TRANSPORT DEVELOPMENT AND THE RURAL ECONOMY: INSIGHTS FROM INDONESIA

A thesis
submitted in partial fulfilment
of the requirements for the Degree
of
Doctor of Philosophy in Geography
at the
University of Canterbury

by
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University of Canterbury
2004
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ACKNOWLEDGMENTS

There is an endless list of organisations and people to whom I am greatly indebted, without whom this thesis could not be initiated and completed. I would firstly thank the Government of Indonesia through the Ministry of Settlement and Regional Infrastructure (or the Ministry of Public Works), which has given me an opportunity to carry out this PhD programme. Special thanks go to Mr Hendryanto Notosoegondo, Mr Hisnu Pawenang and Mr Waskito Pandu, who were in the positions to provide me with formal support at that time. Similar appreciation goes to the Provincial Government of Maluku which has given me leave from my job to undertake my PhD. I would particularly like to thank Dr M.S. Latuconsina, Mr Bob Mahulette, Mr Pieter Mustamu, Mr Antonius Sihaloho. I should like to thank New Zealand Agency for International Development which granted me a scholarship for this programme. I am grateful to the Department of Geography, University of Canterbury which has provided me with knowledge and support, including field research grants. Special gratitude goes to Professor Eric Pawson, Professor Andy Sturman and Associate Professor Ian Owens who, in their departmental roles, have provided me with immense support. I would also like to thank the International Forum for Rural Transport and Development which through its executive secretary, Ms Priyanthi Fernando, has given me opportunities to share knowledge and experience with many rural transport experts and practitioners from different parts of the world.

My greatest debt is to Dr Doug Johnston, the main supervisor for this thesis, who has continually inspired me with critical thinking in rural transport studies from the very beginning of my PhD and who has provided outstanding supervision for my thesis. I also have been incredibly fortunate to have the immense benefit of his rural transport library.

Special thanks go to Dr Garth Cant who has lovingly supervised this thesis and has provided me with insight into rural development issues. He and his wife, Mrs Elisabeth Cant, have also provided my family with strong moral support during the whole period of my PhD research. I am thankful to Dr Simon Kingham for his constantly warm and
kind supervision during the years of my PhD. My warm thanks to Dr Maria Borovnik who has provided me with feedback on selected chapters of this thesis.

I am grateful to many people in the Department of Geography who have provided a very supportive environment during my incorporation into the Department. Special appreciation goes to Ms Janet Bray, Mrs Sue Christopher, Ms Marney Brosnan, Mrs Anna Petrie, Ms Susannah Hawtin, Dr Henry Connor, Mr John Thyne, Mr Steven Sykes, Mr Paul Bealing, Mr Graham Furniss, and Mr Dean Alridge. Warm thanks also to all my PhD colleagues, especially Ms Lee Thompson, Dr Maree Hemmingsen, Mr Hans Eikaas, Ms Christine Elliot and Mr Rijal Idrus.

I must thank people in the International Student Centre, University of Canterbury which have provided me and my family with support during our staying in Christchurch. Many warm thanks go to Dr John Pickering, Ms Eunice McKessar, Mr Gareth Morgan Ms Bex Gilchrist and Ms Maree Thomas.

I feel obliged to many people and families who have been our warmest friends during our years of being New Zealand residents. Warm thanks go to the Hulston Family, the Rahardja Family, the Zikri Family, the Sjahruel Ade Family, the Pahlevi family, the Hadipurnomo Family, the Abdul Hamid Family, the Robertson Family, the Dewhirst Family, the Revis Family, the Idrus Family, Rev. Barbara Stephens, Rev. Robyn McPhail, Mr Leonardo Sambodo and all members of the Upper Riccarton Methodist Church.

I am indebted to hundreds of people who supported my field research in Indonesia. I would like to express my highest appreciation to the district governments of Pangkajene Kepulauan, Tana Toraja, Sorong and Maluku Tenggara Barat. My sincere gratitude goes to Mr Gaffar Pattappe, Mr Amping Situru, Mr John Wanane and Mr Oratmangun, who in their position as district heads, have given me unlimited access to various information and materials that I needed for my research. My special thanks also go to the village governments of Benteng Ambeso, Pabuaran, and Rante Kalua in Tana Toraja; Mappasaile, Kalabirang and Balang Lompo in Pangkajene Kepulauan; Klamono, Disfra and Wanurian in Sorong; and Aruidas in Maluku Tenggara Barat which not only gave me permission to conduct research in their villages, but also willingly shared their
leadership experiences in these villages. I feel immensely thankful to the people of these villages, especially those who worked with me and became my key informants, for their extraordinary supportive attitude to my research.

I would also like to thank my research assistants who helped me to conduct the questionnaire surveys in the twelve research villages: Mr Khiar Ahmad, Mr Zainal Arifin, Mr Akhmad Syukri, Mr Ayub Patiku, Mr Rahman Enta, Mr Yohanis Metris, Mr Dortheus Yable, Mr Martinus Momot and Mr Poly Unakwela.

I am indebted to many key informants in Jakarta, Bandung and Jogjakarta. I thank Mr Mark Baird, the country director of the World Bank in Indonesia at that time, who warmly welcomed me in his office and facilitated my interviews with World Bank staff and my access to the library. I am grateful to Mr Manuel Kasiepo, Professor Soedarti Soerbakti, Mr Iskandar Abubakar and Professor Bambang Bintoro who, in their positions as top policy makers in the central government of Indonesia, gave me insightful interviews. I thank Dr Danang Parikesit from Gajah Mada University and Dr Uton Rustan and Dr Khrisna Pribadi from the Institute Technology of Bandung who shared their knowledge of rural transport in Indonesia.

I am also indebted to many other colleagues and friends who have supported my research in many different ways. I hesitate to single out anyone, lest I slight others, but I would be remiss if I did not acknowledge at least some of those from whom I accepted assistance including Mr Tarsi Hurmali, Mr Manu Pattipeiluhu, Mr Richard Louhennapessy, Mr Taufik Wijoyono, Mr Sugeng Gunadi, Mr Bastian Sihombing, Mr Immanuel Blegur, Mr Edward Tanari, Mr Chris Leverissa, Mr Christ Hehanussa, Mr Ismail Usemahu, Mr Riel Mantik, Ms Widayanti Isbandi, Mrs Numala Simanjuntak, Mr Christophorus Lasmono, Ms Masita Gaffar, Mr Enrico Mattitaputti, Mr Saman, Mr Max Fonataba, Mr Happy Mulya, Mr Adolf Saleky, Mr Arnold Warella, Mr Bambang Subagiono, Mr Deded Syamsuddin, Ms Ahnes Intan, Mr Stanley Tuapattinaja, and Mr Max Hehanussa.

I would now like to thank members of my family who have provided extensive support since the preparation for our departure to New Zealand and right up until today: Leonardo and Vivian Hehanussa, Victor and Rosni Bitticaca, Albertus and Viverny
Patarru, Verry and Maria Bitticaca, Verdy and Syane Bitticaca, Lexy and Vera Andilolo, Vian Bitticaca, Opa and Oma Hehanussa, Julius and Jenny Amping, Junus Kanoena, Charlie and Sita Tikupasang, Alphonse and Nana Sabandar, Samuel and Arlin Sabandar and Triskova Sabandar.

My special thanks go to Ishak Bitticaca, my father-in-law, who introduced me to the three research villages in Tana Toraja and became fully engaged in the data collection process. I gained much insight into Tana Toraja development issues through him. My sincere gratitude goes to my mother-in-law, Antoinette Pangala, who has loved me very much and has given constant encouragement for the completion of this thesis.

My mother, Christina Kanoena-Sabandar requires a very special place in this acknowledgement, as without her I could have never completed my thesis. Her praying, loving and caring have provided me with immense confidence to embark on and finish this PhD journey.

In the end, my highest gratitude goes to my wife, Valentina Bitticaca and my children Ari, Jio and Noni, to whom I dedicate this thesis. Valentina left her main job as a general practitioner in Indonesia and, with her love and faith, has accompanied me every minute of this process. She has provided me with inexpressible support. Ari, Jio and Noni have been a constant reminder of why I have been doing this thesis. They have truly motivated me to finish my PhD on time.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AfDB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>Bappeda</td>
<td>Badan Perencanaan Pembangunan Daerah (Regional or District Development Planning Agency)</td>
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<td>Bappenas</td>
<td>Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)</td>
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<tr>
<td>Becak</td>
<td>A popular name for tricycle public transport in Indonesia</td>
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<td>Bendi</td>
<td>Horse-carts, normally operating as public transport in some parts of Indonesia</td>
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<tr>
<td>BKKBN</td>
<td>Badan Koordinasi Keluarga Berencana Nasional (Coordination Board for National Family Planning)</td>
</tr>
<tr>
<td>BRI</td>
<td>Bank Rakyat Indonesia (an Indonesian government owned bank operated widely in rural areas)</td>
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<tr>
<td>DFID</td>
<td>United Kingdom Department for International Development</td>
</tr>
<tr>
<td>GBHN</td>
<td>Garis-Garis Besar Haluan Negara (National Policy Framework)</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographical Information System</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product</td>
</tr>
<tr>
<td>GRDP</td>
<td>Gross Regional Domestic Product</td>
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<tr>
<td>Golkar</td>
<td>Golongan Karya (a main political party in Indonesia)</td>
</tr>
<tr>
<td>GWT</td>
<td>Gross Weight Ton</td>
</tr>
<tr>
<td>HDM-4</td>
<td>Fourth Highway Development and Management Tool</td>
</tr>
<tr>
<td>IADB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>IDT</td>
<td>Inpres Desa Tertinggal (Inpres for Underdeveloped Villages)</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
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<td>IFRTD</td>
<td>International Forum for Rural Transport and Development</td>
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<td>ILO</td>
<td>International Labour Organisation</td>
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<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IMT</td>
<td>Intermediate means of transport</td>
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<td>Term</td>
<td>Description</td>
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<tr>
<td>Inpres</td>
<td><em>Instruksi Presiden</em> (Presidential Instruction)</td>
</tr>
<tr>
<td>IPJK</td>
<td><em>Inpres Peningkatan Jalan Kabupaten</em> (Inpres for District Road Improvements)</td>
</tr>
<tr>
<td>IRAP</td>
<td>Integrated Rural Accessibility Planning</td>
</tr>
<tr>
<td>JBIC</td>
<td>Japan Bank for International Cooperation</td>
</tr>
<tr>
<td>Kabupaten</td>
<td>District</td>
</tr>
<tr>
<td>Kandep</td>
<td><em>Kantor Departemen</em> (The line ministry organisation at the district level in the New Order administration)</td>
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<tr>
<td>Kanwil</td>
<td><em>Kantor Wilayah</em> (The line ministry organisation at the provincial level in the New Order administration)</td>
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<tr>
<td>KDP</td>
<td><em>Kecamatan</em> Development Programme</td>
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<tr>
<td>Kecamatan</td>
<td>Sub-district</td>
</tr>
<tr>
<td>KKN</td>
<td>Corruption, Collusion, Nepotism – slogan of Reform movement</td>
</tr>
<tr>
<td>KMMP</td>
<td><em>Konsultan Manajemen &amp; Monitoring Pusat</em> (National Consultant of P3DT)</td>
</tr>
<tr>
<td>KTI</td>
<td><em>Kawasan Timur Indonesia</em> (Eastern Indonesia)</td>
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<tr>
<td>Law 5 of 1974</td>
<td>Law of Regional Administration in the New Order administration</td>
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<td>Law 5 of 1979</td>
<td>Law of Village Administration in the New Order administration</td>
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<td>Law 13 of 1980</td>
<td>Law of Roads</td>
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<tr>
<td>Law 14 of 1992</td>
<td>Law of Traffic and Road Transport</td>
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<tr>
<td>Law 22 of 1999</td>
<td>Law of Regional Autonomy introduced by the Reform government</td>
</tr>
<tr>
<td>Law 25 of 1999</td>
<td>Law of “Balancing Grants” between Central and Local Governments introduced by the Reform government</td>
</tr>
<tr>
<td>MSRI</td>
<td>Ministry of Settlement and Regional Infrastructure</td>
</tr>
<tr>
<td>MT</td>
<td>Motorised transport</td>
</tr>
<tr>
<td>NMT</td>
<td>Non-motorised transport</td>
</tr>
<tr>
<td>Nasakom</td>
<td>Nasionalism, Religion and Communism – Soekarno’s concept for uniting Indonesia</td>
</tr>
<tr>
<td>Ojek</td>
<td>A popular name for motorcycle public transport in Indonesia</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>P3DT</td>
<td><em>Program Pembangunan Prasarana Desa Tertinggal</em> (Programme of Underdeveloped Village Infrastructure Improvements)</td>
</tr>
<tr>
<td>PDIP</td>
<td><em>Partai Demokrasi Indonesia Perjuangan</em> (a main political party in Indonesia)</td>
</tr>
<tr>
<td>Perda</td>
<td><em>Peraturan Daerah</em> (District Regulation)</td>
</tr>
<tr>
<td>Pete-pete</td>
<td>A popular local name for a minibus public transport in South Sulawesi</td>
</tr>
<tr>
<td>Pikul bar</td>
<td>Shoulder pole</td>
</tr>
<tr>
<td>Propenas</td>
<td><em>Program Pembangunan Nasional</em> (National Development Plan)</td>
</tr>
<tr>
<td>Repelita</td>
<td><em>Rencana Pembangunan Lima Tahun</em> (Five Year Development Plan)</td>
</tr>
<tr>
<td>Repeta</td>
<td><em>Rencana Pembangunan Tahunan</em> (Annual Development Plan)</td>
</tr>
<tr>
<td>Rupiah (Rp)</td>
<td>Indonesian currency (the exchange rate was 1US$ = 2,300 rupiah in 1996; 10,000 rupiah in 2000; 8,900 rupiah in February 2002; in 9,100 in November 2004)</td>
</tr>
<tr>
<td>Sistranas</td>
<td><em>Sistim Transportasi Nasional</em> (National Transport System)</td>
</tr>
<tr>
<td>SK 77 of 1990</td>
<td><em>Surat Keputusan Menteri Pekerjaan Umum tentang Petunjuk Teknis Perencanaan dan Penyusunan Program Jalan Kabupaten</em> (The Decree of the Minister of Public Works about Technical Guidelines for District Road Design and Programming)</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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</table>
ABSTRACT

This thesis examines the roles of transport development in the rural economy. It is based on the fact that very little knowledge has been gained on how transport should be developed to bring maximum benefits to the rural population. The fundamental premises are that the relationship between transport development and the rural economy is highly multifaceted and that any explanation which does not consider context can never be sufficient. An institutional approach, based primarily on the new institutionalism theory, was employed as the theoretical basis for the analysis.

The research was implemented at four levels of Indonesian institutions: national, district, village and household. Information was collected in Jakarta and four rural districts in Eastern Indonesia through key informant interviews, questionnaire surveys, field observation and library materials. The analyses explored the roots of ineffective rural transport development at each level of these institutions. At the national level, doctrines are chosen, organisations are created and policies are designed, all based on an “adopted” neo-classical assumption and without an appropriate understanding of the specific characteristics of transport and the rural economy. At the district level, there are few mechanisms available for people engaging in the practical development process to inform transport policy makers of the particular benefits and/or limitations of specific transport and rural development initiatives. At the village level, rural people have mainly been passive agents in the development process, without opportunities to determine the transport intervention that they need most. At the household level, individuals are not always able to respond to the opportunities created by transport improvements. All these have contributed to the failure of transport development to effectively promote the rural economy.

Based on the empirical analysis, the linkages between transport development and the rural economy are conceptualised. Transport development needs to be approached as conscious and systematic efforts to improve rural accessibility and mobility. Such an approach should be supported by an environment conducive to greater recognition and participation of societal institutions in the development process.

This thesis has important implications for the discourses on transport policy and research. There is a crucial need for transport policy and research to go beyond their conventional boundaries and to incorporate wider development perspectives that include the social, political, cultural and the economic relationships of rural regions and rural people.
CHAPTER I. INTRODUCTION

1.1 Challenging the Orthodoxy

This thesis is about transport and the rural economy. Based on evidence from Indonesia, it critically examines the role of transport development in the context of the rural economy. It analyses how transport development emerges in different settings and scales of institution, how the process of transport development, from ideas to programmes, interacts with various rural development forces, how such a process works in different contexts of the rural economy, and how different characteristics of the rural economy are affected by various development forces, including improvement in transport. The fundamental premise is that the relationship between transport and the rural economy is highly multifaceted and any explanation of the connection which does not consider context can never be sufficient. An appropriate understanding of the environment within which, and processes through which, the transport sector and the rural economy interact is the keystone to generating an effective relationship between transport and the rural economy.

This point of view contrasts with what has been the orthodoxy in transport studies. The orthodoxy takes it for granted that transport improvements are the prerequisite for the economy. This belief is firmly rooted in classical and neo-classical economic theory which argues that technological innovation is the driving force of economic growth (see Schumpeter, 1934; Rostow, 1971). The theory takes little notice of the environment, process and context that shape the linkage between technologies and the economy. All that matters is the logic which assumes that technological advance leads to economic growth. Given the belief that the economy requires modern transport infrastructure and services to grow, then resources should be prioritised to the transport sector and transport development should be efficiently designed in a way that it can maximise economic growth.

This belief has long been the justification for putting transport among the top priorities for development expenditure. Investments in transport have received a significant
emphasis from international development organisations and developing nation
governments (Table 1.1). Since being established, the World Bank has allocated 20% of
its total loans to transport investments. Other international financial organisations such as
the Asian Development Bank (ADB), African Development Bank (AFDB) and Inter-
American Development Bank (IADB) have allocated 12 – 19% of their loan funds to the
transport sector. In addition, the 10 Asia Pacific governments listed in Table 1.1 have
consistently positioned the transport sector between the second and fourth rank, among
14 to 24 development sectors.

Table 1.1: Transport portfolios in selected international development agencies
and national governments in Asia Pacific Countries

<table>
<thead>
<tr>
<th>Agencies</th>
<th>Period</th>
<th>Share in bank's overall lending (%)</th>
<th>Ranking among sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Bank</td>
<td>1947 - 2000</td>
<td>19.7</td>
<td>2 of 10</td>
</tr>
<tr>
<td>Asian Development Bank</td>
<td>1966 - 2000</td>
<td>18.4</td>
<td>2 of 8</td>
</tr>
<tr>
<td>African Development Bank</td>
<td>1967 - 2003</td>
<td>16.0</td>
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<td>Inter-American Development Bank</td>
<td>1961 - 2002</td>
<td>11.6</td>
<td>3 of 15</td>
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<tr>
<th>Countries</th>
<th>Period*)</th>
<th>Share in development expenditure (%)</th>
<th>Ranking among sectors**)</th>
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<tr>
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<td>1985 - 2002</td>
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<td>1985 - 2002</td>
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<td>Papua New Guinea</td>
<td>1985 - 2002</td>
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<td>Srilanka</td>
<td>1985 - 2002</td>
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<tr>
<td>Thailand</td>
<td>1985 - 2002</td>
<td>12.5</td>
<td>2</td>
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Note:  
*) Five fiscal years are considered in this period: 1985, 1990, 1995, 2000 and 2002  
**) total number of sectors/subsectors in those countries varies from 14 to 24  
Sources: World Bank (2004); ADB (2001; 2003); AfDB (2004); IADB (2003)

Despite this focus on transport investment, rural people seem to enjoy few benefits from
it. In many parts of developing countries, rural people still experience very limited
access. Most of their trips are still on foot and often involve carrying cumbersome loads.
In Nepal, for example, rural people living in the mountains need to walk on average 15
hours to reach the nearest motorable dirt road (Seddon, 2000). In Cameroon, the nearest
rural health clinics are between five and 20 kms from rural settlements and to reach such facilities patients are transported in pushtrucks, or on the backs of relatives (Davis, 2001). In North and Centre-West regions of Brazil school catchment areas average 250 km² resulting in very long walking distances for pupils (Vasconcellos, 1997). In Garut District, Indonesia, more than 90% of rural household trips were made on foot, and they accounted for 38% of total distance and 39% of total load carried (Johnston, 1998a). Very few rural people possess motorised vehicles. In Ghana, with a population of over 21,000 people in research villages, only 10 motor vehicles were found (Dawson and Barwell, 1993). The same authors found that more than 75% of the time spent on transport by rural households in Sub-Saharan Africa is for food production and for collecting fuel and water. In most cases, women and children bear the greatest transport load in terms of time and weight. In Zambia, women’s transport burdens are three to five times those of men (Barwell, 1996).

Such transport situations might be expected to have significant implications for the rural economy which, in this thesis, refers to the economic-related activities of diverse actors taking place in rural areas. This definition is deliberately broader than simply focusing on the functioning of rural markets, which are formed by the supply-demand interactions between consumers and producers. The rural economy requires an interdisciplinary approach in which the broader social, political and cultural issues that influence the economic processes in rural areas are incorporated. The rural economy is characterised by a number of features, four of which are worth emphasising.

- The most alarming feature is that participants in the rural economy continue to be entrapped in poverty. Estimates indicate that 75% of the world’s poor live in rural areas (IFAD, 2001). Rural people are poorer because they are generally isolated from various socio-economic opportunities (Carney, 1999), and have limited access to social and political power (Dixon, 1990).
- The rural economy is normally associated with small-scale family farms or small-scale rural enterprises. Such units of production are characterised by labour intensive operations and limited resources. In most cases, farmers and fishers are heavily reliant on natural resource-based (especially climate dependent) production (Alderman et al., 2001). In some places their environments are also infertile (Dixon, 1990).
While agriculture is the dominant sector in most rural areas, the rural economy is broader than agriculture. The ongoing trend indicates that the rural economy is increasingly characterised by the non-farm sector (Saith, 1992; Start, 2001). As one report indicated, 30-70% of rural incomes in Asia are now generated by non-farm employment (Hossain, 2000). Such trends are diversifying the traditional structure of the rural economy.

Livelihood difficulties have contributed to a significant decrease in the proportion of the population living in rural areas. The rural component of the population in developing countries decreased from 82% in 1950 to 60% in 2000 and is predicted to be only 44% by 2030 (United Nations Secretariat, 2002). The poor economic performance of the agricultural sector plus the limited availability and lower quality of infrastructure and services in rural areas vis-à-vis the high growth of the industrial sector in urban areas are among the important factors that stimulate the migration of people from rural to urban areas.

If one takes the issues of rural transport and the rural economy together, a question arises: what do we really know about the linkage between poor transport and difficulties in the rural economy? The orthodox view has a simple answer: poor transport limits the performance of the rural economy, but if transport is improved the rural economy will automatically benefit. Such a conclusion is misleading, as in real life there is no such a thing as a linear and automatic relationship. Building a road into rural villages or operating a public motorboat connecting remote islands does not automatically generate growth in the village or the island economy. On the other hand, an improved economy cannot be assumed to be simply the result of better roads or improved public transport. We cannot assume that the linkage between transport development and the rural economy will always be positive, unless all factors that are embedded in and related to the interconnection of the two can be effectively managed. In fact, we know little about such factors including how they affect the process of transport development and the process of rural economic growth. We know little about how the process of transport development influences the performance of the rural economy, and in turn, little about how the processes of the rural economy influence the performance of the rural transport sector. This research is explicitly concerned with these issues.
1.2 Objective and Tasks

The basic question posed by this research is “to what extent and in what circumstances does transport development effectively improve the rural economy?” This question reflects the main objective of the thesis: to analyse and conceptualise the relationship between transport development and the rural economy.

To formulate the question and objective into systematic tasks, it is necessary to understand the macro processes of transport development and the rural economy. Some assumptions need to be made in order to provide a clear direction for the analysis. I assume that there are basically two interrelated processes: transport development and the rural economy (Figure 1.1). The first is mainly driven by the state (although this is not always the case as this thesis will explore) and therefore relates to doctrines, organisations, and policies, as well as social and political structures that drive national development. On the other hand, the second is predominantly influenced by natural, social and cultural values embedded in (rural) societies. Nevertheless, the rural economy by itself is not free from state influences, another matter of interest to this thesis.

![Figure 1.1: Transport development and the rural economy](image)

Transport development is formulated as a circular and cumulative process and consists of four interrelated phases: (i) doctrine, (ii) organisation and policy, (iii) implementation,
and (iv) evaluation. The first is the phase by which the national principles of transport development are established; the second is the process of translating these principles into an appropriate organisational structure and policy; the third is the process of applying the established organisational structure and policy in a real world situation; and the last is the step that seeks to evaluate the outcomes of the previous phases and so provide feedback for future transport development.

It is also assumed that the process of transport development has an influence on the process of the rural economy. This relationship, however, can only be appropriately determined by comprehensively examining the effects of transport improvements on the lives of rural people. Transport development is expected to improve rural transport systems and so promote changes in the rural opportunity set. Such changes could include: new production and marketing possibilities, increased availability of non-farm employment, or better access to health and education facilities. One, however, needs to emphasise that new opportunities are not always or even readily taken up by rural people. These new opportunities, nevertheless, affect the ability of the rural economy to change. In turn, change in the rural economy shapes the future direction of transport development process.

This research is not intended to address every aspect stated above. It is however important to distinguish between those issues that are the most relevant for inclusion and those points which would be more appropriately addressed by other research. At first, there is a need to examine doctrines, organisations and policies that drive transport development processes. Secondly, it is important to examine the way transport sector policy is implemented as well as the effects of transport improvements on the rural economy. In this context, examining the changes in the transport situation and their

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1 The term doctrine in this thesis has the same meaning as the words/phrases: national principle, state institution, policy framework, and ideology. In the context of development, Cowen and Shenton (1996) used the term doctrine to represent the state principle of the intention to develop, "to become an expression of state policy" (p.viii), which "provide[s] an overarching principle for a practice of development..."(p. 174).

2 I differentiate between the terms 'transport development' and 'transport improvement'. The former refers mainly to the overall aspects of the transport sector that include doctrine, organisation and policy, implementation and evaluation (see Figure 1.1), but could also reflect societal desire and capability to improve their transport system. On the other hand, 'transport improvement' means the practical initiatives established as the consequence of the former. These could include the construction of new roads, the establishment of public transport services, or the execution of village self-help transport projects.
effects on rural livelihoods becomes crucial. All related factors that contribute to the changes should be considered. These two important stages need to be combined in the last stage of research, which links the evidence of change with the reformulation of concept and policy. Here, developing a policy model is important for a sound outcome that may help ensure the researcher's voice is heard by policy makers (Krugman, 1995).

With the help of the above framework, the objective of formulating the link between transport development and the rural economy is formulated into five main tasks:

1. Analysing (transport) development doctrine and policy in Indonesia and their linkages to the objectives of improving the rural economy and alleviating rural poverty.
2. Examining evidence at the district level of the correlations between transport systems and rural livelihoods, and analysing the way the process of transport development has affected those relationships.
3. Examining evidence at the micro (village and household) level on the way the transport system links to the accessibility and mobility situations of rural people, and how these variables relate to rural livelihoods and welfare levels.
4. Elaborating evidence at the micro (village and household) level for the process of, and factors that promote, rural transport improvement and its consequent effects on the rural economy.
5. Conceptualising the link between transport development and the rural economy using the lessons from the previous tasks plus lessons from other related research.

Indonesia offers a unique opportunity for this research. From the macro development perspective, the Indonesian rural economy is one of the most dynamic economies in the developing world. Important structural transformations that have taken place in the Indonesian economy over the last four decades have altered the structure of the rural economy, from a predominantly agricultural-based economy to a mixed economy, incorporating the agricultural, industrial and service sectors. During the period 1966-1996 (the Soeharto administration), for example, the country enjoyed rapid economic growth (with an annual average of 6.7%), which was achieved however, at the expense of the rural sector (Thee, 2002). In addition, with almost three million people entering the labour force every year, there has been an enormous potential for development change as well as an urgent need to better understand the nature of rural non-farm
economies (Leinbach, 2004). It is also important to understand the change in the structure of national administration, from a centralised to a decentralised system, after the multidimensional crisis in 1997. This is another unique feature of this research as it is able to examine how different development approaches affect the rural economy. Lastly, although rural areas have received 'special' attention in Indonesian development (as indicated by the implementation of various subsidy schemes for rural development since 1974), poverty is still a major feature of rural areas. By 2001, for example, 72% of poverty was found in the rural areas (BPS, 2002: 589).

From the perspective of transport studies, Indonesia provides an ideal laboratory. The country offers various rural transport situations characterised by different geographical, topographical, economic, social and cultural conditions that influence the functioning of the transport network. In fact, research on rural transport has been very much focused on rural regions outside Indonesia (e.g. Sub-Saharan Africa and South Asia). To some extent, this is related to the perceived successful progress of transport and rural development made during the Soeharto regime (see Killick, 2001: 73-75). Yet, authors who seriously studied rural transport in Indonesia have shown a less optimistic picture of the way Indonesian transport development has been managed (see for example Leinbach, 1986; 1989; Johnston, 1993). Johnston (1993) argued that, despite the fact that transport has been a priority in Indonesia's development, rural transport had gained little: the government's focus on building transport infrastructure and neglecting the provision of transport services meant little for the mobility of rural people. More insightful research on rural transport in Indonesia together with similar research from other parts of the developing world is required to provide a more sophisticated understanding of rural transport.

1.3 Structure of the Thesis

This thesis is structured into three parts and 13 chapters (Figure 1.2). In Part One (Chapters I to IV), the context of the research is set out as initiated in this chapter. The part also acts as the framework within which the other two parts of the thesis are placed. The next chapter reviews the theoretical foundations of transport and development in the rural Third World, questioning the neoclassical basis of transport studies. Chapter III
offers an alternative theoretical approach for the effective examination of the linkage between transport and the rural economy. This chapter is followed by a chapter outlining the context and methodological framework of this research.

Figure 1. 2: Structure of the thesis

The six analysis chapters follow in Part Two. In Chapter V, I examine critically the doctrine behind, and policy that has underpinned, rural transport development in Indonesia, mainly during the New Order period (1966-1998), but also in the Reform period (1998-present). In Chapters VI and VII, I connect the transport policies implemented in these two periods with the situation of transport and rural livelihoods in four districts in Eastern Indonesia. This leads me to the next three chapters, where I focus the analysis on selected villages in those districts, examining (i) the linkage between accessibility, mobility and rural livelihoods (Chapter VIII), (ii) the process of transport
improvements and its effects on rural economic performance (Chapter IX), and (iii) the process of transport improvement and the participation of rural communities in such a process (Chapter X). The micro (village and household) level analysis employed in these three chapters will provide insight into the complex situation of the relationships between transport development and the rural economy.

Part Three is about developing a model and formulating strategies for action. The six analytical chapters provide a strong basis for developing a conceptual framework linking transport development and the rural economy, which is the subject matter of Chapter XI. In addition to that, Chapter XII conceptualises the institutional framework for an effective linkage between transport development and the rural economy. Five propositions that underpin the linkages between transport development and the rural economy are discussed in both chapters. The final chapter evaluates the extent to which the objective and tasks of this research have been achieved, highlights implications for actions and identifies further research needs.
CHAPTER II. TRANSPORT DEVELOPMENT AND THE RURAL ECONOMY – A LITERATURE REVIEW

We still know all too little about the ways in which rural transport should be improved and how to deliver benefits to more needy populations. Until recently this was in part due to the consequence of equating people's needs with conventional engineered roads. (Leinbach, 2000: 2)

This chapter reviews the theory of transport and development in the context of the rural Third World. The main question to be examined in this chapter is how far the theoretical understanding of the role of transport development in the rural economy has evolved. The outcome of this review will provide the basis for the present research which seeks to move forward the agenda of conceptualising the link between transport development and the rural economy. In conducting the review, I realise that at least two mainstream disciplines, transport and rural development studies, intersect in this theme. Interestingly, these domains have traditionally been rooted in different theoretical camps. Study of transport has long been preoccupied by (neo-) classical economic theory driven by growth-, demand/supply- and industrialisation-led approaches (Pawson, 1979; Simon, 1996). In contrast, rural development studies have been closely linked with ideas of distribution, basic needs and peasant agriculture (Harriss, 1982; Ellis and Biggs, 2001). Although such a superficial classification risks oversimplification, because in reality the distinction is less clear-cut, it can be helpful in combining research on transport and on rural development into the adaptation of an appropriate theoretical narrative. Accordingly, this chapter will serve to establish a discourse that links transport development and the rural economy.

The first part of the chapter reviews the evolution of transport studies. This section demonstrates the hegemony of classical and neo-classical economic theory in transport studies. The second part reviews the emergence of rural transport studies, indicating the need for applying different theoretical approaches in seeking to understand the realities of rural transport. The third section discusses the problems of rural transport development, underlining some key issues for this research. The last part concludes the discussion and introduces the theme for the next chapter.
2.1 Theoretical Orthodoxy in Transport and Development Studies

Understanding how transport studies have evolved over time and space will be useful, partly for providing lessons about the past but, more importantly, for a continuing understanding of the link between the past, the present and the future. Many authors have reviewed the evolution of transport studies, most notably from historical perspectives (Hoyle, 1973; Pawson, 1979; Button, 1982; Hart, 1983; Howe, 1984; Hilling, 1996; Howe, 1996; Simon, 1996; Banister and Berechman, 2000; Preston, 2001). In this section, the evolution of transport studies is again reviewed, but in relation to the emergence of the new rural transport field.

The origin of the connection between transport and development studies can be traced to Adam Smith’s well-known book in 1776, *An Inquiry into the Nature and Causes of the Wealth of Nations* (n.d.). Smith emphasised the significance of transport networks as ‘the greatest of all improvements’ in the expansion of the market (commerce) from urban to rural areas and subsequently facilitating the division of labour, which in the long run would bring economic expansion for the whole country. In order to ensure that transport can effectively play such a role, increases in production should go hand in hand with provision of transport infrastructure.

That the erection and maintenance of the public works which facilitate the commerce of any country, such as good roads, bridges, navigable canals, harbours, etc., must require very different degrees of expense in the different periods of society, is evident without any proof. The expense of making and maintaining the public roads of any country must evidently increase with the annual produce of the land and labour of that country, or with the quantity and weight of the goods which it becomes necessary to fetch and carry upon those roads. (Smith, n.d.: 567)

Smith, nonetheless, did not offer any theoretical explanation for the way in which transport improvement is linked with production increases and the economic advance of countries, apart from implying the ‘no-doubt and automatic’ role of transport in allowing rural regions to be linked economically to urban centres. Nevertheless, that view has been widely accepted as the foundation of modern transport study and has consistently formed the mainspring of transport and development theory right up until today.
Following Smith, many authors have contributed to the development of transport studies, mainly in enriching the understanding that transport networks are crucial in determining the spatial size of production hinterlands and market forelands. Von Thunen (1826) developed a theory linking transport rates and agricultural land-use. Alfred Weber (1929) established the relationship between transport costs and industrial location. Some authors such as Hoyt (1939), Hoover (1948), Isard (1956) and Greenhut (1956) enriched the work of Weber in linking transport and industrial location. Christaller (1933) constructed a hierarchical system of how transport costs affect urban and rural economic activities. Losch (1954) went into more detail in explaining how transport costs affect the spatial distribution of production. Overall, these economists have provided, within the classical economic framework, further basic theory, mainly developing the argument that an existing transport network influences the location of economic activity. There is a logical break between that statement and the assumption that a change in the transport system will automatically lead to a change in economic activity.

After the Second World War, a new generation of classical economics (well-known as neoclassical economics) was born and provided a strong focus on the role of capital and technology in the economy. From the transport perspective, however, there has been no significant change in the understanding of the role of transport in development between the classical and neo-classical economics. Nevertheless, it is worth noting here that with technology becoming a major strand of the neo-classical model, transport improvements have come to play a more pivotal role in the process of economic growth.3

One of the most popular explanations of the connection between transport and economic change in the modernisation era was found in the “stages of growth” theory by Walt Rostow. Rostow (1960) believed that transport improvement (through railway construction) was the prime stimulus of economic growth, moving countries from pre-industrial to post-industrial societies. In relation to that, he divided the process of

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3 The idea of development has traditionally been associated with the promotion of economic growth, a view rooted in (neo-) classical economic theory. Criticism of this view has been continual since the 1960s, resulting in a broadening of the definition of development to incorporate social indicators in the 1970s and 1980s, and political freedom, later on (Potter et al., 1999). Despite such criticisms, some international development agencies, however, strongly held on to such a conventional view until the late 1990s. One example is the World Bank with its 1980s Washington Consensus that focused on a growth-based policy framework. In the late 1990s, the World Bank changed its view of development doctrine and introduced a new comprehensive development framework that balances good macroeconomic measures with sound social, structural and human policies, including poverty alleviation strategies (Wolfensohn, 1999).
economic growth into four linear stages: (i) pre-industrial, (ii) transitional, (iii) industrial, and (iv) post-industrial. This theory paralleled the core-periphery model established by John Friedmann (1966). In Friedmann’s formulation, the process of modern development is initiated from an urban core and hierarchically transferred towards the rural periphery. The process creates a dynamic interaction between the urban core and the rural peripheries, in which transport is a key element. The process, in the long run, produces an integrated rural-urban space and a modern stage of development (Friedmann, 1966).

It is obvious that the principle enunciated by Smith was still relevant in the neoclassical economy era. The theoretical explanation for Smith, which was also applicable to the neo-classical mainstream, can be seen in the work of van Es (1977) and Button (1982). Button (1982) devised a simple demand/supply model, illustrating how improvement in transport extends the market through a reduction in transport costs (Figure 2.1). It is shown that a reduction in transport costs ($\Delta P$) changes the supply price from $P_{s0}$ to $P_{s1}$. Given the relationship between price and demand, this moves the optimum point from $O_0$ to $O_1$, which means that with the reduction in transport costs, producers can increase their production. The increase in production is associated with the extension of the market.

![Figure 2.1: Transport cost and production linkage](source: Button (1982: 28))
The dominant role of neo-classical economics in transport studies has continued until today. But, some theoretical challenges have arisen. Robert Fogel (1964), for example, through his historical econometric research on the American nineteenth century found that the contribution of railroads to America's development had been overvalued. While showing that the birth of the railroad in the nineteenth century did not make crucial contribution to the economic growth, Fogel elaborated:

Economic growth was a consequence of the knowledge acquired in the course of the scientific revolution of the seventeenth, eighteenth and nineteenth centuries. This knowledge provided the basis for a multiplicity of innovations that were applied to a broad spectrum of economic processes. The effectiveness of the new innovations was facilitated by political, geographic and social rearrangements. (Fogel, 1964: 235)

Fogel's conclusion, although important in understanding the nature of the transport and economic growth linkage, has been widely neglected by transport economists.

Eric Pawson (1979), working from an historical geography perspective, argued that the linkage between transport improvement and the economy is dynamic and that generalized or aggregative research had done little to untangle such dynamism. Based on a study of British turnpike roads during the 18th century, the author identified three factors that were significant in understanding the dynamics between transport and the economy: (i) conditions that generated the need for transport innovations, (ii) their temporal and spatial diffusion, and (iii) the impact of that process of diffusion.

From the "new economic geography" perspective Kilkenny (1998; 1999), in the context of rural areas in developed countries, argued that an improved transport network can be detrimental to the economic performance of rural areas. Reduced transport costs raise the profits of urban firms and promote urban concentration, thus reducing the attractiveness of rural areas. This results in more rural people migrating to the city. According to the author, rural development can only be positively affected by improvements in transport if the costs associated with rural production and transporting output are lower than the costs of supporting urban production.

Most recently, Banister and Berechman (2000) developed a conceptual framework linking transport investments and economic development. Although oversimplifying the
nature of the transport - development linkage in developing regions, the authors used a macro-economic approach to assess the effects of transport investment on economic growth mainly in developed countries. The authors stated that investments in transport will directly improve network accessibility, but do not necessarily promote economic growth. They argued that, in addition to transport network improvements, environmental concerns, an imperfect labour market, and spatial agglomeration also matter in determining economic growth. To enable these factors to maximally translate transport investment into economic growth, political and policy decision-making matter. According to the authors, a supportive political and institutional environment is a necessary condition for making transport improvements contribute positively to economic development.

Up to this point, the review of transport and development theory has been focused on literature dealing with Western Europe and North America. This was what transport study was all about until forty years ago. There have been no transport studies that substantially touched on the nature of transport in Third World countries before 1960 (Hoyle, 1973). The long period of colonialism experienced by most Third World nations is probably the main explanation for the lack of critical transport development studies in these countries. Transport development during the period of colonialism was carried out following the pattern of development in metropolitan countries. More specifically, the pattern of transport development at this time period was mainly to serve the economic and political interests of the colonial regime (Hoyle et al., 1998). Transport was very important for colonial governments as it facilitated the strengthening of political and economic control over the colonial territory. Lord Lugard, for example, argued that “the material development of Africa may be summed up in the one word – transport” (Lugard, 1922 quoted from Hoyle, 1973: 11).

Furthermore, it should be noted that, with economic growth being a single objective of development at that time, transport development was focused on economic development rather than poverty alleviation. Taaffe, Morril and Gould (1973) examined the process of [colonial] transport network expansion in the economic growth of underdeveloped countries. In the beginning, there were only small ports scattered along the coastline. The process of transport improvements started with connecting those scattered ports to their interior hinterlands which, in the long run, formed interconnections between port cities.
and inland cities. The process ended with the emergence of high priority "main streets" connecting major port cities and the main city in the interior. But, it was Rimmer (1977) who clearly illustrated the development of the transport system in developing countries from the pre-colonial era to the neo-colonial period. The most significant part of Rimmer's model illustrates how the process of colonialism has changed the indigenous transport system to a system most appropriate to colonial administrative interests.

To sum up, mainstream transport studies have long been preoccupied by (neo-) classical economic theory which maintains the unquestionable role of transport in promoting economic growth. The theory that has been widely implemented in the western world was then uncritically imposed on the Third World context. Critical thought arguing (i) that development is more than just simply economic growth, (ii) that transport improvements are dynamically related to development issues, and (iii) about the significance of local or regional context matters in understanding development, was largely ignored. Yet, some authors who persisted with their critique have stimulated the emergence of rural transport studies for developing countries. I will discuss their thoughts in the following section.

2.2 The Emergence of Rural Transport Studies

The long hegemony of neo-classical economic theory in transport studies has provided marginal space for other theoretical essays (Black, 2001). Scholars with a more critical view have gained very little space in this area. Nevertheless, some of their work has been significant in providing a basis for transport studies in developing countries. Leinbach (2000) suggested that there is a need for research in greater detail into the role of transport in Third World development. A new interpretation of transport studies is required, one which deals with the role of transport in the rural Third World (Leinbach, 2000). Before reviewing the principles of rural transport, it is worth mentioning the works of some scholars that have laid the foundations of rural transport studies.

Albert Hirschman (1958) provided a strong but clear critique of the neoclassical growth models in relation to investment choices. With regard to the question, "How do we pick out the projects that will make the greatest contribution relative to their
cost?" (Hirschman, 1958:76), neoclassical economists would translate "contribution" as direct contribution to aggregate output and income once the project has been completed (with reference to Harrod and Domar's growth model). The possibility that investments might have multiple impacts was not considered in such an approach. More elusively, the fact that similar investments in different locations could create different development outcomes, is not considered at all by this mainstream thought.

Hirschman, then, based his model on the relationship between investment and economic development. He made a distinction in economic investments between social overhead capital (SOC) and directly productive activities (DPA). The former was associated with basic services without which primary, secondary, and tertiary productive activities could not work: transport and power were the central items of this scheme. DPA, on the other hand, refers to productive activities in industry, agriculture and commerce. The conventional economic belief is that SOC is a prerequisite for DPA, and therefore the improvements of roads, railways, ports, and electric power installations are required to promote growth in industry, agriculture and commerce. Such an understanding can be misleading and potentially overstated as it says nothing about how, or to what extent SOC and DPA are associated. Hirschman provided a model of the relationship between SOC and DPA grounded on the importance of understanding the resource availability and development history of countries. In the Hirschman model, SOC investments can take place either as a response to increasing DPA output (development via shortage capacity of SOC) or as a necessary factor stimulating DPA activities (development via excess capacity of SOC). Ideally, there should be a balance between growth in DPA and growth in SOC, based on the optimum points between increasing DPA outputs that are subject to minimum SOC costs. No ideal prescriptions, however, exist. For Hirschman, determining the further sequence of the way investments should be carried out (whether SOC follows DPA, or DPA follows SOC, or particular combinations of them) in order to promote more balanced growth, required lessons from the past experience of how unbalanced growth took place.

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4 Harrod and Domar's growth model was developed in the 1930s and suggested that economic growth requires efforts that encourage savings and/or generate technological advances in order to lower the capital-output ratio.
Wilfred Owen (1964) discussed the relationship between poor transport systems and poverty in developing countries, and provided extensive illustrations of the relationship between transport and poverty in India (Owen, 1968). He argued for a new transport strategy for development based on the transport needs of the population. According to Owen (1964), the application of the demand/supply approach in transport development of developing countries needs to be complemented by a broader approach to deal with unrevealed or latent demand originating from the immobile condition of people. He argued:

Instead of building a road in the hope that it will lead to increased agricultural output, steps should be taken to help make new production possible. This may require colonization programs, fertilizers, irrigation, or agricultural extension services. To provide only for a transport facility, leaving the rest to chance, is an unnecessary gamble. Instead of guessing about the future, it will often be necessary through a balanced regional development program to help fashion the future. (Owen, 1964:196-197).

The work of George Wilson (1973) was significant for his analysis that distinguished two essential stages in the role of transport in economic development. The first step focuses on whether the transport improvement creates an economic opportunity or not, and the second concerns the role of transport investments in creating individual awareness and ability to respond to an economic opportunity. The former depends on the quality and quantity of resources available in regions affected by transport improvements. The latter is influenced by: (i) awareness by people of the potential of transport improvements, (ii) the availability of finance, and (iii) the magnitude of the possible benefits relative to alternative investment options. Wilson focused his theoretical analysis on the impact of economic change (brought about by transport improvements) on the attitude of individuals, something that is neglected in neoclassical economy theory.

In the effort to understand the way transport investments should be promoted, Wilson raised the significant role of institutional change. On the one hand, while adopting the thoughts of Kahn (1951) and Foster (1962), Wilson argued that investments which involve frontal change in institutions have the least likelihood of success. On the other hand, no change in institutions provides few prospects of promoting growth. "What is required, therefore, is something intermediate between a massive assault on culture and
those investments that leave all else completely unchanged" (Wilson, 1973:223). This led Wilson to suggest a series of policy initiatives for governments in developing countries to balance the distribution of benefits of transport investments between the users and the producers.

The works of Hirschman, Owen and Wilson provided significant steps in the emergence of rural transport studies. At the beginning of the 1980s, the International Labour Organisation (ILO) started a comprehensive research programme in the context of developing a new approach to rural transport development. Transport experts involved in this research introduced the approach of “basic needs” into transport studies (Howe and Richards, 1984; Barwell et al., 1985; Howe, 1996). In this perspective, transport policies and interventions require a comprehensive understanding of the transport needs of rural people. The new approach to rural transport is identified by (i) the introduction of the household (and the community of which it is a part) as the unit of analysis rather than a focus on the region or the country, (ii) the redefinition of rural transport, to be considered in its totality and to encompass the movement of rural people and their goods to meet their domestic, economic and social needs, by any means, along paths, tracks and roads (Dawson and Barwell, 1993). The in-depth work of ILO has led to the establishment of a simple tool for rural transport planners to assess the level of accessibility and transport needs of a rural community. That tool, called Integrated Rural Accessibility Planning (IRAP), was first published in the early 1990s and has been applied successfully in pilot projects in developing countries (ILO, 1999).

This ILO approach seemed to be parallel with the later United Kingdom Department for International Development (DFID) perspective established in the late 1990s. DFID introduced a rural sustainable livelihoods framework that combined the issue of rural development, poverty reduction and environmental management (Scoones, 1998). The concept linked micro and macro approaches for establishing development policies based on local realities (Shankland, 2000). In the context of rural transport, some scholars have established frameworks that integrate the sustainable livelihood approach with transport provision for the rural poor (see Booth et al., 2000; Davis, 2001; Bryceson, Maunder et al., 2003). The framework established by Bryceson, et al. (2003) was termed SLAM to indicate its combination of the Sustainable Livelihoods analysis with Access and Mobility concepts.
The United States Agency for International Development (USAID) has also developed a model to evaluate the impact of transport investment on rural welfare (Berger, 1979). The model conceptualised the major lines of influence through which transport sector investment could be translated into changes in income distribution (relief of poverty), quality of life, and regional growth potential. In this model, transport sector investment improves access to socio-economic opportunities (e.g. production, consumption, social participation and migration) by improving accessibility and reducing transport costs. Furthermore, transport investment creates employment that contributes to the reduction of poverty. Transport investment also creates changes in the environment that lead to an improvement in the quality of life. The model, however, says little about the distributional effects of transport investment (e.g. income distribution) that may have adverse effects on the poor (Gannon and Liu, 1997).

The World Bank has also contributed to the progress of rural transport understanding. The preliminary effort can be found in the work of Carapetis, et al. (1984), Riverson, et al. (1991), Riverson and Carapetis (1991), and Malmberg Calvo (1994) who highlighted the need for a better understanding of the real transport needs and problems of vulnerable groups such as small farmers and women. Another report, based on a village-level survey in Sub-Saharan Africa, suggested that a rural transport strategy should target improvements in the level of access of the rural population to socio-economic facilities (Barwell, 1996). Further efforts to develop strategic and operational links between rural transport and poverty were reported in the paper of Gannon and Liu (1997). This World Bank working paper suggested a way to improve the World Bank's previous approach, which heavily emphasized investments in physical infrastructure. The report underlines several important policy improvements for addressing poverty issues, including: (i) more attention to the distribution of projects' impacts, (ii) compensation for costs incurred by the poor, (iii) increased attention to projects that directly assist the poor, and (iv) improved methods for measuring the value of project benefits to the poor (Gannon and Liu, 1997). This work was then followed by a series of rural transport research papers: prescriptions for managing and financing rural transport infrastructure (Malmberg Calvo, 1998), design and appraisal of rural transport infrastructure (Lebo and Schelling, 2001), and options for promoting motorised and nonmotorised transport in rural areas (Starkey et al., 2002).
The International Forum for Rural Transport and Development (IFRTD) established in 1992, has also made some contributions to the new thinking on rural transport. The Forum's vision is "improved accessibility and mobility for poor communities in Asia, Africa and Latin America" (IFRTD, 2004). The work and research of the Forum focuses on: intermediate means of transport (e.g. bicycles, pack animals, wheelbarrows, low-cost motor vehicles, etc.) to fill the gap between walking and motorised vehicles; local transport infrastructure (paths, tracks, footbridges, rural roads and river ways); appropriate rural transport services; and an integrated approach to rural transport planning. The forum has coordinated some significant rural transport research, such as investigations into the way gender and gender relations affect men's and women's access to transport provision, particularly in Asia and Africa (Fernando and Porter, 2002) and research on how rural water transport may be promoted to cope with the hegemony of road transport (IFRTD, 2003).

Other efforts have been made by Sieber (1996) and Ellis (1996) in their PhD research. Sieber (1996) developed an econometric model to assess the impact of any rural transport or transport related intervention. The model simulates the feedback processes between agricultural production, income, time budget and transport activities, and assesses the regional economic impacts of various transport investments according to several scenarios. Ellis (1996) indicated that planning for rural accessibility has been too focused on providing road access. He argued that a more integrated approach is required, in which the provision of roads is considered in conjunction with vehicle services (i.e. motorised and non-motorised transport), the location of essential facilities and the construction of paths and tracks. Such an approach also needs to take account of the impact of government policy, credit facilities, extension services and marketing opportunities (Ellis, 1996).

Significant contributions to the understanding of rural transport development can be also found in some rural transport books published between 1985 and 2000. Barwell et al. (1985) focussed their attention on improving the understanding of rural transport from the perspective of rural people. Similar efforts were also made by Heidemann and Barth (1987), Dawson and Barwell (1993), Simon (1996) and Hilling (1996). Overall, these
authors have succeeded at the academic level in helping to define the real challenge for transport and development studies.

Despite some successful achievements, however, theoretical gaps still exist mainly in the effort to specify transport development and its effectiveness in promoting the rural economy and addressing rural poverty.

In 1985, Barwell, Edmonds, Howe and de Veen provided agendas for the future development of rural transport.

If we are to address seriously the transport needs of the rural population, changes of attitude and of policy will be necessary. ... The provision of rural transport facilities needs to be viewed in terms of overcoming the constraints and alleviating the problems faced by rural households. (Barwell et al., 1985: 136)

These authors assert that defining a clear concept of rural transport is *sine qua non* for future rural transport development.

In the same year as Barwell et al., Johnston outlined some research prescriptions to improve understanding of the link between transport improvement and rural change. He argued:

... we have a large literature on the impacts of transport improvements in rural areas but, because of conceptual and methodological shortcomings, that literature has not and will not provide us with the theoretical understanding that we so badly need. (Johnston, 1985: 167).

Johnston identified three research issues: (i) specification of the magnitude of transport improvement, (ii) measures of rural change, and (iii) specification of the functional relationship between these two measures of change.

Fifteen years after the statements by Barwell et al. and Johnston, Leinbach (2000) has pointed to the continued existence of similar issues for future research based on his review of the current transport situation in Third World countries. First, there has to be a deeper understanding of the concept of rural household travel demand and personal mobility needs. Second, there should be a clear description of the role of transport for both landholders and those without land in rural situations. This is based on the belief that transport interventions have caused increased gaps between these groups. Third, there should be a careful study of the role of transport in improving information flow.
Fourth, there is a need for a more comprehensive approach in examining the role of transport and accessibility in rural employment creation. This includes the need to discard assumptions about the unity of household demand and welfare and to consider women’s decision-making and logistics as well as the multi-tasking and childcare dimensions of women’s transport strategies. Last but not least, there is a need to comprehensively study the constraints associated with the provision of transport services and infrastructures in order to achieve efficient and equitable outcomes of transport development. Similar points have also been mentioned by Edmonds (1998), Dixon-Fyle (1998), Johnston (1998b), Hilling (1996), Sieber (1996), Simon (1996) and Barwell (1996).

In accordance with those comments made over the period between 1985 and 2000, it becomes clear that there is still a problem with the conceptualisation of rural transport. The principal challenge, which has not changed, is a need to improve our understanding of the links between transport and rural development (Njenga and Davis, 2003). In other words, what has been achieved regarding the nature of rural transport is still questionable, as reflected in the statement of Leinbach that prefaces this chapter and in Edmonds inquiry, “Is our definition of transport appropriate in the context of rural development?” (Edmonds, 1998: 26).

2.3 Problems of Rural Transport Development: Opportunities for Research

As outlined in Chapter I (Figure 1.1), the rural transport development process can be classified into four interrelated stages: (i) doctrine (ii) organisation and policy (iii) implementation and (iv) evaluation. Problems can occur at any stage, which means that transport development processes can easily become ineffective for the promotion of the rural economy. This section reviews these interrelated phases and discusses their embedded problems.
2.3.1 Problems Related to Doctrine

Over the last 20 years several experts have raised the fundamental question of whether the current conception of transport is appropriate in the context of rural development. This question has frequently been raised as a response to the huge effort that has been put into transport development in developing countries by international agencies and national governments, while the real condition of rural transport is still poor and provides little support for rural people seeking to improve their livelihoods. A number of crucial problems contribute to this situation.

The first problem is the ideological misconception of treating rural transport in a manner similar to other transport situations, such as urban and regional transport. For a long time, the planning of transport, including rural transport, has been focused on a 'demand-based approach'. This approach appraises a trip according to its economic productivity, i.e. motorised trips will be 'valued' more highly than non-motorised travel, and journeys to work will be 'valued' more highly than journeys made for social reasons. In terms of rural situations, the weekly 'motorised' business trip to market will be considered more important than the daily 'on-foot' trips to collect water or firewood within villages. Such an approach ignores the real needs of developing countries in which the majority of people living in rural areas are economically disadvantaged. Some research has shown that in the rural areas of poor countries the number of business trips is much lower than social or daily needs trips (Dawson and Barwell, 1993; Barwell, 1996). The outcome of the 'demand based approach' is that the real benefits of transport interventions go to those who already make business trips to the market or the administrative centre, whereas those people with no surplus to sell or no need for administrative services gain little or no benefit. This approach, however, has been severely criticised. There has been a paradigm shift, at least at the level of rural transport experts, that rural transport should be planned using a 'needs-based approach' (Dawson and Barwell, 1993; Nutley, 1998). Such an approach specifically considers every trip made by individuals, no matter how 'small' and 'uneconomic' the travel is. The 'on-foot' travel for obtaining firewood and safe water, which is mostly done by women, or the daily walk to primary education facilities by children, should be taken into account in a non-discriminatory manner along with trips related to economic activities, such as the trip to sell crops in the market. In other words, the needs based approach addresses the problem of rural transport by
examining the social and cultural as well as the economic travel of every individual in rural areas.

Ineffective rural transport development processes are also linked to the inaccurate doctrine that transport improvements will promote the rural economy. The assumption is that investment in transport will automatically generate economic growth through the reduction of production costs, extension of the market, and increase in employment opportunities. This idea has long been questioned. Leinbach (1995; 2000), Howe (1996), and Cullinane and Stokes (1998) argued that the connection between transport and rural economic growth is still unclear owing to the complexities of the relationship. Such complexities are accentuated by the need to understand rural economic growth in relation to distribution and poverty reduction. Some studies show that road or bridge construction generates an ambiguous impact (Airey, 1984), or even have a negative effect on economic growth (Cullinane and Stokes, 1998). Richards (1984) provided an example of road programmes in Nepal that indicated the destruction of local manufacturing after the construction of roads. The new roads built in the Hill and the Terai areas of Nepal made rural markets more attractive to urban traders encouraging agricultural imports rather than exports (Blaikie et al., 1977). These examples have shown that rural transport interventions do not always provide positive impacts to all rural people. The mechanisms linking transport improvement to the rural economy are not fully understood. The key task therefore, is defining a framework that can promote an approach to transport investments that effectively improve the rural economy.

Furthermore, the approach to the rural transport problem has not been sufficiently comprehensive. For a long time, rural transport has been viewed in isolation from the broader system of rural development. Such an approach (e.g. road betterment, bridge replacement) focuses attention on specific problems in the existing transport network and away from broader ‘off-network problems’ (Johnston, 1993). This approach tends to isolate transport problems from other rural problems. In fact, rural transport cannot be isolated from other development forces because the extent to which a transport improvement promotes development depends very largely on a complex set of interrelationships and local conditions (Simon, 1996). Transport problems are an integral part of rural problems (Edmonds, 1998), and therefore transport improvements
should be designed to overcome broader rural problems as well as specific transport problems.

Another aspect of rural transport development where doctrine overrides the need for effective organisations and policies is the distributional mechanism of transport development, between urban and rural areas, between infrastructure and service, between motorised and non-motorised transport, and between land transport and water transport.

In the context of urban-rural polarisation, rural transport is viewed as being less important than urban transport (Cullinane and Stokes, 1998). In many situations, the rural transport network is seen merely as a supportive part of the urban and regional network. Transport improvements should therefore be started in the urban core (where “need” as assessed by congestion is “obvious”), spread outwards and end in the rural periphery. According to this conception, the focus of transport investment will be in the urban area, while rural areas will get the remaining attention, after the demand by the former has been fulfilled.

With regard to the dichotomy between infrastructure and services, Hilling (1996) states that too much attention has been given to ‘the hardware of transport’, to road infrastructure investments, while the transport services such as public transport, have been neglected. “Provision of rural transport services has not been a major theme in research on rural areas of the developing world” (Johnston, 1998b: 1). Policy makers have given unbalanced attention to infrastructure development and neglected the establishment of transport services.

In addition, investment is mostly focused on roads and assumes the availability of motorised vehicles (Dawson and Barwell, 1993). Dawson and Barwell (1993) argued that road investment associated with motorised transport cannot be sufficient, because no one can guarantee how well that kind of transport could accommodate the full range of transport needs in rural areas. A set of community level investigations in Sub-Saharan Africa carried out by the World Bank shows that 87% of household travel and transport takes place on foot, and the use of road and motorised transport services is very limited (Barwell, 1996). Travel ‘on foot’ for the purposes of collecting firewood, accessing safe water, moving to and from farms, and taking produce to local markets represent the main
needs of rural people in that region. It is impossible to expect roads and motor vehicles to substitute for all roles of the ‘on foot’ travel, for the reasons of (i) limited ownership of motorised vehicles, (ii) lack of ‘roads’ to all desired destinations, and (iii) costs of using motor vehicles for small loads or short hauls. This situation requires a more comprehensive approach to investigating the real travel patterns of rural people when dealing with a proposal for transport improvement.

Another problem is the marginalisation of water transport, whether coastal or river based. The long tradition of putting roads first has overshadowed the existence of traditional water transport, which has for a long time been servicing rural settlements along rivers or coastal areas. Water transport has gained very little attention from any funding institutions (Palmer, 1998) whereas, with a relatively small investment (compared with the cost of building a road) on wooden jetties/piers for docking small boats, the accessibility of an ‘isolated’ community in a river or coastal-based region can be improved significantly (Carapetis et al., 1984). In addition, water transport has a number of comparative advantages. It is genuinely people’s transport, which is familiar, accessible with its door-to-door service, provides local jobs, is under local control, and serves local needs (Palmer, 1998). These advantages, if appropriately managed, will bring maximum benefit from water-based interventions for coastal and river based rural communities.

The above points clearly indicate that rural transport development has often relied on inappropriate ideological standpoints. This, to a great extent, creates a lack of clarity in the next phases of rural transport development, which I will discuss next.

### 2.3.2 Problems Related to Organisation and Policy

The first problem concerns policy coordination. The coordination process among rural transport related organisations is often unclear. Davis (2001), for example, discussed the lack of coordination between the Ministries of Education and Public Works in Cameroon. The first ministry had a policy of locating schools in rural areas with a service radius of 10 km. This policy was not adopted by the Public Works Ministry,
which had the task of providing transport infrastructure to public facilities. As a result, many schools that had been established were without transport connections.

In a more specifically rural transport context, Gaviria et al. (1989), Riverson et al. (1991) and Heggie (1994) mentioned the need for a clear organisational and management structure in road construction and maintenance. For example, in Indonesia three separate organisations have different responsibilities in rural road development. The Ministry of Public Works is in charge of the construction of roads and district governments are responsible for the maintenance of those roads. The Ministry of Transport regulates private sector operation of transport services over the roads. Coordination among these organisations is lacking. This situation is reflected by the facts that: (i) more than half of the established 315,000 kms of rural roads lack maintenance and are impassable in the wet season, and (ii) the availability of public transport services on the network is low (Masyarakat Transportasi Indonesia, 1999). There is no policy framework to serve as a coherent vision for all organisations dealing with rural road transport. As a consequence, every organisation related to rural transport improvement has its own way of managing its rural transport investments. Furthermore, each organisation has its own independent procedure to determine the intervention strategy, and no requirement, or mechanism, for coordination with other organisations.

In accordance with the abovementioned problem, it is often unclear which organisation is in charge of rural roads, especially local government roads, community roads and paths (World Bank, 1998). Investment to improve rural roads, in most circumstances, is only assigned to local government roads, while community roads and paths are beyond any formal organisational authority. In Indonesia, only village main roads (i.e. village to village roads) are under government authority, while community roads, such as farm to market paths, are not under any governmental consideration at all (Widjoyono and Antameng, 2000). Most village roads are in bad condition because of the lack of resources available to the community.

Lack of village-level resources is closely related to the powerlessness of rural people. Such a condition is caused by the dominant model of formal development, which provides little room for the involvement of beneficiary communities. Decisions are made at higher levels of government and usually without any consultation with the
communities that are the targets of transport interventions. Community participation in transport improvement is becoming a prevalent issue among researchers, and has been raised by many authors (Barwell, 1996; Edmonds, 1997; Ellis, 1999). Over time, the approach to rural transport development has been mostly a top-down approach. In such a model, the involvement of rural people is very small. The planning, design, and implementation of a transport intervention are primarily carried out by government or development institutions. The community simply receives and uses the service or facilities that have been built without any significant participation in the developmental process. As a result, people become passive and difficult to involve in any participatory transport improvement role.

The next impediment concerns funding mechanisms. The most popular but cliched reason for organisational problems is lack of funds. This reason has been used by many governments in developing countries to excuse their lack of progress in dealing with rural transport development. However, Ellis (1999:2) explains, "At national government level, the issue is mainly one of achieving a logical, sensible and defensible distribution of funds between the various levels of the network." Thus, the question is not: "Is our budget enough?" but, "Is our limited budget appropriately distributed?" (Ellis, 1999:2). The model of transport planning in developing countries, which is mainly aimed at promoting economic growth has led to a small and residual part of the transport budget going to rural transport investment. Rural transport under this model has been assumed to be less economically important than urban and regional transport. Accordingly, we need a legitimate assessment tool to distribute the limited budget in a fairer fashion, in which travel needs of rural 'poor' people are equitably represented.

The series of organisational, policy and doctrinal problems flow on to the next phase of rural transport development: implementation, which is itself afflicted by its own dilemmas.

2.3.3 Problems Related to Implementation

Weak implementation comes as a result of the lack of skilled human resources, inappropriate planning tools, inappropriate design and technology and lack of good
governance. However, weak implementation could also arise from an unclear conceptual framework, or lack of appropriate policies and institutional mechanisms.

The primary problem in this step is the quality of decision makers, especially the persons who deal with the local planning, implementation and controlling processes. Heggie (1994) mentioned the problem of lack of qualified staff in developing countries. The limitation of technical and managerial skills is the primary reason for the ineffective use of funds. A transport intervention project could be worthless for people because the decision-making at implementation level fails to interpret the general specifications that have been determined at planning level. For example, the poor route alignment of a new rural road project could result from the local supervisor lacking the skills to interpret technical drawings. On the other hand, many rural roads have been over-built owing to rigid reliance on a general standard. In Sub-Saharan Africa, “roads have been planned with a seven meter wide carriageway plus shoulder, for traffic of 20 to 30 vehicles per day” (Riverson et al., 1991: 15).

In the planning process, prioritising investments under a budget constraint is the main issue. The main handicap is the lack of tools to determine which transport or transport-related intervention provides the most benefit to which rural areas. With regard to transport infrastructure, de Veen (1999: 2) stated that “…there should be a measure to determine what kind of infrastructure is needed most, where this should be located, and how this should be built and maintained, given a limited budget.” Ellis (1999) indicated similar thinking by explaining the importance of having a logical method for ranking investment decisions. The current popular approach using a ‘cost-effective’ method might be biased (Airey, 1984; Dawson and Barwell, 1993; Sieber, 1996). This is because such a method ranks proposed investments according to economic benefits, whereas many activities in rural areas are not directly related to economic activities and/or cannot be monetarised. But, more importantly as argued by van de Walle (2002), the conventional transport planning paradigm has focused on efficiency-led approaches and ignored the equity objective of transport improvement. All these signify the need to establish a more comprehensive method for assessing possible rural transport intervention strategies.
The involvement of local people in the implementation process is another problem. Many rural road projects select a construction and maintenance technology suitable for labour-based methods. The main purpose of this approach is to stimulate local participation as well as to improve the incomes of local people, especially the poor by providing employment during construction (Howe, 1996; Donnges, 1999). Despite some successful achievements, this method also triggers some negative outcomes, such as the problems related to the lack of continuing employment after the completion of the project (Gannon et al., 2001), and the migration induced by the creation of new employment opportunities by such a project (Donnges, 1997).

Most developing countries encounter the problem of a lack of good governance. "A major and often decisive cause (of development problems) has been the prevalence of official misconduct among politicians and administrators, and concomitant spread of unlawful practices among businessmen and general public" (Myrdal, 1968: 937). The problem of corruption has led to some of the money allocated for transport improvement going in unintended directions. For example, a transport project might fail to achieve the required quality because some of the funds allocated to that project have been transferred to the pockets of people who manage the funds.

The above factors of weak implementation, such as lack of skilled human resources and inappropriate planning tools also influence the next step in the rural transport process: impact evaluation with its main problem of lack of feedback.

2.3.4 Problems Related to Evaluation

Perhaps, the most critical problem in the rural transport development process is the failure to comprehensively learn from the many projects completed over the years. Building a new road connecting rural farms to urban markets, for example, can result in a positive outcome, the improvement of the regional economy, which is identified by an increase in the average income per capita. Yet there can be "unexpected" outcomes such as accelerated migration from rural to urban areas, rapid and uncontrolled intervention of urban traders into the local market inhibiting the direct participation of rural farmers in the market, loss of employment due to the displacement of previous "low technology"
transport modes, shift in land tenure patterns in rural areas because of the increase in land values, and more obvious disparities between 'on-road' communities and 'off-road' communities. Such impacts, which specifically marginalise rural people, can be overshadowed by the improvement of average income per capita. To gain an appropriate understanding of the effects of rural transport interventions, all positive and negative impacts and the factors that facilitate them should be comprehensively taken into consideration. Incomplete information regarding the overall outcomes of building a road can lead to inappropriate perceptions of, and policy on, future rural transport interventions.

The main issue in this phase is the lack of studies dealing with the 'real impact' of rural transport development. Seddon (2000) indicated that most impact studies are carried out in the planning and design process (ex-ante studies). Such studies deal with 'anticipated impacts' of a transport development proposal. "The number of comprehensive surveys and studies carefully designed to assess ex-post the social and economic impact of transport developments over an appropriate period of time and including assessment of the distribution of costs and benefits remains limited" (Seddon, 2000: 4). The lack of ex-post impact studies leads to a lack of effective methods to identify the real outcomes of rural transport development, and thus results in an inappropriate understanding of the nature of rural transport.

In addition, there is no standard comprehensive methodology for evaluating the impacts of rural transport. In the context of rural transport in a developing country, the impact evaluation in many cases has been carried out using 'benefit-cost evaluation methods', as widely adopted in developed countries. This approach might however be biased, because uncounted effects might have much more serious impacts (Hine, 1975; Sieber, 1996). Indeed, such methods rely mainly on economic issues, whereas the problems of rural people are partly related to social and cultural matters. Rural transport therefore needs a multidisciplinary method of impact evaluation that can assess the 'real' outcomes of transport interventions.

In addition to the need for comprehensive evaluation methodologies, appropriate information regarding the situation of rural transport is necessary in developing an effective policy. This is another problem. "There is an extraordinary lack of systematic
information on the transport network and the degree to which it serves the rural population” (Johnston, 1997: 21). He mentions that most readily available statistics use road density (kilometres of road per square kilometre of area) to assess the degree to which the rural road network serves the population. This particular index is widely found in World Bank reports (e.g. in Gaviria et al., 1989, and Riverson et al., 1991). It is in fact not an effective approach, because such an index provides no actual measure of the level to which the population are served by the infrastructure (Johnston, 1997).

Last, but not least is the use of outputs rather than outcomes in assessing the success of transport development. This conventional approach to rural transport improvement provides little information on the impacts of rural roads on local communities (Dawson and Barwell, 1993). In Nigeria, for instance, rural transport project achievements are only measured aggregately in kilometres (Gaviria, et al, 1989). The measure does not consider whether that project has effectively served the transport needs of the rural individuals. The government of Indonesia, for another example, measures the benefits of a transport intervention project by using output measures, but these are not part of the project’s impact. The success of road development is confirmed by the achievement of 100% of arterial roads in good condition, 100% of collector roads in good condition, and 60% of local roads in good condition (Republik Indonesia, 1994). This is in fact the project target. How far the intervention has benefited local communities is not evaluated (Sihaloho and Sabandar, 2000).

Overall, problems that emerge from the evaluation process, apart from rendering the process itself ineffective, provide limited and/or ambiguous feedback for the next stage of rural transport development: the redefinition of doctrines, organisations and policies. Therefore, a clear understanding of the relationships among those processes and their inherent problems will define an effective direction for rural transport development.

The discussions of rural transport development problems in this section emphasise the need for more basic research on rural transport. In particular, they signify the importance of the research tasks set in the beginning of this thesis (see Chapter I, Section 1.2). First, the review in this section indicated some doctrinal misconceptions in rural transport development. This leads to the first task of this research, that is to analyse the extent to which such doctrinal problems (e.g. the development framework based on demand-,
growth- and sectoral-based approaches) influence the organisation and policy of the Indonesian transport sector. Second, the review also highlighted problems related to policy coordination, which identify the entry point for the second research task to analyse the issue of policy coordination, both at the national and local government levels. Third, issues at the implementation level such as the participation of local people in transport improvement also inspire the research tasks (Tasks 3 and 4). These tasks examine (i) the way rural people respond to their transport needs given the availability of rural transport systems, and (ii) the interaction between the state and rural people with regard to improving the rural transport system. Lastly, problems associated with evaluation underpin the whole thrust of this thesis. The failure to obtain adequate feedback on past rural transport interventions leads to a perpetuation of inappropriate doctrines and policies. Put simply, this thesis aims to provide a policy framework that can be used to evaluate the effectiveness of the relationship between the transport development process and the rural economy (Task 5, in particular).

2.4 Conclusions

This chapter has demonstrated the hegemony of neo-classical economic theory in modern transport studies. Challenges to the appropriateness of this theory for understanding the nature of transport in the Third World context have emerged since the 1960s, and led to the growth of rural transport studies from the beginning of the 1980s. Research on rural transport has moved on since then. Some rural transport authors have tried to introduce new theoretical approaches for rural transport studies (e.g. the basic needs approach by ILO researchers, and the sustainable livelihoods approach by DFID researchers). Yet, up until the present researchers still criticise the level of our understanding of the nature of rural transport development, especially in the context of promoting the rural economy and bringing maximum benefits to the rural poor (Edmonds, 1998; Leinbach 2000; Njenga and Davis, 2003).

The reviews of the rural transport literature in the previous sections have indicated the serious weaknesses inherent in the existing rural transport development process, particularly with respect to (i) doctrine, (ii) organisation and policy, (iii) implementation, and (iv) evaluation. These weaknesses are, in fact, only part of the story. When this
rural transport development process is connected to the problems embedded in the rural
development process, a broader framework is needed to understand the nature of the
interconnections between rural transport and the rural economy. In other words, our
specific knowledge with respect to rural transport must be tied to a better understanding
of wider development issues.

With regard to the rural economy, a theoretical breakthrough in rural transport research is
necessary. The conventional approach based on neoclassical economic theory has proven
inappropriate. Leinbach (2000) suggested that the focus of the study should be on the
way transport interacts with the changing economic, political and social circumstances of
development. He has consistently argued the need for a new direction in research on
transport and development that combines a "political economy" and a "rational
institutional" approach (Leinbach, 1995; 2000; 2003). The potential application of this
approach in rural transport studies will be discussed in the next chapter.
CHAPTER III. TRANSPORT DEVELOPMENT AND THE RURAL ECONOMY: AN INSTITUTIONAL APPROACH

The new epoch of development debate brings challenges for transport studies, raising the question of whether or not our recent understanding of the linkage between transport and development is still relevant. Similarly it raises the question of whether or not the long tradition of maintaining transport studies under the umbrella of neo-classical economics is still viable. In the first section of this chapter, I compare the neo-classical economic theory with the new institutionalism, a relatively new theory that seeks "a middle ground between the champions of the market and the defenders of the state, ... a justification for basing development efforts on community action and civic engagement" (Bates, 1995: 27). I discuss why the new institutionalism can be more relevant to explain the process, and to address the problems, of rural development and the rural economy (Section 3.2). Finally, I discuss the potential for the application of the institutional approach in rural transport studies (Section 3.3) and this research (Section 3.4).

3.1 From the Neo-classical Model to an Institution-led Approach

Let me firstly review the basic principle of the neo-classical model. The economy, according to this theory, is basically driven by two forces: consumers and technology (Samuelson and Nordhaus, 1989). Consumers "vote" for things they want to enjoy, forming the pattern of production of those things. But the available resources, along with the available science and technology, limit the extent of the market where consumers can put their dollar "votes". Under these circumstances, three basic economic problems are solved by a market economy. First, consumers with their dollar "votes" determine "what things will be produced". Second, producers through their competition determine "how things are produced". And third, the markets through their demand/supply operation determine "for whom things are produced". Those three components work interdependently, expand the market, accumulate capital and, in line with changes in technology, together promote economic growth. This principle is universally embedded in our everyday life, no matter who and where we are, how we live and interact with others, and what technology is conceivable to us.
Is it just that simple? Yes, it is, and because of that simple model, the theory becomes highly popular and widely used. But in the real world there is no such a thing as laissez-faire (North, 2000b). Different communities have different structures, different norms, rules, behavioral patterns and beliefs that produce different economic or market structures. How a market works or an economy performs is greatly affected by the institutions of a community: its legal system, its political system, its social system, its educational system, its culture and so on (Coase, 2000). To understand how those institutions work, one must start with the way in which societies have evolved over time, which means having an understanding of how institutions, formal and informal, evolve, how they interact with the changing stock of knowledge, how they interact with changing demographic structures, and how these three factors together are continually affecting the way in which political, social and economic systems evolve (North, 2000b: 9).

North (1981; 1990), and with some others (Coase, 1937; 1960; Demsetz, 1967; Williamson, 1975; 1985), have contributed to developing a theory that institutions are pivotal in explaining how the economy works. According to North (1990) institutions can be understood as the societal environment that guides, and reduces uncertainty in human interaction.⁵ Such uncertainty emerges because human beings’ decisions/choices are determined by the way information is distributed, which is always imperfect, and their limited mental capacity to process information (North, 1990; 1995).⁶ North (1990) classified institutions into formal and informal. The first category relates to rules that human beings compose (e.g. constitutions, laws, rules), while the latter signifies unwritten conventions, norms, traditions, and value systems that evolve through the historical process of societies. North distinguished institutions from organisations,

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⁵ Many authors, even long before North, have developed their definitions of institutions. Veblen (1919: 239) defined institutions as “settled habits of thought common to the generality of man”. “An institution is defined as collective action in control, liberation and expansion of individual actions” (Commons, 1931: 648). Mead (1934: 211) perceived institutions as “nothing but an organisation of attitudes which we carry with us, the organised attitudes of the others that control and determine conduct.” Bardhan (1989a: 3) defined institutions as “social rules, conventions, and other elements of the structural framework of social interaction”. Among many possible meanings of institutions, North’s conception has been the most widely used.

⁶ North’s argument that human beings have limited mental capacity to process information is based on Herbert Simon’s view of bounded rationality. Simon (1957; 1986) used the term of bounded rationality to signify the fact that decision makers are not omniscient and have real difficulties in processing information.
(although both serve to structure human interaction) by providing an illustration: if institutions are the rules of the game, organisations are the teams involved in the game. Organisations can be political bodies, economic agencies, social associations, and educational services. They are groups of people who decide to work cooperatively to achieve common objectives. How organisations evolve is principally affected by the institutional framework within which they operate. In turn, organisations affect the way the institutional framework evolves.

The new institutionalism in economics, on which the institutional approach reviewed in this chapter is primarily based, was formulated to complement the theory of the market economy (neo-classical model) with a comprehensive understanding of institutions. This relatively new school of thought is "an umbrella term describing a set of interrelated theoretical approaches that emphasize the centrality of social, cultural, and political institutions, and their interaction, in the constitution and maintenance of the economy" (Johnston et al., 2000: 551). Three facets of institutions have initially formed the core of the new institutional economics. One is the economics of information associated with the role of institutions in distributing information to all economic actors, whether consumers or producers. As searching for market information is not costless, market functioning can be biased against those who struggle to gain such information. The works of Stigler (1961), Akerlof (1970), Stiglitz (1974) and Bardhan (1989b) provided a theoretical basis for this theme. The second, which is closely related to the first, is the theory of transaction costs. The main theme of this theory is the role that institutions can play in minimizing transaction costs including the costs of information, negotiation, monitoring, coordination, and enforcement of contracts. Coase (1937; 1960), Williamson (1975; 1985), and North (1981; 1990) are among authors who provided theoretical

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7 While both the old and the new institutionalism schools in economics acknowledge the role of institutions in explaining and affecting economic activities, the new institutionalism focuses more on microeconomic issues of markets and hierarchies and develops theories on market institutions, whereas the old one provides no theoretical framework about market institutions (Williamson, 1975; Coase, 2000; Kherallah and Kirsten, 2001).

8 Although, not as progressive as its development in economics, the new institutionalism has also grown in Sociology and Political Science. The difference between the new institutionalism in economics and the other two fields is that in economics, the new institutionalism deals with the role of institutions in economic activities, while the new institutionalism in sociology examines the relationship between individuals and their organizations within the framework of social institutions (Nee, 1998), and the new institutionalism in political science focuses on analyzing the role of political institutions and the politics of markets (Peters, 1999).
principles for this aspect. The third is the theory of collective action. The theory seeks to analyse the role of institutions in promoting collective action among actors with common interests. The key issue of this theme is to explain how rational individuals can choose to cooperate with others in activities that lead to collective outcomes. Authors that have contributed to this theory include Olson (1965; 1982), Hardin (1982) and Ostrom (1990).

In addition to these three themes, some other branches of the new institutionalism have subsequently evolved, such as the theory of social capital (Coleman, 1988; Putnam et al., 1993), and the theory of technological and institutional change (Ruttan, 1989; North, 1990; Platteau, 2000). The former is closely associated with the collective action theory (see Ostrom and Ahn, 2003). Putnam (1993), for example, saw social capital as social relationships inherent in the structure of societies that have the potential to facilitate cooperation among members of the society and eventually to promote economic efficiency. Regarding the latter, Ruttan (1989) and North (1990) argued that shifts in the demand for institutional change are induced by changes in relative resource endowments and by technological change. Institutions do not change abruptly, and cultural endowment plays a vital role in this regard (Platteau, 2000).

More interestingly, some scholars provide suggestions to make the new institutional economics more relevant to the situations of developing countries. Bardhan (2001), for example, mentioned four particular institutional problems of developing countries: (i) persistence of dysfunctional institutions in poor countries, (ii) institutional impediments as outcomes of distributive conflicts, (iii) the collective action problems these conflicts exacerbate, and (iv) the critical need for coordination and, accordingly, for a more complex and nuanced role for the state, which many states fail to fulfill. Fukuyama (2004) concluded that the critical issue facing developing countries in terms of economic development is their inadequate level of institutional development. These six themes set the foundation for the new institutional framework (Figure 3.1)

The central themes identified by the institutional framework, however, are taken as givens in the neo-classical model, and in many cases have even been omitted altogether (Nabli and Nugent, 1989). This has led to the neoclassical model performing badly in explaining the operation of the economies of developing countries, where the role of social, cultural and political institutions is significant in affecting the functioning of the
economy. Let me now confront the principles of neo-classical economics with the perspectives of the new institutional economics.

First, with regard to what will be produced, the institutionalists believe that the votes of consumers do not directly determine what will be produced; “demand” does not simply correlate with “supply”. The social, political and cultural arrangements of societies mean that information about consumer demand is not evenly distributed among producers. Those who possess economic and/or political power will tend to get the information first, deliver that information to their colleagues, and sell the information at a high price to their opponents. How information is distributed does matter in determining the production of things rather than consumer demand. This argument is associated with the theory of imperfect information, which takes into account the existence of information asymmetries in the market systems of developing countries.

Imperfect information also affects the aspect of “how things are produced”. In the institutionalist view, institutions which are formed by a society’s political, cultural and
socio-economic structures may hamper the transfer of information evenly to producers. This may lead to unfair competition among them.

In addition, according to the institutionalist perspective, production can be put as a function of collective actions rather than individual competition. This theory is based on the work of Coase (1937, 1960) who argued that since producing things individually is expensive, individuals are most likely to engage in collective action to minimise the cost of production. Furthermore, collective action persuades individuals with common interests to act more effectively in overcoming the free-rider problem and coming up with cooperative solutions for the management of common resources (Olson, 1965).

Third, the question of “for whom things are produced” is determined by markets functioning according to the supply-demand law. Here, the transaction process, which is costless in the neo-classical model, is crucial. Transaction costs can consist of the costs of measuring the valuable attributes of things being exchanged and the costs of protecting rights as well as the policing and enforcing of agreements (North, 1990). Bardhan (2001) elaborated on this situation:

In a small, closed, peasant community where transactions are face to face, transaction costs are low but production costs are high because specialization and division of labour are severely limited by the extent of the market defined by the personalized exchange process of the small community. In a large scale, complex economy, as the network of interdependence widens, the impersonal exchange process gives considerable scope for all kinds of opportunistic behaviour, and transaction costs can be high. (Bardhan, 2001:269-270).

So, transaction costs matter in market operation, and it is a task of institutions to keep the transaction costs as low as possible.

In the context of developing countries, North (2000a) provided a basic argument on why market-led principles do not work in improving the economy.

When I go to third world countries and look at why they perform badly and examine how factor and product markets are really working, in every case, be it capital, labor or product markets, one observes that the cost of transacting is high. The cost of transacting results in the economy performing badly because it is so costly for human beings to interact and engage in various kinds of economic activity that the result is poor performance and poverty and so on. (North, 2000a: 37).
This argument is supported by another institutionalist who stated that the complex institutional structures that have been devised in western societies to prevent excessive transaction costs through the law of property rights, formal contracts and guarantees, trademarks, limited liability, and bankruptcy law, have been poorly developed and implemented in the developing world (Bardhan, 2001). Governments in these countries are too weak in devising and imposing such systems. The main reason is that the complex organisations appropriate for industrial investments and innovations did not evolve in many developing countries. Bardhan then argued that only by thoroughly examining how institutions in developing countries have evolved throughout their history can the condition of institutional failure in developing countries be properly understood.

Regarding technological change, which the neo-classical model conceptualises as the consequence of market extensions, the institutional approach understands it vice-versa. Demsetz (2000) provided a fascinating comparison between the neo-classical and the new institutional views of technological change. The neo-classical model conceptualises technological change as an exogenous force that limits the extension of market size. For example, Smith’s Wealth of Nations argued that the size of the market determines the rate of technological innovation. Put simply, increases in production meant more money to build roads. On the other hand, the new institutional model perceives technological change as a function of a long-run historical process: it is an endogenous factor of market extension. In other words if, in the neo-classical model, market size determines the rate of technical change, in the new institutional model it is technological change that determines the extent of markets. Demsetz then used the work of North on shipping costs (North, 1968) to conclude his analysis: “An increase in the rate of technical change results in reduction in transport cost, in larger per capita wealth, and in larger sustainable population. These, in turn, lead to larger markets” (Demsetz, 2000:77-78). This argument is in line with the work of Fogel (1964) reviewed in Chapter 2 which argued that the design of political, geographical and social structures of societies facilitates technological changes, and those changes matter in determining economic growth.

From the discussion above it is clear that, although the new institutional model aims to complement the neo-classical model, there are substantial differences between them.
Table 3.1 provides the summary of these. The new institutional model has tried to adopt and acknowledge the role of the market in the economy. In doing so, the model provides a breakthrough in bridging the gap between the theoretically perfect knowledge of the market and the fact that market knowledge, particularly in developing countries, is imperfect. Only by acknowledging the role of institutions can economic models apply to the nature of the market in the Third World development.

Table 3.1: The differences between the neo-classical model and the new institutional approach

<table>
<thead>
<tr>
<th>Basic principles</th>
<th>Neo Classic</th>
<th>New Institutionalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>Purely economics</td>
<td>Social, cultural, political and economy</td>
</tr>
<tr>
<td>Driving forces</td>
<td>Capital (market) and technology</td>
<td>Institutions and knowledge, history</td>
</tr>
<tr>
<td>Production</td>
<td>Determined by consumer “votes”</td>
<td>Determined by institutions (how information is distributed)</td>
</tr>
<tr>
<td>How things are produced</td>
<td>Determined by competition among producers</td>
<td>Determined by institutions (how information is distributed and whether or not collective action exists)</td>
</tr>
<tr>
<td>Market operation</td>
<td>Determined by the law of supply-demand</td>
<td>Determined by the law of transaction costs</td>
</tr>
<tr>
<td>Technological change</td>
<td>Determined by market size</td>
<td>Determined by historical process or changes in society</td>
</tr>
</tbody>
</table>

It is not just scholars who call themselves institutionalists who believe in the significance of institutions in development, as the mainstream of developmentalist thought also seems to put significance on the role of institutions. Sen (1999) emphasised the role of institutions in the process of development which involves, among others, markets and market-related institutions, government and local authorities, political parties and other civic institutions, educational arrangements and opportunities for open dialogue and debate, including the role of media and other means of communication. Hoff and Stiglitz (2001) added that the importance of institutions, history and distributional considerations must be recognized and go beyond the usual fundamentals of resources, technology and preferences. In addition, as development is a highly multifaceted, non-linear and dynamic process, changes in policies and institutions over time are needed (Adelman, 2001). Along with the concern for policy and institutional changes, attention should be given to building a strong civil society (Thomas, 2001). And in building such a society, poverty-reducing strategies, which go beyond merely an income dimension, must recognize interactions among development policies (Kanbur and Squire, 2001).
Integrating income measures and human development measures are vital in addressing development. For that purpose, fresh thinking on governance, institutions, regulatory policies, and measures for managing resources will lead to the highest payoff (Yusuf and Stiglitz, 2001).

In addition, Crafts (2001) criticised the wide use of growth in GDP for measuring the improvement of living standards of a nation as “seriously misconceived”. From an economic history standpoint, the author showed that institutions matter for economic growth. However, different countries will persistently have different institutional arrangements and thus development processes are unique for every country (Adelman, 2001; Crafts, 2001). How such different institutional arrangements work can only be understood from a political economy perspective (Grindle, 2001 agreeing with Bates, 1995). More specifically, the new institutionalism as a branch of political economy will explain how social, cultural and political institutions work and interact with one another in the economy (Bardhan, 2001). Institutions matter more than any other components of development.

Overall, the discussion above has shown that the new institutionalism offers a viable theoretical basis for understanding the development process in developing countries. The theory acknowledges the pivotal role of institutions in promoting an equitable interaction among people in the development process. The application of this approach to rural economic studies is discussed next.

3.2 Promoting the Rural Economy: The Institutional Perspective

With 75 percent of the world’s poor living in rural areas, and the proportion likely to remain high for several decades, it becomes clear that attempts to promote the rural economy should focus on the rural poor. According to IFAD (2001), the most significant sub-groups of the rural poor are smallholder farmers and landless wage labourers. Other notably poor sub-groups are: artisanal fishermen, indigenous minorities, female-headed households, displaced people, pastoralists, and rain-dependent farmers. These poor sub-groups are found in almost every continent in developing Asia, Africa and Latin America. The rural poor are our starting point. This section will examine why world
development has been structurally biased against rural areas and rural people, and what the new institutional approach offers by way of paths forward.

First, in the last three decades, many authors have indicated that development policies have been biased against the rural economy. The main criticism is directed toward the growth-based development approach widely implemented in developing countries. Michael Lipton (1977: 72) argued that: "Most poor countries have attained unprecedented growth in the last three decades. However, not much of this has been shared with the poor, especially the rural poor. The process is inefficient, inequitable, and unsystematic". In another part of the book, he added that development in poor countries creates conflict between urban and rural classes.

The rural sector contains most of the poverty, and most of the low cost sources of potential advance; but the urban sector contains most of the articulateness, organisation and power. So, the urban classes have been able to 'win' most of the rounds of the struggle with the countryside; but in so doing they have made the development process needlessly slow and unfair. (Lipton, 1977: 18)

Robert Chambers, in parallel with Lipton, indicated reasons for development processes being biased against rural areas. Chambers (1980; 1983) elaborated the root of poverty problems in rural areas of developing countries and discussed the need to empower the rural poor through rural development programmes that consider the rights of the rural poor first. But this in itself is not enough. Development professionals need to change their professional and institutional attitudes in approaching rural development, by putting their own views last. This will create a more conducive condition for rural people to express their local, complex and diverse realities (1997b; Chambers, 1997a).

Many authors have criticised the overwhelming role of the neoclassical growth model in the development policies of developing countries. The theory that is primarily based on the works of Kuznets (1955) and Solow (1956), has been viewed as inappropriate for the structure of most developing countries. Adelman and Morris (1973), Griffin and Khan (1978) and Griffin and Ghose (1988) provided analyses showing a rise in national

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9 Kuznets' hypothesis is well-known as the inverse-U model. The model indicates that growth in the low income societies will first be associated with an increase in income inequality. Income inequality will then decrease as growth continues and the societies are industrialised. Solow's model suggested that growth is the direct and constant function of capital stocks and labour forces, and has no link to a distributional mechanism.
income per capita is associated with greater poverty, especially in rural areas. These results are in line with the work of Johnston and Kilby (1982), who argued that promoting growth in rural areas through a highly commercialized agrarian economy has been incompatible with redistribution of assets. Wilber and Jameson (1988) argued that the “grow now trickle later” approach was badly flawed in its conception of strategy because of the structures accompanying unequal growth. One example is that, as growth proceeds, those receiving income gains also achieve increased political power to oppose any attempt to redistribute resources later. Hoff et al. (1993) argued that uneven distribution of wealth hampers the process of growth. Similar conclusions were raised by Alesina and Rodrik (1994) and Persson and Tabellini (1994), who used mathematical models to explain that inequality is negatively correlated with economic growth. The study by Alesina and Perotti (1996) showed that income disparity increases political instability, and this contributes to a decrease in investment and hampers economic growth. These authors agreed that inequality and poverty do inhibit economic growth. Therefore, the old paradigm that focuses only on economic growth needs to be revised to one that acknowledge the adverse effect of inequality on economic growth (Rodrik, 2000; Fields, 2001).

Overall, these authors have deeply criticised the structure of development policies that focus on the neo-classical growth model, but without thoroughly considering the variety of real situations in the rural Third World. Other scholars have asserted that the failure to value the significance of institutions in development explains the ineffectiveness of the growth-based model for the rural economy. Those studies most relevant to the research on the rural economy are reviewed here.

Hoff et al. (1993) explained why the neoclassical model has been unsuccessfully implemented in the rural areas of developing countries. They identified the two main problems of rural organisations as imperfect markets and imperfect information. Compared to the neoclassical model, where markets are formal and governed by price and income, rural markets operate in both formal and informal ways. Case studies from rural Thailand (Siamwalla et al., 1993) and rural India (Bell, 1993) showed that formal credit markets (provided by the government) lend primarily to larger farmers, while the majority of rural farmers have had difficulties accessing the formal credit market as it requires a minimum amount of land as collateral. This has promoted the growth of the
informal credit market (trader-moneylenders) that can work with much more flexible collateral, but with high interest rates. With commercialisation of agricultural production more poor farmers were trapped into the informal credit market (Aleem, 1993).

Imperfect markets go hand in hand with imperfect information. Hoff et al. (1993) mentioned two causes of imperfect information: adverse selection and moral hazard. The former is based on the work of George Akerlof (1970) who argued that business in developing countries is difficult due to adverse selection which arises when commodities are distinguished on the one side of the market (usually, the sellers) but are treated as identical by the other side (the buyers). The sellers of the best quality products will withdraw them from the market because their products cannot be distinguished and therefore are priced according to the average quality. More generally, the presence of people in the market who seek to sell bad wares as good will tend to drive honest dealers out of the market. In broader terms, this is related to the problem of selecting commodities (labour, land, capital goods) whose quality is unknown. On the other hand, a moral hazard arises when an individual acts to maximise his own welfare at the expense of others in situations where informational problems prevent the assignment to the individual of the full damage caused by his action (Hoff et al., 1993).

Imperfect information (in addition to market failures) creates high transaction costs, as North (1990:27) stated: “The costliness of information is the key to the costs of transacting,...”. In the case of rural Pakistan, Aleem (1993) showed the very high transaction costs of informal credit institutions as the result of imperfect flow of information in the market. This is in line with Dorward et al. (1998), in the context of smallholder cash crop production, who argued:

Possibly the most important source of transaction costs is the need to acquire information in order to do business. Information needs to encompass not just the ‘hard’ facts concerning available technology and prevailing prices, but also information on the reputations of other people and organisations” (Dorward et al., 1998: 10).

The next institutional perspective on rural communities concerns the risks associated with information constraints, seasonality and environmental shocks.Binswanger and Rosenweig (1986) listed the risks faced by farmers associated with agricultural production including variations in yield and market prices, uncertainty about the optimal
timing of particular activities, risks related to the availability of critical factors of production, asymmetric information, high transport costs, and the changeability of the rainfall season.

These four problems (market failures, imperfect information, high transaction costs, and risks) reviewed above can only be overcome if the visible hand of the state exists in the rural institutions (Hoff and Stiglitz, 1993). Effective government policies are required to ensure that markets work in an equitable way, information is evenly distributed to all players, transaction costs are minimal, and there are various schemes that can minimize the pervasive impacts of risks on farmers (Binswanger and Rosenzweig, 1986; Nabli and Nugent, 1989; Hoff et al., 1993; Dorward et al., 1998).

Another aspect of the institutional perspective on rural areas, but which may go beyond market operations, is the significance of social capital. Baas and Rouse (1997) argued that solidarity stimulated by social capital promotes collective action and common pooling of resources that help to overcome market failures. More than that, social capital needs to be viewed as a prerequisite for promoting community participation and self reliance. The authors argued that, to promote the participation and empowerment of the poor, an institutional approach to poverty alleviation should start with providing schemes that improve access of the poor to assets (land, water, credit, farm equipment and inputs, off-farm employment opportunities) and services (education, health and market).

This discussion would not be complete without mentioning the emerging role of the rural non-farm economy. Start (2001) suggested that the proportion of rural household income derived from non-farm sources is significant, reaching 40-45% in Sub-Saharan Africa and Latin America and 30-40% in South Asia. He argued that the rural non-farm economy evolves with improving physical connection between urban and rural areas. As urban forces penetrate into more accessible rural areas, the rural non-farm economy would firstly decline but then revive (Start, 2001). Previous work by Bryceson (1997) argued that de-agrarianisation in Africa is explained by four significant processes, namely (i) labour migration, (ii) rural non-agricultural income diversification, (iii) change of agricultural labour form, and (iv) socio-economic ostracism. In the context of Southeast Asia, this deagrarianisation process is accentuated by the fifth factor: spatial
interpenetration, the changing balance of economic, social, cultural, political, infrastructural and environmental forces between urban and rural areas (Rigg, 2001).

According to Start (2001), the penetration of non-farm employment into rural areas brings positive as well as negative impacts. On the positive side, the rural non-farm economy increases rural incomes and, more importantly, provides complementary livelihoods for the rural people to help deal with risk, uncertainty, variability and discontinuity in agricultural production. The negative effects, however, are closely linked with the positive. Non-farm employment is “often exploitative, with incomes too low to meet basic needs and a work environment too poor to meet basic human rights” (Start, 2001: 499). Such low return activities contribute to structural inequality, erode the possibility for collective action and then empowerment. Again, the author recommended that policy makers take a role in shaping the structural transformation and pattern of diversification of urban-rural linkages.

In summary, it is reasonable to conclude that institutions matter in explaining the complexity of the rural economy, and that appropriate understanding of the role of formal and informal institutions related to rural development will provide a robust platform for efforts to promote the rural economy. Balanced roles between state and market as well as between productive sectors and social sectors are greatly needed in rural development (Ashley and Maxwell, 2001). They argued that the state should play a significant role in both poverty reduction and rural development through the empowerment of rural institutions and rural markets to counter the rapid spread of urban interests into rural areas.

3.3 Application of the Institutional Approach to Rural Transport Research

Despite the quite strong presence of the theory of institutions in the studies related to the rural economy, its application in rural transport research is hardly found. Some suggestions for rural transport research to consider institutions, however, do exist. Wilson (1973) mentioned the need to take into account the issue of ethnic distinctions, as well as the legal, social and political environment of societies in any economic analysis.
of transport development. Other authors highlighted the need to consider the political economy of rural (transport) infrastructure as the investment allocation process is not isolated from political interests (Overton, 1990), and rural people are often misguided in their desire for improved roads (Wilson, 2004). The key for the effective management of rural transport infrastructure lies in establishing institutional arrangements in ways that can provide incentives to key players involved in the provision and production of such infrastructure (Cook et al., 1985; Ostrom et al., 1993; Schroeder, 1997). Incentives are more than simply financial rewards and penalties. "They are the positive and negative changes in outcomes that individuals perceive as likely to result from particular actions taken within a set of rules in a particular physical and social context" (Ostrom et al. 1993:8). Leinbach (1995; 2000) emphasised the need to thoroughly examine economic, political and social relationships of rural transport development and suggested that the new field of institutional economics may hold some promise in examining those interactions.

The suggestions from the above scholars may serve as entry points for the application of the institutional approach in rural transport research. In fact, a more systematic framework can be developed to integrate the institutional approach into rural transport study (Figure 3.2). The framework is based on the question: how can the link between transport development and the rural economy be conceptualised using the institutional framework? The link is two-sided. It does not just recognise how transport development affects the rural economy, but also how the rural economy may shape the way transport development is promoted. The institutional framework elaborates the role of institutions in promoting transport development in relation to changes in the rural economy. In turn, the framework helps us to understand the nature of the rural economy more effectively for the proper design of transport development. The institutional framework may cover (but is not limited to) the issues of: (i) asymmetries of information, (ii) high transaction costs, (iii) collective action and social capital, (iv) technological and institutional change and (v) dysfunctional institutions.
This framework indicates that the linkages between transport development and the rural economy are shaped by the nature of the environment within which, and the different processes through which, the two interact. Different societies would have different institutional arrangements that affect the way transport development is promoted and the way it influences the rural economy. Transport policy makers would make a decision based on the information they have, which depends on the mechanisms enabling such information to arrive on their desk. Furthermore, the decision over transport investment might also be affected by political interests or moral hazard problems, through which the investment is unfairly allocated to the region that best serves the political or economic interests of the policy makers. This outcome might occur if the state has a poor mechanism to enforce law and order in the development process (i.e. problems of dysfunctional institutions). In relation to this, the institutional analysis offers tools for analysing incentive models for an effective rural transport development process (law, organisation, policy, implementation and evaluation). The institutional view, for example, acknowledges that the provision and maintenance of transport infrastructure cannot be based on market demand, but on the capabilities of institutions in managing the infrastructure.
Once rural transport investment is put in place, one cannot assume that any opportunities opened up by this investment would be evenly distributed among rural people. Rather, those who possess better information about that opportunity (which can be a function of better economic capability, education, social status or political power) would respond to it more effectively compared to those who did not. For example, the improvement of rural roads might increase the accessibility of rural people to the urban market. This is, however, not a guarantee that farmers would be able to sell their agricultural produce in that market with a higher profit. Asymmetries of information about prices and other possible markets for the produce, in addition to high transaction costs due to the lack of any guarantee of the rights of farmers over their produce, can even lead to the marginalisation of farmers. All these factors affect the linkage between transport development and the rural economy.

The institutional approach also recognises that different regions would have different resource endowments that result in different transport conditions and different characteristics of the economy. Plateau (2000) formulated this relationship based on the context of Sub Saharan Africa (Figure 3.3).

![Diagram](image)

**Figure 3.3:** Low population density, transportation costs and imperfect markets
Source: Platteau, (2000: 50)

Low population density of the region leads to long distances between rural people and their market. Transport costs are high, which leads to high transaction costs and agricultural marketing channels stay ill-developed and subject to a low degree of
competition. In this situation, the market may therefore fail to emerge or alternatively, natural monopolies may become established with the consequence that farmers suffer from high transaction costs. Similar points were also raised by Binswanger et al. (1989), and Nabli and Nugent (1989: 68-69).

What is more, the institutional framework understands that the interaction between transport development and the rural economy is evolutionary and path-dependent. Redmond (2003) views technological improvement as a diffusion process, characterised by a time lag between the introduction of an innovation and its adoption by a given individual. Pawson (1979) raised this issue in the context of transport and the modern economy. Many rural transport studies have indicated that adoption of motorised technology by rural people in developing countries varies between regions, and is affected by the local context (see for example Starkey, 2001; Porter, 2002b). Redmond (2003:677) concluded that an “individual’s reactions to the new (technology) depend upon their particular economic history and their actual alternatives; hence institutional change is not the result of technological determinism but rather is a path-dependent process of cumulative causation”. This is in line with Stiglitz (1989), who argued that history matters in understanding how the adoption of technological innovations may vary between rural areas: history determines which technologies are developed, and therefore determines the shape of the available opportunity set.

The institutional framework also enables us to critically examine the role of the state in creating the institutional environment conducive for effective rural transport development. This issue has been mentioned in the beginning of this section, in which Ostrom et al. (1993), Schroeder (1997) and Leinbach (2000) provided enlightening entry points. These authors criticised the way transport infrastructure in developing countries has been managed. Donor agencies and national governments have individually acted to invest heavily in building transport infrastructure, neglecting the aspect of maintenance. As a result, much of this infrastructure has deteriorated to the point where substantial new investments are needed. There has been an unclear institutional arrangement in the transport sector associated with the incentives facing stakeholders in the overall process of rural transport infrastructure development (Schroeder, 1997). The challenge is to provide and develop incentive systems which will allow us to deliver transport development that leads to relatively efficient and equitable outcomes (Leinbach, 2000).
3.4 The Institutional Approach and the Present Research

Having discussed some prescriptions for the application of the institutional approach to rural transport research, I now turn to the application of this approach to the present research. The first application relates to the analysis of transport development policy and its objectives of improving the rural economy and alleviating rural poverty.

As development is multifaceted, non-linear and dynamic in process, different nations will follow different paths in promoting development (Adelman, 2001). The institutional approach offers an appropriate tool for dealing with such a situation. Nabli and Nugent (1989) showed the importance of examining the specific roles of institutions, rules and policies that promote economic growth. Institutions, in these authors' view, may have the effect of either facilitating or retarding economic growth. In addition, Bardhan (2001) argued that the new institutional economics provides major insights for our understanding of underdevelopment as an institutional failure. From the new institutional perspective, the development processes of any country are affected by the way political, cultural, social as well as economic institutions evolve and operate. In terms of rural transport development, the institutional approach is relevant to elaborate why countries with similar transport development policies can produce different results in rural economic growth and rural poverty reduction and helps identify the influence of transport development institutions in promoting or inhibiting rural development. In the context of Indonesia, the institutional approach provides a basis for examining how governments with different doctrines, structures and policies (e.g. comparing the New Order and Reform governments) might have different approaches to transport development and the rural economy. Only by understanding how the social and political institutions related to (transport) development evolve and work can one understand the appropriate connection between transport development and the rural economy of any nation.

The second application of the institutional approach in the present research relates to an examination at the district level of the correlations between transport conditions and rural livelihoods and how the process of transport development has affected those relationships.
The conceptual framework of the rural transport development process (Figure 1.1) indicated that appropriate organisations and policies are required for effective implementation of transport improvements. Insensitivity of transport development organisations and policies to the needs of rural people will make the process of implementation of any transport programme ineffective in addressing rural economic issues. The institutional approach can thoroughly explore this connection, highlighting the question of how different societies act differently in working with a standardised development policy and organisation structure. I quote the question of Toye (1995: 62): "how do societies with different cultures and institutions adjust to new opportunities for trade and technological innovations?" He argued that the characteristics embodied in existing rural organisations will affect the process of adaptation. Rural change will be slow, incremental and path dependent, very much reflecting the initial institutional environment. On the other hand the state, with its authority to establish institutional frameworks, will impose "efficient" development strategies that maximize revenues for the country. Conflict between the state's "top-down" and "efficient" institutional arrangement and rural people's "bottom-up" and slow change of institutional environment is undeniable. The final outcome will depend on "the size of the 'political transaction cost' of the changing nature of the state" (North, 1989 quoted in Toye, 1995: 62). The institutional approach enables us to examine how the top-down institutional arrangement of policy makers meets the needs for change in a rural institutional environment.

The third application consists of using the institutional approach to examine evidence, at the village and household level, of the links among the rural transport system, accessibility and mobility situations of rural people, and their livelihoods and welfare levels.

If the previous task sought the relationship between transport conditions and rural livelihoods at the macro (district) level, this task focuses such an examination at the micro (village and household) level. In this light, aspects of the institutional approach applied to the second task may also be relevant here. However, it is worth emphasising that the institutional approach acknowledges that different communities (e.g. villages) will have different settings of local institutions (North, 2000) plus different resource endowments (Platteau, 2000). These situations determine how local people interact as
well as how they use the transport system for the purpose of improving their livelihoods. Porter (2002c), for example, suggested that roadside and off-road rural communities would have different attitudes toward the same transport system, not just in terms of the physical accessibility and economic opportunities, but also in the political relationships between these two types of settlements.

From the orthodox perspective of transport studies, improved rural transport systems result in better accessibility and greater mobility for rural people. These conditions promote the livelihoods of rural people. The link between accessibility/mobility and rural livelihoods, however, is ambiguous, complex and affected by many factors. The institutional approach provides a lens to thoroughly examine factors associated with transport systems and rural livelihoods. Using this approach, the link between transport conditions and village situations will be influenced by the norms, values, cultures and other endowments that exist in the community. According to Wilson (1973), these characteristics affect the attitude and awareness of the people in responding to the creation of economic opportunities brought about by transport investments.

The fourth application is the use of the institutional approach in the micro examination of the rural transport development process and its relation to changes in the rural economy. There are several tenets of the new institutional approach which are relevant in this context.

One is the theory of imperfect information. I discussed earlier in this chapter that the new institutional approach explains how rural organisation in developing countries is affected by imperfect information that leads to imperfect markets (Hoff et al., 1993). Information associated with production, marketing and non-farm employment opportunities may be unequally distributed to rural people owing to poor transport and communication facilities connecting the people with the source of information. An expensive public transport service, for example, may create a high price for information. Nevertheless, improved rural transport conditions in themselves are no guarantee of perfect information as other factors (social, culture and politics) affect this situation.

Poor rural transport conditions also lead to high transaction costs for rural people. An unreliable transport system or high transport charges, for example, may compound the
risks of transporting agricultural produce to a market place. These factors boost transaction costs and contribute to an imperfect market.

Another tenet is the application of collective action theory in examining the effects of transport development on the social institutions of rural people. Social cohesiveness that characterises rural institutions in many developing countries may potentially promote collective action that helps to overcome market failure. Rural people in Flores, Indonesia, for example, used such a collective action mechanism to build 250 kms of village access roads (Winkelmann, 1999). The roads are important to facilitate the transport of cash crops produced in the previously isolated villages to the local markets.

It is important, however, to view transport development as a process embedded in the history of rural societies. The theoretical basis for this view can be found in the work of Fogel (1964) and North (1968; 1990). Applying new transport technology to rural areas may not benefit the poor. Intermediate means of transport (IMT), for example, offer an effective solution to improve the access and mobility of rural people in Africa (Starkey, 2001). Porter (2002a), however, showed that a large proportion of IMT interventions in Africa have failed, for reasons of, among others, irrational enthusiasm by promoters, an unsuitable environment or culture and lack of consumer appeal.

The last application of the institutional approach in the present research relates to the conceptualisation of the linkages between transport development and the rural economy.

This task combines the findings from the four previous tasks to develop a model linking transport development and the rural economy. As mentioned earlier, there are two interrelated processes in this context: (i) transport development, and (ii) the rural economy. The institutional approach offers a theoretical platform to understand the linkage between the two, mainly from the perspective of technological and institutional change. North (1990) argued that institutions and organisations are important in shaping the direction of institutional change. Institutions determine the opportunities available in a society. Organisations are created to take advantage of those opportunities and, as the organisations evolve, they influence the direction of institutional change. North defined two factors that shape the resultant path of institutional change: (i) the lock-in that emerges from the symbiotic relationship between institutions and the organisations that
have evolved as a consequence of the incentive structure provided by those institutions, and (ii) the feedback process by which human beings perceive and react to changes in the opportunity set. North's argument clearly links to Wilson's classic theory on transport and development. Wilson (1973) identified two crucial stages in the relationship between transport and economic development. First is the role of transport improvements in creating economic opportunities, and the second is the awareness and capacity of individuals to respond to these opportunities. While neoclassical transport studies have given enormous attention to the former, very little attention has been given to the latter. The institutional approach provides an opportunity for this research to explore Wilson's hypothesis, in the context of transport and the rural economy, in a more comprehensive way.

Finally, this chapter and the one that precedes it, have laid a theoretical framework for the present research. This leads me to discuss the methodological framework and the context of the research in the next chapter.
CHAPTER IV: THE CONTEXT AND METHODOLOGICAL FRAMEWORK

This chapter sets the scene for the more detailed analysis of rural transport development in Indonesia in subsequent chapters, following the objective, tasks and theoretical base defined in the previous chapters. Two aspects of the research framework are examined here: the context and methodology of the research. The first section reviews the macro situation of Indonesia, covering the issues of socio-economic and political change in Indonesia over the years. The review of these issues in this section is necessarily brief, mainly to provide a background for the more in-depth examination of Indonesia’s rural transport development in the following chapter. The second section discusses the series of approaches that frame the research. These include defining the procedures through which the research will be carried out and selecting the organisations and the locations of the rural areas in Indonesia with which the research will deal. Lastly, the macro situation of these rural regions is discussed in the third section.

4.1 Indonesia: Socio-Economic and Political Changes

Indonesia is the largest archipelago nation in the world and consists of more than 13,000 islands stretching along the equator for more than 5,000 km (Figure 4.1). The population of the country is more than 200 million comprising about 300 ethnic groups who speak more than 500 languages and dialects. It is difficult to imagine that a single country could be born from such great diversity. The only factor that minimised these differences and laid the foundation for the birth of a nation called Indonesia was what Mohammad Hatta, the first vice-president of the Republic of Indonesia, described as perasaan senasib sepenanggungan (the feeling of common fate and common plight) (Lanti, 2001). This feeling emerged among peoples and regions that for three and a half centuries had been occupied by colonial powers.
The review of Indonesia in this section is limited to certain aspects, mainly providing an overview of the socio-economic and political setting of Indonesia. The essential differences between urban and rural, and between western and eastern regions are also included in the review. The discussion is divided into three sections: (i) the evolution of national development, (ii) demographic change, and (iii) economic change.

4.1.1 The Evolution of National Development

The development of Indonesia will only be appropriately understood by taking into account the whole period of Indonesia’s development history. Arndt (1980) divided that history into two sections: before and after Independence in 1945. The first of these deals with more than three and a half centuries mainly under Dutch occupation. The prime focus during this period was the extraction of the natural resources of the archipelago, such as spices (nutmeg, cloves, and pepper) and horticultural crops (indigo, sugar and coffee), selling them on the international market, and using the revenue predominantly to support the Dutch economy (Hoyle et al., 1998; Dick, 2002b). If there was “development”, it was mainly experienced in agriculture and the transport industry in Java and Sumatra. Indigenous people enjoyed few of the fruits of this development, as strongly argued by Geertz (1963: 146): “In the absence of any genuine reconstruction of
Indonesian civilisation...only one thing grew: paralysis”. “Indonesia”, which was well-off compared with many European nations in the 1600s turned into an impoverished region (Reid, 1980: 441). Indonesia emerged into Independence on 17 August 1945 as a very poor country (Booth, 1998: 6).

The period after Independence can be divided into three phases: (i) the Independence period (1945-1966), (ii) the New Order period (1966-1998), and the Reform period (1998 – present). Each regime has established different doctrines, and accordingly, followed different approaches to development. None of those approaches has been unambiguously successful in bringing Indonesia back to its original level of relative welfare.

**Independence Period (1945-1966)**

The period under Soekarno was peculiarly coloured by political romanticism. This period was characterised by many political convulsions, hampering the process of social and economic development. Dealing with the remaining legacy of the colonial power in the early years of the independence, Soekarno was influenced by socialist thinking rejected, not just the colonial experience (Dick, 2002b), but also the intervention of the western world in the development process (Thee, 2002). He preferred to build the economy up by domestic investment. The government strongly encouraged cooperative models, rather than competitive market approaches, as a basis for a just society. In politics, Soekarno introduced the “guided democracy” political system in the late 1950s. The idea was to build Indonesia’s own form of democracy that fitted indigenous norms. He introduced the idea of *Nasakom* (integration of nationalism, religion and communism) into the development platform. The development model, therefore, was very much based on people’s social welfare, rejecting western influences that were associated with capitalism. Soekarno overlooked the risks associated with the difficulty of implementing such radical economic and political concepts in the new-born country, which was economically poor and highly diverse in cultures. Political conflicts occurred in many parts of the new Indonesia during the 1950s and 1960s hampering the progress of development. The slow progress of development was an outcome of macroeconomic instability, lack of investment and structural rigidity, and clearly related to political instability, which brought Soekarno to the end of his era.
New Order Period (1966-1998)

Soekarno was replaced by Soeharto in 1966, marking the beginning of a more systematic economic development phase. Soeharto gave his administration a name, the New Order, to distinguish the development approach of his era from that of the Independence Era, which he named the Old Order. Soeharto rejected the ideology of guided democracy, political mobilisation and social welfare economy implemented by his predecessor. Rather, he promoted a new development doctrine called *trilogi pembangunan* (three pillars of development) that consisted of: (i) political stabilisation, (ii) economic growth, and (iii) distribution. Given the close link of this ideology to a neo-liberal platform, Soeharto was very clear with his development doctrine: return to the west.

- In terms of the first pillar, Soeharto reduced the number of political parties from 34 in the Old Order Era to only three parties. The strongest one was the new government party called *Golongan Karya* (Golkar), which was established to support the ideology of Soeharto's administration. The other two were the result of merging all the political streams existing in the Soekarno Era, excluding the communist party that was banned by Soeharto in the early years of his administration. The Golkar party, with full support from the military, won all five of the general elections conducted in the New Order Era making Soeharto the only president during these three decades. The methods adopted, although successful in creating a political environment conducive for economic development, have been widely criticised as a repressive system that progressively diminished the existence of diverse political aspirations in the Indonesian history.

- With regard to the second pillar, an economic growth-based policy was introduced. The policy aimed to accelerate economic growth, and did so by developing a strong industrial sector. Foreign investment was invited to industrialise Indonesia. As a result, Indonesia's economy grew rapidly and the country was transformed from an agricultural nation to a newly industrialised country in less than 20 years. The downside however, was that Indonesia became highly dependent on foreign capital and one of the most indebted countries in the world.

- The last pillar was aimed at the distribution of the revenues originating from successful economic growth. A series of subsidy schemes was introduced by the Soeharto administration to bridge the gap between rich regions and poor regions. One
example was the introduction of a national policy called the Development Acceleration Programme for Eastern Indonesia.\textsuperscript{10} Eastern Indonesia covers the islands of Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Papua (Kartasasmita, 1993). The accelerated development policy was needed to reduce the differences between Eastern Indonesia and the Western Region of Indonesia that includes Java, Bali and Sumatra (Haeruman, 2000). The policy was aimed at accelerating the economic growth of Eastern Indonesia to more than 8% per year in order to close the economic gap between Eastern Indonesia and Western Indonesia (Kartasasmita, 1993). This policy however, had to compete with the sustained hegemony of the economic growth policy of the Soeharto government that was mainly focused in Western Indonesia. Furthermore, the wide and persistent gap between Western and Eastern Indonesia meant unbalanced political connections in that Western Indonesia had a strong political access to the central government whereas Eastern Indonesia had only weak connections. The development acceleration policy for Eastern Indonesia has had limited success as there has been little effort to mediate such a difference.

\textbf{Reform Period (1998 – present)}

Similarly to the transformation from Soekarno to Soeharto in 1966, the collapse of the Soeharto regime in mid 1998 was marked by bloody conflicts and political upheaval. The poor management of the country along with "korupsi, kolusi dan nepotisme" (corruption, collusion and nepotism) that existed among Soeharto’s cronies and evolved with the long presidency period of Soeharto were the main issues that united Indonesians to topple Soeharto from power. The development achievements of Soeharto have practically crumbled. Soeharto’s ideology of development was highly criticised by the reformists, mainly because of its centralisation of political and economic power and its association with an authoritarian government. Indonesia sought a new political and economic foundation with the collapse of the New Order regime.

The birth of the Reform Era in 1998 led to new institutional arrangements for Indonesia. In politics, 48 parties were involved in the 1999 general election. The nature of those

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\textsuperscript{10} Eastern Indonesia (\textit{Kawasan Timur Indonesia}, KTI) is a geographical term by definition. It was introduced as a political term and a formal development term in 1990 in President Soeharto's Annual Budget Speech (Chauvel, 1996)
parties was similar to the political parties in the Soekarno Era (Lanti, 2001). Although Golkar was still powerful, it was the Partai Demokrasi Indonesia Perjuangan (PDIP) led by Megawati Soekarnoputri (the daughter of Soekarno) that won the election. Megawati, later became Indonesia’s fifth president, after Habibie (1998-1999) and Abdurrahman Wahid (1999-2001). What is more, the political system was changed through the amendment of Indonesia’s 1945 constitution. The change was aimed at strengthening the political power of the people, and one key feature is found in the presidential election in which the people now directly elect their president.

In addition, Indonesia now has a completely different system of political administration. The New Order was associated with a centralised political system, while the Reform Era operates with a decentralised system. Booth (2003) highlighted Indonesia as the country that changed from one of the most centralised administrations in the world to one of the most decentralised. The development planning system in the New Order Era was regulated by the Regional Administration Law introduced in 1974 (Law 5 of 1974). Under this Law, there were three hierarchical levels in the Indonesian administration: (i) central government, (ii) provincial government, and (iii) local government. Although, autonomy for planning was given to the local government, the fiscal system was under the full control of the central government. Although, the planning process was initiated from the local government level (bottom-up), it was the task of the central government to synchronise the programmes and to allocate the monies needed to carry out those programmes. In practice, the central government had all the power, as they had the authority to distribute both programmes and monies. This system was abolished at the beginning of the Reform Era with the introduction of the Regional Autonomy Law in 1999 (Law no. 22 of 1999). In this law, there is no hierarchical link between central, provincial and local governments. There are only two levels of government (i) central government and (ii) local government that includes provincial and district government. The link between the central and local is coordinative, and not instructional as dictated by the previous law. The authority (kewenangan) of the local government was widened. The law states that the local authority has the final say in all administration/governance matters, except in relation to foreign policy, national security, justice, monetary and fiscal policy. In addition, the centre controls the national policy on planning and management of development, “balancing grants” (dana perimbangan), administrative and economic system, management of human and natural resources, strategic technology
and standardisation. This regulation provides more political power for the local government to plan and manage their development.

In economic policy, the Reform Era government has adopted a system of “people-centred economy” (ekonomi kerakyatan). This system puts equity as an important focus of economic development, and requires that the resources for economic growth have to be fairly distributed to the society (Republik Indonesia, 2000: Chapter IV.C). It has been difficult, however, to implement such a system due to the large role of capitalist agencies (e.g. IMF and the World Bank) in the recovery of Indonesia’s economy after the Asian financial crisis. This is accentuated by the fact that the system of “people-centred economy” provides poor guidelines to Indonesian policy makers for further implementation of that model.

4.1.2 Demographic Change

The population of Indonesia has grown significantly in the last century. The population was only about 40 million in 1900, and had jumped more than five times by 2000 (Figure 4.2).

![Population Chart]

Figure 4. 2: The population of Indonesia (1900 – 2000)
Before Independence in 1945, the growth rate of the population was relatively low, 1.4% annually. This was due to the disruption caused by the 1930s economic depression, Japanese occupation and the War of Independence with the Dutch (Hugo et al., 1987). After Independence, with the decrease in mortality, the population grew quite rapidly, reaching 2.2% annually between 1960 and 1980. With the introduction of a family planning programme in the 1970s resulting in better control over fertility, the rate of population growth was reduced to 1.7% between 1980 and 2000 (BPS, 2002: 46).

The population however, is unevenly distributed between Western and Eastern Indonesia. Despite the fact that both regions have grown by a relatively similar rate over the last century, they are extremely different in terms of population density. Western Indonesia is a densely-settled region; the population density in 2000 was 272 people/km² (BPS, 2002: 47). In this region, more than 80% of Indonesia’s population shared 32% of the nation’s land. In contrast, the population of Eastern Indonesia is scanty, with a density of only 29 people/km² in 2000 (BPS, 2002: 47). This population gap is associated with the issue of resources for development. The high cost of investments required to develop the economic infrastructure in Eastern Indonesia due to the region’s demographical and geographical situation, has been used as an excuse to focus industrial development in Western Indonesia. Hugo (2000) explained the dichotomy as a reflection of resource endowments, and “although there is considerable potential for development in the Outer Islands they are frequently incorrectly portrayed as being ‘empty’...” (Hugo, 2000: 304).

In terms of urban-rural comparisons, the trend of demographic change covering the period between 1961 and 2000 is shown in Figure 4.3. The proportion of urban population increased from 17% in 1961 to 42% in 2000. The increased proportion of the urban population is not surprising. With the dominant pattern of development tied closely to the urban and industrial sectors, urbanisation through migration and the creation of new urban areas is unavoidable. Hugo (2000), however, argued that such statistics should be cautiously considered, as the distinction between the urban and rural population in Indonesia is not clear-cut, at least since the 1970s. Many rural people migrate to urban areas in Indonesia for working purposes. While some move permanently others move seasonally to urban areas, but keep their families and their
permanent place of residence in rural areas. Improved transport networks between urban and rural areas have helped promote such a mobility pattern.

![Figure 4. 3: The proportion of the urban and rural population (1961 – 2000)](image)

Source: Hugo (2000: 322); BPS (2001b: 2)

4.1.3 Economic Change

Indonesia experienced rapid economic growth from the 1960s until the multidimensional crisis hit the country in 1998 (Figure 4.4). The GDP had consistently grown at an average annual rate of 6.7% during the period 1965 – 1996 (Thee, 2002: 198). In early 1960 the GDP per capita was just around 200,000 rupiahs, yet by the mid 1990s the GDP per capita reached almost one million rupiahs (both figures at 1983 prices). But the turmoil in the late 1990s, that ended the hegemony of Soeharto’s growth based economic policy, has halted the economic progress.

The multidimensional crisis that hit Indonesia in mid 1997 has totally changed the national performance, from that of a newly industrialised country with an income per capita of US$ 1,000 to one of the poorest in the world with an income per capita of only US$ 480 (Thee, 2002: 198, 237). No economist ever predicted such a severe outcome. The crisis reached its peak in 1998 when the GDP contracted by 13.7% (Thee, 2002: 226) accompanied by the demise of the New Order regime. According to Indonesia’s modest poverty standard, poverty incidence increased from 11% in 1996 to 24% in 1998.
In terms of international standards however, more than 60% of Indonesians live on less than two dollars a day (Kompas, 2001).

Figure 4.4: Indonesia's GDP per capita at 1983 prices, 1960 – 2002

The rapid growth of Indonesia's economy between 1966 and 1997 was associated with a significant structural change in the economy (Figure 4.5). The main feature of the change was a shift of the country from an agricultural to an industrial and modern economy. In 1966, the agricultural sector shared more than 50% of the GDP. By 2002 the sector contributed less than 20% of the GDP. On the other hand, while the service sector has steadily grown, the role of the industrial sector increased significantly from 11% in 1966 to 37% in 2002.

Figure 4.5: Structural change in the GDP, 1966 – 2002
The structural change in the GDP is associated with a change in the employment pattern (Figure 4.6). The decreased role of the agricultural sector is reflected in the declining proportion of people working in this sector. The proportion of agricultural employment decreased from 73% in 1961 to 43% in 2001. In turn, the industrial sector and the service sector in particular have attracted more employment. This trend may well explain the growth of Indonesia’s urbanisation mentioned above.

![Employment by major sector, 1961-2001](image)

Figure 4.6: Indonesia’s employment by major sector, 1961 – 2001

There has been also a link between the achievement of economic growth and the reduced incidence of poverty. Between 1976 and 1996, the incidence of poverty decreased from 40% to only 11% (Figure 4.7). Due to the crisis, poverty incidence increased to 24% in 1998. After 1998, the reduction in poverty has only been occurring in urban areas, while poverty in the rural areas has been relatively stagnant at the rate of 25%. It seems that the rural poor have not necessarily benefited from a series of economic recovery programmes conducted by international agencies and the government of Indonesia in the post-crisis era. By 2001, 72% of poverty was found in the rural areas (BPS, 2002: 569).

11 Poverty incidence depends primarily on the construction of poverty lines. Indonesia’s official poverty line has been claimed to be very modest compared to the international and other countries’ poverty lines. For example, while the international line of absolute income poverty is US$1 a day, the Indonesian standard is less than a half of this amount. In addition, Booth (2000b) showed that while Indonesia’s poverty line indicated 15% of the population was poor in 1990, using Thailand’s poverty line such a proportion reached 50%.
Figure 4.7: Indonesia’s poverty, 1976 – 2001
Source: BPS (2002: 569)
Note: BPS published two poverty data for 1996. The 1996b data, and accordingly the 1998 and 2001 ones, were based on the 1998 standard which was adjusted to account for the shift in the consumption pattern on these respective years.

Economic differences between Eastern and Western Indonesia

The rapid economic growth of Indonesia from 1966 to 1997 was achieved at the expense of Eastern Indonesia. The region has abundant resources like minerals, oil and forests, but the political power and infrastructure to capitalise on those resources are mainly concentrated in Western Indonesia. When a distinction is made between Western and Eastern Indonesia in terms of their contribution to the Indonesia’s GDP (Figure 4.8), more than 80% of the GDP originated from the Western Indonesia’s economic activity. Disaggregate figures can be even more dismal. In 1997, for example, Jakarta alone was almost as large an economy as the whole of Eastern Indonesia. The city’s economic size was 42 times larger than the Province of Southeast Sulawesi, the poorest province in terms of GDP in Eastern Indonesia, and was more than three times the GDP of East Kalimantan, the richest province in Eastern Indonesia. To sum up, while the spatial differentiation of economic activities between Eastern and Western Indonesia is striking, the gap between regions within Eastern Indonesia is also obvious.
The graph also shows that between 1975 and 2000, the share of the GDP between Western and Eastern Indonesia is relatively unchanged. This indicates that the national policy for the accelerated development of Eastern Indonesia introduced in 1991 has made relatively little difference to the relative size of regional economy.

Having reviewed the Indonesian context of this research, including the problems associated with Indonesia’s development, the next section sets the methodological framework for the research, including descriptions of the locations chosen for case study research in Eastern Indonesia.

### 4.2 Methodological Framework

Three aspects of the methodological framework for this research: (i) the methodology (ii) the selection of policy-making organisations dealing with rural transport, and (iii) the selection of case study areas, are discussed in this section.
4.2.1 Methodology

The methodology developed in this section formulates the five research tasks (see Section 1.2) into a series of systematic assignments, and was designed to be implemented at four levels of Indonesian institutions: national, district, village and household (Table 4.1).

### Table 4.1: The methodology

<table>
<thead>
<tr>
<th>Institutional Level</th>
<th>The Five Tasks</th>
<th>Focus/Target</th>
<th>Approach</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>Analysing transport development policy and its linkages to the objectives of promoting the rural economy</td>
<td>Central government of Indonesia</td>
<td>Collecting data on policy and programmes of rural (transport) development</td>
<td>Document search and policy-maker interviews</td>
</tr>
<tr>
<td>District</td>
<td>Examining evidence for the correlations between transport conditions and rural welfare, and how transport development has affected those relationships</td>
<td>District governments, and district transport and development conditions</td>
<td>Collecting data on the strategy of transport development and condition of transport system</td>
<td>Document search, policy maker interviews and direct field observation</td>
</tr>
<tr>
<td>Village and Household</td>
<td>Examining evidence on how the transport systems links to rural accessibility and mobility and how these variables relate to rural livelihoods</td>
<td>Village organisations and households</td>
<td>Survey of travel activities and livelihood conditions of rural households</td>
<td>Semi-structured interviews (questionaires)</td>
</tr>
<tr>
<td></td>
<td>Elaborating evidence for the process of, and factors that promote, rural transport improvements and their effects on the rural economy</td>
<td>Village organisations and households</td>
<td>Collecting data on the process of transport improvements and rural changes</td>
<td>In-depth interviews, focus groups, and document search</td>
</tr>
<tr>
<td>Integration of all levels</td>
<td>Conceptualising the link between transport development and the rural economy</td>
<td>All levels</td>
<td>Combining findings from the previous tasks and evidence from other research</td>
<td>Conceptual modelling</td>
</tr>
</tbody>
</table>

The first task is aimed at analysing the transport and rural development policy of the Republic of Indonesia. As this policy was primarily developed at the national level of the Indonesian government, therefore the research at this stage is involved mainly with the central government of Indonesia. The task was approached through collecting data on
the policies and programmes of rural transport development in Indonesia. Two methods were employed: (i) searching policy documents related to rural transport development, and (ii) interviewing policy makers who were involved in managing rural transport development. The former was carried out by visiting the library or the information centre of the government ministries responsible for managing rural and transport development, and the latter was approached through making appointments to interview particular policy makers from those ministries. These two methods were complementary.

The second task concerns examining the way transport development has been implemented in a selection of rural districts in Indonesia and observing the pattern of the relationships between transport conditions and rural welfare in those districts. The choice of the research districts is discussed in the next section. Data collected includes the transport development policy and programmes as well as statistics on transport and rural conditions in those districts. The first was done through searching policy documents in district government offices and interviewing district policy makers, while the second was accomplished by gaining access to the micro data of the village statistics of Indonesia (Statistik Potensi Desa). This data was more easily accessed through the central office of Statistics Indonesia in Jakarta than through the district offices. In addition, to understand the situation of rural areas more thoroughly, direct observations on the rural transport system of the researched districts were carried out.

The third task is a micro-scale examination of the links between transport systems and rural livelihoods in a set of villages in the selected research districts. The procedure for selecting these research villages is elaborated in the next section. Data collected include measures of travel activities and socio-economic conditions of rural households. To deal with this task, 30 to 40 households from each selected village were interviewed. They were individually and directly contacted before the interview. The households were selected using a stratified random method, based on location and income level criteria. The interview was semi-structured, for which a questionnaire was designed to gather the required information. The types of information collected are listed in Table 4.2.
Table 4. 2: Types of information gathered for the survey of travel activities and socio-economic conditions (Task 3)

<table>
<thead>
<tr>
<th>Travel activities</th>
<th>Socio-economic characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Type of travel</td>
<td>1. Composition of households</td>
</tr>
<tr>
<td>2. Frequency of travel</td>
<td>2. Level of education of members of households</td>
</tr>
<tr>
<td>3. Travel distance</td>
<td>3. Health status of members of households</td>
</tr>
<tr>
<td>4. Transport mode used</td>
<td>4. House and settlement conditions</td>
</tr>
<tr>
<td>5. Travel cost</td>
<td>5. Income status</td>
</tr>
<tr>
<td>6. Travel time</td>
<td>6. Consumption of households</td>
</tr>
<tr>
<td>7. Type and weight of load carried, if any</td>
<td>7. Household possessions, including vehicle / transport ownership</td>
</tr>
<tr>
<td></td>
<td>8. Levels of difficulty reaching selected facilities</td>
</tr>
</tbody>
</table>

It is worth mentioning that rural transport research has frequently used such travel pattern and livelihood surveys (see for example: Kaira, 1983; McCall, 1985; Bryceson and Howe, 1993; Dawson and Barwell, 1993; Rozemuller et al., 2001; Bryceson, Maunder et al., 2003). Although using similar methodologies, all these studies served different objectives. The study by Rozemuller, et al. (2001), for example, employed the method to analyse the effects of village accessibility on gender relations and welfare levels of rural households. Another study examined livelihood, mobility and accessibility patterns in the context of urban-rural linkages (Bryceson, Maunder et al., 2003). The present research also serves a specific objective. It seeks to analyse how different rural characteristics (i.e. topography and transport conditions) affect accessibility and mobility of rural people and how these variables relate to rural livelihoods and welfare levels.

The fourth task involves examining, at the village level, the links between transport improvements and rural changes. This task aims to observe the changes resulting from any previous transport improvements and their effects on the livelihoods of rural people. The main approach taken was observing the development history of the research villages. The villages are the same ones as those selected for the previous task. Some information was collected through village statistics and reports available in village offices. But, for insight into the village development situation over time, an in-depth interview with rural people is the most effective approach. The in-depth interview approach can be in the form of individual interviews or group discussions and focus groups. The individual interview method was chosen when the nature of the information collected is related to personal opinion or experience of respondents. The group discussion method is
preferable in the context of gaining information related to community perceptions and common knowledge or facts about the community. Roche (1999) argued that the group discussion method is appropriate for bringing together an overall understanding greater than any individual knowledge, generating new insight and contributing to mutual learning. However, such an approach can allow dominant voices to be further legitimised and the voices of the less powerful to be ignored or undermined. To deal with this limitation, the focus group method was employed. A focus group is often used to explore specific issues in-depth in a particular situation. Where there are socio-cultural barriers for particular people (e.g. women, young people, the landless, people with lower social status) to engage in a group discussion, the use of focus groups to encourage the involvement of such people has been proven effective (Goss and Leinbach, 1996). In this research, the focus group method was used to collect in-depth information from groups of people like local traders, local transport operators, village women, and farmers or fishers.

The last task is about integrating the findings from the above four tasks. The relationship between transport development and the rural economy in Indonesia is conceptualised. It is important to emphasise three inter-related processes that will underpin the formulation of the model of the transport and rural economy linkage.

- The process of policy making, particularly related to transport and rural development. Here, the focus is to conceptualise how organisations involved in transport development articulate the objectives of promoting the rural economy and alleviating rural poverty.
- The process of implementing transport policy and programmes in rural areas. Here, the focus is on how the process of policy making affects the implementation of transport programmes in rural areas, and how such programmes relate to transport and the socio-economic condition of those areas.
- The process of change in rural areas as a result of development activities, including transport improvements. Special attention is given to the way transport improvements may affect changes in rural situations and how such changes improve the rural economy as well as reduce poverty.

A thorough examination of these three aspects provides a sound understanding for developing a conceptual model linking transport development and the rural economy.
This conceptualisation is enriched by information available from other research in Indonesia and from other parts of the world. This stage of research was carried out after the analysis of empirical data had been completed.

4.2.2 The Policy Making Organisations

With regard to the first research task, the national government organisations that are in charge of, or have a relationship with, rural transport policy were listed and contacted for inclusion in this research (Table 4.3). Two international development agencies which played a role in rural transport development in Indonesia and had a branch in Jakarta were also contacted.

Table 4.3: Organisations related to rural transport development policy in Indonesia

<table>
<thead>
<tr>
<th>National Government Organisation</th>
<th>Division / Official Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Transport</td>
<td>• Directorate General of Land Transport</td>
</tr>
</tbody>
</table>
| Ministry of Settlement and Regional Infrastructure (or Ministry of Public Works)* | • Directorate General of Regional Infrastructure  
  • Directorate General of Urban and Rural |
| Ministry of Internal Affairs    | • Directorate General of Regional Development  
  • Directorate General of Community Empowerment |
| Ministry of Agriculture         | • Directorate General of Management and Marketing of Agricultural Product |
| National Development Planning Board | • Deputy for Production, Trade and Infrastructure  
  • Deputy for Regional and Natural Resources |
| Ministry of Development Acceleration in the Eastern Region of Indonesia | • Minister |

<table>
<thead>
<tr>
<th>International Development Agency</th>
<th>Official Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>The World Bank, Jakarta Office</td>
<td>• Country Director</td>
</tr>
<tr>
<td>Asian Development Bank, Jakarta Office</td>
<td>• Country Director</td>
</tr>
</tbody>
</table>

Note:
*) The name “Ministry of Public Works” was used during the period of the New Order government. This ministry was abandoned in 1999 and a new department was created, named the Ministry of Settlement and Regional Infrastructure. This ministry was also restrained in 2004, after the new elected government in 2004 decided to re-establish the Ministry of Public Works.
The process of approaching these organisations and trying to gain information from them is worth noting. The process started with a formal letter to each unit. The response received from those organisations varied markedly: some of them were welcoming, while others gave no answer at all. Concerning the latter, a non-formal approach was employed at the time when research was initiated in Jakarta, with the help of some colleagues who either worked in these organisations or had connections to them. Nevertheless, a few organisations were still inaccessible. In addition, among those that responded to the introductory letter, some admitted difficulties in helping my research given the resources available in their unit. The response from one directorate general that was believed to be highly involved with managing rural transport, for example, stated: "you are welcome to visit our office...but, I am afraid that you will find that information on rural transport is very little". In addition, when visiting some of the above listed organisations, it became clear that rural transport had relatively little space in their structures. Rural transport was mainly managed by a small and less powerful section in those organisations. Nevertheless, information on rural transport policy was more likely to be found in such a unit. These points provide us with some preliminary understanding of the poor attention given to the rural transport development in Indonesia.

It is worth noting at this stage that, although this research was carried out in the Reform Era, it intends to explore the process of rural transport and development policy during the last 30 to 40 years of Indonesia’s development. This means that the New Order era will also be included in the analysis. The institutional transformation of Indonesia’s development from a highly centralised system to a decentralised one will, of course, have significant implications for the way rural and transport development are managed at the present time. This will make the analysis of the rural and transport development policy of Indonesia more dynamic and comprehensive.

4.2.3 Selection of Case Study Locations

While the reason for selecting Indonesia was discussed in Chapter I, this section focuses on the way districts and villages in Indonesia were selected for the present study. First, the research acknowledges the great diversity of situations in which rural transport policy and interventions are implemented. Four types of topographical settings are considered.
The first type consists of settlements in a remote island region, which is socially, culturally, environmentally and of course geographically, influenced by its insularity. The second type is riverine settlements relying on river transport. The third category is villages located in a land-based but flat area. The last type involves communities in a mountainous region. The types of feasible transport interventions will vary among these categories, almost by definition. In an insular village, for instance, boats or ships are the most important transport modes for people. This is because most transport activities such as going to work, visiting the health clinic, and selling the produce to urban market, will involve travel by boats or ships. Riverine villages also have water transport options, but road building provides another possible approach to transport improvements. Land-based regions focus primarily on the provision of various levels of “roadway” (ranging from foot track to all-weather road) and the availability of various road transport modes (ranging from carrying baskets to bicycles to motorcycles to cars and heavy trucks). In addition, bicycles and tricycles would be handy as daily transport modes for carrying people and goods in a flatland-based village, but those modes would be effective only for sport or leisure activities in a mountainous area. It is clear that diversity in topographical situations is likely to lead to differences in historical transport development patterns and in feasible transport interventions.

A further dimension of the transport situation is added by selecting villages according their proximity to, or remoteness from, a main (arterial) transport network. The first category comprises settlements located on an arterial transport network. Arterial transport networks include an arterial road, a main terminal, or a main port. Second level villages are located in a feeder transport network. Feeder transport networks can be a secondary road, a feeder terminal or a feeder port. And the third group includes villages with no transport network at all. Such villages are isolated from any modern transport network and rely on foot tracks or canoes for travel. By using such a classification, the effects of different levels of transport context of the lives of rural people can be thoroughly examined. The combination of topographical setting and the levels of transport context generates 12 distinct rural transport situations for examination (Table 4.4).
Table 4.4: Classification of Village Transport Situation

<table>
<thead>
<tr>
<th>Diversity in Transport Context</th>
<th>Diversity in Topographical Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Insular</td>
</tr>
<tr>
<td>Villages located on an arterial transport network</td>
<td>Category IA</td>
</tr>
<tr>
<td>Villages located on a feeder transport network</td>
<td>Category IB</td>
</tr>
<tr>
<td>Villages located in isolation from a transport network</td>
<td>Category IC</td>
</tr>
</tbody>
</table>

The selection of villages according to this classification of transport situation is based on Eastern Indonesia. As mentioned earlier, Eastern Indonesia occupies 68% of the Indonesian land, but is inhabited by less than 20% of the population of Indonesia. These conditions lead to more striking transport problems associated with poor accessibility and mobility of the people in this region compared to Western Indonesia. The focus on rural regions of Eastern Indonesia will, therefore, provide more insight into an understanding of the nature of transport and rural development in a low-population density region.

The final selection of districts to be researched was made after the governments of the districts proposed for the case study areas agreed to be included in the research. Four districts were finally chosen. The district of Maluku Tenggara Barat was selected to represent the insular region. The district of Sorong represents the riverine region. Meanwhile the districts of Pangkajene Kepulauan and Tana Toraja stand for the flat-land region and the hill-country region, respectively. Tana Toraja and Pangkajene Kepulauan are in Sulawesi Island, Maluku Tenggara Barat lies in the southern part of the Maluku Archipelago, and Sorong is located in Papua Island. The positions of the four districts are indicated in Figure 4.9.

During the process of field research a change was made, which was based on consultation with the Pangkajene Kepulauan government. The district head of Pangkajene Kepulauan suggested that rather than seeking a “category IIIC village”, which was unlikely to be found in the district, it would be more useful from the district’s point of view to consider one or two island villages (Pattappe, 2002a: pers.comm.). I accepted this suggestion and altered the category IIIC village to an island village. The
most positive side of this change is that it provided an opportunity for the research to explore, in one district, the distinct differences in transport development processes between land and water transport systems.

![Field research locations in Indonesia](image)

**Figure 4.9:** The locations of field research in Indonesia

### 4.3 The Research Districts

The next subsections review the geographical and socio-economic context of the four research districts. The socio-economic data presented in these subsections was based on the analysis of the micro data of the Village Potential Statistics 2000 (BPS, 2001a).

#### 4.3.1 Pangkajene Kepulauan

Pangkajene Kepulauan District is located 50 kms to the north of Makassar on Sulawesi.\(^{12}\) The district covers an area of 62,147 km\(^2\), but the land region is less than 2% of this. The population of the district in 2000 was 269,164, unevenly spread over its mainland and islands. On the mainland lives 81% of the population with a density of 282 people per km\(^2\). The remaining 19% resides on the islands with a density of 143 people per km\(^2\).

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\(^{12}\) Makassar (or Ujung Pandang, the name of the city between 1971 and 1999) is the capital of South Sulawesi Province, the largest city in Eastern Indonesia.
The archipelago consists of 117 islands (76 are inhabited) spread over a range of 396 kms from the west to the east. The closest island to the capital of Pangkajene Kepulauan, Pangkajene, is just 6 kms, while the farthest island is 414 kms away.

Although the district economy of Pangkajene Kepulauan relies on three sectors (industries, agriculture and services), the majority of the people (70%) live by agriculture. In terms of well-being, the island communities are lagging behind the mainland people. Fifty six percent of households in the islands are categorised as pre-prosperous households and prosperous household level I, while the proportion on the mainland is only 34%. Another indicator is housing conditions: 71% of island households reside in a non-permanent house, while the figure is 23% for mainland households. The availability of information and communication facilities is also much better on the mainland compared to the islands. Television sets are owned by 33% of mainland households, but by only 11% of island households. Only one telephone is found on an island close to the mainland, while 801 mainland households own such a facility. However, island people own more motorised vehicles than mainland people. The percentage of island households owning motorised ships and motorboats is 4.8% and 12.3%, respectively. These ships and boats are mainly for supporting their main employment in fishing. In the land, 4.5% of households have four-wheel motorised vehicles and 12.3% of households own motorcycles.

4.3.2 Tana Toraja

The landlocked Tana Toraja District is located in upland South Sulawesi, 310 kms to the north of Makassar, and covers an area of 3,205 km$^2$. As a mountainous region, 85% of the area has a slope of greater than 15%, and 60% of the land is more than 1000 metres above sea level. The population of Tana Toraja is 388,139, of which 94% resides in rural areas. The population density of 121 people/km$^2$ is unevenly distributed over the district.

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13 The Coordination Board for Family Planning (BKKBN) established five categories for measuring the welfare level of Indonesian households. Among these five, pre-prosperous household and prosperous household level I are the lowest two categories. A Pre-prosperous household means the household cannot afford minimum basic necessities (e.g. having a meal two times a day), while a prosperous household level I is the household that cannot afford basic social necessities (e.g. sending children to school). These measures have been incorporated by BPS into its Village Potential Statistics since 1996. The detailed discussion of the classification can be found in Chapter VII (see Table 7.4).
In 11 urban villages, the population density averages 3,854 people/km², while in 259 rural villages the density of population is only 114 people/km².

The economy of Tana Toraja relies principally on agriculture, indicated by figures showing that 82% of households live by farming, and 74% of the area is agricultural land and forest. The farming system is dominated by smallholder farms of horticultural and estate crops. Horticultural production is mainly for local consumption, while some of the estate crops such as coffee, vanilla and cacao are exported. Nonetheless, the agricultural sector is not well developed and 41% of Tana Toraja households belong to the pre-prosperous and prosperous level I categories. This poverty situation is accentuated by the reality that only 40% of households have access to public electricity, 14.1% of households own TV, 2.7% of households possess a telephone, and 2.7% of households have motorcycles. With all these factors operating, Tana Toraja is one of the low-income districts in South Sulawesi.

4.3.3 Sorong

Sorong is the westmost district of Papua Province, located about 1,500 kms to the east of Makassar. The district population of 256,883 inhabits 51,546 km² of land, let alone around 80,000 km² of sea. The spatial structure of the district can be divided into four regions: (i) the archipelago region consisting of 610 islands, (ii) the insular region that lies along the coast of Sorong, (iii) the interior hill region with no land access to Sorong City, and (iv) the capital region, that is the area around, and including, Sorong City (P3WK ITB, 2001). The first three regions can be categorised as rural areas where 47% of the Sorong population resides, with a density of 3.2 people/km². The fourth region is mainly urban and peri-urban with a population density of 10.5 people/km².

Sorong’s macro economy is mainly driven by mining and agriculture. Between 1996 and 1999, mining contributed 42% of GRDP, while agriculture contributed 36%. The agriculture sector, however, is mainly occupied by the fishery (44%) and forestry (35%) sub-sectors. These two sub-sectors together with the mining sector are dominated by big companies and have much more of a relationship with the urban economy. It is undeniable that the incidence of poverty is much higher in rural areas compared to the
city regions. In urban areas where only 24% of the population lives by agriculture, the percentage of households classified as pre-prosperous and prosperous level I is 40%. In this region, electricity is available to 68% of households, television is owned by 34% of households, and the telephone is used by 18% of households. Meanwhile, in rural areas, 86% of households rely on agriculture and the proportion of pre-prosperous and prosperous level I households reaches 81%. The ownership of electricity, TV and telephones in the rural areas is 24%, 7% and 1%, respectively.

4.3.4 Maluku Tenggara Barat

The district of Maluku Tenggara Barat (formerly five subdistricts of Maluku Tenggara) was created in 1999. The district is an archipelago with 88 inhabited islands, grouped into four clusters: Tanimbar Islands, Babar Islands, Lemola Islands and Terselatan Islands. The district is located in the far south-eastern tip of Indonesia, stretching along the southern border of Indonesia for more than 1,000 kms. The land region covers 14,584 km$^2$, but the sea area is about 8 times this figure. The capital of Maluku Tenggara Barat, Saumlaki, is located in Yamdena Island, the biggest island in this archipelago, and part of the Tanimbar Islands. Socio-economic activities are concentrated on Yamdena. The population of Maluku Tenggara Barat is 149,850, of which 57% resides in the main Tanimbar islands. The population density is 10.3 people/km$^2$.

The economy of Maluku Tenggara Barat is driven by the agriculture and trade sectors that provide 54% and 25% to the GRDP, respectively. Fishery and food crops are the major elements (77%) of agriculture. Meanwhile, the local economy relies predominantly on agriculture with 88% of households living as farmers or fishers.

In comparison with the three other districts, Maluku Tenggara Barat is the poorest. The percentage of pre-prosperous and prosperous level I households of the district reaches 68%. In addition, 64% of house buildings are non-permanent. This condition is emphasised by the facts that only 20% of households enjoy electricity, 7.6% own television, 1.4% own a telephone, and 1.1% own motorised vehicles.
4.4 From Context to Analysis

This chapter and the previous three have discussed the context of the present research. Chapter I started with introducing the central issue in rural transport development and setting the objective of the research: to analyse and conceptualise the linkages between transport development and the rural economy. Chapter II reviewed the evolution of rural transport studies and discussed the problems of rural transport development. The analysis in this chapter indicated the need to connect rural transport studies with wider development issues and to employ appropriate theories in understanding this connection. This led the thesis to Chapter III that reviewed the theory of institutions and discussed its application to rural transport studies in general and, to the present research in particular. The institutional framework set up in this chapter was then used to address the tasks for the research based on the case of Indonesia. An overview of Indonesia, including the four rural districts the research will focus on, was given in this chapter, in addition to the discussion of the methodological framework to be used in this present research. Finally, the discussion of the methodology and the socio-economic context of the research locations took this thesis to the end the Part One.

The next part of the thesis (Part Two) consists of six analytical chapters. These chapters will examine how transport development links to the rural economy at four levels of the Indonesian institution: national, district, village and household. Part Two will start by examining the linkage at the national level (Chapter V) and end by analysing such a linkage at the village and household levels (Chapters IX and X). Throughout the discussion, I will argue that the linkages are multilayered and complex, characterised by institutional environments and arrangements that influence the processes of transport development and the rural economy. These analyses are expected to provide sufficient evidence for the present research to embark on the conceptualisation of the linkage between transport and the rural economy (Part Three).
CHAPTER V. TRANSPORT SECTOR AND THE RURAL ECONOMY: ANALYSING NATIONAL INSTITUTIONAL CHANGE

This chapter examines the institution of the transport sector in Indonesia focusing on its roles in improving the rural economy and alleviating rural poverty. The first section delineates the link between development doctrine and transport policy in Indonesia since the 1960s, including its outcomes. The second section analyses the policy of the transport sector, focusing on its link with rural development. Several transport improvement schemes aiming at promoting the rural economy and alleviating rural poverty are discussed. The next section discusses the laws and structures of the transport sector. The case of road transport is presented to provide insight into the nature of the organisation of the transport sector. The last section concludes the discussion by outlining institutional change in the transport sector and assessing whether such change hampers or promotes the effectiveness of the transport policy in promoting the rural economy.

The chapter contains an analysis of data collected from organisations and individuals involved in policy making at the national level. The questions asked when meeting the persons or visiting the organisations covered the themes of: how the transport sector has been managed and to what extent the sector has considered rural development and rural poverty alleviation goals. The responses to these questions have come from a series of personal communications with the policy makers and from various documents and policy papers. Information on past policies was mainly collected from the libraries of the organisations visited. Table 5.1 summarises the types of policy information collected for each analysis section in this chapter, including the organisations which were the source of that information. Information related to the evaluation of those policies was collected from various project/programme evaluation reports, transport conference proceedings, journal articles, transport magazines, newspapers, local government officials, plus the author’s direct observation.
Table 5.1: Data Collected and Organisations Involved

<table>
<thead>
<tr>
<th>Section</th>
<th>Issues examined</th>
<th>Information collected</th>
<th>Organisations involved</th>
</tr>
</thead>
</table>
Ministry of Internal Affairs  
Ministry of Transport  
Ministry of Settlement and Regional Infrastructure  
Members of People’s Representative Board |
| 5.2                            | Transport sector and the rural economy | Transport policy schemes that target rural people           | National Development Planning Board  
Ministry of Internal Affairs  
Ministry of Transport  
Ministry of Settlement and Regional Infrastructure  
The World Bank, Jakarta Office  
National Consultants for Transport Projects |
| 5.3                            | Organisation of road transport        | National policy on road transport organisation              | Ministry of Transport  
Ministry of Settlement and Regional Infrastructure |

5.1 Development Doctrine and Its Effects on Transport Policy

The discussion here is divided into two institutional periods: (i) the New Order government (1966-1998), and (ii) the Reform government (1998-present). The former is associated with a highly centralised institutional environment, while the latter rejects this system and operates a more decentralised one. The change significantly affects the performance of the transport sector.

5.1.1 The New Order

When Soeharto started the New Order administration, the economy was crippled. The GDP per capita in that year was about the same as that of the early 1900s (van der Eng, 1992), and the country was one of the poorest in the world (Booth, 2000a). There was no alternative for the government except to rehabilitate the economy. The new Soeharto administration preferred a totally different development approach from his predecessor, Soekarno. The fundamental mission of the Soeharto regime was economic development, and in carrying this out Soeharto was backed up by US-trained economists/technocrats who favoured a neo-classical approach. It is understandable then to learn that the main principle of the neo-classical economy, a market-led approach, coloured the development policy of the New Order government. Accordingly, the government preferred to reestablish links with western economies. The open-economy policy attracted
international agencies such as the IMF, the World Bank and some western countries plus Japan to participate in Indonesia’s economic recovery programmes. These agencies and countries injected loans into Indonesia’s development through the promotion of industrial sectors, which were believed to offer a short-cut route to economic recovery. The loans, however, were inefficiently used (e.g. financing over-ambitious projects and being plundered by regime cronies) (Rachbini, 1995; Thee, 2002). Nevertheless, these modern sectors, with the help of an extraordinary increase in the international oil price at a particular stage of the Soeharto period, have become the prime mover for Indonesia’s economic growth.

The transport sector gained special attention during the New Order era through the perception of its vital position in promoting economic growth and maintaining national unity. The adoption of the neo-classical doctrine into development policy helped to explain this relationship. Investments in such transport infrastructure as roads, railways, ports and airports were perceived as a prerequisite for economic growth. Table 5.2 summarises the proportions of transport sector allocations during the six five-year development plans (Repelita) of the New Order administration. Repelita was the major policy guideline of the New Order government and was determined every five years, normally at the beginning of the five-year presidential term. The Repelita was first introduced in 1969 for the period 1969-1974 and ended before the completion of the Repelita VI period (1994-1999).

Table 5.2: Transport sector allocations during the New Order period (percentages)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport (% of development budget)</td>
<td>21.7</td>
<td>15.8</td>
<td>15.5</td>
<td>19.3</td>
<td>19.1</td>
<td>18.8</td>
</tr>
<tr>
<td>Land transport (incl. rail and river)</td>
<td>60.0</td>
<td>48.1</td>
<td>59.3</td>
<td>58.6</td>
<td>69.4</td>
<td>78.6</td>
</tr>
<tr>
<td>Sea transport</td>
<td>19.6</td>
<td>28.7</td>
<td>15.5</td>
<td>19.8</td>
<td>10.6</td>
<td>9.0</td>
</tr>
<tr>
<td>Air transport</td>
<td>9.3</td>
<td>8.7</td>
<td>13.8</td>
<td>13.3</td>
<td>12.5</td>
<td>11.7</td>
</tr>
<tr>
<td>Others (communication or tourism)</td>
<td>11.2</td>
<td>14.5</td>
<td>11.4</td>
<td>8.2</td>
<td>7.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>


It is shown that the transport sector has enjoyed between 15% and 21% of the total development budget allocations during the 30 year period of the Soeharto administration. The majority of this budget went to infrastructure improvements. With the number of
budget sectors varying between 16 and 20 during this period, the transport sector has invariably been one of the top development sectors. Among the transport sub-sectors, land transport received the highest allocation. This has been related primarily to investments in road and railway infrastructure.


The main challenge for the Soeharto government in its early administration was to stabilise the political situation and to recover the economy. The government introduced a development principle known as the “development trilogy”, consisting of (i) stabilisation, (ii) economic growth, and (iii) equitable distribution of development. These three pillars were used as the development doctrine in all Repelitas. The order of the pillars within the trilogy, however, varied over particular Repelita periods bearing in mind the objective situation and specific targets of each Repelita.

*Repelita* I (1969-1974) focused on stabilisation and economic growth. The background conception of putting stabilisation first was the need to control political tension in order to create an environment conducive for economic development to take place. Soeharto preferred to work closely with the military to create such an environment. In addition, the number of political parties was reduced from 34 to three for the general election of 1971. Economic development policy was directed mainly at providing basic infrastructure for the agricultural and industrial sectors, which was intended to improve the standard of living of the people (Republic of Indonesia, 1969). During this *Repelita*, economic sectors such as agriculture, industry, communication and transport, and energy shared 78% of the development budget, while the social field (e.g. education, health and family planning) only accounted for 16% (Republic of Indonesia, 1969: 41).
Given the focus on economic growth, the transport sector was aimed at expediting the movement of commodities and people for promoting economic development (Republic of Indonesia, 1969). Transport programmes in this period were focused on the rehabilitation of deteriorated transport infrastructure, mainly in Java and Sumatra to restore the flow of industrial goods in economic zones. Road improvements in just these two islands, for example, were planned for 13,830 kms, while the rest of Indonesia (Eastern Indonesia) received only 3,395 kms (Republic of Indonesia, 1969: 96). This is understandable given that these two islands had more established transport systems inherited from the colonial administration compared to other Indonesian regions. The concentration of road improvements in Java and Sumatra relates to the immediate target of the government to restore the national economy. With a dispersed spatial distribution of population and resources in eastern Indonesia, the focus on transport improvements in Java and Sumatra would provide a higher rate of return on economic investment. Programmes to reduce the great disparity in the transport situation between Java and Sumatra and other islands were not carefully considered in the transport sector policy.

Transport improvements also aimed at promoting the political stabilisation of the country. In the road sub-sector, for example, Repelita I stated: “Roads are important not only for the smooth flow of goods in the promotion of economic development, but also for the smooth flow of people in the promotion of national unity” (Republic of Indonesia, 1969: 92-93). For national unity, the function of road investments relates to administration, defence, security and social purposes. Whether for national unity or economic development purposes, the policy of promoting the use of motorised vehicles was established. The policy was aimed at encouraging the emergence of motorised transport enterprises to ensure a smooth flow of goods and people (Republic of Indonesia, 1969).

It is worth noting that since Repelita I, the government has decided to restrict its role mainly to the provision of transport infrastructure and has left investment in transport services to the private sector (Republic of Indonesia, 1969). This explains why the major part of the transport budget in the Soeharto administration has been given to infrastructure. In relation to transport services, the role of government was mainly as a facilitator, providing an environment (such as policies and incentives) conducive for private sector investment in transport operations. This approach was very much
efficiency-led. A transport network in a region of high population density may easily generate travel demand that is sufficient for managing transport services in a business-like way. In low-density areas or remote regions, however, managing viable transport operations is very difficult due to low travel demand or high transport costs. Later on, in the second Repelita, the government introduced an incentive scheme for operators of uneconomic transport links, but due to unclear targets and inefficient management of the programme, the outcome has been less productive for the targeted people. I will discuss this scheme in the following section.

Oil Booms and Rapid Economic Growth (1974-1982)

This period started coincidentally with the Repelita II period (1974-1979). The focus on economic growth continued. During this period, Indonesia experienced the golden era of growth as a result of oil prices booming. The price of Indonesia’s oil rose from $1.67 per barrel in 1970 to $35 in 1981 (Prawiro, 1998: 101). Over that period, Indonesia enjoyed rapid economic growth, with real GDP growing on average at 7.7% annually, an unprecedented rate in Indonesian economic history (Hill, 2000: 16). This was seen to prove that the policy direction taken by the government was the right one, although such a growth rate was primarily achieved due to the increase in the international oil price.

The oil booms provided an opportunity for the government to more actively promote transport improvement in rural and remote regions. Apart from maintaining and improving transport networks in developed regions, Repelita II gave special attention to transport networks connecting rural and/or remote areas with marketing centres (Republik Indonesia, 1974a). A specific scheme called Presidential Instruction (Inpres) to deal with this mission was introduced. This policy was aimed at promoting regional development through infrastructure improvements mainly for rural areas. In the road subsector, for example, Inpres for district roads was introduced in 1979 for improving strategic but neglected district roads. The scheme has been perceived as being successful in improving the local transport system, and therefore has become one of the milestones in transport investment during the New Order period.

Another policy introduced during this period was the transport subsidy, which is mainly directed at sea and air transport services in outlying regions (well-known as pioneer or
"perintis" services). This policy was based on the economic calculation that servicing underdeveloped regions is largely uneconomic due to the low demand, and therefore needs financial stimulus from government to make it possible. The service was aimed at supporting the movement of rural people and agricultural products from rural areas to market centres. Passengers on such transport services would only pay about half of the commercial fares on that particular route, while the remainder was supported from the government budget. For pioneer air transport services, the monopoly right was given to Merpati Nusantara, a government-owned airline. A fleet of twin-engine aircraft (DHC-6 Twin Otters and Cassa 212) with the capacity of 18 passengers or 1,500 kgs of cargo was operated. Seventy four locations were served in the first year of implementation in 1974 (Republik Indonesia, 1974a). The number was reduced significantly to only 37 regions by 1993 (Republik Indonesia, 1994). This reduction was claimed to be the result of the increasing demand for private sector services (Republik Indonesia, 1994). In fact, the number of pioneer aircraft also declined significantly because of poor management of the operation (Angkasa, 2002b). Meanwhile, for sea-line pioneer services, the procurement mechanism was more competitive, by tendering the routes to private shipping companies. The services were distributed in Eastern Indonesia. In the first year of implementation (1974), nine pioneer ships were operated servicing 11 routes and stopping in 79 ports in Eastern Indonesia (Republik Indonesia, 1979a). By the end of the Repelita V period, the number of ships increased to 26, servicing 28 routes and calling at 193 ports (Republik Indonesia, 1994).

Although there was a strong tendency to increase the focus on the remote and undeveloped regions, transport development was still unbalanced. Road improvements in Repelita II, for example, were concentrated in Java, Bali and Sumatra to support growth, while the other regions only received meagre attention (see Table 5.3). New road construction in Java, Sumatra and Bali was more than four times greater than in the outer islands, while road betterment, rehabilitation and routine maintenance programmes were two and a half, two and two times larger, respectively. Rail infrastructure was improved for Java and Sumatra, but there was no expansion outside these two islands. Azis (1992: 110) described this problem of development distribution as "an enigmatic challenge". The 80% of the country’s population that lives in Western Indonesia, but occupies only 30% of the area, could simply “swallow” the economic opportunities provided by the country. Demand for transport mobility, for example, is much higher in the western than
in the eastern region, affecting the difference in the allocations for transport investment. Relying greatly on an efficiency-led approach, however, would enlarge the disparity between these regions.

Table 5.3: Road Development Program in Repelita II

<table>
<thead>
<tr>
<th>Regions</th>
<th>New Construction (km)</th>
<th>Betterment (km)</th>
<th>Rehabilitation (km)</th>
<th>Routine Maintenance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Indonesia</td>
<td>1,255</td>
<td>5,747</td>
<td>8,646</td>
<td>21,598</td>
</tr>
<tr>
<td>Eastern Indonesia</td>
<td>300</td>
<td>2,250</td>
<td>4,834</td>
<td>10,219</td>
</tr>
</tbody>
</table>

Source: (Republik Indonesia, 1974a: 325)

It is worth emphasising that during this development stage, the government introduced two laws to regulate centre-local relationships in the development process. The law of regional administration principles (Law 5 of 1974) was launched in 1974, followed by the law of village administration (Law 5 of 1979). The proclaimed objective of these two laws was to increase the level of public participation in development and to enhance the effectiveness of coordination between central and local administration (Republik Indonesia, 1974b; 1979b). In implementation, however, the focus has been only on the latter aspect, which was efficiently carried out through establishing a centralised and top-down development mechanism. Given their strong centralised and top-down approach, these two laws have been contra-productive in promoting public participation in development.

Post-oil Boom and Rapid Export-led Growth (1983-1997)

In this period the price of world oil fell, stimulating the government to seek revenues from non-oil resources. Manufacturing and modern service sectors were encouraged. Incentives and protection were given for foreign and domestic industrial investments. Many industries including assembly, engineering goods, and parts and components, were born in this period. The manufacturing sector was then stimulated to become export-oriented. Growth remained steady as a result of the success of the government in promoting non-oil income and continual high growth was enjoyed by Indonesia until the end of the Repelita V period.
Booth (2000a) argued that the rapid economic growth in the post-oil boom period was accompanied by increasing inequality, and this undermined any effect on poverty reduction. She formulated three hypotheses to explain this outcome. First, the Indonesian growth model has relied less on agriculture and more on manufacturing and modern service sectors. Such a model could have little impact on poverty reduction, given the situation of most Indonesians and particularly the poor relying on agriculture. Second, most of the poor live in isolated regions. The growth process focused on urban industry was too far from them, so, they could not benefit from that growth. The third reason is related to unjust accessibility to education. Urban areas, as a result of industrial development, offered many work opportunities to those with a good education. This situation has increased the migration of skilled individuals to urban regions. Rural areas, with poorer schools, were less capable of providing the necessary skills.

The transport sector was continually defined as having a direct correlation with economic growth in Repelita III, IV and V. Repelita III, for example, stated that if the economy was to grow at 6.5% annually, transport demand would need to be increased by more than 10% every year (Republik Indonesia, 1979a: 157). The transport sector, therefore, was targeted to cope with this demand (Republik Indonesia, 1979a). This shows us how the classical model of Adam Smith is applied to transport and development policy: the increase in production requires the expansion of the transport network. It is also an explanation for the emphasis on the transport improvements being related to the promotion of economic growth rather than to an equitable distribution of development.

At the end of the Repelita V period, the New Order government claimed a significant achievement in the transport sector over the first 25 year development period (Republik Indonesia, 1994: 202-208). In road transport, there had been 218,652 kms of roads improved, over 85% of which were in good condition. This was related significantly to the increase of registered motor vehicles by 7.5 times, from 1.64 million in the Repelita I period to 12.39 million in the fourth year of the Repelita V period. Rail improvements in Java and Sumatra, successfully increased the number of passengers from 29 million to 69 million. Ferry transport, also increased the number of passengers 5 times over the four Repelita periods (from 11 to 56 million). The number of domestic ships also significantly increased from 1812 vessels operating on international, national, local, special and pioneer routes in the Repelita I period, to 9188 ships at the end of the Repelita V period.
In air transport, the number of passengers and the amount of freight increased over the four Repelita periods, from 1.65 million to 10.75 million passengers, and from 16,800 tons to 184,000 tons, respectively. No doubt, these achievements have to be acknowledged as the success of the New Order government in promoting transport infrastructure development. There is a lack, however, of any performance measures of how such achievements were related to progress in economic growth and poverty reduction. In addition, these macro indicators do not show us the uneven pattern of transport infrastructure across the country.

At the beginning of the sixth Repelita period, which was also the beginning of Indonesia’s second long-term development plan, the conceptual foundation for transport development for the next 25 years was introduced. It was stated that transport is the “artery” connecting national economic, social, cultural, political and security sectors which should therefore, be designed as a national transport system, abbreviated as Sistranas (Republik Indonesia, 1994). The concept of Sistranas was explained in the National Policy Framework 1993 (GBHN 1993) (see MPR RI, 1993). According to GBHN 1993, the national transport system has to be integrated to support (i) dynamic development, (ii) mobility of people, goods and services, (iii) national pattern of distribution, (iv) regional development, and (v) international communication (Republik Indonesia, 1994). In order to effectively carry out these tasks, Sistranas should be based on an intermodal transport system, which integrates all regional transport systems, (though they might be different according to their regional space characteristics) in an optimum and competitive model (Dikun, 1996).

Repelita VI, which was the first Repelita based on Sistranas policy, came with the main objective of establishing an efficient national transport system, in order to effectively cope with broader challenges, not just internally but also externally (Dikun, 1996). The internal challenge is promoting economic growth and distribution, while the external one is globalisation in which transport has to accommodate the advanced development of technology, information and communication. The only option for the transport policy is strengthening the national transport system to support the role of Indonesia in global economic competition (Dikun, 1996). This vision, however, was contested by the perennial transport problem that has emerged as the outcome of the long run industrial growth-based model focused in Java and Sumatera. In the road subsector, for example,
there were some 3,600 kms of roads in Java which had to handle 50,000 – 150,000 vehicles per day, which meant that transport capacity improvements were needed if those roads were to effectively support economic flows (Dikun, 1996: 22). On the other hand, 10,000 kms of new roads outside Java were needed to provide access for rural people in remote regions (Republik Indonesia, 1994: 233). The budget allocation for road improvements in Repelita VI (about 13% of the total Repelita budget) was too small to cope with either of those problems.

5.1.2 The Reform Era

Neither international policy makers nor academics ever predicted that the Soeharto administration, which achieved such unprecedented progress in economic development, would end in such an embarrassing way. Before the crisis, the country’s high performance in promoting economic growth and poverty reduction had been a popular example of wise policies for many academics and international agencies (Killick, 2001). The World Bank Report of 1997, for example, which was published two months before the peak of the upheaval, strongly recommended the need to sustain rapid growth with equity, focusing on macroeconomic stability, high investment and domestic saving, strong human resource development, international competitiveness, and stronger institutions (World Bank, 1997). This optimistic report states “If Indonesia were to average 7.5% p.a. growth through 2005, GDP per capita would more than double in dollars (to over $2300)” (World Bank, 1997: xxiv). The agency had no awareness of the impending crisis that suddenly crippled Indonesia. After the crisis, academics and policy makers seemed to agree that many aspects of the growth achievements were artificial and contributed to the weak development foundation of the country. While other Asian countries, such as South Korea, Thailand and Malaysia quickly recovered from their crisis, this was not the case in Indonesia. Thee Kian Wie explained the performance of the Soeharto regime as follows:

Thus the New Order government, which had emerged from the economic crisis left by Sukarno’s Guided Democracy government, ended ignominiously in an even more serious economic and political crisis from which it was unable to extricate itself. (Thee, 2002: 197)
The Reform Era was born under constant pressure to carry out reforms in all sectors: politics, economy, law, and administration. Apart from toppling the New Order government, the reform movement also appealed for (i) amending the constitution aiming for a more democratic nation, (ii) returning the military to their barracks and removing their political power, (iii) combating corruption, collusion and nepotism (KKN), (iv) creating an environment for broader regional autonomy and decentralisation, and (v) distributing economic assets fairly to the people. The new Reform administration has attempted to address these appeals. One example of their efforts was the introduction of a series of decentralisation laws (Laws 22 and 25 of 1999) transferring some political powers from the central government to local administrations.

The introduction of Laws 22 and 25 of 1999 (replacing Law 5 of 1974 and Law 5 of 1979) in the early period of the Reform Era shifted the authority of the central government from budget allocation power to policy-making power. Law 22 of 1999 abandons the hierarchical relationship between the centre, provinces and districts. Provinces and districts are given a wider autonomy in managing their development according to their people’s aspirations. The centre, however, still controls the macro policy on national development planning and supervision, but the implementation of the policy has been transferred to the regions. In relation to that, Law 25 of 1999 rearranges the financial relationship between the centre and the regions. The existing central government grants to the regions (e.g. Inpres and routine expenditure) have been replaced by “balancing grants” (dana perimbangan). The balancing grants model provides more freedom for local governments in setting their development programmes.

The revolutionary change made at the state’s institutional level, however, does not necessarily proceed smoothly at the implementation level. Moral hazards exist mainly because the new model of decentralisation will significantly restructure the distribution of power between central and local agencies. Booth (2003) claimed that the long and well-established working relationship between donor agencies and the central government has hampered any genuine process of decentralisation. She argued, “Although less than 10% of Indonesia’s four million civil servants were based in Jakarta, a very high proportion of the most senior were in the capital. Many had built up extremely lucrative patronage networks which they had no interest in seeing disrupted. Indeed, the Jakarta-based senior bureaucracy remains the single most powerful obstacle
to the effective implementation of the 1999 legislation” (Booth, 2003: 194). From the local government side, on the other hand, a particular concern is related to the capacity of local governments to cope with the new powers handed to them. Alm et al. (2001), for example, indicated that only a few local governments were capable of carrying out their new responsibilities. With greater political power, local governments may transform themselves into another version of authoritarianism. This possibility has been indicated by the greater prevalence of corruption at the local administration level. Therefore, in order to successfully carry out the process of institutional reform, stronger commitment and moral responsibility must be obtained from both the centre and the regions.

The severe contraction of the economy as a result of the multidimensional crisis in 1997 led to a rapid increase in the number of poor people in 1998. The immediate task of the new reform government, therefore, was to protect the poor. A social safety net programme was launched with support from international development agencies to minimise the impact of the crisis on the poor. At the macro level, a series of economic recovery programmes was introduced, based on two principles: fiscal sustainability and monetary prudence (Boediono, 2001). The former deals with tackling the problem of shortfall in domestic financing and the latter involves promoting monetary and financial stability (e.g. prices, inflation, and rupiah exchange rate). These, however, may only be achieved through a government with a strong commitment to combating corruption, collusion and nepotism (Kwik, 2001), and promoting legal certainty and the rule of law (Yudhoyono, 2001).

The poverty issue has been addressed more seriously in the reform era as indicated by its highest priority in the economic development agenda of the government (Republik Indonesia, 2000). Four types of policies were introduced: (i) policies designed to empower the poor, (ii) policies designed to break the intergenerational transmission of poverty, (iii) policies designed to better utilize labour and raise the income of the poor, and (iv) policies designed to reduce the vulnerability of the poor to economic shocks (Kuntjoro-Jakti, 2001). These four policies, especially the third one, were tied to the macro economic policy of restoring economic growth. For example, in the annual development plan of 2004, the government claimed that economic growth of greater than 5% is required to cope with 10% unemployment (Republik Indonesia, 2004: II-10).
The concentration of the Reform government on programmes that may quickly revive the economy, lowers the relative significance of the transport sector. During the early years of the crisis, many transport projects were postponed or even cancelled. The budget allocation for the transport sector was reduced to 13% of the national development budget in the 2002 fiscal year (Soekarnoputri, 2001). As a result, the government has lacked the money to maintain the condition of the transport system. By 2000, only 52% of the roads were still in good condition and the social and economic user costs of the roads far exceeded the investment capacity of the government (Soedjito, 2002). The government faces a huge challenge to rehabilitate much transport infrastructure left without proper maintenance during the crisis.

Nevertheless, the transport sector still plays a pivotal role in the national development. Its role is in supporting economic activities for the movement of people and goods, connecting production areas and their markets, at the local, regional, national as well as international levels (Republik Indonesia, 2000). The national development programme document also stated that transport is urgently needed to support social activities including poverty alleviation (Republik Indonesia, 2000). Interestingly, the traditional role of the transport sector in promoting national unity, as consistently stated in the New Order policy, was not included. This is a fundamental difference between the New Order policy and that of the Reform government. While the former positioned the transport sector mainly as an economic and security engine, the latter views it as an economic and social instrument.

The new role of the transport sector in the Reform administration policy narrows the gap between transport and rural development sectors. Regarding the latter, the Reform government shifted the paradigm of rural development, from having rural people as passive participants to actively involving and empowering them in the development process (Soedjito, 2001). This principle is in line with the reform spirit and the new decentralisation law, which gives the people more say in the development process. Macro policies of rural development, therefore, are: empowering rural people, developing rural institutions, as well as providing rural infrastructure that cannot be funded by rural people alone (Republik Indonesia, 2000).
Based on those three rural development principles, the government established a new agenda for rural transport development. The new priorities are increasing the involvement of local people in rural transport development, and defining the local transport system as an integral part of the regional transport system in supporting rural economic development (Soedjito, 2001). This initiative gives a strong indication that the Reform government will be more considerate of the needs of rural people in the transport development process. The key issue is, however, whether such an initiative can be the underlying principle for the institutional reform of the transport sector? If this can be the case, the next question is: can such a principle be applied to a new arrangement of transport organisations at all levels of the reform administration?

5.2 Transport Sector and Its Links to the Rural Economy

Although the transport sector during the New Order and the Reform period has been highly associated with the macro economic growth objective, there has also been a link to rural development goals. I discuss three policy schemes in more detail in this section, examining the relationship between the transport sector and the objective of rural economic growth and poverty alleviation. The first two schemes were introduced during the New Order period, while the third is a product of the Reform Era.

5.2.1 Pioneer Transport Services

The policy of the pioneer transport services was introduced in 1974 and has continued right up until recently. The policy is directed at the sea and air transport sub-sectors. The objective of this policy was to stimulate economic development in remote and low population-density regions, where demand for transport is low, through subsidising the operation of sea and air transport services in such regions. Hirschman (1958) called such an investment as “development via excess of capacity of SOC (social overhead capital)”. Transport investments, through subsidised transport services, play a role as a necessary factor stimulating productive (economic) activities in the region. After 20 years of implementation (1974-1994), however, the pattern of the pioneer shipping routes was relatively unchanged, even though the number of regions served by this scheme had
increased. On the other hand, the number of pioneer flights has reduced during the same period, which was claimed as a success by bringing commercial flights to some formerly subsidised routes (Republik Indonesia, 1994). The question to be examined is: does this policy effectively stimulate the economy of rural or remote regions?

**Sea Services**

It has been argued that the impact of the subsidised sea transport on the rural economy is positive but marginal (Leinbach, 1989). Its benefits are clearer for remote regions where there is no alternative transport. The service is used to carry students to high schools and teachers to postings in remote areas (Leinbach, 1989). Regarding the latter, however, a district head in Eastern Indonesia argued that teachers working in islands accessible by the pioneer services were more likely to be “absent without leave” rather than those without such an access (Pattappe, 2002a: pers.comm.). This argument is in line with comments given by a focus group on an island served by pioneer sea transport. Before the pioneer ship stopped at this island, the only primary school in the region had enough teachers. After the pioneer ship started operations, many of the teachers stayed longer on the mainland rather than on the island, forcing the school to combine classes at times. The “unattractiveness” of island life stimulates the teachers, with the help of the pioneer services, to travel more to the mainland and stay longer there. This situation is not really a transport constraint, but relates more to non-transport problems. Leinbach (1989), in addition, argued that the non-transport constraints may well have much to do with lack of production capital, deficient budgets and staff shortages.

The role of the pioneer sea transport system for cargo was also challenged (Leinbach, 1989). One study of this aspect showed that the services carry an insignificant volume of cargo (O’Sullivan, 1983). Another recent study showed that in 2000 the pioneer sea transport only carried 0.04 percent of the total shipping domestic cargo (Blankfeld and Fritz, 2001). Shippers are reluctant to use the pioneer services owing to irregular scheduling and poor cargo handling practices which may damage the freight (Leinbach, 1989). Although insignificant in comparison to other sea lines, for particular remote regions of Eastern Indonesia, the pioneer sea services have been the only transport service available to carry rural people’s cargo (e.g. cows, pigs, goats, and varieties of fish) to regional markets. The low demand for transporting cargo has been largely a
function of low levels of productivity. In this case, the subsidy on transport costs has not been effective enough in promoting the productivity of the people in remote regions, resulting in the minimal use of the pioneer services for transporting cargo.

Leinbach (1989) also argued that the operation of the pioneer services into remote regions does not necessarily affect price levels or the supply of basic commodities. Monopolistic distribution arrangements are rather more influential in determining price levels. I would also argue that the majority of the remote island communities did not enjoy better prices for their commodities after the commencement of the pioneer services. Commodities such as copra in remote areas of the Eastern Indonesian archipelago, for example, are collected by middlemen who themselves set the price. As selling copra individually is risky because of poor market information and high transaction costs, using a middleman may offer a “win-win” solution to the farmer. In turn, the cheaper transport costs as a result of the pioneer shipping service do not necessarily benefit the people.

It is also worth mentioning the top-down implementation of this policy. The central government sets the routes of the pioneer services and supplies the vessels for these routes. In particular cases, the vessels cannot effectively operate due to the specific conditions of the route or harbours. The operation of the pioneer ships in Pangkajene Islands of Sulawesi, for example, is ineffective because the size of the ships (700 GWT) means that they cannot stop off shallow coasts. In 2001, the district government proposal to replace the pioneer services with new ships made locally by the island community was accepted (Pattappe, 2002a: pers.comm.). The project to build two smaller ships (200 GWT) was given to an island community which has a long involvement in building traditional ships. The project itself created new employment opportunities for the community. But, more importantly, two highly manouverable local ships are now operating across the region.

Air Services

Leinbach (1989) argued that pioneer air services made little contribution to the local economy, except in the most outlying regions. The benefits were mainly derived from the better delivery of government administration, postal services and business access. A
negative impact, however, arises with the redistribution of income in favour of those who
are not poor. Although subsidised, the tariff of the pioneer flights is still too expensive
for the majority of the population in remote areas. In addition, airline services are too
costly to carry rural produce, such as crops and animals. This was indicated by the cargo
traffic that appeared to flow primarily from regional centres to remote regions, with little
back haul traffic (O’Sullivan, 1983). So, the role of this transport system for promoting
markets for people in remote regions is marginal. Rather, the penetration of urban traders
even further reduces the people’s market opportunities.

The top-down approach of the pioneer transport programme has made it insensitive to
the local situation of the population served. The focus of this programme on the rural
poor is far from clear given that airports are primarily built in non-poor rural regions.
The archipelagic district of Maluku Tenggara Barat, for example, has two pioneer
airports located in well-established urban centres. The poor, on the other hand, are
distributed across the 88 islands of the district. For a majority of the people, reaching the
airport is more costly than using other transport (e.g. ships) to reach regional markets.

The poor management of the pioneer services may also be seen in safety aspects. Safety
precautions, for example, have been overwhelmingly neglected. My own travel on a
pioneer flight from Ambon to Saumlaki, the capital of Maluku Tenggara Barat in 2002
strongly demonstrates the point. The aircraft was not equipped with a working navigation
system. In addition, the pioneer airport of Saumlaki has inadequate navigational aids.
The crew relied on visual judgments with the help of aeronautical maps. The problem
arose when the crew could not find the destination airport owing to their unfamiliarity
with the region. They finally decided on an emergency landing in a corn field on an
“unidentified” island about 300 km to the west of Saumlaki. Three months before, and a
month after this incident, two pioneer planes crashed in Papua killing all their passengers
and crew (Angkasa, 2002a). Poor safety precautions have been the main cause of the
pioneer aircraft accidents in Eastern Indonesia.
5.2.2 Presidential Instruction (Inpres)

The Inpres policy was launched to promote regional development and to help reduce interregional disparity. The policy was based on transfers of development funds from central government to local governments, at provincial, district and village levels. Initially, the whole scheme was directed to support infrastructure improvements in rural areas. By 1994, it was expanded to finance non-infrastructure programmes. There are several Inpres schemes including: (i) Inpres for Provinces, (ii) Inpres for Districts, (iii) Inpres for Villages, (iv) Inpres for Road Improvements, (v) Inpres for primary schools, and (vi) Inpres for health. In this section, we discuss in more detail, Inpres for villages and Inpres for Road Improvements. With the implementation of the new regional autonomy law in the Reform era, however, these schemes were discontinued and changed to another model of regional development.

Inpres for District Road Improvements

Inpres grants allocated for district roads were initiated in the first year of the Inpres policy, but a specific Inpres for district roads was introduced in 1979, called Inpres for Budget Roads. In 1988, the name of this Inpres was changed to Inpres for District Road Improvements (IPJK), indicating more systematic management and attention from the international development agencies to the organisation of district roads. Inpres for Budget Roads, for example, did not have systematic planning tools apart from the criteria that the proposed district roads needed to have a direct connection with food-production, transmigration and tourism areas (Gould, 2002: pers.comm.). The launching of IPJK was associated with the introduction of an economic planning and programming system established by the Directorate General of Highways in coordination with the World Bank. The use of this tool for the IPJK projects has provided international development agencies with an economic tool for measuring their investments in district roads. With this tool, more funding from the agencies like the World Bank and ADB has been allocated for district roads in Indonesia.

The procedure, formally called SK 77 of 1990, regulates the annual planning cycle of district roads, which is synchronised with the Indonesian fiscal year (Direktorat Jenderal Bina Marga, 1995). The process starts with a review of the district road database.
followed by the establishment of long and short lists of road programmes, and restarts after the completion of the final programmes (Figure 5.1, bottom part). The whole process, however, has to be integrated into the process of regional development planning authorised by the Regional Administration Law of 1974 and regulated by a decree of the Ministry of Internal Affairs of 1982 (Permendagri 9 of 1982).

Figure 5.1: SK 77 of 1990 and its integration into Permendagri 9 of 1982
Source: Analysis from Direktorat Jenderal Bina Marga (1995) and the diagram of Permendagri 9 of 1982 (Anwar and Hadi, 1997)

According to Permendagri 9/1982, all proposals for development have to be initiated by a development meeting at the village level. This meeting is arranged by the village head and attended by the people’s representatives. There is then a forum at sub-district level to prioritise the proposals from all villages in the same subdistrict. The next stage is a development meeting at the district level, in which all sub-district proposals are combined and prioritised using the set of district policy statements: the District Development Principle (Pola Dasar), District Repelita and the District Land Use Plan. The next meeting is a provincial development meeting, prioritising district proposals using a set of provincial development policy statements, such as the Provincial Development Principle, Provincial Repelita and the Provincial Land Use Plan. The outcome of this meeting will be the input to the central government to allocate the development budget, but with consideration given to GBHN, Repelita and the National Land Use Plan.
Although SK77 stated that district road planning is initiated from village meetings, with its integration into the Permendagri 9/1982 model, coordination between a bottom-up and top-down approach is required. The bottom up process involves processing the road improvement proposals from the village meetings to a national consultation meeting, while the top-down approach relates to the coordination of the proposals with the national, provincial and district policy statements. In theory, this should be a wise way to compromise between the unlimited needs of people and limited national resources. In the New Order practice, however, the bottom-up approach was simply swallowed by the strong top-down approach.

There are at least three reasons why the policy on decentralisation, through integrating bottom-up and top-down approaches in the New Order Era could not be implemented. First, the model of government was fully centralised. The provincial, district, sub-district and even village governments were representations of the central government. Although those local governments were elected by a local electorate, the approval of their appointment came from the central government. In addition, the very strong role of Soeharto’s party (Golkar) in parliaments at all levels, generated local policies that only served the interests of the central government. Second, there was a centralised model of revenue collection and allocation. All revenue sources had to be authorised by the central government on behalf of the people. The revenues from resources were collected in the central government “pocket” before being distributed to local governments. This made the budget position of the local government very dependent on the central government. Third, the structure of development policy was centralised. All statutory policies of local government (the District Development Principle, District Repelita, the District Land Use Plan) were integral parts of national development policies (the GBIHIN, Repelita and the National Land Use Plan). This created a local policy which predominantly served the interests of national policy. Overall, the centralisation of power in the New Order Era made no space for local initiatives, with the result that all central-local transfer policies, including Inpres for rural road improvements, were centralised.

Another major feature of SK 77 is its association with an economic benefit-cost analysis approach in ranking the proposals for district road improvements. The benefits of a road proposal are calculated based primarily on traffic volume and population of regions served by the road. The expenditure analysis is based on costs associated with the
construction of the road. The net present value (NPV) of the benefits (net of costs) of each proposal is then calculated. The greater the NPV of a road proposal the higher its rank in the planning document. Such an approach, again, is very much efficiency-based, putting regions with high economic productivity first. Remote and low population density regions, which are predominantly poor communities are not targeted effectively by such a planning tool.

**Inpres for Villages (Inpres Desa)**

*Inpres* for underdeveloped villages (*Inpres Desa Tertinggal = IDT*) was launched in 1994 indicating a growing concern of the government with poverty alleviation. The selection of villages for the IDT programme was made by the National Development Planning Agency (Bappenas) and the Ministry of Internal Affairs based on village potential statistics published by the Central Statistics Board. The IDT consists of two programmes: (i) financial assistance for community business, and (ii) infrastructure improvements.

With regard to the first, villages categorised as underdeveloped are granted 20 million rupiahs annually for three consecutive years. This money is used as a revolving fund to stimulate businesses in the community thus promoting the village economy. Over the three-year period, training and supervision are provided for these businesses. It is expected that after three years, the number of poor people would be reduced and the villages would be mature enough to support their own businesses. The outcome of this programme varies across villages depending greatly on the implementation and supervision at local levels (Indroyono, 2002). In one Nusa Tenggara subdistrict, for example, only 22% of the grants were revolved involving only 7% of the poor households (Indroyono, 2002). In a Central Java subdistrict, however, the agricultural production of village communities increased by 60% after 9 years of programme implementation (Indroyono, 2003).

The programme of Underdeveloped Village Infrastructure Improvements (*Program Pembangunan Prasarana Desa Tertinggal, P3DT*) was carried out through a cluster-based approach. One cluster consists of five villages, and each of these villages receives 120 – 130 million rupiahs. Differing from IPJK where the list of projects is determined at
national consultation level, in the P3DT scheme only the budget allocation is set at the central government level. In other words, the P3DT programme provides flexibility to the local people in setting their own priorities. Village communities receiving the P3DT grants prepare a plan for the use of the money to build particular rural infrastructure (i.e. roads, bridges, wharves, sanitation facilities, and local markets) relevant to promote their economy. The construction of the infrastructure can be carried out by either the people themselves or contractors. During the process, the community is supervised by a consultant provided by the central government.

An evaluation during the first six years of the implementation (1995-2000) showed that transport infrastructure (roads, bridges and wharves) has been the most important rural facility funded by this programme (Rae et al., 2001). Rural road projects took 64% of the total budget (KMMP, 2001: III.1). In addition, rural roads, bridges and wharves were constructed in 82%, 43% and 12%, respectively, of villages receiving the P3DT grants (KMMP, 2001: III.1). This may indicate that accessibility problems are closely related to the rural economy. This preliminary conclusion, however, should be taken cautiously. The reason is the likely bias in perceptions toward transport projects. On the managerial side, most consultants involved in this programme have long been associated with sectoral transport projects. On the villagers' side, although an irrigation system might be greatly needed by a village not everybody from the village would directly benefit from improvements to the irrigation system. On the other hand, improved roads can be an indication of better village “status”. The absence of a road connection is extremely obvious and, once the initial road has been constructed, there is a regular sequence of improvements needed to bring “our road” up to the level of “other villages”.

An ex-post study carried out by an independent consultant (quoted in KMMP, 2001: II.55) indicated that the main output of the first six years of the P3DT programme has been a significant improvement in village access roads. Generalised transport costs are reduced with motorised vehicles becoming more accessible to villages. The author, however, expressed concern at the sustainability of the infrastructure built. Rural organisations were found to lack initiative and capacity to maintain their roads.

Another post-evaluation study carried out by the National Consultant of P3DT (KMMP, 2001: Chapters 3 and 4) indicated that the programme has significantly improved the
accessibility of underdeveloped villages. Using data from the Village Statistics 1996 and 2000, the study found that the villagers' travel time to permanent markets was reduced by 27% between 1996 and 2000. In addition, differing from the independent consultant report, the study found that the capacity of rural organisations for planning, implementation and maintenance had increased after the introduction of P3DT in a village. The same report, however, mentioned problems associated with the implementation of the P3DT programme. These included, among other things: (i) the continued existence of corruption, collusion, and nepotism during implementation, (ii) lack of local government commitment to people's empowerment, (iii) lack of capacity of designated consultants, (iv) low allocations for Eastern Indonesia, and (v) poor integration of the programme with other programmes. These points indicate that the institutions dealing with this programme were not just weak at the village level, but also at the upper level of the administration.

5.2.3 Community Driven Development

The demise of the New Order administration and the emergence of the Reform government provided momentum for the introduction of more decentralised and "people-based" development programmes. This came along with the shift in international development agencies toward more poverty-focused targets. Several community-driven development schemes were introduced by the central government, such as the Subdistrict (or Kecamatan) Development Programme (KDP) financially supported by the World Bank, the Community Empowerment Rural Development (CERD) supported by ADB, and the Village Infrastructure Development (P2D) supported by the Japan Bank for International Cooperation. The nature of these programmes is similar, but KDP seems to be the most widely implemented in rural Indonesia. I shall discuss the KDP scheme next.

Kecamatan Development Program (KDP)

The first KDP was launched in 1998 for the period of 1998-2002, and because it has been perceived as being successful in improving the rural economy, the second phase was launched for the period of 2002-2012. The programme aims to reduce rural poverty
by raising rural incomes, strengthening local government and community institutions, and improving good governance (KDP National Secretariat, 2000). The programme focuses on the principles of community empowerment, especially for women and poor people, transparency and sustainability. The KDP provides funds at kecamatan or subdistrict level. Villagers then decide to use these funds as grants for public goods (infrastructure) or loans to existing groups for working capital. These funds are available each year for up to three years.

The program differs from P3DT in several ways. First, the KDP strongly delivers the commitment to implement the decentralisation process. While the role of line ministries is relatively strong in the P3DT programme (e.g. in determining the criteria of underdeveloped villages), the KDP gives more authority to the local level administration, focusing on the relationships between the sub-district and village level. Secondly, rather than maintaining the focus on poverty alleviation as the target as found in P3DT, the KDP broadens the thrust to include strengthening the role of village institutions in development. Strong local institutions will promote governance foundations for better sustainability, and growth of poverty programmes. In relation to that, financial transfers are conducted through the accounts of village and subdistrict organisations. Third, while P3DT is limited to financing five types of infrastructure, the KDP is an open programme. Nevertheless, the first year of the implementation indicated that 54% of budget was allocated to transport infrastructure (KDP National Secretariat, 2000: 32). Fourth, contractor-based models that are partly adopted by P3DT are completely abandoned in the KDP approach. An evaluation of the P3DT programme indicated that community-built infrastructure appears to cost some 20% less than contractor-built infrastructure for the same quality (World Bank, 2003: 4). Overall, the KDP seems to have taken full advantage of the evaluation of P3DT in order to maximise the benefit of the programme to rural communities.

It is worth emphasising that the introduction of the new regional autonomy law (Law 22 of 1999) automatically abandoned Permendagri 9/1982. The planning process for the KDP is significantly different from the Inpres programme (Figure 4.2). The figure shows that there are no national, provincial or district interventions in the planning process. Intervention, however, does exist in the initial stage when the central government in coordination with district governments decides on the sub-districts eligible to receive the
KDP programme. The process of planning starts with disseminating the KDP to all villages in a subdistrict receiving the KDP funds. Three village meetings are then arranged to (i) introduce the KDP to the people, (ii) develop village proposals, and (iii) discuss the design and implementation of the project.

![Planning process of the KDP](image)

**Figure 5.2: Planning process of the KDP**  
Source: KDP National Secretariat (2000)

One of the predicaments of the KDP, however, is the lack of a planning tool to rank community proposals. Programmes are selected at village and sub-district level based mainly on community judgments. The possibilities that villagers with a higher socio-political and/or economic status impose their interests on those without such status are quite high. A national evaluation of the KDP implementation, for example, was concerned about the dominating role of “clever villagers” in collaboration with the rich in directing the programme at local levels (Sahputra, 2003). To produce a more representative list of programmes, a simple planning tool may be worth introducing to the KDP programme. Such a tool would help village communities in ranking their development needs, including determining which transport investment would be the most useful for them with a given budget.

Another problem created by the growing popularity of programmes such as the KDP relates to the lack of coordination among policy makers in international and national agencies. It is obvious that the Indonesian transport sector allocation will decrease with some of the transport programmes being handled through the community-driven development sector. In the World Bank, for example, the transport sector has long been managed under an economic and infrastructure division. The approach to transport programmes in this division is strongly related to economic growth targets. On the other hand, the new KDP scheme is managed under a social development division. The
approach of transport programmes originating from this division is participatory
development leading to poverty alleviation. The gap between these two types of
transport programmes widens as they proceed into the national administrative system.
The first scheme is managed under a line ministry, while the second is coordinated by
local government. In the case of Indonesia, no institution has been established so far to
coordinate these programmes. Conflicts of interests exist in the planning and
implementation at local level related to which scheme should come first: either a sectoral
transport programme with strong cost-benefit analysis criteria or a transport programme
through KDP with strong social and poverty focused criteria. Intermediation between
these programmes is critically needed if we are about to develop a transport policy that
can both promote the economy and alleviate poverty.

5.3 Two Institutional Umbrellas: The Case of Road Transport

One of the aspects crucial in understanding the institution of transport development is the
examination of laws and organisations that frame the policy. The two development eras
of Indonesia between 1960s and 2000s are particularly unique in these matters. As
mentioned in the previous chapter, the central-local institutional model shifts from a very
centralised system during the New Order period to a decentralised one in the Reform
period. This shift affects the way the transport policy from central government is
implemented at the local administration level. The introduction of the 1999 regional
autonomy law changes the role of central government from “budget allocation power” to
“policy making power”. How has such a change been associated with changes in the
structure of central government? The case of road transport is presented here, to focus
the attention on the effect of the institutional change in central-local relationships on the
performance of the transport sector in improving the rural economy.

5.3.1 The New Order

National authority over the road transport system in the New Order administration was
held by two ministries: (i) the Ministry of Public Works and (ii) the Ministry of
Transport. The former was responsible for the construction and maintenance of roads.
The division associated with this task in the Ministry of Public Works was titled the Directorate General of Highways. In carrying out the task, this ministry was ruled by Road Law (Law 13 of 1980) introduced in 1980. Meanwhile the Ministry of Transport managed the operation of road transport through the Directorate General of Land Transport. The Law of Traffic and Road Transport (Law 14 of 1992) was established to support the authority of this ministry. The arrangement of the road transport policy under two separate organisations and laws has been consistent during the New Order administration, and continued until recently. I examine the effect of such an organisational arrangement on the roles of promoting the rural economy in the following paragraphs.

Table 5.4 summarises the laws and organisations of the road transport sub-sector. Law 13 of 1980 defines roads as an integral part of cities or growth centres. The Law regulates the hierarchy of roads based on the significance of road networks in supporting the development of growth centres. The size of cities and the economic activities determined by the National Land Use System are important factors in classifying the roads. Meanwhile, Law 14 of 1992 views road transport as a part of an integrated national transport system, which involves sea, air, and railway as well as road systems. Together they facilitate the movement of people and goods. The classification of roads in this law is based on travel demand and the selection of an appropriate transport mode. So, although both laws acknowledge the interrelationship between roads and road transport, their standpoint in defining the (road) transport system is significantly different.

These different standpoints lead to the ministries having different approaches in managing the road transport system. The Ministry of Public Works focused exclusively on the national plan of road network development. The plan was related to the National Land-Use System. A road management system was introduced to systematically manage the national process of road development. On the other hand, the Ministry of Transport managed the operation of road transport based on a national transport system (Sistranas). Sistranas is a statutory product of this ministry that integrates air, sea and railway as well as road transport into a national transport system (Menteri Perhubungan, 1984). Conflicts at the implementation level arose as both ministries used different tools for planning and programming. The Ministry of Public Works used their road management system for
prioritising road improvements, while the Ministry of Transport uses *Sistranas* in ranking plans for road transport.

Table 5.4: Laws and organisations of Road Transport in Indonesia

<table>
<thead>
<tr>
<th>Items compared</th>
<th>Road</th>
<th>Road Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standpoint of Law</td>
<td>Road as a network connecting cities/growth centres in a hierarchical regional unit</td>
<td>Road transport as an integral part of multimodal transport system (sea, air and land)</td>
</tr>
<tr>
<td>Basis of Road Classification</td>
<td>Based on economic size of regions and cities</td>
<td>Based on travel demand and appropriate modal choice</td>
</tr>
<tr>
<td>Road system</td>
<td>(i) Primary system is roads significant to national landuse system, (ii) Secondary system is roads significant to local/city landuse system</td>
<td>(i) Primary system supports intermodal intercity or international transport, (ii) Secondary system associates with intermodal local (urban or rural) transport</td>
</tr>
<tr>
<td>Rural Transport</td>
<td>(i) District roads, under the authority of district government, (ii) Village roads, under the authority of village government</td>
<td>(i) Rural transport: transport within a district, under the authority of district government</td>
</tr>
</tbody>
</table>

Source: Law 13 of 1980 (Republik Indonesia, 1980) and Government Regulation 26 of 1985 (Republik Indonesia, 1985); Law 14 of 1992 (Republik Indonesia, 1992) and Government Regulation 43 of 1993 (Republik Indonesia, 1993)

What has been the effect of such an institutional arrangement on managing transport development in rural areas? The bottom line is that the differentiation at the national level provides huge coordination problems at the local level. The planning and constructing of rural roads, for example, were under the command of the Ministry of Public Works. At the local level, this was coordinated by the Ministry’s Regional Office (*Kanwil PU*). After a road has been built, it was the task of the Ministry of Transport to determine the vehicle class of the road and to manage the operation of public transport services on it. The regional office of the Ministry of Transport (*Kanwil Perhubungan*) coordinated the implementation at the local level. In many cases, roads have long been constructed but signals or markings have not been put in place and public transport
routes have not been established. In other cases, the demand for public transport services was high, but the maintenance of roads on which the transport operates was poor. What is more, the interdependency between these ministries was great at the operational level, but even an intensive coordination process could not address the problem effectively. The Ministry of Public Works might have built a road, but they could not control the overloading of vehicles that travelled along that road. On the other hand, public transport operations including their quality/reliability were under the responsibility of the Ministry of Transport, but they were limited in controlling any aspect of poor road conditions that may have hampered the services.

Apart from the above coordination problem, the relevant laws have not substantially addressed the issue of rural transport. The lowest level of the road hierarchy in Law 13/1980 is the local road. Local roads are subdivided into local primary and local secondary roads. The first refers to roads connecting level three cities (e.g. district capitals) and roads linking these cities and their hinterlands. The second includes roads linking level three secondary areas (e.g. capitals of subdistricts or villages) with their hamlets. Roads within a village, or roads connecting farms with local market within a village, have not been recognized by this law. In fact, the length of such roads is greater than the sum of all the statutory roads. More importantly, village roads or paths have been proven to be of major importance in supporting the rural economy.

Similarly, the Road Transport Law only acknowledges the existence of motorised vehicles as providing public transport services. In addition, only cars and buses are acceptable as passenger public transport. This largely neglects the reality of rural areas, where motorcycles and various non-motorised vehicles involving human (and animal) power have long been operated in support of rural transport needs. The implementation of Law 14/1992 meant that these transport vehicles are illegal for public transport services.

5.3.2 The Reform Era

The emergence of the Reform Era followed by the implementation of Law 22 of 1999 led to a reorganisation of central-local relationships. The line ministry organisations at
the provincial and district levels (i.e. Kanwil and Kandep) were abolished. In the New Order Era, Kanwil and Kandep were a representative of central government in the regions. Their main task was to coordinate, monitor and supervise the central government programmes planned and implemented in the region. In practice, these organisations had become another bureaucratic hurdle in the relationship between the central and local governments. With the new law, these organisations were integrated into local development bodies under the authority of district or provincial governments. As a consequence, all assets of the central government in kanwil and kandep, including their government officials were transferred to local governments.

With such a restructuring, the local government is now fully in charge of transport programmes implemented within their region. The problems of coordination between ministries can be minimised by a stronger role of the local government body in coordinating a multi-sectoral programme. In addition, the shift of implementation tasks from the central to local government has narrowed the gap between transport programmes and the reality of rural areas. The problem, however, is related to the readiness of the local government to fully carry over such a responsibility. Institutions of local government are relatively weak due to the long hegemony of the central government institution. The challenge now is to develop a strong local government institution that can handle the broader responsibilities in transport programmes mandated by Law 22 of 1999.

The significant change in the central-local institutional relationship, however, has not been followed by a substantial change at the central government level. The Ministry of Public Works was restrained during the presidency of Abdurrahman Wahid (1999-2001), but it has been quickly reconstructed through a new ministry: the Ministry of Settlement and Regional Infrastructure (MSRI). In the restructuring process within this ministry, the Directorate General of Highways received a new name: Directorate General of Regional Infrastructure. Although the name has changed, the responsibility of the MSRI over roads is exactly the same as the old Ministry of Public Works.

Interestingly, both the MSRI and the Ministry of Transport have been recently working on revising the Laws 13/1980 and 14/1992, respectively. The focus of the change will be on the accommodation of the new regional autonomy law. No doubt the issues of rural
transport, like village roads and intermediate means of transport, will be more seriously addressed by these new laws. But, by maintaining their different standpoints, the revised laws will again create similar coordination problems. In addition, there has been growing pressure among international and national transport societies to strengthen the role of Sistranas as the blueprint of the national transport system, and to continually develop a system of regional transport (Sistrawil) and local transport (Sistralok). Sistranas has been under the Ministry of Transport since it was first established in 1984, but it is targeted to be an umbrella of Indonesia’s transport system in the near future. If this happens, a more complicated institutional problem will affect the road transport organisation.

In concluding this section, a statement of the Minister of Transport is worth noting. He argued that maintaining the planning of the national transport sector under two ministries faces three coordination problems: (i) the difficulties in addressing inter-sectoral transport problems, (ii) transport policies are partially developed, and (iii) transport investments are made without considering multi-modal transport system (Gumelar, 2001). He suggested a comprehensive plan for an efficient national transport system.

5.4 In Which Direction are the Institutional Arrangements Moving?

Changes in institutional arrangements colour the shift from one development regime to another in Indonesia. People and/or their representatives abandon the institutional arrangements that fail to satisfy their aspirations and establish a new institutional structure that is perceived to be more relevant in accommodating their future needs. The Soekarno administration, for example, rejected the western orientation of the colonial institutions by introducing his own development principle based on people’s social welfare. The downfall of Soekarno indicated a significant shift in the institutional arrangements. The New Order government rebuilt connections with the western nations to recover and promote the economy, but maintained the process under a tight centralised military-bureaucratic tradition. The emergence of the Reform Era after the multidimensional crisis hit the country and ended the supremacy of the New Order government, indicates another institutional reform. In this period, a decentralised institutional system bounded by a more democratic society has been introduced. Such a
colourful development history has helped the country evolve into a mature nation particularly in articulating the needs of its people.

Although the development process of Indonesia has been formally initiated since 1945, the transport sector was not well articulated until the early years of the New Order administration. It was under this administration that a national transport system was established. The transport sector during the New Order Era was institutionalised into economic and security domains. An efficiency-led approach drove the pattern of transport development for promoting export-led economic growth and national unity. Transport development followed such a pattern, resulting in a continuation of the hegemony of urban sectors particularly in Western Indonesia. Little space has been given to the objective of distributing development to the poor.

The Reform Era brings significant changes. Although the transport sector is still categorised into an economic domain, its link to poverty reduction is closer. The change in the institutional system from a centralised to a decentralised model accentuated this connection. The decentralisation process is not settled yet, as the democratisation process is still underway. The effect of the new policy on the rural poor remains to be seen. The differences in transport’s institutional arrangements between the New Order government and the Reform administration are summarised in Table 5.5.

Table 5.5: Changes in the Institutional Arrangement of the Transport Sector

<table>
<thead>
<tr>
<th>Items Compared</th>
<th>New Order Regime</th>
<th>Reform Regime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Centralised</td>
<td>Decentralised</td>
</tr>
<tr>
<td>Goals</td>
<td>Economic growth and national unity</td>
<td>Economic development including poverty alleviation</td>
</tr>
<tr>
<td>Approach</td>
<td>Mainly sectoral</td>
<td>Toward a more area-based process</td>
</tr>
<tr>
<td></td>
<td>Top down</td>
<td>Toward a more bottom-up process</td>
</tr>
<tr>
<td>Rural Economic</td>
<td>Subsidy and Inpres</td>
<td>Community-driven development</td>
</tr>
<tr>
<td>Scheme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural Transport</td>
<td>Rural transport serves regional and national transport system</td>
<td>Closer link with rural development, and rural transport is directed to be a part of the national transport system</td>
</tr>
</tbody>
</table>

The change in the institutional arrangement of the transport sector provides a closer link between the transport sector and rural development and poverty alleviation. The Reform transport institution following the introduction of Laws 22 and 25 of 1999 provides more
space and flexibility for rural people to participate in transport development. Greater authority given to local governments in managing their transport programmes indicates greater accommodation of local aspirations in transport development. Some transport programmes based on community-driven development have shown particular achievements in targeting the poor. However, there are some aspects of the institutional reform in the transport sector that need attention in order to make the sector effective in targeting the rural economy. They are among other things:

- The problem of moral hazard associated with the reform in transport institutions. Moving toward a decentralised institutional system is not easy. At the moment the political power of line ministries is still very strong. The long term friendly relationship between officials in the central government and international agencies, for example, should not be a constraint on transferring authority to the local level. On the other hand, the local government needs to be more proactive in eliminating corruption and promoting a clean governance environment.

- The coordination issue between transport schemes aimed at promoting economic growth and ones targeted to alleviate poverty. Defining the link between these policies will provide the transport sector with a strong policy framework in working toward improving the rural economy as well as alleviating poverty.

- Coordination between different transport organisations. The case of road transport indicates that to effectively introduce a national transport system, transport authorities at the national level need to be integrated.

- Defining the system of rural transport that involves all transport networks significant in promoting rural people’s activities.

- A stronger appreciation of the rural transport system as an integral part of the national transport system and not as the secondary or tertiary system.

- Top-down programmes like the pioneer transport services need to be effectively coordinated at the local level in order to be more sensitive to rural characteristics.

- Planning tools for an area based approach or a community-driven programme need to be designed to provide people with the ability to independently prioritise their programmes.

Overall, the reform in the transport sector can only be implemented if the new national institutional environment brought by the reform movement in 1998 can be strengthened. Internal challenges such as moral hazard problems related to political dynamics either at
national or local level as well as external challenges in the form of market liberalisation need to be thoroughly addressed. Strong institutional reform in the national development process will give the transport sector a strong focus on rural development objectives.

Having carried out the analysis of transport development and the rural economy at the national level, the next stage of the analysis is examining such linkages at the district level. I will discuss the implementation of national transport policy in four rural districts in the next chapter.
CHAPTER VI: IMPLEMENTATION OF TRANSPORT POLICY - A DISTRICT LEVEL ANALYSIS

“Papua is very poor and left behind other regions in development because of poor roads connecting districts, subdistricts and villages”, the governor of Papua emphasised. ...He asserted that building roads has become and will remain the main commitment of the government in the next five years. Roads are a key for the success of development in Papua. Roads remove the isolation of people that live in poverty, nakedness, backwardness and wilderness. (quoted and translated from Kompas, 2002: 22 August)

There has been a vigorous debate about the need to continue or not the construction of Trans [Papua] roads. ...Herry Ahmadi, a member of the [Indonesian] People’s Representative Council suggested carrying out a serious evaluation on whether the new road meets the needs of the indigenous people before continuing the project. ...Having directly interviewed the local people, he concluded that many [road] projects in Papua are wasteful and fail to meet the expectations of the people. (quoted and translated from Suara Pembaruan, 2001: 7 May)

The excerpts above convey different messages. The former refers to the argument of the top policy maker of Papua who strongly believed that a lack of roads was the cause of poverty in the region. The latter concerns the perception of a member of the People’s Representative Council who argued that many road projects in Papua failed to meet the needs of indigenous communities. Considering these messages together, I argue that a careful interpretation of local realities is required for transforming a development policy into action. Just because a new road has been built and local people have had access to the road does not necessarily mean that the people have automatically benefited from the road. A thorough evaluation of the outcome of transport policy and programmes is needed to determine whether they deliver the maximum benefit to the most needy population. This chapter and the one that follows consider this issue. The main question to be answered is: Does transport policy and its implementation effectively promote the rural economy?

This chapter examines the implementation of national transport policy and the changes it brings in several rural districts in Indonesia. The cases of Pangkajene Kepulauan, Tana Toraja, Sorong and Maluku Tenggara Barat, are discussed. The first section analyses the implementation of the transport sector policy in the four districts in terms of the influence of national transport policy on district programmes and on current district
government priorities in the transport sector. The second section examines the nature and degree of change in the transport situation of each of the four districts between 1976 and 2000. The last section points out the lessons drawn from the analysis in the first two sections and sets the basis for the analysis in the next chapter.

6.1 Influence of National Policy and Current Priorities: District Level Perspectives

This section is based on interviews with local policy makers and on an examination of district strategic plans and programme reports gathered from the district government offices in the four research districts (Table 6.1). The main questions raised when meeting the district policy makers, or searching for information in the district government offices were: “To what extent has national transport policy affected the implementation of transport programmes in your district?” and “To what extent is the district transport sector important in promoting the rural economy and alleviating rural poverty?” The interviews with the policy makers were limited to collecting recent information only. Information about past district policy and its implementation was gathered from past government reports.

Table 6.1: Sources of information: local policy-makers and district government organisations

<table>
<thead>
<tr>
<th>District</th>
<th>Policy makers interviewed</th>
<th>District government offices visited</th>
</tr>
</thead>
</table>
| Tana Toraja               | • District Head  
                          • Deputy of District Head  
                          • Head of Transport Bureau | • District Planning Board  
                          • Public Works Bureau  
                          • Transport Bureau |
| Pangkajene Kepulauan      | • District Head  
                          • Head of District Planning Board  
                          • Head of Transport Bureau | • District Planning Board  
                          • Transport Bureau  
                          • Public Works Bureau |
| Sorong                    | • District Head  
                          • Head of District Planning Board | • District Planning Board  
                          • Transport Bureau  
                          • Settlement and Regional Infrastructure Bureau (previously Public Works Bureau) |
| Maluku Tenggara Barat     | • District Secretary  
                          • Head of District Planning Board | • District Planning Board  
                          • Public Works Bureau |
6.1.1 Influence of National Transport Policy

All of the district policymakers interviewed agreed that, during the New Order period, the influence of the central government on the district’s transport programmes was overwhelming. The head of the Transport Bureau of Pangkajene Kepulauan, for example, argued that in the New Order period, local government voices were practically unheard by the central government in the process of setting up programmes and budgets for regional development (Salirang, 2002b: pers.comm.). The strong top-down approach in the development process meant little space, financially as well as politically, was available for local governments to control their district programmes. As revenue collection and allocation were centralised, the budget position of the local government had been highly dependent on the central government. In the development planning process (as dictated by Permendagri 9 of 1982), all proposals from district governments had to be prioritised by the central government according to a standardised mechanism. For example, district road proposals needed to be justified based on SK 77 of 1990, an economic analysis tool created by the Ministry of Public Works. Such a centralised and top-down approach had resulted in the insensitivity of development programmes to local characteristics. In this light, district governments have been no more than a central government agency operating at the local level.

The policy makers also agreed that the implementation of the new regional autonomy law (Law 22 of 1999) in the early years of the Reform Era has provided district governments with greater authority in determining their development programmes.

The current system enables local government to have a greater say in any national transport programme allocated to districts. For example, the Ministry of Transport has just recently approved the proposal of the District Government of Pangkajene Kepulauan to substitute the pioneer transport budget allocated to the district with the provision of two ships made by local people and operated by the district government (Salirang, 2002b: pers.comm.)

This view was reinforced by the head of the District Planning Board of Sorong who affirmed that:

Law 22 of 1999 and the special autonomy law given to Papua meant more monies to develop Sorong. With these laws, ‘the ball of development’ is now in district government hands, and the district government has the authority to decide on
how to deliver ‘the ball’ to the needy regions and population” (Kabarek, 2002: pers.comm.).

The head of the District Planning Board of Maluku Tenggara Barat emphasised that “It is much easier to cope with the needs of people for transport if the transport authority is given to local government rather than if such an authority is held by the central government” (Malaka, 2002: pers.comm.). He explained that the new district government of Maluku Tenggara Barat had decided to give greater attention to developing the sea transport system, a sector that has been poorly funded by the New Order government.

The change in national policy that gives regions a greater say in determining their development programmes permitted a change in the way local administrations budget their transport sectors (Figure 6.1).

During the New Order period the trends of the transport budgets in the four districts were relatively similar. The similarities are obvious between 1989/1990 and 1998/1999. The budget proportion of the transport programmes in all four districts increased significantly, in the late 1980s and early 1990s. The transport sector enjoyed a very high share of the budget in all districts between 1991/1992 and 1998/1999, averaging 55% for Tana Toraja, 41% for Pangkajene Kepulauan, 52% for Sorong and 47% for Maluku Tenggara and Maluku Tenggara Barat. With such high proportions allocated to the transport sector, the non-transport sectors, (which numbered between 15 and 22) shared the remainder.

The economic crisis in 1998 shifted the focus of these district governments from the transport sector to the sectors that directly protect the poor (e.g. social safety nets and promoting small-scale entrepreneurship). Accordingly, the allocation to the transport sector in these districts decreased to 10-30% in 1999/2000.
In 1999, the Reform government launched a new regional autonomy law (Law 22 of 1999) that replaced two authoritarian local administration laws implemented during the New Order period (Law 5 of 1974 and Law 5 of 1979). Law 22 of 1999 provides greater authority to local governments to set their own development budgets. With such enhanced local authority, the pattern of transport allocation has been different for each of the districts. Tana Toraja returned to a high priority for the transport sector (greater than 50%) for the expansion of the road network. On the other hand, the Pangkajene Kepulauan government continued to reduce the allocation to the sector, giving other sectors greater priority in local development. The government of Maluku Tenggara Barat returned to the high proportion allocated to the transport sector, but with a strong focus on the water transport system. Such different directions in development budget priorities
indicate how local governments have responded to the development needs of their regions when greater autonomy in programming and budgeting is given to them.

The relatively high proportion of the transport allocation in the four districts during the period 1991/1992 – 1997/1998 was generated by the allocation of Inpres for district road improvements (IPJK). As we have discussed earlier, IPJK was initiated in 1988 indicating greater involvement of the central government and international development agencies such as the World Bank and ADB in the improvement of rural roads. The World Bank, for example, launched a series of projects aimed at improving the condition of rural roads in Eastern Indonesia (i.e. Rural Roads III and IV, Kabupaten Roads for Eastern Indonesia). Loans were given to Eastern Indonesia districts with reference to the economic viability and structural condition of district roads in each district.\textsuperscript{14} The loan required an accompanying contribution from the central government budget. IPJK grants were then allocated to the development budget of districts receiving the World Bank loan, boosting the significance of the transport sector budget in all Eastern Indonesia districts. The scheme started to greatly affect the pattern of transport allocations in the four districts in the fiscal year 1991/1992. Ironically, even in regions where roads are relatively less important than water transport, the transport sector budget has been allocated mainly to road improvements. Furthermore, there has been no equivalent Inpres grant provided for water or other transport systems.

The District of Maluku Tenggara, which until 1999 administratively included the archipelago that became the district of Maluku Tenggara Barat, may serve as a relevant example in this case. Maluku Tenggara was an archipelagic district consisting of more than 150 inhabited islands and lying across more than 1000 km of the southern border of Eastern Indonesia. More than 90\% of the region is covered by sea. Inevitably, the sea transport system is the basis for improving accessibility and promoting development in this region. Ironically, the district government has given very little attention to developing the sea transport system (Table 6.2). During the period from 1989/1990 to 1997/1998, road improvements received more than 90\% of the transport budget. This was mainly due to the allocation of the IPJK grant which provided the district with most

\textsuperscript{14} In addition to classifying roads according to their function (arterial, collector, and local), Law 13 of 1980 also divides roads according to their administrative status: national, provincial and district. While national and provincial roads are under the authority of the central and provincial governments, respectively, district roads are controlled by district governments.
of its budget for road infrastructure (and even for the transport sector). Between 1991/1992 and 1997/1998, the district received a series of World Bank projects for district road construction and maintenance. This increased the proportion of the IPJK grant in the transport portfolio of the district, from 60-70% to greater than 90% (Table 6.2). Most of the grant accompanied the World Bank loan.

Table 6.2: Road budget and IPJK budget in Maluku Tenggara District

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Road (% of transport budget)</th>
<th>IPJK (% of road budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989/1990</td>
<td>91.6</td>
<td>68.5</td>
</tr>
<tr>
<td>1990/1991</td>
<td>96.2</td>
<td>69.9</td>
</tr>
<tr>
<td>1991/1992</td>
<td>93.8</td>
<td>92.2</td>
</tr>
<tr>
<td>1992/1993</td>
<td>98.5</td>
<td>91.3</td>
</tr>
<tr>
<td>1993/1994</td>
<td>94.1</td>
<td>90.2</td>
</tr>
<tr>
<td>1994/1995</td>
<td>99.9</td>
<td>93.3</td>
</tr>
<tr>
<td>1995/1996</td>
<td>95.3</td>
<td>95.5</td>
</tr>
<tr>
<td>1996/1997</td>
<td>100.0</td>
<td>91.6</td>
</tr>
<tr>
<td>1997/1998</td>
<td>94.4</td>
<td>93.4</td>
</tr>
</tbody>
</table>


These monies went to the improvement and expansion of district roads in the region. The use of SK 77 of 1989 (see Section 5.2) in the planning and programming process meant that only district roads which were classified as “economically viable” could receive the loans. Such roads were primarily found in the two main economic centres of the district, Kei and Yamdena Islands. As a result, the programme has never addressed the transport difficulties of the majority of the people in the outer islands.

Table 6.2 also indicates that less than 10% (even nothing in 1996/1997) of the district transport budget was given to sub-sectors other than road infrastructure. The residual after road expenditure was distributed among several sub-sectors: (i) improving road traffic and safety, (ii) building wharves and (iii) supporting the operation of pioneer airfields. The last two categories were mainly to support the operation of pioneer transport services in the region. Ironically, none of the budget was allocated to the operation of local private enterprise shipping (pelayaran rakyat) which has been traditionally the backbone of the local transport system in the region. Local shipping, as it has been centrally managed by the Ministry of Transport, has never been within the authority of the district government. It is understandable, therefore, to learn that the
expansion of the sea transport system in the region has been very slow compared to road network improvements.

For the sea and air transport systems, the district government relied on pioneer transport programmes operated centrally by the Ministry of Transport. The central government allocated four pioneer ships, between 750 and 900 GWT in size, to serve connections among the main islands within the district, as well as connections between these islands and their regional centres in Ambon, Kupang and Surabaya. The call time for each of these ships was 21 days. An analysis of the operation of this shipping service showed that it had little impact on the accessibility of the region, mainly because of the low frequency and poor connectivity of the service (Sabandar, 2000). In addition, its impact on the people who live away from the route of these ships is likely to have been even less positive.

The emergence of the Reform Era followed by the launch of Law 22 of 1999 helped to stimulate the subdivision of Maluku Tenggara District. Strong political pressure from the people in western Maluku Tenggara who felt their development needs had been neglected by the Maluku Tenggara government during the New Order period was the stimulus for the creation of Maluku Tenggara Barat. The new district government decided to define its own transport priorities with the focus on developing a reliable sea transport system. The district head of Maluku Tenggara Barat argued that: "the pioneer sea transport services are far from enough to cope with the transport needs of the people. Travel conditions are very poor, where people and animals are normally loaded in a same cabin" (Gatra, 2002: 2). The district government then decided to have its own ship and allocated 20 billion rupiahs from its 2002 district development budget (86% of the total transport budget) to purchase a 1,000 GWT ship (Maluku Tenggara Barat, 2002a). The ship complements the operation of the existing pioneer ships in the region. In addition, the district government subsidises the operation of the ship. The consequence of this programme is that more district government funding is required to support the ship. The maintenance and the operation of the ship will also be highly dependent on skilled human resources which are in short supply.

The approach of the Maluku Tenggara Barat government in purchasing a modern ship is different from the one adopted by the government of Pangkajene Kepulauan. In 2001,
the district government of Pangkajene Kepulauan decided to support the operation of local private enterprise shipping, through strengthening the organisation of fishermen and island communities. A series of programmes was launched to support the empowerment of island communities, including financial incentives such as soft credit to build and operate fishing vessels. In practice, fishing vessels provide an effective transport service for the island people, connecting islands with the mainland. In addition, the district government also shifted the one billion rupiahs of central government funds that had been allocated to support the operation of the pioneer transport system in the region to the purchase of two ships made locally by island communities. Two ships of 200 GWT were made in Kulambing Island by local craftsmen in 2002. These ships are now operated mainly by local people under the management of the district government. The maintenance and operational costs of those ships will be relatively low, as local resources (e.g. spare parts, technicians, and crews) are available to cope with these costs.

To sum up, the strong top-down approach in the transport sector during the New Order administration has led to the limited participation of local policy makers in setting priorities for their transport programmes. Transport policy, including setting the budget for implementing the policy, was established at central government level. This created a uniformity in the transport programme which made it less sensitive to the real situations of regions. The change in national institutions through the Reform government brought a change in the relationship between central and district governments. The implementation of Law 22 of 1999 provides district governments with greater authority in setting their development priorities. Since the implementation of this law, district governments have actively created their own distinctive transport programmes. How the transport sector addresses rural poverty is now up to the ability of local government in understanding the realities of its people and regions. The above discussion of the different approaches taken by two district governments in managing their sea transport systems illustrates the greater freedom and authority enjoyed by local governments in determining their transport development strategy. I continue the discussion by analysing current district transport priorities in the next section.
6.1.2 Current Transport Priorities

All local policy makers interviewed agreed that transport is a crucial element for improving the rural economy and reducing poverty. Yet, the nature of the relationship between transport and economy/poverty was never clearly explained by any interviewee nor by any district policy statement (Table 6.3).

Table 6.3: Perceptions of District Policy Makers and District Transport Strategic Plans

<table>
<thead>
<tr>
<th>District</th>
<th>District Policy Makers’ Perceptions</th>
<th>District Strategic Plan or District Development Plan</th>
</tr>
</thead>
</table>
| Tana Toraja               | “...expansion of roads is crucial to ensure that we can develop the economy of rural areas better” (Situru, 2002: pers.comm.). | • Improvements and maintenance of the already existing district roads  
                                    | “I do not think there will be any better option than roads to develop rural areas” (Mapau, 2003: pers.comm.)       | • Expanding road construction to reduce the isolation of remote areas  
                                    |                                                                                                                   | (Bappeda Tana Toraja, 2001c: 15)                                                                                   |
| Pangkajene Kepulauan      | “...we have enough roads. We now need to alter our priority to develop better transport to the island community” (Pattappe, 2002a: pers.comm.). | • Rehabilitation and maintenance of road and wharf infrastructure  
                                    |                                                                                                                   | • Improvement of safety for land and sea transport  
                                    |                                                                                                                   | (Pangkajene Kepulauan, 2001: IV.9)                                                                                 |
| Sorong                    | “This region needs more funding to develop roads to reduce the isolation of people in the interior. ...For islands, sea transport is needed to connect them with the mainland, but the island community also needs roads to connect settlements with their port” (Wanane, 2002a: pers.comm.). | • Continuing the improvement of roads to reduce the isolation of remote areas  
                                    |                                                                                                                   | • Integrating the land, sea, air and river transport systems  
                                    |                                                                                                                   | (Sorong, 2001: 23, 48)                                                                                           |
| Maluku Tenggara Barat     | “Better roads are needed to support the development of Yamdena Island as the main economic centre for the district” (Wattimena, 2002: pers.comm.). | • Integrating land, sea and air transport system to support the connection between settlement, production and marketing regions  
                                    | “Sea transport needs more attention to improve the transport of people in the islands” (Malaka, 2002: pers.comm.). | (Maluku Tenggara Barat, 2002b: 167)                                                                             |

Most of the district policy makers simply associated transport with infrastructure, particularly roads. The head of Tana Toraja, for example, argued that: “We put road improvements as our priority since expansion of roads is crucial to ensure that we can develop the economy of rural areas better.” (Situru, 2002: pers.comm.). He continued
that better rural roads encourage greater participation by private transport services in rural areas. This is in line with the policy statement of the District Strategic Plan of Tana Toraja, 2001-2005 that covered only road improvement programmes in the transport sector (Bappeda Tana Toraja, 2001c: 15). No reference to any programme to improve transport services was found in the document.

It is also clear from another district policy maker interview that roads have particular importance, even in regions where roads are not the only mode of transport. The district head of Sorong argued that, although sea and air transport are important in supporting the travel of people in the island region, it is roads that are mostly needed to reduce the isolation of people. “This region needs more funding to develop roads to reduce the isolation of people in the interior. …For islands, sea transport is needed to connect them with the mainland, but the island community also needs roads to connect settlements with their port” (Wanane, 2002a: pers.comm.). Accordingly, the Sorong district policy considers roads as the first priority followed by the integration of land, air, sea and river transport (Sorong, 2001).

In Maluku Tenggara Barat, the District Secretary also asserted the significance of roads to support the development of Yamdena Island as the main centre of the district (Wattimena, 2002: pers.comm.). In a separate interview the head of the District Planning Board mentioned that better sea transport is greatly needed to support the transport of people living in the islands (Malaka, 2002: pers.comm.). This is in line with the district policy to integrate the development of land, sea and air transport systems (Maluku Tenggara Barat, 2002b).

The district head of Pangkajene Kepulauan provided a different perspective on developing the district transport system. He confirmed the lack of attention that had been given to developing the insular transport system and argued “…we have enough roads. We now need to alter our priority to develop better transport to island communities” (Pattappe, 2002a: pers.comm.). His comment is based on the reality that all villages on mainland Pangkajene Kepulauan have been connected by the public transport system, while less than 50% of the island villages have access to public transport. Poor transport helps to explain the prevalent poverty in the islands (Pattappe, 2002b). The concern of Pattape, however, was not reflected in the district strategic plan.
for 2002-2004. The plan gives rehabilitation of transport infrastructure, roads as well as wharves, as the main priority for the transport sector (Pangkajene Kepulauan, 2001).

Overall, different views on transport priorities were conveyed by local policy makers and district transport strategic plans in the four research districts and so indicate that the characteristics and problems of transport are different for each region. Nevertheless, the domination of road infrastructure over other aspects of transport, the trend conveyed by the New Order government, still continues to the present day. Some district governments, however, have strengthened their focus on developing the water transport system, which has been given little attention for a long time. This indicates greater sensitivity on the part of particular district governments to the realities of its people and region. Yet in other districts, where road infrastructure remains a dominant sector, little can be expected for the improvement of rural public transport services and the water transport system in the near future.

6.2 Transport Network Improvements

The way transport policy has been implemented at the local level affects the degree to which the transport network has changed over time. I discuss network change in this section, based on the condition of the transport network in the four research districts in 1976/1977 and in 2000 (Table 6.4). The spatial basis for measuring transport conditions in this analysis is the village. The reason is that the village is the smallest administrative unit in Indonesia, within which rural people have (some) control on events that occur in village units, such as hamlets and households. The provision of basic services, such as education, health care, markets and administration affairs, is conventionally designated at the village level. Transport network improvements are associated with the supply of these facilities. The other reason is that the village unit is relevant in terms of data availability. Data for the analysis was gathered from the unpublished micro data of village statistics 1976/1977 (BPS, 1980a) and the equivalent for 2000 (BPS, 2001a).
Table 6.4: Village transport network in 1976/1977 and 2000 in four districts

<table>
<thead>
<tr>
<th>Description</th>
<th>Year</th>
<th>1976/1977</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tana Toraja</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of villages</td>
<td>65</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Number of land-based villages</td>
<td>65</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Villages with main roads of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>asphalt (%)</td>
<td>4.6</td>
<td>32.2</td>
<td></td>
</tr>
<tr>
<td>gravel (%)</td>
<td>47.7</td>
<td>31.5</td>
<td></td>
</tr>
<tr>
<td>earth (%)</td>
<td>47.7</td>
<td>36.3</td>
<td></td>
</tr>
<tr>
<td>Villages with access to motorised public transport (%)</td>
<td>23.1</td>
<td>43.7</td>
<td></td>
</tr>
<tr>
<td><strong>Pangkajene Kepulauan</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of villages</td>
<td>54</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Number of land-based villages</td>
<td>32</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Villages with main roads of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>asphalt (%)</td>
<td>43.8</td>
<td>97.1</td>
<td></td>
</tr>
<tr>
<td>gravel (%)</td>
<td>15.6</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>earth (%)</td>
<td>40.6</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Villages with access to motorised public transport (%)</td>
<td>46.9</td>
<td>95.6</td>
<td></td>
</tr>
<tr>
<td><strong>Sorong</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of villages</td>
<td>105</td>
<td>282</td>
<td></td>
</tr>
<tr>
<td>Number of land-based villages</td>
<td>64</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Villages with main roads of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>asphalt (%)</td>
<td>3.1</td>
<td>25.3</td>
<td></td>
</tr>
<tr>
<td>gravel (%)</td>
<td>0.0</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>earth (%)</td>
<td>96.9</td>
<td>58.7</td>
<td></td>
</tr>
<tr>
<td>Villages with access to motorised public transport (%)</td>
<td>3.1</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td><strong>Maluku Tenggara Barat</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of villages</td>
<td>188</td>
<td>188</td>
<td></td>
</tr>
<tr>
<td>Number of land-based villages</td>
<td>71</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Villages with main roads of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>asphalt (%)</td>
<td>5.6</td>
<td>21.1</td>
<td></td>
</tr>
<tr>
<td>gravel (%)</td>
<td>4.2</td>
<td>12.7</td>
<td></td>
</tr>
<tr>
<td>earth (%)</td>
<td>90.1</td>
<td>66.2</td>
<td></td>
</tr>
<tr>
<td>Villages with access to motorised public transport (%)</td>
<td>5.6</td>
<td>23.9</td>
<td></td>
</tr>
</tbody>
</table>

Note: According to BPS (1977; 1980b), data for Tana Toraja and Pangkajene Kepulauan were collected in 1976, while data for Sorong and Maluku Tenggara were collected in 1977.
Apart from the landlocked Tana Toraja, all other districts have two types of villages in terms of their topographical situations: (i) land based villages and (ii) water-based villages (covering riverine and insular villages). The transport network in villages of the first category is measured by the condition of the main access roads of the village (i.e. asphalt, gravel or earth) and the access of motorised public transport to the village. In the second category villages, transport performance is indicated by the access of villages to water-based public transport.

It is worth noting that between 1976 and 2000 the number of villages in these four districts increased, except for Maluku Tenggara Barat. The increase in the number of villages indicates the division of existing villages into smaller territorial units between 1976 and 2000. A smaller village size means shorter distances for village people travelling to their village “centre”. This affects the way we interpret the data on village transport conditions between 1976 and 2000. For Tana Toraja, Pangkajene Kepulauan and Sorong, the change in transport conditions using the data in Table 6.4 should be interpreted cautiously. The unchanged number of villages in Maluku Tenggara Barat means that the macro transport indicators of this district in Table 6.4 are directly comparable.

6.2.1 Tana Toraja

Improvements in the transport network in Tana Toraja were centralised and initiated in two main towns. The first town is Makale, the capital of Tana Toraja, which has long been the main service area for villages in the south and west. The second town is Rantepao, the main business town in Tana Toraja, which has historically been the market for the northern and eastern communities. Those two towns are linked by a provincial trunk road, connecting Tana Toraja to Makassar and other districts (Figure 6.2). In 1976, asphalt roads were only found in these two towns. The improvement of the South Sulawesi provincial roads, under many projects funded by the central government during the 1980s and 1990s, meant that those villages located on the provincial road were the next settlements to receive road improvements. A number of rural district roads have been constructed from the trunk road to rural villages away from the main road, mainly funded by Inpres for Road Improvements (IPJK), during the period 1989/1990-
1998/1999. The district government budget, which derived from internal district revenue (Pendapatan Asli Daerah), was very small and mainly directed at routine maintenance of district roads. The centralised pattern of transport development in conjunction with the limited development budget, however, has meant that the extension of the rural road network is still far from reaching the peripheral areas of the district. By 2000, only 32% of the villages were connected by paved roads. In addition only 44% of the villages were accessible by motorised public transport.

By 2001, 2,190 kms rural roads had been constructed, but only 25% were in good condition (BPS Kabupaten Tana Toraja, 2002: 191). The local government estimated that
only 41% of the population was served by the existing roads and the district still needed 2,639 kms of new rural roads to connect all villages to the main network (Bappeda Tana Toraja, 2001b). If I use the “Indonesian standard”, as of 2000, of building a new road in a hilly area, which is one billion rupiah per km, Tana Toraja still needs 2,639 billion rupiah (not including the funding necessary to maintain those roads). This amount is 203 times the total development expenditure of Tana Toraja for one year (with reference to the annual development budget in 2000). It is clear that Tana Toraja will never have a complete transport network, unless there is huge investment in the transport sector, or there is a new approach that reassesses the transport needs as a more achievable target and optimises the investment of the limited funding in those sectors most needed by rural people. The first alternative is far from likely, while the second is the challenge for this research.

Rural transport programmes focus on the maintenance and construction of roads and ignore the provision of transport services to operate on the roads. Operation of transport services is mainly the concern of the private sector. The district government plays a role as a regulatory body. Routes and fares are regulated only for paved roads and for car and bus transport, as the existence of motorcycle and non-motorised modes of public transport is not recognized in the Road Transport Law. Transport service operations are mainly found on the trunk network where demand is high. In Tana Toraja, more than half of the registered public transport vehicles are operated on trunk roads (BPS Kabupaten Tana Toraja, 2002). Public transport operations on the rural road network are unattractive as demand is low and many roads are in poor condition. In addition, there is no subsidy scheme available to stimulate rural transport services. Transport fares on rural roads are therefore more expensive than those on the trunk network, thus affecting the ability of rural people to make use of public transport. This situation explains why the penetration of transport services into rural villages is even slower than road expansion.

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15 The rupiah exchange rate in February 2002 was 1US$ = 8,900 rupiah. In 2000, the rate was about 1US$ = 10,000 rupiah. The “Indonesian standard” refers to the unit price used by road planners in the Ministry of Public Works in proposing the budget for road improvements.
6.2.2 Pangkajene Kepulauan

In Pangkajene Kepulauan, following its geographical condition, transport development is structured into two sub-sectors, land and sea (Figure 6.3). The mainland area is only 2% of total area of the district, but the population and economic activities of the district are concentrated in the mainland. Consequently, transport network development has been focused in the mainland.

Figure 6.3: Pangkajene Kepulauan
The land transport system comprises a road network that connects all villages in the mainland area. The arterial Trans Sulawesi road crosses the district for 34 kms from the southernmost to the northernmost extremities of Pangkajene Kepulauan, following the coast-line of the Makassar Strait. District roads evolved in two main patterns. One is made up of feeder roads that intersect with the Trans Sulawesi Highway, and the second comprises rural roads that run parallel with the main road. But the overall pattern is a centralised network with Pangkajene, the capital, as the centre. In 1976, only half of the villages were accessible to motorised vehicles. By 2000, almost all villages (96%) were already accessible to motorised vehicles. Overall, 623 kms of district roads have been built, of which 89.8% are in good or medium condition (Dinas PU Pangkajene Kepulauan, 2002). The improvement of roads in Pangkajene Kepulauan faces fewer constraints compared to Tana Toraja, owing to the flat condition of the terrain and the relatively small size of the land area.

The predominantly flat topography enables a variety of public transport modes to operate on the mainland, ranging from human power vehicles (e.g. push-cart or gerobak, tricycle or becak, and bicycle), animal-carts mainly powered by horses (bendi), motorcycles (ojek), to minibuses (pete-pete). Only the last has the legal status to operate as public transport on Indonesian public roads (Law 14 of 1992). The absence of any national legal framework recognising non-motorised vehicles and motorcycles as public transport leads to the ambiguous situation at district level of such vehicles actually operating as public transport. In Pangkajene Kepulauan, routes and tariffs for public transport are controlled only for minibuses, while the remaining “illegal public transport” is completely unregulated. This has major implications for public transport operations on mainland Pangkajene Kepulauan. By 2000, routes and tariffs for minibus public transport had been set for almost all rural roads. Horse carts that, in the 1970s and 1980s, were widely found in the region to serve the transport of people and goods cannot compete with the penetration of motorised technology into the feeder road network. The number of horse-carts in mainland Pangkajene Kepulauan decreased significantly from more than 1000 in the 1980s to only 200 in recent years (Arifin, 2002: pers.comm.). Many households who used to have permanent incomes from operating horse-cart public transport can no longer sustain their livelihoods. Few horse-cart operators could easily shift to other jobs. Many of them become poor with the penetration of motorised public transport into rural roads.
Some horse-cart operators have tried to sustain their job by preventing the operations of minibus public transport from entering particular feeder roads. They formed their own organisation with rules and declared to the public that no motorised public transport vehicles were allowed to travel on their routes. They imposed physical retribution (e.g. attacking the driver or puncturing tyres) on any motorised public transport vehicle carrying passengers on these routes. With the lack of government regulations to control the operations of the various public transport modes in Pangkajene Kepulauan, this “social capital” effort seemed to offer an effective way for the horse-cart operators to continue their livelihoods.

The condition of the land transport system, however, contrasts with insular transport in the Pangkajene Kepulauan archipelago. Although progress has been made over the last 25 years (1976-2000), more than half of the island villages were still inaccessible to public transport by 2000. Out of 76 inhabited islands (whose distances to Pangkajene port vary from 6 to 414 kms), only 28 have ports or wharves. These ports are located in the capitals of sub-districts, or on islands with relatively dense populations. The “port” is normally only a wooden wharf without supporting facilities such as storage sheds or cargo handling equipment. Despite the fact of poor wharf infrastructure, the main transport constraint of the islands is the very limited number of public transport services. The operation of shipping and public transport services predominantly follows the availability of ports. For islands close to the mainland, public transport motorboats owned by communities (5 – 10 GWT) operate under government regulation. In 2002, there were 13 islands, ranging in distance from 6 to 40 kms from Pangkajene Port, served by such transport operations. Each island was normally served by one to three public transport motorboats. For the outer islands, a relatively big ship is required to cope with sea conditions in Makassar Strait. People and goods transport in the outer islands predominantly rely on vessels operated privately by island traders or fishermen. However, a majority of those ships has a capacity of less than 40 GWT, meaning that they cannot operate in the west-monsoon season (December – February) when the sea waves reach 4 metres in height. The Ministry of Transport operates a pioneer ship of 700 GWT to serve transport needs in the outer islands. The ship leaves from Makassar port, visits 12 islands and returns to Makassar, with a cycle time of three weeks. It is,
however, far from enough to deal with the needs for travel of the people living in the outer islands.

In addition to geographical differences, the way the national transport budget was distributed, especially in the New Order period, has played a role in creating a big gap between the mainland and island transport situations in Pangkajene Kepulauan. In Repelita VI, for example, the national transport budget allocation was 79% for land transport, and only 9% was directed to sea transport (see Table 5.1). Here, the coordination problem between the two ministries involved in the transport sector (as discussed in Chapter V), and the difficulties that such a structure generates at the district level (see the discussion in Sub-section 6.1.1), help explain the insensitivity of national transport organisations and policy to the local context. District roads are under the authority of the Bureau of Public Works, which is functionally the local representative of the Ministry of Public Works. Meanwhile, the sea transport system is under the responsibility of the Bureau of Transport which is functionally coordinated by the Ministry of Transport. The fact that the road network of Pangkajene Kepulauan is almost complete is mainly due to the dominance of the road sub-sector over the other transport sub-sectors at national policy level. The reality that the local characteristics of Pangkajene Kepulauan require more funds to develop a reliable insular transport system apparently cannot be understood at national policy level. In addition, with two separate national organisations, budget interchange at the local level to deal with those local characteristics is not acceptable. This policy barrier creates a road sector that enjoys abundant financial resources, while the sea transport sector receives limited funding.

6.2.3 Sorong

Following the spatial pattern of the district, the transport system of Sorong is served by three transport sub-systems: road, sea, and air transport (Figure 6.4). In addition to these three, inland water transport plays a role in supporting the transport needs of riverine and insular communities in southern Sorong. The existence of this latter transport mode, however, is not clearly recognised in any development initiatives of Sorong District.
Road network improvement is radial in pattern and was initiated from two centres. The first centre was Sorong City, with roads spreading in three different directions (two follow coastal lines and one goes into the interior). The one that goes into the interior is to be connected with the second network, and become a part of the Trans Papua road system.\textsuperscript{16} The second network was built from Teminabuan port to the interior connecting all interior subdistricts (Aifat, Ayamaru, Aitinyo and Sawiat). In 1976, paved roads were

\textsuperscript{16} Trans Papua is an arterial road network crossing Papua Province "horizontally" from Jayapura to Sorong. The development of this network is funded by the central government with loan support from international agencies.
only found in the capital of the district and only 10% of the mainland villages had access to motorised vehicles. The progress of road improvement has been very slow due to topographical difficulties, but also the poor management of the projects implemented in the region. By 2000, paved roads had reached 25% of the mainland villages and 19% of the villages had access to motorised public transport. Total road length in Sorong was 1,176 km, of which only 41% was in medium to good condition (BPS Kabupaten Sorong, 2001). The target of the Sorong Government for 2001 – 2005 is to improve 305 kms of national roads, 157 kms of provincial roads, 500 kms of district roads, and 480 kms of village roads (Sorong, 2001). This ambitious plan is driven by the belief that roads are crucial to promote the district economy (Wanane, 2002b).

An air transport system has been established under the pioneer transport programme to support transport to isolated interior regions. Five airfields have been built in the interior and subsidised air services have been operated weekly to connect those locations with Sorong City. Government officials working for services such as health and education, as well as business people, are the main users of this transport service. The air transport system also provides a connection between Sorong City and Waigeo Island, but the main transport mode for the islands is sea transport.

A sea transport service is operated to connect the four island clusters to Sorong City. Trips from the islands to Sorong City are in high demand since the city is the main centre for economic and social activities. This operation involves two government schemes. One is the national subsidised service involving two pioneer ships and the other is the district subsidised scheme also supported by two pioneer ships. The cycle time for each of these ships is between 2 – 3 weeks. Apart from the long waiting time, the condition of the service (e.g. safety, reliability, convenience) is relatively poor.

The remaining transport system in Sorong is inland water transport. Navigable rivers are widespread in the southern region, but they are not effectively utilised for transport or for reducing the isolation of interior people. Inland water transport is a very cheap transport system compared to road transport as the infrastructure is readily available and facilitates

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17 The main road connecting Sorong and Klamono (48 km), for example, was paved for 48 km in 1999. By 2002, only half of the road was still paved. The remainder was in poor condition. Poor supervision and poor management during the implementation of the project seem to have been the main cause of the short life of the road.
door-to-door service (Palmer, 1998). River transport has for centuries been used by people in the southern region (Beraur, Teminabuan and Inanwatan) as their main transport. In the past, transport activities on the rivers were mainly for exchange (e.g. clothes-slave exchange), trade (e.g. forest products and birds of paradise), migration and subsistence agriculture activities (Miedema, 1994). Rivers have also played a major role in the interaction between the Melanesian and Southeast Asian cultures in the region (Healey, 1997). People in the region were not isolated since they have been connected to the world economy for centuries (Timmer, 2002). Today, with the penetration of forest and fishing industries into the interior, river transport has been dominated mainly by motorised boats and vessels operated by companies working in those industries. Local people, who are still traditional in livelihood and isolated in terms of roads, can readily be found using traditional boats for their subsistence agricultural activities. Unclear government policy on river transport minimises the advantages local people gain from their rivers. In the district’s transport strategy, inland water transport is attached to sea transport. This is confusing since inland water transport in national transport policy is part of the land transport system. This “add-on” status at both national and local government levels explains the marginality of inland water transport in transport development.

6.2.4 Maluku Tenggara Barat

Among the four districts, Maluku Tenggara Barat has been the slowest in terms of transport improvements and changes. The percentage of the land-based villages accessible to motorised vehicles only increased from 5.6% in 1976 to 23.9% in 2000. During the same period, the proportion of the water-based villages having access to public transport merely grew from 2.6% to 6.8%. The slow progress of transport change in the region indicates a lack of attention given, not just to the transport sector, but also to other development sectors. This is confirmed by the number of villages in the region, which was unchanged during this period. The lack of attention given to the region was mainly caused by its inferior position as part of the District of Maluku Tenggara during the period. The concentration of development in the centre (i.e. Tual, the capital of Maluku Tenggara) meant that regions located far from the centre received few improvements.
Similar to Pangkajene Kepulauan, rural transport development in this archipelago district is mainly driven by two sectoral policies (Figure 6.5). The sea transport system, which is the backbone of the district’s transport is maintained mainly by the Ministry of Transport. Meanwhile, the road transport system is coordinated by the Ministry of Regional Infrastructure (formerly the Ministry of Public Works). As the coordination between these ministries is mainly done at the central level, the specific conditions of Maluku Tenggara Barat are hardly noticed.

Figure 6.5: Maluku Tenggara Barat
To support inter-island transport, the central government allocated two subsidised schemes to this region in the 1990s. First, four pioneer ships with a tonnage of 750-900 GWT were operated to provide transport connections among island clusters (Tanimbar, Babar, Lemola and Terselatan), as well as connecting those regions with the regional centres in Ambon (the capital of Maluku Province) and Kupang (the capital of Nusa Tenggara Timur Province). The cycle time of these ships was 21 days. Apart from low frequency and poor connectivity (Sabandar, 2000), the quality of service, however, is very poor. Safety precautions are overlooked. To cope with limited capacity, people and animals (e.g. cows, and goats) can be put in the same cabins to allow more space for goods on the decks. Such poor conditions are even worse during the eastern monsoon, normally from April to September, when the sea can be very unsafe for transport. Travelling by pioneer ships at that time is a nightmare, but the island people seem to have no option. They need to travel to markets, which are not widely available in the islands. The second scheme is the operation of a subsidised ferry. This service, however, is mainly to connect the people of the Tanimbar Islands with Tual, as it does not sail to the outer islands. The service conditions of the ferry are similar to those of the pioneer ships.

Road development is focused on building the 155 kms Trans Yamdena, the road network that lies along the east coast connecting Saumlaki to the far north. The aim of the Trans Yamdena project is to support the role of Yamdena Island as the growth centre of Maluku Tenggara Barat. Given its regional importance, the development of the Trans Yamdena is mainly funded by the central and provincial government budgets. The district government budget is mainly for feeder roads and roads in the outer islands. The development of Trans Yamdena was initiated in early 1980s and until recently was still receiving monies for its construction. The poor soil conditions and the non-availability of appropriate aggregate materials in this island hamper road construction. These conditions, along with the lack of suitable technical supervision help to explain why, after more than 20 years of construction, two-thirds of the route is still incomplete. The poor road conditions lead to high vehicle operating costs. Public transport operations become less attractive owing to the high vehicle operating costs, and are further diminished by the low level of demand and weak economic growth of the region.
6.3 Directions of District Transport Strategy

I now turn to review the lessons from the above discussion as the basis for continuing the analysis to the next chapter.

First, although transport receives the highest priority in rural (district) development, the condition of the transport system is far from adequate to support the distribution of economic growth across the regions. It seems that transport conditions are relatively fair in the regions where the economy grows, but poor in the regions where deprivations still exist. An efficiency-based approach in transport development creates centralised transport networks. Regions enjoying political and economic advantages become the core of the transport system, while regions without those specific advantages will remain on the periphery of transport network.

Secondly, during the New Order period, national transport policy coordinated at the central government level was blind toward the significance of local conditions. The need to develop a water-based transport system at district level, for example, has been structurally hampered by the inflexible format of transport institutions. This explains two institutional issues: (i) the insensitivity of the national transport institution to the specific characteristics of regions, and (ii) the powerlessness of district governments to inform national transport policy about local issues. The Reform government has brought a significant institutional change in the relationship between the central and local governments and has provided district governments with greater authority in local development policy. With such authority, district governments can be more responsive to local conditions and rural development goals. The key issue now is how a district government can improve its capacity and sensitivity in understanding the nature of local conditions in order to effectively deliver transport programmes to the most needy population as well as meeting other transport objectives.

Thirdly, road infrastructure has remained the main budget element of the transport sector at district level until recently. Although, some district governments have made some changes in their priorities in transport policy, it is still too early to say that other transport components (e.g. water transport system and transport services) receive enough attention. On the basis of the above analysis, the following institutional changes are required at the
district level: (i) improving the performance of district organisations in charge of the transport sector in managing the distribution of programmes and budgets according to the needs of people and regions for transport, (ii) developing regulations to promote the operation of intermediate means of transport as public transport including their connectivity with motorised public transport, (iii) ensuring that the water transport system, especially in districts where water transport (e.g. river, lake and sea) is of importance, receives appropriate attention in transport policy, and (iv) encouraging the participation of communities and their organisations in the process of transport development.

Finally, although, at the policy level, the transport sector is assumed to be highly correlated with economic development, there has been no evidence (including the abovementioned case studies) of an understanding of how precisely transport policy works to promote the rural economy and reduce poverty, or that all transport components should be coordinated in order to minimise ineffectiveness and inefficiency in delivering transport projects. With the perennial problem pertaining to financial limitations faced by developing areas coupled with the ideological problem of development that is biased towards urban areas, it is of considerable importance to clarify the connection between transport and the rural economy. The next chapter will therefore analyse statistical measures of the relations between transport conditions and the rural economy with special attention given to the welfare level of rural people. The analysis will provide clear pointers on how the transport sector should address the rural economy.
CHAPTER VII: TRANSPORT CONDITIONS AND RURAL WELFARE – IMPLICATIONS FOR RURAL TRANSPORT POLICY

It is normally assumed that improved transport systems are associated with increasing income earning and social welfare. A comparison of territorial units that vary in their transport situations provide an opportunity to critically examine this assumption. This chapter investigates the statistical correlations between transport conditions and the rural economy with specific regard to welfare issues in the four research districts and ties its analytical findings with the empirical discussion in Chapter VI to provide an examination of the effectiveness of the transport sector in promoting the rural economy. The chapter is divided into four sections. The first defines the variables of transport conditions and rural welfare employed for the statistical analysis. The second presents the output of the analysis and interprets the results. The third discusses the outcome of the analysis in relation to its implications for transport sector policy and the last indicates directions for a better understanding of the linkage between transport development and the rural economy. The basis of the analysis is the village. The transport conditions of each village in the research districts are measured and related to indicators of the welfare situation. The source of data for this analysis is primarily the unpublished micro data of the Village Statistics 2000 (BPS, 2001a) with the support of the research district maps obtained from various sources (Dinas PU Pangkajene Kepulauan, 2000; Sorong, 2000; Bappeda Tana Toraja, 2001a; BPS, 2001d; Dinas PU Propinsi Maluku, 2002).

7.1 Transport and Rural Welfare: Variables

To begin with, the analysis of the link between transport and rural welfare in these four districts is separated into land-based villages (villages that rely mainly on road transport) and water-based villages (villages that use water transport especially for external trips). The reason for this is that the nature of the transport system is substantially different between land- and water-based regions. In land-based regions, road transport is the main form of transport to connect places and people. This is, of course, not the case with
water-based communities (e.g. island or riverine settlements), where a reliable water transport system supports the interaction among the population. The different patterns of transport systems between these two types of situation create different ways of viewing the link between transport and rural welfare.

7.1.1 Measures of Transport Conditions

An increasingly accepted definition of transport, especially in rural transport studies, is the movement of people and goods by any conceivable means for any conceivable purposes (Barwell et al., 1987; Dixon-Fyle, 1998). This concept conveys a broader understanding than simply the conventional identification of transport as just infrastructure and services. The 'new' meaning of transport embodies the wider notion of what transport is for. It is the questions of where, how and why people travel, which are all facilitated by transport infrastructure and services. The questions of 'where and how people travel' relate to accessibility concepts. Accessibility is defined as the potential ease with which somebody or something can reach desired destinations or be reached by relevant services. The recent understanding of accessibility integrates three elements: transport infrastructure, transport services and the location and quality of facilities relevant to the people (Lebo and Schelling, 2001; Bryceson, Maunder et al., 2003; Donnges, 2003). On the other hand, 'how and why people travel' relates to mobility issues. Mobility is conventionally understood as the ability of people and their goods to move around, and is measured by trips made by individuals (Barwell et al., 1988). The recent understanding, however, incorporates aspects of human behaviour (Bryceson, Maunder et al., 2003), in addition to economic, political and social relationships (Leinbach, 2000; Porter, 2002c) as factors embedded in mobility. Urban-rural relations and gender relations (Leinbach, 2000), as well as power relationships between roadside and off-road settlements (Porter, 2002c), are among those factors that significantly affect mobility.

Based on these interpretations, it is important to recognise the role of mobility as equally important as accessibility in our understanding of transport. I define mobility as the twin sister of accessibility, in the sense that both accessibility and mobility are inextricably influenced by the condition of transport systems (i.e. infrastructure and services), (Figure

149
7.1). But, while accessibility refers primarily to the proximity of relevant facilities and services, mobility relates to the capability of travellers. Capability refers to the physical ability of a person (e.g. with respect to age, gender and income) to make use of transport infrastructure and services, but also individual’s attitudes to, and rationality about, the significance of travel vis-à-vis factors such as travel time, travel costs, travel comfort and travel purposes. Overall, the nature of a transport system, apart from its infrastructure and service components, also incorporates accessibility and mobility dimensions.

Figure 7.1: The relationship between transport and mobility and accessibility

The next discussion defines the measures of village transport conditions based on indicators available in the Village Statistics 2000 that were used for the analysis.

Transport Infrastructure

In land-based villages, rural roads are the main element of rural transport infrastructure. Village access roads connecting villages to their service centres provide the most relevant indicators to measure the influence of transport infrastructure improvements on rural villages. The quality of such roads may ideally be measured by the combination of: (i) type of road surface, (ii) length of roads in good, medium and poor condition, and (iii) the presence/absence of supporting structures such as bridges and roadside drainage systems. Only the first measure, however, is available in the Village Statistics 2000 database. These statistics categorise villages based on their access road situation: (i) paved roads, (ii) gravel roads, (iii) tracks and (iv) others (including no roads). These measures, however, are sufficient for a macro (district) level analysis of the relationship between transport conditions and rural welfare. Villages with track access, for instance,
indicate a low quality of transport connection provided compared to that provided by paved roads.

In water-based villages, the availability of wharves, jetties or ports is important in facilitating the transport of people and goods. This is related to the role of such facilities as departure and arrival gates for water-based villages. The Village Statistics 2000 classified villages into two groups: (i) villages with a permanent wharf, and (ii) villages without a permanent wharf. The former indicates a relatively high level of transport investment in these villages, while the latter confirms a relatively low level of transport improvements. The Village Statistics 2000, however, did not indicate the capacity or condition of wharves available in each village.

**Transport Services**

Rural transport services, in terms of availability, can be divided into two broad categories: private transport and public transport (Table 7.1). Private transport comprises vehicles owned by individuals with the main function of serving the needs of transport of those people. Private vehicles can be either motorised or non-motorised. Meanwhile, public transport comprises vehicles operated as a public service and is equally available to all members of the community. Public transport can also consist of both motorised and non-motorised vehicles. Non-motorised vehicles, however, have not been recognized as public transport in Indonesian road transport law (see Traffic and Road Transport Law, Law 14 of 1992, Section 1.9). In the explanation chapter (*penjelasan*) of this Law, motorcycles are also explicitly excluded as a public transport mode. In fact, public transport in the form of motorcycles, bicycles, tricycles, animal-carts, and human porterage, plays a significant role in most rural areas. Such means of transport operate locally and mainly on non-regulated routes, but are significant in providing for rural mobility.

The means of transport listed in Table 7.1 are commonly found in the four research districts. The most complete range of transport modes is found in Pangkajene Kepulauan. Given the flat nature of this region and the location of the district close to Makassar, all of the non-motorised and motorised road transport vehicles listed above are operated in mainland Pangkajene Kepulauan. This situation is not found in the other
three districts, where topographical and geographical conditions have limited the operation of particular types of transport vehicles. In Tana Toraja, given the hilly condition of the region, non-motorised vehicles like bicycles, tricycles and animal-carts are rarely found.

Table 7.1: Private and public transport operated in rural Indonesia

<table>
<thead>
<tr>
<th>Type of vehicles</th>
<th>Private Transport</th>
<th>Public transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorised</td>
<td>Road</td>
<td>Road</td>
</tr>
<tr>
<td></td>
<td>• motorcycle</td>
<td>• motorcycle (ajek)</td>
</tr>
<tr>
<td></td>
<td>• motorised tricycle</td>
<td>• motorised tricycle</td>
</tr>
<tr>
<td></td>
<td>• car</td>
<td>• minibus 10 – 30 passengers (e.g. oplet, pete-pete, angkutan pedesaan)</td>
</tr>
<tr>
<td></td>
<td>• truck</td>
<td>• bus 30 – 55 passengers</td>
</tr>
<tr>
<td></td>
<td>• tractor</td>
<td>• taxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• truck</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• trailer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• tractor</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• motorboat</td>
<td>• motorboat or waterbus</td>
</tr>
<tr>
<td></td>
<td>• ship</td>
<td>• ship</td>
</tr>
<tr>
<td>Non-motorised</td>
<td>Road</td>
<td>Road</td>
</tr>
<tr>
<td></td>
<td>• human porterage</td>
<td>• human porterage</td>
</tr>
<tr>
<td></td>
<td>• animals</td>
<td>• animals</td>
</tr>
<tr>
<td></td>
<td>• human-cart (pulled or pushed)</td>
<td>• human-cart (pulled or pushed)</td>
</tr>
<tr>
<td></td>
<td>• animal-cart</td>
<td>• animal-cart</td>
</tr>
<tr>
<td></td>
<td>• bicycle</td>
<td>• bicycle</td>
</tr>
<tr>
<td></td>
<td>• tricycle</td>
<td>• tricycle</td>
</tr>
<tr>
<td></td>
<td>• cartcycle</td>
<td>• cartcycle</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• boat (paddled, rowed, poled)</td>
<td>• boat (paddled, rowed, poled)</td>
</tr>
<tr>
<td></td>
<td>• raft</td>
<td>• raft</td>
</tr>
</tbody>
</table>

In measuring the transport service situation of each village, the nature of both private transport and public transport was taken into account. The condition of private transport was measured by the proportion of village households owning motorised vehicles. First, the vehicle ownership level of each village was scored based on the total number of motorcycles and cars owned by households in land-based villages and the total number of small motorboats and large motorboats/ships owned in water-based communities. To combine numbers of motorcycles and cars (or motorboats and ships) into a single measure, a scoring system was applied. Cars and large motorboats were treated as four
times the "value" of motorcycles and small motorboats. The score for private vehicle ownership for each village was formulated as: the number of motorcycles/small-motorboats plus four times the number of cars/large-motorboats. This quantity was then taken as a percentage of the number of households in the village.

Furthermore, the public transport situation of each village was measured by the distance from the village to the nearest public transport service. This measure indicates how easy or difficult it is for rural people to get to their public transport services. To measure the public transport distance, villages accessed by motorised public transport services were plotted on the district map and the distance from every single village to the closest village where the public transport is available was estimated.

It is worth noting that as data pertaining to the number of non-motorised vehicles was not available in the Village Statistics 2000, the analysis of the transport service situation was carried out without considering non-motorised transport. This means that the analysis does not fully reflect the availability of transport services in the areas concerned.

Accessibility

To measure accessibility, the proximity of villages to public facilities relevant to the people and reported by the Village Statistics 2000 was considered (Table 7.2). The public facilities included in the analysis were junior high school, senior high school, health centre, general hospital, local market and regional market. Facilities such as primary school and places of worship, although relevant to village people, were excluded as they were available in each village and so did not necessarily generate a transport constraint in terms of travel outside the village. Similarly, the village health clinic or branch health centre was also excluded from the analysis because, in most cases, this facility offered no, or very limited, services and so its relevance to the provision of health care for village people was very minor.

18 A sensitivity analysis was carried out to determine the ratio between motorcycles and cars, and between small motorboats and large motorboats. The analysis was based on a comparison of capacities and prices of motorcycles/small motorboats compared with cars/large motorboats. It was found that the best-fit ratio between motorcycles/small-motorboats and cars/large-motorboats was 1:4.
Table 7.2: Rural Public Facilities: coverage, locations and functions

<table>
<thead>
<tr>
<th>Facility</th>
<th>Service coverage</th>
<th>Location</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school (Sekolah dasar)</td>
<td>Village level</td>
<td>Around village centre</td>
<td>Basic education, year 1 - 6</td>
</tr>
<tr>
<td>Junior high school</td>
<td>A cluster of villages</td>
<td>Around village centre</td>
<td>First intermediate education, year 7 - 9</td>
</tr>
<tr>
<td>(Sekolah menengah pertama)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior high school</td>
<td>Subdistrict level</td>
<td>Around subdistrict capital</td>
<td>Second intermediate education, year 10 - 12</td>
</tr>
<tr>
<td>(Sekolah menengah atas)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Branch health clinic</td>
<td>Village level</td>
<td>Around village centre</td>
<td>Basic health services, but in most cases offers no or very limited services</td>
</tr>
<tr>
<td>(Puskesmas pembantu)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health clinic</td>
<td>Subdistrict level</td>
<td>Around subdistrict capital</td>
<td>Intermediate health services</td>
</tr>
<tr>
<td>(Puskesmas)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General hospital</td>
<td>District level</td>
<td>Around district capital</td>
<td>Advanced health services</td>
</tr>
<tr>
<td>(Rumah sakit umum)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mosque, church, vihara, temple</td>
<td>Village or even hamlet level</td>
<td>Around community settlement</td>
<td>Place for worship</td>
</tr>
<tr>
<td>temple*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local market</td>
<td>Village level or a</td>
<td>Around village capital</td>
<td>Trading services (mainly for basic necessities) at village level</td>
</tr>
<tr>
<td>(pasar lokal)</td>
<td>cluster of villages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional market</td>
<td>Subdistrict or district level</td>
<td>Around subdistrict or district capital</td>
<td>Trading services at regional or district level</td>
</tr>
<tr>
<td>(pasar sentral/regional)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:
* Variables not included in the accessibility analysis as they did not reflect the concern with transport constraints on travel outside the village.

Travel distance and travel time from each village to six public facilities (i.e. junior high school, senior high school, health centre, hospital, local market, regional market) were added up and averaged. Travel distance is an indicator of spatial separation between villages and their facilities. Travel time is an indicator of the time needed by people or goods to travel to their relevant facilities using the most readily available mode of public transport. Travel cost, which is perceived as the best measure of accessibility by some authors, cannot be included, because it was not recorded in the Village Statistics 2000.

Mobility

In measuring mobility, apart from the private transport and public transport variables discussed above, the use of information and communication facilities by rural communities was also included. To a great extent, the decision made to undertake a journey is affected by the information available. Farmers, for example, may decide to travel and sell their produce in an urban market after obtaining information about the price of such produce. Even in remote places (e.g. on an isolated island), communication
and information facilities can be as important as pure transport facilities (such as roads or transport services) in reducing transport barriers. When sea transport is unreliable or waves are too rough for boats, people in remote islands can still gather regular information on fishery and agriculture from satellite television, and communicate with their relatives in the land using radio telephones.

Many scholars have mentioned the importance of information and communication facilities in contributing to the link between transport and development (Hoyle and Smith, 1992). In one transport model, for example, cost of communication is included as one of the transport factors that relates to socio-economic welfare (Berger, 1979). In a wider perspective on development, imperfect information is linked with the imperfect functioning of the market and leads to ineffective rural organisation (Hoff et al., 1993; Dorward et al., 1998).

The Village Statistics 2000 provided data pertaining to the number of communication and information facilities (i.e. newspapers, television sets, satellite antennae, communication radios and telephones) found in the village. For this analysis, an index of communication and information access was measured by taking the total of television sets, communication radios (e.g. single-sideband radio) and telephones available in villages as a proportion of the number of households in the villages.¹⁹

**Relevant transport measures that were not available in the Village Statistics 2000**

Although the Village Statistics 2000 is useful in providing various transport measures according to the criteria set above, more specific indicators are required to comprehensively represent the accessibility and mobility concepts defined in the beginning of this section. Such a limitation of the Village Statistics 2000 is understandable as they were collected for general use and not particularly designed for the transport sector. Furthermore, collecting transport data such as the lengths of road segments in good, medium and poor condition, or peoples' willingness and ability to pay for transport services, requires more advanced techniques in data collection and therefore

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¹⁹ I acknowledge that this index provides only a crude measure of the “hardware” of information, while the “software” that relates to the quality of information received by people cannot be measured by this analysis.
is more appropriate to be conducted by ministries responsible for the transport sector. Such data have been collected by transport ministries but not at the scale comparable to the village statistics which covered every village in Indonesia. Table 7.3 lists a range of items necessary to clarify the transport situation of rural villages. Coordination in the collection of such information between Statistics Indonesia and the ministries responsible to the transport sector would lead to a comprehensive database on the transport situation at the village level.

Table 7.3: Transport condition measures: available/not available in Village Statistics 2000

<table>
<thead>
<tr>
<th>Transport Variables</th>
<th>Basic transport indicators provided by the Village Statistics 2000</th>
<th>Advanced transport indicators not provided by the Village Statistics 2000, but needed to comprehensively measure accessibility and mobility at the village level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport infrastructure</td>
<td>Road condition: tracks, gravel roads, paved roads</td>
<td>Lengths of road segments in good, medium and poor condition</td>
</tr>
<tr>
<td></td>
<td>Wharf condition: availability of permanent wharves</td>
<td>Structure and capacity of wharves</td>
</tr>
<tr>
<td>Transport services</td>
<td>Private transport: number of motorised vehicles owned by households</td>
<td>Numbers of non-motorised vehicles owned by households</td>
</tr>
<tr>
<td></td>
<td>Public transport: distance of villages to the nearest motorised public transport</td>
<td>• Number of non-motorised and motorised public transport services in the village</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Frequency and reliability of public transport services</td>
</tr>
<tr>
<td>Accessibility</td>
<td>• Travel distance to relevant facilities</td>
<td>• Travel cost to relevant facilities</td>
</tr>
<tr>
<td></td>
<td>• Travel time to relevant facilities</td>
<td>• Quality of services provided by those facilities</td>
</tr>
<tr>
<td>Mobility</td>
<td>Information and communication facilities owned by households</td>
<td>• Travel behaviour of individuals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Willingness and ability to pay for transport services</td>
</tr>
</tbody>
</table>

7.1.2 Rural Welfare Variables

Having defined a series of transport variables, the next task is to determine an appropriate measure of rural welfare. The Village Statistics 2000 used several variables to indicate welfare levels in the villages, such as: (i) number of households classified as
pre-prosperous (prasejahtera) and prosperous level I (sejahtera I), (ii) number of households receiving a “poverty letter”, and (iii) the economic condition of villages, rated on a four-point scale. Of these three indicators, the first is the most comprehensive one and more widely used compared to the other two. The Village Statistics 2000 enumerated the number of households classified as pre-prosperous and prosperous level I for each Indonesian village. I employed this variable expressed as a percentage of total households to measure village welfare levels for this analysis. In the next section of the discussion, the term “pre-welfare” is used to represent pre-prosperous households and prosperous households level I.

Measuring welfare using the principle of “prosperous households” was introduced by the Coordination Board for National Family Planning (BKKBN). The board classified households into five socio-economic categories based on certain indicators, including food consumption patterns, the type of health care family members were able to access, the possession of alternative sets of clothing, the material and size of the floor in a house, and the ability of household members to practise their religion (Table 7.4). These indicators were also employed in the Village Statistics 2000 methodology.

Table 7.4: Classification of household prosperity introduced by BKKBN

<table>
<thead>
<tr>
<th>Prosperous Level</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-prosperous household</td>
<td>Households that cannot afford minimum basic necessities: having a meal two times a day, owning different clothes for different activities, house floor is predominantly earth. These households are also unable to send their children to school and to obtain relevant health services.</td>
</tr>
<tr>
<td>Prosperous household level I</td>
<td>Households that have been able to afford the minimum basic necessities, but are still unable to send their children to school, and to get appropriate health services and family planning services.</td>
</tr>
<tr>
<td>Prosperous household level II</td>
<td>Households that can afford the minimum basic necessities, plus being able to conduct their religious practices, being able to send their children to school and obtain appropriate health services</td>
</tr>
<tr>
<td>Prosperous household level III</td>
<td>Similar to the characteristics of the prosperous household level II plus (i) having capacity to improve religious knowledge, (ii) having savings in the bank, (iii) participating in community activities, (iv) having a picnic/recreation at least once in six months, (v) having access to news/information from newspaper, radio, TV and magazine, and (vi) having access to private transport services.</td>
</tr>
<tr>
<td>Prosperous household level III plus</td>
<td>Similar to the characteristics of the prosperous household level III plus (i) making donations to community or social organisations regularly, and (ii) participating actively as members of social foundations</td>
</tr>
</tbody>
</table>

7.1.3 Correlating Transport Conditions and Pre-welfare Levels

We have defined the seven variables used to summarise the condition of the rural transport system for each village: (i) road condition, (ii) wharf condition, (iii) private transport ownership, (iv) distance to public transport, (v) travel distance to public facilities, (vi) travel time to public facilities, and (vii) ownership of information and communication facilities. The dependent variable, pre-welfare level, is measured by the proportion of households classified as pre-prosperous and prosperous level I (pre-welfare households). The following analysis seeks to establish whether there is any systematic relationship between transport condition and the pre-welfare level. For this purpose a multivariate analysis is employed. Hair et al. (1995) provided a detailed discussion of nine types of multivariate techniques, each of which have specific conditions under which the method is appropriate. In this analysis, with reference to Hair et al. (1995), a multiple regression method was used. This is because the model and variables used in this analysis satisfy the following three principles of this method: (i) there is only one dependent variable, (ii) this variable is a parametric number, and (iii) there are several parametric independent variables. A multiple regression analysis provides a means for objectively assessing the degree and nature of the relationship between dependent and independent variables.

The equation of the multiple regression analysis for examining the correlation between transport condition and rural welfare follows:

\[ Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 \]

In which:

- \( Y \) = the pre-welfare level (the dependent variable), measured by the proportion of pre-prosperous and prosperous level I households (pre-welfare households) out of the total households in the village (%)
- \( b_0 \) = intercept
- \( b_1, b_2, b_3, b_4, b_5, b_6 \) = change (coefficient) in pre-welfare levels associated with a unit change in the transport variable (the independent variable) considered. The greater the magnitude of the coefficient (if it is

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20 Non parametric variables (where used) in the analysis will be treated as dummy variables.
statistically significant at 0.05 level), the stronger the effect of the transport variable on the pre-welfare level

\[ X_1 = \text{road condition (conditions of access roads for land-based villages) or port availability (availability of permanent wharves for water-based villages).} \]

These two variables are non-parametric and expressed as:

- Paved road: paved roads = 1; other than paved roads = 0.
- Port availability: port = 1; no port = 0.

\[ X_2 = \text{vehicle ownership, vehicle ownership score as a percentage of the total number of households (\% - parametric)} \]

\[ X_3 = \text{public transport, distance from the village to the nearest public transport (km - parametric)} \]

\[ X_4 = \text{travel distance, average travel distance from the village to the main public facilities (junior high school, senior high school, health centre, hospital, local market, regional market), (km - parametric)} \]

\[ X_5 = \text{travel time, average travel time from the village to the main public facilities (junior high school, senior high school, health centre, hospital, local market, regional market), (hours - parametric)} \]

\[ X_6 = \text{information/communications (IC) ownership, number of information and communication facilities (television, communication radio, and telephone) owned by households as a percentage of the total number of households (\% - parametric)} \]

The multiple regression analysis for examining the relationships between transport variables and the welfare level was carried out in two ways. The first is called a confirmatory approach. In this method, all independent variables are collectively examined to define the coefficient of each independent variable in the equation. This method is appropriate for determining the relative importance of all the independent variables tested, but does not take into account the issue of collinearity (magnitude of relationship between independent variables), the identification of outliers and the significance of linear regression coefficients. To deal with those limitations, a stepwise method is employed. This method is sequential in approach, starting the analysis by selecting the best predictor of the dependent variable. Additional independent variables are selected in terms of the incremental explanatory power they can add to the regression model. Independent variables are added as long as their partial correlation coefficients
are statistically significant. By comparing the result from both confirmatory and stepwise approaches, we can obtain a high level of confidence in the results and minimise the effects of some aspects of methodological bias.

### 7.2 Analysing the Links

Table 7.5 summarises the results of the multiple regression analysis for each of the four research districts using two methods: confirmatory and stepwise. The complete output of the analysis is attached in Appendix 1. Seven "regions" relating to the four research districts are analysed, four are road-based and the other three are water-based. Overall, the results from the confirmatory analysis are in line with and supportive of the results from the stepwise approach. The highest correlation between transport and pre-welfare levels is achieved in mainland Sorong, where the coefficient of determination is 0.390, while the weakest relationship exists in Maluku Tenggara Barat Islands with an $R^2$ squared of 0.220. These results indicate that the transport variables make a significant contribution to the variability of pre-welfare levels in all seven regions, statistically between 22.0% and 39.0%.

It is worth emphasising that this regression analysis can only determine the magnitude of the statistical relationships between variables measured but, it cannot explain the way the relationships occur. For example, the significance of the vehicle ownership variable in the variability of the Tana Toraja pre-welfare level may mean either the increase in the ownership of motorised vehicles causing the increase in the welfare level, or the increase in the welfare level that improve the capacity of people to purchase motorised vehicles. A more detail analysis is necessary to explain causal relationships between transport and the rural economy.
Table 7.5: Multivariate correlation analysis on transport condition and welfare using two approaches of Multiple Regression Method

<table>
<thead>
<tr>
<th>Rural Regions</th>
<th>Confirmatory Method</th>
<th>Stepwise Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R²</td>
<td>Variables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel distance</td>
</tr>
<tr>
<td>Tana Toraja (271 villages)</td>
<td>0.311</td>
<td>Vehicle ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paved road</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland Pangkajene Kepulauan (68 villages)</td>
<td>0.296</td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel distance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paved road</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pangkajene Kepulauan Islands (29 villages)</td>
<td>0.294</td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel distance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vehicle ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland Sorong (150 villages)</td>
<td>0.390</td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paved road</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel distance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorong Islands (135 villages)</td>
<td>0.382</td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vehicle ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel distance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maluku Tenggara Barat Islands (188 villages)</td>
<td>0.220</td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel distance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland Maluku Tenggara Barat (Yamdena Island) (71 villages)</td>
<td>0.342</td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vehicle ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel distance</td>
</tr>
</tbody>
</table>

* Regression coefficient is not statistically significant at 0.05 level
7.2.1 Tana Toraja

In Tana Toraja, travel distance and vehicle ownership are the two transport variables that correlate the most with pre-welfare levels. The other four transport variables are not significant at the 0.05 level. Travel distance correlates positively with pre-welfare (0.479), which means the longer the average travel distance to facilities the higher the percentage of pre-welfare households. Meanwhile, vehicle ownership correlates negatively with pre-welfare (-0.134) meaning that the higher the proportion of vehicle ownership the lower the percentage of pre-welfare households. The coefficient of determination of the correlation is 0.302 denoting that those two transport variables statistically contribute 30.2% to the variance in pre-welfare levels in the district. The particular significance of travel distance to the pre-welfare level in this region indicates that location of rural services (i.e. junior high school, senior high school, health clinic, general hospital, local market and regional market) is critical in relation to rural welfare. On the other hand, the regression analysis reveals that the paved road variable makes an insignificant contribution to the transport and pre-welfare relationship. This confirms the notion that the aspect of accessibility is more relevant than road condition in explaining welfare in Tana Toraja.

A separate regression analysis (details in Appendix 2) correlating travel distance to each of the public facilities with pre-welfare levels indicates that the locations of hospitals (by the stepwise method) and regional markets (by the confirmatory method), followed by the location of senior high schools, matter the most in explaining the trend of pre-welfare in Tana Toraja. Hospitals were only found in Makale and Rantepao, the two urban centres of the district. Regional markets were located also in those two urban centres, plus in the other two sub-district capitals. Meanwhile, senior high schools had been placed in all sub-district capitals. This leads us to the conclusion that the concentration of facilities in economic and administration centres for the sake of efficiency has disadvantaged the villages located far from those centres. The result can also be interpreted to mean that the role of these three facilities needs to be expanded to remote villages to improve the welfare level in the district.

The second most important correlation with pre-welfare levels is vehicle ownership. This indicates the significance of private transport in affecting the variability of rural welfare.
This result supports my observation in rural Tana Toraja, where many private motorised vehicles, such as trucks, four-wheel drive cars and motorcycles were used to transport people and goods for socio-economic purposes (e.g. travel to funeral ceremonies or travel to rural markets). On the other hand, public transport is not significant in explaining the variance in pre-welfare levels. To some extent, this indicates that the operation of public transport services has not been effective enough to support the travel of rural people. This could be due to such factors as: (i) public transport services are mainly operated on the trunk road network so that the pick up point of the service is beyond the distance that rural people are willing to walk, (ii) when they operate on the rural network, the cost is beyond rural people’s willingness to pay, and (iii) the road networks are not long and good enough to support the operation of public transport in rural areas. The bottom line of these three factors is the poor condition and incomplete network of the rural roads coupled with a lack of incentives for public transport to operate on these roads.

7.2.2 Pangkajene Kepulauan

Similarly to the Tana Toraja region, travel distance to facilities is the most relevant factor correlated with pre-welfare levels in mainland Pangkajene Kepulauan (0.328), followed by IC ownership (-0.273). Taken together they “explain” 28.1% of the variance in mainland pre-welfare. The fact that road conditions are invariably good and public transport services have reached almost all of the villages in the mainland (see discussion in Section 6.2.2) help explain why those factors do not significantly correlate with pre-welfare. Conversely, relatively long distances to public facilities, which are concentrated in a few urban centres, do relate to the pattern of pre-welfare in the mainland.

A disaggregate regression analysis was also carried out on the facility distance components vis-à-vis pre-welfare levels (Appendix 2). It was found that the distance of the mainland villages to the regional market, which is located in the district capital, affects the correlation the most, either by a stepwise method or by a confirmatory approach. Other facilities shown to be significant in the analysis are general hospitals and senior high schools. The general hospital is located in the district capital, while the senior high schools are spread in the subdistrict capitals. These findings all confirm that
centralised public facilities are critical to pre-welfare condition. The message conveyed is that the wellbeing of people and villages in mainland Pangkajene Kepulauan may well be a function of their proximity to the district centre.

IC ownership (relating to television sets, communication radios and telephones) also matters in explaining the pre-welfare situation in the mainland of Pangkajene Kepulauan. The general trend is the higher the IC ownership, the lower the percentage of pre-welfare households in the villages. One possibility is that villages owning more information and communication facilities would have higher welfare. Rural people in mainland Pangkajene Kepulauan were gaining more communication options with the availability of telephone lines on several feeder roads. More effective communication might increase rural welfare by improving market knowledge. However, the opposite interpretation of the relationship between IC ownership and pre-welfare levels can also be drawn: more prosperous villagers would have greater ability to purchase information and communication facilities. More prosperous households would have greater capacity to own a telephone than poor households. So, the question is does IC ownership affect welfare or vice versa? This statistical analysis may well indicate the magnitude of the relationship between transport and welfare but, it cannot explain how this relationship occurs. Only by a more in-depth analysis at the local/household level can such a relationship be elaborated (Chapters VIII and IX).

The nature of the transport-rural welfare relationship in the mainland differs considerably from that calculated for the island region. In the Pangkajene Kepulauan Islands, public transport (distance of villages to public water transport) emerges as the only key variable. The total contribution of the transport variables to the variance in the pre-welfare level is 29.4% (confirmatory method), but if only the significant variable is included (stepwise method), the coefficient of determination of the relationship is 21.4%. This influential role of public transport confirms the great reliance of the island people on pioneer ships and/or motorboat public transport services. The non-availability of these services in many islands correlates genuinely with a high proportion of pre-welfare households in Pangkajene Kepulauan Islands.
7.2.3 Sorong

In mainland Sorong, IC ownership and travel time are the transport variables that correlate the most strongly with the pre-welfare situation, generating regression coefficients of -0.387 and 0.326, respectively in the stepwise analysis. Together, they contribute 36% of the variance in pre-welfare incidence in the mainland. The significant negative contribution of IC ownership (-0.387) suggests that a high proportion of pre-welfare households is found in villages with a low level of IC ownership. A similar situation is also found in the islands of Sorong, where IC ownership is the most significant transport factor contributing to the pre-welfare situation (-0.433), followed by port availability (-0.323).

IC ownership may well help explain levels of well-being in the villages (either in the mainland or in the islands) for the following reasons. First, transport infrastructure and services in both areas were lacking. As indicated in the previous chapter (Table 6.4), by 2000, only about 20% of the mainland and water-based villages had access to public transport. Pre-welfare incidence in that year was still very high: 81% of the households were classified as “pre-prosperous and prosperous level I” (see Section 4.4). Considering these facts, I would argue that the people were not able to afford their transport means (either public or private transport) partly because they are poor, but mainly because the transport system does not exist. Even if they had the ability to purchase motorised transport or to pay for public transport, they cannot do so as transport infrastructure and services are lacking. Deficient transport infrastructure and services lead to the insignificant contribution of these factors to the variability of pre-welfare levels in Sorong. On the other hand, the people can still purchase things like television sets even though there is no transport infrastructure (and accordingly electricity) in the village. One isolated community in riverine Sorong, for example, purchased several generator sets, television sets and a satellite antenna through its involvement with a logging company operating in the area. Travel to Sorong city was coordinated once or twice a month by the village leader using a private boat. The people obtained information by watching television, although they were isolated from public or private transport. As in this case, information and communication facilities can be more advanced in infiltrating isolated communities rather than transport infrastructure. They also more significantly contribute to the variability of rural welfare.
Notably, travel time rather than travel distance gave a stronger correlation between transport and pre-welfare levels in the mainland. Lack of access roads and poor public transport services explain that the time required to reach facilities (e.g. market) located far from villages can be critical to the rural economy. In interior Sorong, the distance from a village to a public facility might be less than five kms, but if there is a great barrier like wide rivers or swamps that hamper travel to that facility, the travel time for that distance can be more than a day. In addition, lack of transport services means that most trips are by walking (this will be thoroughly examined in the next chapter), increasing the time required for travel.

In the Sorong Islands, the significance of port availability in the correlation can be explained as follows. From the Sorong data, ports are only located in 22 out of 132 island villages. Apart from lack of ports, the majority of the ports that do exist were built on islands that were seen to have potential to stimulate the regional economy. Locations of ports in the Sorong islands, therefore, may well indicate the well-being of the community living on these islands.

7.2.4 Maluku Tenggara Barat

In the case of the archipelago of Maluku Tenggara Barat, the factors that contribute most strongly to the transport and pre-welfare relationship are public transport and IC ownership. These factors contribute 20.9% of the variance in pre-welfare levels. First, distance to public transport is determined mainly by the routes of the pioneer ships that serve the region. Local private enterprise shipping (pelayaran rakyat) operated by local people is limited to coastal travel, and interisland journeys are too risky, particularly in the monsoon season. With the harsh sea conditions in this region, this form of transport cannot effectively support the operations of the pioneer transport services. The significant positive contribution of public transport to the correlation means that high percentages of pre-welfare households are mainly found in those island villages that are not served by the pioneer transport services. In addition, the high proportions of pre-welfare households in the region’s villages indicate the poor support that pioneer transport services give to promoting the rural economy. Second, the significant correlation between IC ownership and the pre-welfare level denotes a situation similar to
that observed in Sorong. The availability of such facilities can help reduce the problem of poor accessibility due to a poor transport system.

The situation of Wetar Island, the western-most island of Maluku Tenggara Barat can illustrate the importance of the two transport variables above.\textsuperscript{21} The island covers an area of 3,700 km\textsuperscript{2} with a population of 6,300 (BPS, 2001a). The people were distributed in 24 villages, located along the island's coast-line. The proportion of households classified as pre-welfare in these villages was high, ranging from 65 - 97\% (BPS, 2001a). No paved roads or motorised vehicles were found on the island, apart from a few fishing boats owned by the people. External travel was served by a pioneer ship that visited the island once in three weeks. No private enterprise ship served inter-island routes. The pioneer ship only stopped in Ilwaki, the main village in the island, and people from around the island needed to walk or boat to Ilwaki if they wanted to use the service. This situation was associated with the relatively better well-being of Ilwaki households compared to other villages in the island. The village head of Karbubu, a village that is located about 80 kms from Ilwaki, claimed that they relied little on the pioneer ship, as the trip to Ilwaki had to be undertaken by walking. For their necessities, they depended mainly on Buginese traders who visited their village [with their ships] once a month.

With a lack of private and public transport, the well being of people can be assessed by seeing their houses and their ownership of information and communication facilities (television, satellite antenna). Households owning a television set are obviously more prosperous than the majority who do not own one. The number of television sets was higher in Ilwaki than in other villages, indicating a more prosperous village. But, the ownership of IC facilities also means that people have access to information. Most heads of villages in Wetar are equipped with radio communication. This facility was mainly used to send and receive messages from the government in Ambon or Kupang.

\textsuperscript{21} I carried out a survey in Wetar Island in October 2000 in relation to the plan of the central government to resettle East Timorese refugees in this island. A majority of the people rejected this plan. They worried about the social friction which could occur between the people and the East Timorese. They also questioned the intention of the government to build the island for the East Timorese. One of the island leaders argued that they had been neglected with respect to "development" since the country's independence in 1945. The resettlement plan would mean "development" on this island but for outsiders and not for them.
The regression analysis was also conducted for the “mainland” of Maluku Tenggara Barat. The mainland here is the largest island in the archipelago, Yamdena, where road transport plays a role in connecting villages. Yamdena is the most developed island in the region, and is where the capital of Maluku Tenggara Barat is located. Distance to public transport is the only factor significant in explaining the link between transport and the pre-welfare situation in the Yamdena Island.

The public transport system on Yamdena Island is influenced by the condition of the road network. Although Yamdena is the most developed island in the region, its road network is relatively undeveloped. The 155 kms Trans Yamdena, the main road that lies along the east coast connecting Saumlaki to the far north, had only been passable by motorised vehicles for one-third of its length by 2000. Feeder roads connecting villages away from the main road with the Trans were mostly in poor condition. With the lack of roads in Yamdena, public transport could only be found in the first 47 kms of the Trans Yamdena road. Only three buses served this route in 2000. Likewise, fewer than 30 minibuses, with more frequent services, served the first 20 kms of the Trans Yamdena. The road from Km 21 to Km 47 was virtually impassable in the rainy season. Low demand for transport accentuated by poor roads has meant that demand for transport services has not been well developed. Inaccessibility of most of the region’s villages to public transport services correlates significantly with the pre-welfare level.

7.3 Implications for Rural Transport Policy

Figure 7.2. summarises the way the analysis (in this chapter and the previous two chapters) has proceeded so far. Although the transport sector goals for the rural economy may well be articulated at the policy-making level (either at national or at regional level), their effectiveness can only be appropriately evaluated at the local level. This chapter, in particular, has dealt with an evaluation at the district level, and will be followed by an analysis at a more detailed level in subsequent chapters.
Transport policy (and the organisations that formulate it) determine the way transport programmes/projects are implemented at the regional and local levels. Different transport policies lead to different transport programmes and create different outcomes at the local level. Chapter VI has indicated that different district governments may have different transport policies and programmes, which to a major extent are influenced by: (i) the intervention of the central government in the management of the transport sector at the district level, and (ii) the specific characteristics of the district. The implementation of transport policy affects the way transport systems have changed at the district level. Transport systems, as I discussed in this chapter, are not just a function of infrastructure and services but, more widely, concern accessibility and mobility. These factors correlate with the rural economy (as represented by rural welfare in this chapter) in different ways and to different degrees, depending on the way transport and other development programmes are implemented and the attitudes of people toward the process of development.
One way of investigating the role of transport in the rural economy is by means of the correlations between the two. I discuss the outcome of the correlation analysis in relation to the transport policy implemented in the research districts in the following paragraphs. The question remains: Does transport policy and its implementation effectively promote the rural economy?

A correlation analysis tells us the significance of the statistical relationship between the variables considered. In this analysis, data from the Village Statistics 2000 was employed to establish the indicators of transport and rural welfare. Six transport variables were correlated with a measure of rural welfare: (i) existence/condition of transport infrastructure (paved roads or ports), (ii) availability of public transport services, (iii) ownership of private transport, (iv) ownership of information and communication facilities, (v) travel distance to relevant facilities, and (v) travel time to relevant facilities. Other transport variables that would also matter for representing the condition of rural transport were not available in the Village Statistics 2000 (see Table 7.3). The absence of these measures affects the comprehensiveness of the correlation analysis. Furthermore, the statistical analysis can only indicate the magnitude of the relationship but not explain how the relationship occurs. For these reasons, the chapter can only serve as a preliminary effort to examine the relationship between transport and the rural economy. Further analysis that explores more qualitative variables will be developed in the following chapters.

With regard to the statistical analysis, in each of the district regions, different variables were found to be significant in the multiple correlation between transport measures and pre-welfare levels thus underlining the different characteristics of the regions. The results of the analysis allow one to examine the implications that it has for transport policy. I discuss each of the transport variables and its implications for rural transport policy in turn.

**Paved Roads**

It is interesting to learn that paved roads were not among the variables considered significant in the correlation analysis between transport conditions and rural welfare in
the above four research districts. Although their role is obviously important in improving transport systems, paved roads, by themselves, are not sufficient to affect the variability of rural welfare. Other transport measures (e.g. public transport, travel distance and time, or IC ownership) were more significantly correlated with the welfare level. It is worth explaining, however, that the performance of these transport measures is dependent on the quality of road systems. The availability of telephones in mainland Pangkajene Kepulauan, for example, related to the good feeder road system of the region that facilitated the installation of the telephone line. Another example, as demonstrated in the case of Yamdena Island, is that the poor condition of Trans Yamdena hampered the operation of public transport, which was a significant variable for the rural welfare variation in this island. From a policy perspective, efforts to improve a road network need to be related to both accessibility and mobility measures. A road programme is targeted not just to improve the condition of the road, but also to ensure that transport services on this road are available and, more importantly, targeted beneficiaries are able to use both roads and transport services.

**Port infrastructure**

Lack of ports or permanent wharves in the Sorong Islands (only 17% of total island villages had wharves) correlates significantly with pre-welfare levels in the region. This indicates the need to build more wharves, particularly in the islands with a high percentage of pre-welfare households. Careful interpretation of this intention is required, as we learn from other regions where port availability is far less significant than the availability of water public transport (see Pangkajene Kepulauan Islands and Maluku Tenggara Barat Islands). In fact, the number of ports in these regions was also small. A policy to build port infrastructure in island regions requires coordination with a policy to promote public transport operations that serve the ports.

**Public transport**

The pre-welfare situation is also correlated with distance of villages to the nearest public transport. This is the case of Pangkajene Kepulauan Islands and Maluku Tenggara Barat. The pioneer transport service policy implemented by the central government to promote transport in remote regions was far from enough to address transport problems in these
islands. A more serious and effective strategy is required, one aspect of which is promoting local private enterprise shipping (pelayaran rakyat) to support transport services between islands. Private shipping services are available in almost all islands in the regions, but they are ineffective as regular inter-island public connections. The main difficulties of the local enterprise shipping are: (i) lack of a legal framework to allow them to operate as public transport in a secure and safe environment, (ii) lack of capital support to develop their business, and (iii) lack of technological support to operate in a wider transport network (e.g. technology to build a semi-modern ship).

In land-based regions, as in the case of Yamdena Island, poor roads hamper the operation of public transport services. The poor condition of the Trans Yamdena road means high vehicle operating costs (and transport fares accordingly) for minibus and public bus transport serving the road. On the other hand, low demand for travel (as a function of low population density) reduces the potential for promoting more frequent and reliable public transport on this route. Facing these difficulties, an integrated district policy to improve the transport system of Yamdena is required. First, the further expansion of the Trans Yamdena network needs a comprehensive evaluation of government capacity (central, provincial and district), not just for constructing a new road but also, for maintaining the existing roads. As in the case of the Trans Yamdena, a lack of attention to maintenance has resulted in many improved roads deteriorating to their initial condition as an earth track. Second, improvements of the road network need to go hand in hand with improvements of public transport services. Promoting public transport services in such a low-demand route requires government incentives that enable public transport operators to cope with the high operating costs. Lastly, as long as the road network is still unable to reach all villages in the island, a scheme to promote the operation of local enterprise shipping is greatly needed.

Vehicle Ownership

Tana Toraja is the only region in this analysis where the proportion of private motorised transport in villages is a significant factor in explaining pre-welfare levels. This signifies two conditions: (i) a greater reliance of rural people on private vehicles, and (ii) an ineffective operation of public transport services in rural areas. The concentration of public transport operations on the main road network in Tana Toraja helps to explain this
situation. People living in remote villages benefit little from such public transport services. With few public transport services in feeder roads, I have seen many private transport vehicles (e.g. trucks, four-wheel drive cars, and motorcycles) operating as public transport carrying passengers and goods. They do so illegally but effectively help the travel needs of people in remote areas. To promote the mobility of the rural poor in Tana Toraja, a specific strategy to encourage the use of various forms of motorised vehicles as public transport and to let them operate legally on the rural road network is necessary. Special licencing arrangements for private transport (black-plate) operators in the village could be an effective way of ensuring a degree of village-level control.

One shortcoming of this analysis is the exclusion of non-motorised transport owing to data limitations, whereas such modes operate widely in rural areas (Table 7.1). Indeed, the analysis of the role of private and public transport for promoting the rural economy must take into account the role of non-motorised vehicles.

**Travel distance**

Travel distance to public facilities correlates significantly with rural welfare, especially in Tana Toraja and mainland Pangkajene Kepulauan. The separate analysis of travel distances in these regions (Appendix 2) verifies the significance of centralised facilities including regional market, general hospital and high school in affecting the variability of pre-welfare levels. In terms of policy implications, this result confirms two things. First, the transport policy of these districts, which has long been focused on road improvements, needs to embrace accessibility measures to ensure that every road programme is also aimed at promoting rural accessibility. Roads should be built, not just to physically connect villages with their socio-economic centre, but also to reduce difficulties faced by villagers travelling to their centre or by central services reaching the villages. Second, it is obvious that roads are not enough for solving the transport problems of rural people. Rural services need to be close enough to the people to ensure that the people can obtain maximum benefits from them. This does not mean that facilities like a hospital or a regional market are to be placed in every locality. But, it does mean that facilities need to be close enough so that they do not discourage visits. The main issue is to develop a strategy that can ensure that the services provided by hospitals or regional markets can be enjoyed by those who live far from district centres.
Travel time

Travel time correlates significantly with rural welfare in mainland Sorong. Poor roads and lack of transport services in the region lead to long travel times. These problems go hand in hand with the concentration of public facilities in Sorong city. The key issue here is to integrate the task of improving the transport system with providing socio-economic services to the people.

IC ownership

Information and communication facilities (television, radio, radio communication and telephone) available in the villages correlate substantially with the variability of pre-welfare levels in mainland Pangkajene Kepulauan, Sorong Islands and Maluku Tenggara Barat Islands. In mainland Pangkajene Kepulauan, households have started to enjoy telephone communication with the expansion of the telephone network along several feeder roads. This provides people in the mainland with a more advanced communication technology.

Our focus, however, is on the last two archipelago regions, where transport connections, mainly by sea transport, are poor. In these two regions, information and communication facilities play a crucial role and, to some extent, can substitute for the role that transport infrastructure used to play. With the availability of a telephone kiosk in Balang Lompo Island, Pangkajene Kepulauan, fishermen living in this island can now negotiate with their customers in Makassar before travelling to the city. The availability of single-sideband radio communication in the majority of the villages in Wetar Island means that villagers can communicate with government officials in district or provincial capitals to report any administration issue for the attention of the government. This facility will be more useful if its function can be expanded to also cover the needs to communicate with people in other regions for social and economic reasons. Although the benefits of such facilities are still ambiguous with regard to promoting the rural economy, they are necessary to promote the mobility of people in remote islands.
Other Factors

The statistical contributions of the sum of the above six transport variables to the variance in the pre-welfare level in the seven research regions range between 22.0% and 39.0% (see Table 7.5). In statistical term, these indicate that between 61% and 78% of the variance in pre-welfare levels is not explained by those transport measures. This signifies the potential contribution of other factors such as resource endowment, market imperfection, agricultural innovation, employment opportunities, migration, education levels, political participation of rural people or transport measures other than those six variables that have been considered. Similar statistical analysis for these factors may help to indicate their contribution to the variability of rural welfare.

7.4 Conclusions

Returning to the question raised at the beginning of Chapter VI of whether transport policy and its implementation effectively promote the rural economy, I now provide several conclusions based on the discussion in Chapter VI and VII.

First, the way that transport development policy is implemented is significant in explaining the change in district transport conditions. The analysis in Chapter VI has shown that the New Order government with its overwhelming power (through centralisation and top-down approaches) was insensitive to the local characteristics of rural transport. The Reform government brought changes in the institutional arrangement of the transport sector, providing local governments and their people with greater freedom to develop transport policies and programmes. It is still too early to claim that rural transport will get appropriate attention from such a change, although some district governments have tried to accommodate the transport needs of their people. But some aspects of rural transport (such as the legal framework for the rural transport system, the promotion of rural transport services, appropriate attention to water transport and greater participation of local communities) are of considerable importance if transport development is to effectively promote the rural economy.
Second, the relationship between transport and rural welfare is different for the seven situations analysed, indicating that differing local characteristics and differing transport development forces affect the relationship in each region. Transport, in this relationship, is more appropriately conceptualised in terms of accessibility and mobility. Accessibility refers to the potential ease with which somebody, or something, can reach desired destinations or be reached by relevant services, while mobility is the ability of people to move around which incorporates aspects of human behaviour in addition to economic, political and social relationships. These measures embrace transport infrastructure and services, and make significant statistical contributions to the variability of rural welfare.

Considering this analysis, rural transport development should be aimed at improving both rural accessibility and mobility. For this, an integrated approach to the transport sector is required, to include external links to other development sectors and/or internal links among transport sub-sectors. In addition, as the government by itself cannot solve the problem of transport, it needs to involve all potential stakeholders in the transport sector. Local or societal institutions can be given more authority for participating in transport development.

Finally, the key for transport policy to effectively promote the rural economy is to have an appropriate understanding of the relationship between transport and the rural economy at the local level. Failure to understand this relationship will mean that governments or development agencies at all levels adopt ineffective approaches in developing rural transport policy and programmes. The analysis in this chapter has contributed to this understanding but, because it is a purely quantitative approach, it needs to be complemented by sound qualitative analysis. The next chapters will continue to address the question of the linkage between transport and the rural economy and to more thoroughly explore the key elements of the previous analysis, but with an emphasis mainly on a village and household level evaluation.
CHAPTER VIII: ACCESSIBILITY, MOBILITY, TRAVEL ACTIVITIES AND RURAL LIVELIHOODS

Having examined the statistical relationship between transport and the rural economy at the district level, this chapter and the following two chapters elaborate, at the village and household levels, how the relationship works out in detail and whether or not a causal relationship between these systems exists. To begin with, this chapter investigates the effects of transport, in the context of accessibility and mobility, on village and household livelihoods.

The main question addressed by this chapter is how different rural localities and transport situations affect the accessibility and the mobility of rural people, and how that pattern of relationships affects the livelihoods of rural people. To answer this question, a micro analysis at the village and household levels is carried out, which is elaborated in several sections of this chapter. First, nine villages, which were selected from the districts examined in the previous chapter, are discussed with the focus on their accessibility situations (Section 8.1). These villages are different in their structural situations and in their transport connections, and presumably have, therefore, different accessibility patterns. Second, the characteristics of selected households from the nine villages are examined with regard to their mobility (Section 8.2). Third, the travel activities of these households are analysed (Section 8.3). The next two sections examine the travel activities of those households in greater detail, seeking the links between the travel patterns and rural livelihoods (section 8.4) and economic welfare conditions (section 8.5). Lastly, conclusions are drawn by highlighting key factors affecting the links between accessibility, mobility, travel activities and rural livelihoods (Section 8.6).

8.1 Villages: Location, Transport and Accessibility

The nine villages examined in this chapter can be differentiated according to their topography, population pattern, village economy, transport connections, and the public
facilities located in each village (Figure 8.1 and Table 8.1). The villages are located in
the districts of Pangkajene Kepulauan, Tana Toraja and Sorong.\footnote{Maluku Tenggara Barat was excluded from this analysis due to incomplete information collected during the village level survey. The survey failed to provide enough information comparable to the surveys in the other three districts.}

Table 8.1: Characteristics of the Case Study Villages

<table>
<thead>
<tr>
<th>Village</th>
<th>Topography</th>
<th>Population density (people/(\text{km}^2))</th>
<th>Household livelihood *)</th>
<th>Transport infrastructure in the village</th>
<th>Trip distance and time and public transport used to district capital</th>
<th>Facilities in the village **)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mappasaile, Pangkajene Kepulauan</td>
<td>Flat</td>
<td>1,335</td>
<td>Non-agri and agri</td>
<td>Paved road, terminal, wharf</td>
<td>2 km, 10 min animal cart</td>
<td>PS, JS, SS, H, HC, M, RM, B, T, P, A, GO</td>
</tr>
<tr>
<td>Kalabirang, Pangkajene Kepulauan</td>
<td>Flat</td>
<td>279</td>
<td>Agri and non agri</td>
<td>Paved road</td>
<td>12 km, 15 min minibuses</td>
<td>PS, JS, HC, M, RM, GO</td>
</tr>
<tr>
<td>Balang Lombo, Pangkajene Kepulauan</td>
<td>Small island (3km²), flat</td>
<td>477</td>
<td>Agri (fishing)</td>
<td>Small wharf, sandy road</td>
<td>24 km, 120 min motorboats</td>
<td>PS, JS, HC, P, GO</td>
</tr>
<tr>
<td>Rante Kalua, Tana Toraja</td>
<td>Hilly</td>
<td>240</td>
<td>Non-agri and agri</td>
<td>Paved road, terminal</td>
<td>15 km, 20 min minibuses</td>
<td>PS, JS, SS, HC, M, RM, B, T, A, GO</td>
</tr>
<tr>
<td>Benteng Ambeso, Tana Toraja</td>
<td>Hilly</td>
<td>243</td>
<td>Agri</td>
<td>Paved and unpaved road</td>
<td>30 km, 45 min minibuses</td>
<td>PS, JS, BHC, M, RM, B,</td>
</tr>
<tr>
<td>Pabuaran, Tana Toraja</td>
<td>Hilly</td>
<td>135</td>
<td>Agri</td>
<td>Footpath</td>
<td>38 km, 165 min walking + minibuses</td>
<td>PS, BHC,</td>
</tr>
<tr>
<td>Klamono, Sorong</td>
<td>Riverine, flat</td>
<td>3.5</td>
<td>Non-agri and agri</td>
<td>Paved and unpaved road, small river wharf</td>
<td>48 km, 120 min minibuses</td>
<td>PS, JS, BHC, P</td>
</tr>
<tr>
<td>Disfra, Sorong</td>
<td>Riverine, flat</td>
<td>1.4</td>
<td>Agri</td>
<td>Footpath, river wharf</td>
<td>78 km, 300 min motorboats + minibuses</td>
<td>PS, BHC</td>
</tr>
<tr>
<td>Wanurian, Sorong</td>
<td>Riverine, flat</td>
<td>5.2</td>
<td>Agri</td>
<td>Footpath, river wharf</td>
<td>108 km, 480 min motorboats + minibuses</td>
<td>PS, HC</td>
</tr>
</tbody>
</table>

Note:
* ) Household livelihood: Non-agri: non-agricultural livelihoods (e.g. traders, non-agricultural labourers, workers, transport operators, and government officers); Agri: agricultural livelihoods (e.g. farmers, farm workers and fishermen)
Figure 8.1: Location of the research villages

In addition to the topographical differences, the research villages have different settlement and demographical patterns. In general, they can be classified into three groups:

1. Villages with the population spread evenly across the village territory with few uninhabited areas. Such villages have a relatively high population density as in the cases of Mappasaile (1,335 people/km²) and Balang Lompo (477 people/km²).23

2. Villages where the population is nucleated into several hamlets with some distance between hamlets. The population density of these hamlets is relatively similar to the first village group, but because of significant unsettled areas (e.g. farmland or forests), the average population density of the village territory is medium (i.e. Kalabirang, Rante Kalua, Benteng Ambeso and Pabuaran with the population density varying between 135 and 279 people/km²).

3. Villages with a single nucleated settlement surrounded by a large uninhabited village territory (e.g. rainforest). Klamono, Disfra and Wanurian (with population densities between 1 – 5 people/km²) belong to this group.

The first three villages in Table 8.1 are located in Pangkajene Kepulauan. The first research village, Mappasaile, lies beside the arterial Sulawesi Highway, about two kms to the north of Pangkajene. Trips from rural Mappasaile to the district centre can be made by a variety of transport modes, but horse-carts (bendi) are the most popular one. Given its proximity to the district capital, the livelihood structure is dominated by mixed farm and non-farm activities, while fishing households dominate the peripheral zone along the coast line. The second research village is Kalabirang, which is about 12 kms inland from the district capital, and connected by a new paved feeder road. The road was served by pete-pete public transport from Pangkajene with a tariff of 2,000 rupiah per one way.24

There were about 40 pete-pete registered for this route in 2002 (Salirang, 2002a: pers.comm.). Household livelihoods in this village were predominantly mixed agriculture and non-agriculture. The third community is Balang Lompo, which is an island community, about 22 kms off shore from Pangkajene port. The island can normally be reached by two registered public transport routes, either from Paotere Port,

23 The high population density of Balang Lompo is affected by the small land size of the island. If the sea area of the island is included, it would be more appropriate to classify the island into category 2 or 3.

24 Pete-pete is a popular local name for minibus public transport in South Sulawesi. Such vehicles carry 12-14 passengers. In 1997, there were 870 pete-pete registered in Pangkajene Kepulauan (BPS Sulawesi Selatan, 1998: 45).
the special port for local private enterprise shipping (*pelayaran rakyat*) in Makassar, or from Pangkajene Port. The one-way tariff for motorboat public transport was 3,000 rupiah per person for either route. Three motorboats were operated on the Paotere - Balang Lompo route, and two on the other one. Given its insular characteristics, a majority of the Balang Lompo population live by fishing. In addition, as it is a subdistrict capital, some government officers live in the island.

The next three research villages are in Tana Toraja District. The first village, Rante Kalua, is 15 kms to the south of Makale, the capital of Tana Toraja, and connected to it by the main Sulawesi Highway. About 60 minibuses served the Makale - Rante Kalua route, with the one-way tariff per person of 1,500 rupiah. Given its status as one of the administrative and economic centres in the southern Tana Toraja, it is understandable that the livelihoods of Rante Kalua were mixed between agriculture and non-agriculture. The second research village in Tana Toraja is Benteng Ambeso. This village is about 15 km from the main highway (or 17 kms from Rante Kalua), and connected by a paved feeder road. Although the road had not been licenced for public transport operations, there were about 10 – 20 minibuses serving the route in 2002, with the one-way tariff of 4000 rupiah per passenger from Rante Kalua. Village livelihoods were obtained mainly from agriculture. The last research village in Tana Toraja is Pabuaran, which is about 23 kms from the main highway, or 8 kms from Benteng Ambeso. Pabuaran was connected to Benteng Ambeso in 2002 by a steep and rough track which precluded motorised vehicles from reaching Pabuaran. Almost all households in this village lived by farming.

The last three research villages are located in Sorong District. The first village to be observed in Sorong was Klamono. Klamono is located 48 kms inland of the city of Sorong, and is connected to it by the arterial network of the Papua Highway. About 10 minibuses served the route of Sorong - Klamono every day, with a tariff of 8,000 rupiah per person. The road was paved for the first 24 kms from Sorong in 2002, while the remainder stayed unpaved and in poor condition. The people of Klamono traditionally lived by subsistence agriculture. But, with the discovery of oil in this region in 1935 continued by its exploitation from 1948 until today, a majority of households have relied on employment in the oil industry. The second research village is Disfra. Disfra is located about 30 kms to the south of Klamono, and could only be reached by river transport. However, no motorboat river transport specifically served the connection
between Klamono and Disfra. This is because of the unattractiveness of the region for public transport operations coupled with the lack of any government public transport licence for this route. The last village is Wanurian, which has a topographical and transport condition similar to Disfra, but is located farther inland, about 60 kms from Klamono. The public transport situation was exactly the same as that of Disfra. Travel to Klamono from Disfra or Wanurian had to rely on the few private motorboats owned by local people. All Disfra and Wanurian families were sago and swidden agriculturalists as well as fishermen.25

The village situations discussed above correspond closely with the availability of public facilities in the villages. Mappasaile, for example, has almost a complete set of public facilities as the village is located very close to its urban centre and the population density is high. Accordingly, the transport infrastructure and services of the village are relatively complete. On the other hand, villages such as Wanurian, Disfra and Pabuaran have limited public facilities as they are located far from the urban centre and have low population densities. Transport systems connecting those villages with their district centre are poor. These factors affect the villagers' accessibility to social and economic facilities.

Figures 8.2, 8.3 and 8.4 describe the cumulative physical accessibility of the nine villages to relevant services, measured in terms of travel distance, travel time and travel cost, respectively. Seven primary rural facilities were included: primary school, junior high school, senior high school, local market, bank, health centre, and hospital. Consider two extreme cases: Mappasaile and Wanurian. While Mappasaile people only need to travel an aggregate nine kms (or 50 minutes) in separate trips to reach all seven facilities, Wanurian people need to travel 499 kms (or for 56 hours) to make use of similar facilities. The ratio between these villages is 1:55 for travel distance and 1:66 for travel time. In terms of travel cost, however, the ratio is much higher 1:224. Mappasaile people would only have to spend an aggregate 1,750 rupiah for separate journeys to visit the selected facilities, while Wanurian people need to pay 392,000 rupiah to reach the same ones.

25 Sago is the staple food of a majority of Papuans, sometimes eaten with fish. The diet of sago and fish is augmented by hunting and gathering. Hunting is of minor importance but the variety of forest products collected add important elements to the diet. Sago is generally in plentiful supply and nutritionally the people are well served by their environment (Walker and Mansoben, 1990).
Figure 8.2: Aggregate travel distance from the villages to selected facilities

Figure 8.3: Aggregate travel time from villages to selected facilities
Notes: Travel time calculation was based on the most popular transport service used by local people

Figure 8.4: Aggregate travel cost from villages to facilities
As another illustration, consider three villages in the same district: Rante Kalua, Benteng Ambeso and Pabuaran of Tana Toraja. With respect to travel distance to these seven facilities, the ratio of these villages is 1:3:5. For travel time the ratio is 1:3:7. The ratio of travel cost, however, is 1:4:19, substantially different from the first two ratios. Based on these cases, it seems that, while the ratio of travel distance and travel time is relatively similar (as indicated by the two cases presented), travel cost provides a different ratio pattern, in which the more remote villages (Wanurian and Pabuaran) face much higher travel costs. Overall, the more distant the village from its urban centre, the lower its accessibility.

The marked differences in accessibility among these villages can be explained by two factors. One relates to the location of those villages in relation to their district centre which is often the main location for public facilities. This location also relates to the demographic pattern, economic activities and allocation of public facilities, accordingly. Mappasaile is only about two kms from the urban centre of Pangkajene, while Wanurian is about 108 kms from the urban centre of Sorong. Rante Kalua is about 15 kms from the district centre, while Benteng Ambeso and Pabuaran are about 30 kms and 38 kms from the same centre. Such distances correlate negatively with village population densities. In addition, public facilities are concentrated in urban centres or in villages with high population densities. Centralisation of public facilities such as high schools, hospitals and markets in urban centres means that the more distant villages are from the centre the further the people need to travel to public facilities. Second, poor transport connections (both infrastructure and services) between urban centres and peripheral villages (such as Wanurian and Pabuaran) accentuate the difficulties of village people seeking to reach desired facilities in urban centres. The more remote the villages from the urban centre the poorer the transport situation of those villages. This factor is clearly demonstrated by the travel cost ratios and helps explain the exceptional gap in accessibility of Wanurian and Pabuaran with respect to public facilities when measured by travel cost.

It is worth noting that the pattern of public facilities and transport networks in the research villages seems to strongly follow a neo-classical model driven by the

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26 Travel cost for walking from Pabuaran to the closest public transport services that is at the Benteng Ambeso market was calculated based on the cost of labourers/porters at the market.
demand/supply, or efficiency-led approach: the higher the “demand” represented by population density, the better the “supply”, represented by the presence of public facilities (e.g. market, bank, high school, hospital, etc) and the quality of the transport system. Villages located far from urban centres bear a great accessibility burden. Given the difficulties involved in reaching such facilities, one might expect that such villages would have a high incidence of poverty. This hypothesis will be tested in the following sections.

8.2 Characteristics of Households: Effects on Mobility

In order to thoroughly examine the link between accessibility, mobility and the livelihoods of rural people, a sample of households has been taken. The number of households selected varied from 30 to 41 for each village, with an overall total of 331 households. The summary characteristics of respondent households in each village are shown in Table 8.2.

The average size of households varied from 4.05 in Benteng Ambeso to 5.10 in Klamono and Mappasaile. The largest household was found in Mappasaile with 9 members, while the smallest with a membership of two was found in almost every village. The average age of respondents in all villages was between 28 and 34, varying from a six year old child to an 81 year old great-grandmother. Babies and children under 6 were excluded from the analysis from the assumption that their travels were fully dependent on adults.
### Table 8.2: Characteristics of respondent households in the researched villages

<table>
<thead>
<tr>
<th>Villages</th>
<th>Number of households</th>
<th>Average household size</th>
<th>Average age of hh members (years)</th>
<th>Average consumption level *) (Rupiah)</th>
<th>Average land ownership**) (ha)</th>
<th>Average education level***) (%)</th>
<th>Vehicle Ownership level ****)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mappasaile</td>
<td>40</td>
<td>5.10</td>
<td>30</td>
<td>1,270,858</td>
<td>4.32</td>
<td>32</td>
<td>57.5</td>
</tr>
<tr>
<td>Kalabirang</td>
<td>39</td>
<td>4.68</td>
<td>28</td>
<td>1,013,859</td>
<td>0.62</td>
<td>31</td>
<td>66.7</td>
</tr>
<tr>
<td>Balang Lombo</td>
<td>38</td>
<td>5.42</td>
<td>28</td>
<td>988,763</td>
<td>0.02</td>
<td>21</td>
<td>52.6</td>
</tr>
<tr>
<td>Kante Kalua</td>
<td>40</td>
<td>4.25</td>
<td>30</td>
<td>1,167,590</td>
<td>1.10</td>
<td>59</td>
<td>55.0</td>
</tr>
<tr>
<td>Benteeng Ambeso</td>
<td>41</td>
<td>4.05</td>
<td>30</td>
<td>1,122,085</td>
<td>0.91</td>
<td>43</td>
<td>14.6</td>
</tr>
<tr>
<td>Pabuaran</td>
<td>39</td>
<td>4.60</td>
<td>29</td>
<td>615,883</td>
<td>8.67</td>
<td>28</td>
<td>0.0</td>
</tr>
<tr>
<td>Klasmono</td>
<td>39</td>
<td>5.10</td>
<td>34</td>
<td>1,026,816</td>
<td>N/A</td>
<td>25</td>
<td>12.8</td>
</tr>
<tr>
<td>Distra</td>
<td>26</td>
<td>4.80</td>
<td>25</td>
<td>1,052,303</td>
<td>N/A</td>
<td>28</td>
<td>10.0</td>
</tr>
<tr>
<td>Wanurian</td>
<td>38</td>
<td>4.60</td>
<td>26</td>
<td>920,619</td>
<td>N/A</td>
<td>16</td>
<td>26.7</td>
</tr>
<tr>
<td>Total</td>
<td>331</td>
<td>4.73</td>
<td>29</td>
<td>1,031,759</td>
<td>2.36</td>
<td>32</td>
<td>35</td>
</tr>
</tbody>
</table>

**Note:**

- *) Consumption level (Rupiah) is monthly consumption of households that consists of food consumption (e.g., rice, meat, instant foods, cigarettes and alcoholic drinks) and non-food consumption (e.g., housing, clothing education, health care, tax and insurance and social activities). Any non-expenditure consumption was transferred into money values.
- **) Land ownership (hectares) is the area of land owned legally by households according to either National Land Law or customary laws. N/A is given to the situation when households cannot specify the amount of land they possess because the land is customarily owned by the tribe.
- ***) Education level (%) is used to measure the highest formal education completed by members of households. Zero points were given to each member who never attended school, 10 to those who went to primary school but did not complete it, 20 to those who completed primary school, 30 to those who went to but did not complete junior high school, 50 to those who completed junior high school, 60 to those who went to but did not complete senior high school, 80 to those who completed senior high school, 90 to those who went to but did not graduate from university, and 100 to those who graduated from university. Points were summed for each households and converted to a percentage of the possible household score.
- ****) Vehicle ownership (%) is the total number of vehicles owned by sample households as percentage of the number of sample households. Motorised vehicles refer to any vehicle with an engine: car, truck, motorcycle, ship and motorboat. Non-motorised vehicles are vehicles without engines: bicycle, tricycle, horsecart, boat and raft. Human-powered carts, pikul-bars and baskets were excluded.

In terms of consumption level (which is an estimate of the well-being of households), Mappasaile households on average spent the most, while Pabuaran households had the lowest average household expenditure. However, it is worth noting that the cost of living in Sorong could be twice that of Pangkajene, Kepulauan and Tana Toraja due to the high price of consumer goods. Comparing the prices of 11 types of goods purchased by households in these three districts (based on average retail prices in 2000), it was

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27 Measuring household well-being using "consumption level" was introduced by Statistics Indonesia in several national socio-economic (welfare) surveys. The consumption level is measured based on two categories: food consumption and non-food consumption (see BPS, 2001c: 239-259).
found that the consumer price indexes of Pangkajene Kepulauan, Tana Toraja and Sorong were 11.0, 11.3, and 19.3, respectively. It can then be assumed that the average consumption level of Sorong is nearly half that of Pangkajene Kepulauan and Tana Toraja. In addition, given the marked differences in transport situations, one would expect higher prices in the more remote villages. With these in mind, there is an indication that households living in the villages close to urban centres, and therefore having better transport conditions (e.g. Mappasaile, Kalabirang, Rante Kalua and Benteng Ambeso) also have higher consumption levels than those living far from urban centres (e.g. Balang Lompo, Pabuaran, Klamono, Disfra and Wanurian). But, of course, this will also depend upon the type of livelihood practised by the households, a matter that will be further explored in Sections 8.4 and 8.5.

Interestingly, Pabuaran households occupied the largest areas of land. This was also the case of the three Sorong villages, with large but ‘indefinable’ areas of land ownership. In these three villages, indigenous households are entitled to work on the whole village territory, but it is the tribe that holds the ownership rights rather than the individual. High density of population seems to correlate with small area of land ownership. Furthermore, “unlimited” land availability (as in the case of the Sorong villages) means that people do not need to be aware of the area of land available to them. In aggregate, however, a large area of land in these villages is negatively related to household welfare. The reason is the land has not been effectively used. The capability of the people in these four villages (Pabuaran, Klamono, Disfra and Wanurian) to exploit their land is limited by their lack of access to technology and capital. An organised irrigation system, for example, can only work effectively in a relatively flat region and is not suitable for Pabuaran. This situation is accentuated by limited access to agricultural extension services and poor transport connections which reduce the incentives for commercial production.

28 The 11 household commodities are: rice, salted fish, cooking oil, sugar, chicken eggs, salt, kerosene, soap, textiles, batik, and cement. The average retail prices for these commodities were collected from the statistics of the three research districts (BPS Kabupaten Pangkajene Kepulauan, 2001; BPS Kabupaten Sorong, 2001; BPS Kabupaten Tana Toraja, 2001). In comparing these prices, the Pangkajene Kepulauan price for each of the eleven items was taken as the standard 1.0 for an overall baseline of 11.0.

29 The 4.32 ha average land ownership of the Mappasaile households is, in fact, affected by three respondent households that own 62, 55 and 34 ha of land, a majority of which is located outside the village territory. If these three households are excluded from the calculation, the average land ownership of the remainder Mappasaile households would be 0.40 ha.
Rante Kalua respondents revealed the highest level of education, with a score of 59%. This means that the respondents, on average, stopped school at senior high school level. At the other extreme, Wanurian respondents averaged 1.6, meaning that they had, overall, not completed their primary education. Lack of a junior high school in Disfra, Wanurian and Pabuaran hampers the continuing educational process, and helps explain the low education levels in these villages. In Balang Lompo, low education is influenced by the significant involvement of children in fishing to help their parents. The Klamono junior high school was opened in the 1990s and so, before that time, people needed to move to Sorong to continue beyond primary school. Overall, we can say that the disadvantaged locations of, and poor transport connections to, Disfra, Wanurian, Klamono, Balang Lompo and Pabuaran contribute to the low level of education achieved by the people of those villages.

With regard to vehicle ownership, the total number of motorised vehicles owned by Mappasaile, Kalabirang, Balang Lompo and Rante Kalua households represented more than 50% of the total households. This, however, does not mean that a similar proportion of the households in those villages had motorised vehicles, because some households owned more than one. In Kalabirang, for example, one household working in the construction sector owned four cars and one truck. But, clearly, there is a broad relationship between aggregate motorised vehicle ownership and the well-being of the villages, as in the case of those four villages. Only Benteng Ambeso households had a relatively high consumption level but did not have an equivalent proportion of motorised vehicles (only 14.6%). The reason is that the trend to purchase motorised vehicles in Benteng Ambeso has just started with the village becoming connected to the Tana Toraja paved road network only in 1999.

Although the pattern of motorised vehicle ownership might be affected predominantly by a household’s cash income, this is not the case for non-motorised vehicle ownership. The proportional ownership of non-motorised vehicles was high mainly in flat (including riverine) regions, as indicated by the Pangkajene Kepulauan and Sorong villages, except for Klamono, and low in hilly regions such as in the Tana Toraja villages. In the flat regions, non-motorised vehicles powered by human beings (e.g. bicycles, tricycles and paddle boats) and animals (e.g. horsecarts) were easily found. On the other hand, the
hilly landscape of Tana Toraja minimised the appeal of non-motorised vehicles in that region. It can be said that the availability of non-motorised transport is more closely a function of the topographical characteristics of regions rather than the consumption level.

Klamono is an exception from the above conclusion. Given its flat topography in a riverine region, one might assume that a variety of non-motorised transport modes would readily be found and that the water transport system would play a significant role. These expectations do not hold for Klamono. This situation can be explained from cultural and historical perspectives. The Klamono were traditionally a river-based people. For centuries, rivers had been their main means of transport. They started to learn how modern roads work with the establishment of the Sorong – Klamono road in the 1940s, which was, in fact, mainly to support oil exploration and exploitation in Klamono. The involvement of more and more Klamonians in oil exploration and exploitation has encouraged them to leave their traditional mode of river transport which, since then, has only been crucial for a subsistence agricultural livelihood. Later on, bicycles were brought to the region by migrants. The acceptance of migrant communities by the indigenous people has been rather more difficult than their adjustment to the oil industry. One reason is a view, widely held among the indigenous people, that the migrants threaten their sources of employment. This has led to a reluctance to accept any of the items of value brought by the migrants, including the use of the bicycle for local transport. When a Klamonian was asked why they did not use the bicycle for their transport activities, the man replied: “Bicycle? (…laugh…) It is only for the migrants, it is embarrassing for us to ride such a thing”.

To some extent, improvements to rural roads and the penetration of motorised vehicles into rural areas threaten the existence of non-motorised vehicles. In Chapter VI, I have discussed the decline of horsecarts in mainland Pangkajene Kepulauan as a result of the penetration of motorised public transport into feeder roads. A similar situation occurred in the Tana Toraja villages. Before the improvement of the 15 km access road, Benteng Ambeso and Pabuaran people used mainly horses to carry goods in their daily travel

30 Migrants (transmigran) from Java and Nusa Tenggara have been settled by the central government in the Klamono region since the early 1980s. Their population in 2001 was three times the indigenous Klamono population (Author's analysis of data from BPS, 2001a).

31 Interview with a Klamono resident, 8 April 2002.
activities. Today, the use of horses is very rare, and only for transporting goods to the market on market days, mainly by Pabuaran people. The great reduction in the use of horses, to a major extent, was influenced by a belief that the availability of a road would change the role of horses. In the early 1990s, people in Benteng Ambeso and Pabuaran sold their horses to villagers in the more remote parts of the south-east region, when they learned that a sealed road would very soon be entering their village. The availability of a modern road, which was only constructed as far as the local market, however, could not satisfy many of the transport tasks of rural people. As a result, for journeys requiring the carriage of goods (e.g. collection of water and firewood, taking seeds and fertilizer to the fields and selling produce in the local market), they now mainly rely on baskets used by women and pikul bars used by men.

To sum up, I have elaborated several macro characteristics of the research households. In general, a village’s level of accessibility corresponds to the overall socio-economic aspects of the households (represented by education level, consumption level and land ownership in this section). The socio-economic situation of the households affects their mobility: the capacity of individuals to engage in transport activities. Improved rural transport infrastructure (contributing to improved accessibility) encourages more motorised vehicles to operate in rural areas, and may improve the mobility of rural people. But, while motorised vehicle ownership, which was affected mainly by the condition of the transport network and by the consumption level of the households, matters for mobility, one should not undervalue the significance of non-motorised vehicles in promoting rural mobility. Non-motorised vehicles operate widely in rural areas, and did so long before the penetration of modern transport into the regions. The persistence of such vehicles reflects the importance of their role, but is also affected by topographical condition, culture, history and even the way rural transport development is promoted in the villages.

8.3 Travel Activities

This section is about travel activities and the factors that influence them. The travel patterns of individuals in each research village are summarised in Table 8.3.
Table 8.3: Village Locality and Transport Patterns

<table>
<thead>
<tr>
<th>Description</th>
<th>Mappasale</th>
<th>Kalabirang Lombo</th>
<th>Ballang Lompo</th>
<th>Rante Kalua</th>
<th>Benteng Ambeso</th>
<th>Pabuaran</th>
<th>Klamono</th>
<th>Disfra</th>
<th>Wanurian</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average individual travel pattern (six months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of trips</td>
<td>539</td>
<td>416</td>
<td>417</td>
<td>317</td>
<td>395</td>
<td>222</td>
<td>219</td>
<td>232</td>
<td>249</td>
<td>334</td>
</tr>
<tr>
<td>Total travel distance (km)</td>
<td>3,108</td>
<td>2,313</td>
<td>2,791</td>
<td>2,320</td>
<td>1,509</td>
<td>960</td>
<td>1,049</td>
<td>662</td>
<td>610</td>
<td>1,702</td>
</tr>
<tr>
<td>Total travel time (hours)</td>
<td>338</td>
<td>264</td>
<td>632</td>
<td>234</td>
<td>377</td>
<td>326</td>
<td>212</td>
<td>263</td>
<td>241</td>
<td>321</td>
</tr>
<tr>
<td>Average travel speed (km/hr)</td>
<td>9.2</td>
<td>8.8</td>
<td>4.4</td>
<td>9.9</td>
<td>4.0</td>
<td>2.9</td>
<td>4.9</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>Total travel cost (rupiah)</td>
<td>852,186</td>
<td>281,935</td>
<td>472,291</td>
<td>285,148</td>
<td>192,947</td>
<td>12,067</td>
<td>132,085</td>
<td>46,656</td>
<td>30,780</td>
<td>256,233</td>
</tr>
<tr>
<td>Total load carried when walking (ton-km)</td>
<td>0.465</td>
<td>1.339</td>
<td>1.226</td>
<td>1.958</td>
<td>6.648</td>
<td>7.427</td>
<td>2.637</td>
<td>2.615</td>
<td>3.356</td>
<td>3.074</td>
</tr>
</tbody>
</table>

Proportion of trips

- By walking: 48.8, 76.1, 86.1, 74.7, 97.1, 99.7, 93.3, 81.8, 86.6, 82.7
- By private non-motorised transport: 21.2, 6.4, 6.5, 0.0, 0.0, 0.0, 0.1, 17.8, 13.2, 7.2
- By public non-motorised transport: 10.6, 3.8, 0.3, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.6
- By private motorised transport: 17.5, 7.6, 5.6, 8.7, 1.0, 0.0, 0.0, 0.4, 0.2, 4.5
- By public motorised transport: 1.9, 6.1, 1.5, 16.6, 1.9, 0.3, 6.6, 0.1, 0.1, 3.9

Total: 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0

Average trip distance

- By walking: 0.99, 1.10, 1.15, 1.57, 2.30, 4.01, 2.19, 1.33, 1.61, 1.81
- By private non-motorised transport: 3.24, 8.36, 6.70, 0.00, 0.00, 0.00, 12.53, 8.50, 5.96, 5.03
- By public non-motorised transport: 5.32, 19.46, 8.67, 0.00, 0.00, 0.00, 60.90, 96.25, 96.00, 62.45
- By public motorised transport: 13.79, 25.27, 84.21, 25.07, 44.98, 0.00, 0.00, 103.60, 38.16

Notes:

- Number of trips is the average number of trips made by individuals in six months. Only trips longer than 500 metres were counted. A trip starts when an individual leaves home and ends when they return home. A trip might serve several travel purposes and/or involve several transport modes.
- Total travel distance is the average of the total distance travelled by each individual over six months. The distance travelled on agricultural production trips, for example, is only the distance travelled to and from the farm, not the distance travelled on the farm itself.
- Total travel time is the average time spent travelling by individuals over six months. The time spent on an agricultural production trip, for example, is only the time to travel to and from the farm, not the time spent there.
- Average travel speed is the average travel speed of individuals, calculated by dividing the total travel distance by the total travel time.
- Total travel cost is the average transport expense of individuals for six months. It includes the expenses of using public and private vehicles.
- Load carried when walking is the average load carried over a period of six months by individuals when walking.
The travel activity survey in these nine villages was carried out between February and April 2002, involving 1,565 individuals from 331 households in nine villages (see Table 8.2 for the summary of the respondent households). The survey recorded: (i) the routine travel activities of these individuals over the previous two weeks and: (ii) the non-routine travel activities of those respondents over the last six months. Average travel patterns for six months were obtained for each individual by accumulating the two, after converting the two-week routine travel into a six-month equivalent. Owing to the time period represented by the recorded data (from October 2001 to April 2002), the travel pattern analysed may only represent the pattern of wet season travel.

Overall, there seems to be a strong indication that the closer the village to its urban centre (and therefore the better the transport connection between that village and the centre), the greater the number of trips made, the greater the distance travelled, the faster the average speeds and the greater the expenditure on travel (Table 8.3, top part). This is reiterated in Figure 8.5 that compares the trip patterns of the villages in terms of the average numbers of trips, travel distance, travel speed and travel cost, relative to the Mappasaile values. The figure reveals some extreme comparisons:

- The average number of trips made by Mappasaile individuals is about two and a half times greater than those of Pabuaran, Klamono, Disfra and Wanurian residents.
- The average distance travelled in six months by Mappasaile people is three to five times further than those of the four villages.
- Mappasaile people travel two to four times faster than those in the four remote villages.
- As a consequence of those conditions, Mappasaile people spend seven to 28 times more on travel expenses than those in Pabuaran and the three Sorong communities.

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32 This calculation is based on the assumption that these individuals carried out exactly the same pattern of trips over the previous six months as was reported in their two-week routine travel form. This assumption was made as it was unreasonable to expect respondents to remember the details of their travel activities for the period of six months.

33 The wet season in Indonesia starts in December and ends by March, while the dry season starts in June and ends by September. The months between these two seasons are the transitional periods (BPS, 2002). The exact period, however, varies between regions. As it seems clear that seasonality matters in affecting the way rural people travel (see for example Rozemuller et al., 2001), the analysis does not claim to represent the dry season situation.

34 Travel time and the load carried when walking are excluded from Figure 8.3 as they will be discussed later in this section.
The numbers of trips made by rural individuals are affected by many factors, but in general the more accessible the village and the greater the mobility of the people the more control they have over their trips. As discussed earlier, accessibility is affected by the condition of transport systems and proximity of desirable locations. Mobility, on the other hand, is a function of transport conditions and the capacity and attitude of individuals toward the significance of trips vis-à-vis the effort needed to carry out these trips. Mappasaile individuals had better accessibility and relatively greater mobility than individuals in the other villages and, understandably, generated more trips. The number of trips, however, is still a very general measure for representing and elaborating the travel patterns of individuals. Other aspects of travel patterns are discussed below.

Given that the proximity and transport connections (Figure 8.1) of Mappasaile people to their social and economic facilities are much better than those in Klamono, Pabuaran, Disfra and Wanurian, one might expect that the latter communities would travel greater overall distances than the former. The reverse is, in fact, true, as demonstrated by the comparison of Mappasaile and Wanurian.

In the case of Mappasaile, households live in a region of dense population, close to an urban centre, and have a relatively good economic situation. The economic situation is closely associated with the degree to which Mappasaile people were involved in the cash
economy. These circumstances facilitate demand for market goods. Interaction between demand and supply in market activities generates more demand for travel and use of transport. This then encourages investment in transport infrastructure and services. Better transport systems reduce transport costs and stimulate more, easier and cheaper travel for people.

The case of Wanurian, however, is just the opposite. Here, people live in a region of low population density, far away from any urban centre. Transport costs are high as demand for transport services is low. Transport investment, driven by the neo-classical approach, is only reluctantly brought to this region, as the prospects for economic returns are low. Operating public transport in the region becomes a very costly affair as the demand for travel is low and transport infrastructure is poor. All these contribute to high information and transaction costs for Wanurian people and inhibit them from effective participation in the market. These situations contribute to the low welfare situation of the people and discourage them from travel.

The conditions of these two different rural transport situations fit the analogy of virtuous and vicious circles of rural transport (Starkey et al., 2002). The virtuous circle of rural transport occurs in areas with high population density and low to medium income, while the vicious circle of transport deprivation is experienced by regions with low population density and low-incomes (Starkey et al., 2002). This formulation, however, focused mainly on the population density and income levels of rural areas and failed to recognise the influence of the development approach, including the way transport improvement is promoted in rural regions. The application of the neo-classical approach in development policy (meaning that public expenditure on transport improvements is biased against low population density or low income rural areas), accentuates the gap between the virtuous and vicious circles of rural transport.

The average travel speed of people in the nine villages is also affected by the location of villages and transport conditions. The location of villages matters primarily for external trips (e.g. travel to urban centres), while transport conditions affect either external or internal trips (e.g. travel to fields). The average travel speed reported by people in the nine villages was five kms/hour (Table 8.3). Using this average, we can classify the villages into three groups. First, villages where the travel speed was above average, as in
the cases of Mappasaile, Kalabirang, and Rante Kalua. These villages are located relatively close to their urban centre (15 kms or less) with relatively good transport infrastructure and services. Second, villages where the travel speed was close to the average, specifically Balanglompo, Benteng Ambeso and Klamono. These villages are located between 24 and 48 kms from their urban centre with relatively modest transport conditions. Lastly, villages where the travel speed was below the average comprised the cases of Pabuaran, Disfra and Wanurian. These villages are between 38 and 108 km from the urban centre and depend upon either rough tracks or low-speed river boats.

At the individual level, however, travel speed is obviously affected by the means of transport used by a person when travelling. This relates to the social and economic power held by individuals. Disadvantaged groups (e.g. poor people, women and children, elderly people and people with disabilities) inevitably experience poorer travel conditions and so, the village travel speed classification given above is much less clear-cut. Although Kalabirang belongs to the “above average speed” group of villages (8.8 kms/hour), a majority of the primary school children in Kalabirang took an hour to walk the four to five km to school. On the other hand, although Benteng Ambeso was classified as an “average speed village” (4.0 kms/hour), a few rich traders from this village were traveling to regional markets (30 kms and 35 kms) nearly everyday in their private cars.

In terms of travel cost, two individual factors are relevant: (i) ability to pay and (ii) willingness to pay for transport services. The former is mainly affected by the socio-economic capability of individuals. The higher consumption level of the Mappasaile households indicates their greater ability to pay transport fares, or to own private motorised vehicles, than the households in the other villages. On the other hand, willingness to pay relates more to rural peoples’ attitudes toward transport. Although these two factors are interrelated, there are several variables that directly affect willingness to pay:

• The individual’s perception of the importance of the trip compared to “the effort” (cost, time and discomfort) needed to carry out the trip. Balang Lompo households, given that their fishing livelihoods depend greatly on transport, spent more on transport than Kalabirang, Rante Kalua and Benteng Ambeso residents, although their average consumption level was lower than these three villages.
Information available to people also affects their willingness to spend money on a specific trip. Information about market prices for their fishing produce encouraged Balang Lompo fishermen to choose whether or not to travel to the market.

The upper part of Table 8.3 also summarises time spent travelling for individuals in the nine research villages. With the exception of Balanglompo, people in the eight villages spent about the same amount of time on travel. The trip time varied from 212 hours/person/six months as the case of Klamono to 377 hours/person/six months as found in Benteng Ambeso. In other words, those people spent between one and two hours every day for travel, no matter what transport system they were involved with, how they travelled and what trip activities they undertook. Rural people with poor transport conditions will have a restricted travel range, and conversely, those with good transport will be able to travel further in a given time. This supports the argument that disparities in travel activities originate from the structural conditions of rural areas and from the political and economic aspects of transport development. With the same amount of time spent in travel, rural people who have good access to motorised vehicles (assuming the speed of vehicle is 60 kms/hr) can travel 20 times further than those who can only travel by walking with the speed of three kms per hour.

Carrying heavy loads when walking is mostly associated with poor transport conditions and hilly topography where non-motorised vehicles play a limited role. Among the research villages, the people of Benteng Ambeso and Pabuaran carried loads when walking that were, on average, 14 to 16 times heavier than Mappasaile people. First, the road network in Benteng Ambeso and Pabuaran was still very limited. The paved road (and public transport services accordingly) ended up at the Benteng Ambeso market. People from both villages predominantly carried loads, with or without the help of horses, to this point before gaining access to motorised vehicles. Second, the hilly topography means that non-motorised vehicles such as tricycles, bicycles and horse carts

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35 Balanglompo was excluded from the trip-time analysis. As given in Table 8.3, the average trip time of Balanglompo individuals was 632 hours/person/six months (3.5 hours/day). Travel for Balanglompo men is inextricably related to their livelihood as a fisherman. A fishing trip can take one or two weeks sailing. In this situation, it is nearly impossible to separate which part of this time is for travel and which part is for fishing.

36 Benteng Ambeso people walked up to six kms from fields to reach the market, while Pabuaran residents walked between seven and 15 kms to reach the same market.
are of limited importance to support the travel of people and their goods. This topographical situation in Tana Toraja helps explain that carrying goods when walking is a significant part of, and embedded in, the daily-life activities of the people. One clear indicator of this fact is that the local language has ten different words to convey transporting goods when walking (Sabandar, 2002). These types of goods transport were also well integrated into Torajanese ritual ceremonies even until recently.

The link between modern transport and the pattern of carrying loads in Tana Toraja should be a subject of further research in gender and rural transport. Before modern transport entered Tana Toraja villages, the transport burden was relatively well distributed between women and men. This is indicated by the almost balanced numbers of male and female carrying devices available in Benteng Ambeso and Pabuaran in 1990 (Figure 8.6).

Figure 8.6: Changes in the number of carrying devices
Source: Focus group with the heads of hamlets of Benteng Ambeso and Pabuaran, 4 October 2002.

In addition, as horses were still widely used to support rural travel, it was men who were responsible for breeding horses and using them mainly to carry goods (as pack animals). The penetration of paved roads into Benteng Ambeso at the end of the 1990s was not just associated with the disappearance of horses from the village, but also with the significant reduction in the availability of men’s carrying devices (i.e. pikul bars/shoulder poles). On the other hand, the number of women’s carrying devices (i.e. baskets) increased for Benteng Ambeso and Pabuaran, which partly indicates the increased transport burden faced by women in these villages. Observation in the Benteng Ambeso market indicates that most women from these two villages came to the market carrying loads using their
baskets, whereas few men came to the market with loads. Whether the burden was 
simply transferred from men and horses to women can only be answered by further 
research. The fact is that the gap between male and female loads has become more 
striking after the penetration of rural roads.

Discussion next refers to the second and third sections of Table 8.3, which summarise the 
pattern of mode use and average trip distance for each particular transport mode. Several 
issues deserve further comment. First, the distribution of trips among transport modes, 
as reiterated in Figure 8.7, shows that higher use of motorised and non-motorised 
transport reduces the role of walking as a mode of travel. In Mappasaile, the significant 
use of private non-motorised transport (21.2%) and public non-motorised transport 
(10.6%) reduced the proportion of on-foot travel to 48.8%. On the other hand, in the 
more remote villages (e.g. Pabuaran, Benteng Ambeso, Klamono, Disfra, Wanurian and 
Balanglombo) where the operation of any non-walking transport system has been 
hampered by the structural and development factors that have been discussed above, the 
use of the human body as a transport vehicle was significant (greater than 80%).

![Figure 8.7: Proportion of trips by different transport modes](image)

It is also interesting to comment on the pattern of transport modes used by the people of 
the three Sorong villages. With better transport connections in Klamono, one might 
expect that the variety of transport modes available would reduce the significance of on-

foot travel for Klamono people. The fact, however, is otherwise. The proportion of travel
by walking was greater in Klamono than in Disfra and Wanurian. This is due to the significant contribution of traditional boats in the latter villages, which complement the on-foot travel of the people. In contrast, the availability of roads in Klamono reduced the dependency of the people on boats. This situation is reflected by the low level of boat ownership of the Klamono (see Table 8.2). The penetration of roads into Klamono has changed the pattern of travel of many Klamono people from rivers to roads. With the reluctance to use bicycles, however, the people’s travel patterns shifted from boating on the river to walking on roads.

So far we have noted the significance of walking in rural travel, and how non-motorised transport reduces the travel burden of rural people. The third part of Table 8.3, which is graphically presented in Figure 8.8, clarifies the role of motorised transport in rural travel.

![Figure 8.8: Average trip distance by transport mode](image)

Walking and non-motorised transport are limited to short and medium distance trips. Kalabirang generated the longest household average trip distance by these modes, 19.46 kms. On the other hand, motorised transport satisfies the need for long distance travel. In Wanurian, the longest household average trip distance is as much as 103.60 kms. In villages like Mappasaile, Benteng Ambeso, Pabuaran, Klamono, and Disfra, motorised public transport was used more for longer distance trips rather than motorised private transport. In Kalabirang, Rante Kalua and Wanurian, the use of motorised transport modes involved similar distances. In Balang Lompo, motorised private transport was
used for longer distance travel supporting fishing activities, while motorised public transport was for shorter trips. It is obvious that both private and public motorised transport modes are important for the long distance travel of rural people.

Overall, this section (with the support from the previous two sections) has elaborated factors influencing travel activities of rural people. These factors can be categorised into four groups:

1. Local characteristics of rural areas: location, topography, population density, settlement pattern, culture/tradition and availability of natural resources.
2. Doctrines, organisations and policies that shape development, including how transport development is introduced into rural areas. The pattern of transport and rural facilities established in the research villages, which affect accessibility and mobility, reflected the strong application of the demand/supply and centralised approaches in development.
3. Socio-economic situations of rural people: income or consumption levels, social and political power, as well as gender relations.
4. Transport system conditions: transport infrastructure, transport services, vehicle ownership including motorised vehicles and non-motorised vehicles.

Each of these four dimensions has been shown to affect travel in rural areas. Each, therefore, is relevant to an understanding of the linkages between transport and the rural economy.

8.4 Linking Travel Patterns and Rural Livelihoods

This section and the section that follows serve a different purpose from the previous sections. The focus is now on examining the relationship between travel patterns of rural people and their livelihoods and welfare levels. As the core of the analysis is to compare travel activities of households with regard to their livelihoods and welfare levels, it is important to select villages that have a comparable context with respect to livelihoods. Three groups of villages with similar contexts emerge from the nine research villages. The first group represents villages that rely on the interaction between farm and non-farm livelihoods. This group includes Mappasaile, Kalabirang, Rante Kalua, Benteng
Ambeso and Pabuaran. The second group includes villages with a riverine context, and are characterised by the interaction between subsistence agriculture and resource-based industry (e.g. forest and mining). This group includes Klamono, Disfra and Wanurian. The third group comprises island villages relying on fishing, of which Balang Lompo is the only example. For the remainder of the discussion I will focus on the first village group.37

The household livelihoods identified in the five selected villages were grouped into three categories: (i) fully agricultural households: households that depend entirely on income from agriculture, (ii) mixed agricultural and non-agricultural households: some members of each household works in non-agricultural sectors either part-time or full-time, while other members are involved in agriculture, and (iii) fully non-agricultural households: households with no agricultural land which rely completely on the non-agricultural sector. The characteristics of the households in the five villages differentiated by this broad livelihood classification are summarised in Table 8.4.

It is shown that, in all villages, households living by a “mixed” livelihood enjoy higher socio-economic welfare (as measured by consumption, education and motorised vehicle ownership) than those living by “only agriculture” or “only non-agriculture”. On average, the households living by a “mixed” livelihood have greater consumption, education and motorised vehicle ownership levels than the “only agricultural” households, by 1.7, 2.0, and 5.5 times, respectively. The ratios are 2.1, 1.4 and 3.0 when comparing “mixed” households and households living by “non-agriculture”. Although not always true, “mixed” livelihood households normally had agricultural land and had worked in agriculture before adding their non-agricultural source of income. Better levels of education helped them to access non-agricultural jobs. Furthermore, households living by “only non-agriculture” were normally those who had migrated into the villages, mainly for economic reasons (e.g. find jobs). These households had no agricultural land, but their incomes from non-agricultural employment were relatively

37 It is not my intention to ignore the other four research villages in this analysis. The selection of the first village group is based on the assumption that these five villages have different levels of transport improvements, and so can provide rich evidence on the effects of different transport conditions on travel patterns and rural livelihoods. The riverine village group, although it offers interesting insights, would be less effective in bringing out evidence related to transport and rural livelihood linkages, as Disfra and Wanurian have been relatively untouched by modern transport improvements, and the livelihood situation of these villages is relatively similar. Meanwhile, the island village group consists of only one village.
higher than households living by “only agriculture”. The “only agriculture” household type might or might not possess agricultural land. My interviews strongly indicated that their absence from non-agricultural employment was not because they wanted to focus only on their farm activities, but because they lacked opportunities to gain such jobs. Low education levels, coupled with the difficulties of accessing non-agricultural jobs, restricted them to the agricultural sector.

Table 8.4: Household characteristics by village and livelihood situation

<table>
<thead>
<tr>
<th>Household Type Description</th>
<th>Mappa-saille</th>
<th>Kala-birang</th>
<th>Rante Kalua</th>
<th>Benteng Ambeso</th>
<th>Pabuaran</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of households</td>
<td>6</td>
<td>11</td>
<td>9</td>
<td>34</td>
<td>28</td>
</tr>
<tr>
<td>Average household size</td>
<td>5.3</td>
<td>4.8</td>
<td>3.8</td>
<td>4.0</td>
<td>4.7</td>
</tr>
<tr>
<td>Average household consumption</td>
<td>891,667</td>
<td>592,080</td>
<td>652,825</td>
<td>957,717</td>
<td>615,589</td>
</tr>
<tr>
<td>Average household land tenure</td>
<td>0.03</td>
<td>0.45</td>
<td>1.99</td>
<td>0.81</td>
<td>9.18</td>
</tr>
<tr>
<td>Average score of education</td>
<td>13</td>
<td>9</td>
<td>33</td>
<td>41</td>
<td>26</td>
</tr>
<tr>
<td>Motorised vehicle ownership level</td>
<td>50.0</td>
<td>9.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Non-motorised vehicle ownership level</td>
<td>133.3</td>
<td>45.5</td>
<td>0.0</td>
<td>0.0</td>
<td>7.1</td>
</tr>
</tbody>
</table>

Table 8.4 also indicates that the closer the village to its urban centre (and therefore the better the transport connections of the village), the more households that have adopted “mixed” agricultural and non-agricultural livelihoods. In Mappasaile and Rante Kalua, for example, the number of households living by a “mixed” livelihood is 30 (75% of Mappasaile households) and 24 (62% of Rante Kalua households), respectively. Meanwhile, in Pabuaran, only two households fall outside the “fully” agricultural household category (7% of Pabuaran households). This indicates that improved transport connections facilitate more opportunities for rural people to engage in non-agricultural employment.
With better welfare (as indexed by consumption, education and motorised vehicle ownership), one can assume that households living by a “mixed” livelihood will travel more, further and faster than households living by “only agriculture”, or by “only non-agriculture”. Better mobility, in turn, should provide more opportunities for a better livelihood. Before discussing whether or not that hypothesis can be accepted, a summary of the travel activities of the three types of households is provided in table 8.5.

Table 8.5: Household travel patterns by livelihood type and village

<table>
<thead>
<tr>
<th>Household Travel Activities in Six Months</th>
<th>Number of trips</th>
<th>Travel Distance (km)</th>
<th>Travel time (hr)</th>
<th>Average travel speed (km/hr)</th>
<th>Travel expenditure (rupiah)</th>
<th>Total load-carried (ton·km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural households</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mappasaile</td>
<td>2,247</td>
<td>15,294</td>
<td>2,024</td>
<td>7.6</td>
<td>8,672,300</td>
<td>2.2</td>
</tr>
<tr>
<td>Kalabirang</td>
<td>1,604</td>
<td>4,813</td>
<td>853</td>
<td>5.6</td>
<td>352,000</td>
<td>8.2</td>
</tr>
<tr>
<td>Rante Kalua</td>
<td>1,087</td>
<td>4,340</td>
<td>1,052</td>
<td>4.1</td>
<td>274,500</td>
<td>24.0</td>
</tr>
<tr>
<td>Benteng Ambeso</td>
<td>1,394</td>
<td>3,898</td>
<td>1,190</td>
<td>3.3</td>
<td>189,471</td>
<td>15.7</td>
</tr>
<tr>
<td>Pahmaran</td>
<td>801</td>
<td>3,401</td>
<td>1,163</td>
<td>2.9</td>
<td>27,892</td>
<td>26.5</td>
</tr>
<tr>
<td>Average</td>
<td>1,427</td>
<td>6,349</td>
<td>1,256</td>
<td>4.7</td>
<td>1,903,333</td>
<td>15</td>
</tr>
<tr>
<td>Mixed households</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mappasaile</td>
<td>2,305</td>
<td>13,414</td>
<td>1,350</td>
<td>9.9</td>
<td>2,778,877</td>
<td>1.9</td>
</tr>
<tr>
<td>Kalabirang</td>
<td>1,796</td>
<td>12,234</td>
<td>1,240</td>
<td>9.9</td>
<td>1,704,157</td>
<td>5.0</td>
</tr>
<tr>
<td>Rante Kalua</td>
<td>1,239</td>
<td>9,153</td>
<td>827</td>
<td>11.1</td>
<td>1,180,258</td>
<td>3.6</td>
</tr>
<tr>
<td>Benteng Ambeso</td>
<td>1,571</td>
<td>12,102</td>
<td>2,099</td>
<td>5.8</td>
<td>2,860,750</td>
<td>59.7</td>
</tr>
<tr>
<td>Pahmaran</td>
<td>308</td>
<td>2,324</td>
<td>640</td>
<td>3.6</td>
<td>237,000</td>
<td>15.8</td>
</tr>
<tr>
<td>Average</td>
<td>1,444</td>
<td>9,845</td>
<td>1,231</td>
<td>8.1</td>
<td>1,752,209</td>
<td>17</td>
</tr>
<tr>
<td>Non-agricultural households</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mappasaile</td>
<td>1,175</td>
<td>2,328</td>
<td>510</td>
<td>4.6</td>
<td>663,500</td>
<td>1.5</td>
</tr>
<tr>
<td>Kalabirang</td>
<td>1,648</td>
<td>5,921</td>
<td>853</td>
<td>6.9</td>
<td>31,500</td>
<td>2.8</td>
</tr>
<tr>
<td>Rante Kalua</td>
<td>1,137</td>
<td>1,692</td>
<td>856</td>
<td>13.7</td>
<td>1,531,250</td>
<td>2.0</td>
</tr>
<tr>
<td>Average</td>
<td>1,320</td>
<td>6,647</td>
<td>740</td>
<td>8.4</td>
<td>742,083</td>
<td>2</td>
</tr>
</tbody>
</table>

As shown by the summary “average” rows of Table 8.5, it is nearly true (top on the number of trips and travel distance, second on the average travel speed) that the households living by a “mixed” livelihood travel more, further and faster than those who live by “only-agriculture or “only non-agriculture”. On a case-by-case basis, however, the rest of the hypothesis is less obvious. This can be seen in Figure 8.9 that compares villages in terms of the three trip characteristics and livelihood types. In terms of trip numbers, “mixed” households of Mappasaile travel the most, followed by “agricultural” households of Mappasaile, and “non-agricultural” households of Kalabirang. In the context of trip distance, however, “agricultural” Mappasaile households travel the farthest, followed by “mixed” households of Mappasaile, and “mixed” households of Kalabirang. It is worth noting that the involvement of some “agricultural” households of Mappasaile in fishing that involves travel off-shore, generates an exceptional trip
distance for this group. In terms of average travel speed, "non-agricultural" households of Rante Kalua travel the fastest, followed by "mixed" households of Rante Kalua and "mixed" households of Kalabirang and Mappasaile. The fact that some members of the "non-agricultural" households in Rante Kalua worked as public transport operators, traders, and workers and therefore used motorised transport frequently helps to explain the highest travel speed of this group.

![Graph showing trip characteristics of households categorised by livelihood and village](image)

A= agricultural households, M= mixed households, N= non-agricultural households

Figure 8. 9: Trip characteristics of households categorised by livelihood and village

In terms of travel expenditure, "agricultural" households of Mappasaile spent overwhelmingly greater amounts than other household groups, followed by "mixed" households of Benteng Ambeso and Mappasaile. Again, the involvement of some "agricultural" households of Mappasaile in fishing explains why the transport expenditure of this group is very high.

In terms of load carried when walking, several groups of households carried significant burdens (between 15.7 and 59.7 ton-kms/six months). These were the "mixed" households of Benteng Ambeso and Pabuaran, and "agricultural" households of Pabuaran, Rante Kalua and Benteng Ambeso. All of these groups are from Tana Toraja, which indicates the effect of the topographical condition of the region hampering the use of non-motorised vehicles which could help reduce the transport burden of the people.
To explore in more detail the link between transport conditions, livelihood patterns and travel activities, the trip activities of the 15 village-livelihood groups are examined. Trip activities are divided into eight categories. They are trips for: agricultural production, agricultural marketing, non-agricultural employment, education, household tasks, social purposes, leisure activities and health care (Table 8.6).

Table 8.6: Trip category, livelihood groups and example of trips

<table>
<thead>
<tr>
<th>Trip category</th>
<th>Livelihood groups conducting the trip</th>
<th>Examples of trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural production</td>
<td>Agricultural households</td>
<td>Cultivating rice or growing vegetables</td>
</tr>
<tr>
<td></td>
<td>Mixed households</td>
<td>Watering farm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Raising animals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Purchasing farm inputs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crop harvesting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transporting rice to a mill or storage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fishing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preparing nets for fishing</td>
</tr>
<tr>
<td>Agricultural marketing</td>
<td>Agricultural households</td>
<td>Selling agricultural produce</td>
</tr>
<tr>
<td></td>
<td>Mixed households</td>
<td>Visiting agricultural traders</td>
</tr>
<tr>
<td>Non-agricultural employment</td>
<td>Non-agricultural households</td>
<td>Journey to work</td>
</tr>
<tr>
<td></td>
<td>Mixed households</td>
<td>Trading consumer goods</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operating public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selling home produce in markets</td>
</tr>
<tr>
<td>Household tasks</td>
<td>All household types</td>
<td>Collecting water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fetching firewood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buying household needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Washing clothes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shopping</td>
</tr>
<tr>
<td>Education</td>
<td>All household types</td>
<td>Attending school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Going to study in a friend’s house</td>
</tr>
<tr>
<td>Social purposes</td>
<td>All household types</td>
<td>Going to worship</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Visiting relatives or friends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attending parties or ceremonies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attending meeting in village office</td>
</tr>
<tr>
<td>Leisure activities</td>
<td>All household types</td>
<td>Playing sports</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Watching television in a friend’s house</td>
</tr>
<tr>
<td>Health care</td>
<td>All household types</td>
<td>Visiting health clinics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delivering children for immunisation</td>
</tr>
</tbody>
</table>

Table 8.7 provides a summary of the travel activities made by livelihood groups according to the number of trips for each purpose/mode combination, and Table 8.8 provides more detailed information by ranking the five major trip types for each livelihood group for every village.
Table 8.7: Travel activities made by livelihood groups (percentage of trips)

<table>
<thead>
<tr>
<th>Description of trips</th>
<th>Agricultural households</th>
<th>Mixed households</th>
<th>Non-agricultural households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>W</td>
<td>NMT</td>
<td>MT</td>
</tr>
<tr>
<td>Agricultural production</td>
<td>46.0</td>
<td>1.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Agricultural marketing</td>
<td>1.5</td>
<td>0.6</td>
<td>0.9</td>
</tr>
<tr>
<td>Non agricultural employment</td>
<td>11.1</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Education</td>
<td>14.7</td>
<td>1.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Household task</td>
<td>14.2</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Leisure</td>
<td>4.5</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Health</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>91.9</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: W: walking; MT: motorised vehicles; NMT: non-motorised vehicles

Table 8.8: The five major trip-types by household category (percentage of trips)

<table>
<thead>
<tr>
<th>Trip activities</th>
<th>Percent</th>
<th>Trip activities</th>
<th>Percent</th>
<th>Trip activities</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAPASAILE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social by walking</td>
<td>44.4</td>
<td>Social by walking</td>
<td>22.2</td>
<td>Social by walking</td>
<td>59.8</td>
</tr>
<tr>
<td>agr. prod. by MT</td>
<td>13.1</td>
<td>Social by MT</td>
<td>11.0</td>
<td>House.task by walking</td>
<td>10.0</td>
</tr>
<tr>
<td>house.task by NMT</td>
<td>13.0</td>
<td>Education by NMT</td>
<td>10.9</td>
<td>Non-agri.empl.by NMT</td>
<td>8.0</td>
</tr>
<tr>
<td>education by walking</td>
<td>9.3</td>
<td>Social by NMT</td>
<td>8.5</td>
<td>Education by walking</td>
<td>6.6</td>
</tr>
<tr>
<td>agr. mark. by NMT</td>
<td>4.5</td>
<td>Agr.prod. by walking</td>
<td>6.1</td>
<td>Social by NMT</td>
<td>5.2</td>
</tr>
<tr>
<td>Total</td>
<td>84.3</td>
<td>Total</td>
<td>58.7</td>
<td>Total</td>
<td>89.6</td>
</tr>
<tr>
<td>KALABIRANG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agr. prod. by walking</td>
<td>40.4</td>
<td>Agr.prod. by walking</td>
<td>21.5</td>
<td>House.task by walking</td>
<td>42.5</td>
</tr>
<tr>
<td>house.task by walking</td>
<td>22.1</td>
<td>House.task by walking</td>
<td>18.7</td>
<td>Education by walking</td>
<td>24.5</td>
</tr>
<tr>
<td>education by walking</td>
<td>10.0</td>
<td>Education by walking</td>
<td>13.8</td>
<td>Non-agri.empl.by NMT</td>
<td>10.3</td>
</tr>
<tr>
<td>social by walking</td>
<td>6.9</td>
<td>Social by walking</td>
<td>13.3</td>
<td>House.task by NMT</td>
<td>7.9</td>
</tr>
<tr>
<td>agr. prod. by NMT</td>
<td>6.8</td>
<td>Non-agri.empl.by MT</td>
<td>8.8</td>
<td>Social by walking</td>
<td>7.6</td>
</tr>
<tr>
<td>Total</td>
<td>86.2</td>
<td>Total</td>
<td>76.1</td>
<td>Total</td>
<td>92.8</td>
</tr>
<tr>
<td>RANTE KALUA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agr. prod. by walking</td>
<td>48.5</td>
<td>Education by walking</td>
<td>19.6</td>
<td>Non-agri.empl.by MT</td>
<td>22.3</td>
</tr>
<tr>
<td>social by walking</td>
<td>12.8</td>
<td>House.task by walking</td>
<td>17.1</td>
<td>Non-agri.empl.by walking</td>
<td>22.1</td>
</tr>
<tr>
<td>house.task by walking</td>
<td>11.8</td>
<td>Agr.prod. by walking</td>
<td>12.6</td>
<td>Education by walking</td>
<td>20.6</td>
</tr>
<tr>
<td>education by walking</td>
<td>11.5</td>
<td>Social by walking</td>
<td>11.3</td>
<td>Social by walking</td>
<td>11.5</td>
</tr>
<tr>
<td>leisure by walking</td>
<td>8.4</td>
<td>Non-agri.empl.by MT</td>
<td>10.6</td>
<td>House.task by walking</td>
<td>10.4</td>
</tr>
<tr>
<td>Total</td>
<td>93.0</td>
<td>Total</td>
<td>71.2</td>
<td>Total</td>
<td>86.9</td>
</tr>
<tr>
<td>BENTENG AMBESO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agr. prod. by walking</td>
<td>59.2</td>
<td>Agr.prod. by walking</td>
<td>43.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>house.task by walking</td>
<td>18.4</td>
<td>Non-agri.empl.by walking</td>
<td>12.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>education by walking</td>
<td>7.9</td>
<td>Education by walking</td>
<td>12.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>social by walking</td>
<td>7.2</td>
<td>House.task by walking</td>
<td>9.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>leisure by walking</td>
<td>3.9</td>
<td>Leisure by walking</td>
<td>5.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>96.6</td>
<td>Total</td>
<td>83.7</td>
<td>Total</td>
<td>0.0</td>
</tr>
<tr>
<td>PAPUARAN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agr. prod. by walking</td>
<td>48.7</td>
<td>Non-agri.empl.by walking</td>
<td>44.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>education by walking</td>
<td>19.5</td>
<td>Social by walking</td>
<td>26.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>social by walking</td>
<td>16.4</td>
<td>House.task by walking</td>
<td>16.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>house.task by walking</td>
<td>9.3</td>
<td>Agr.prod. by walking</td>
<td>8.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>leisure by walking</td>
<td>3.8</td>
<td>Non-agri.empl.by MT</td>
<td>2.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>97.7</td>
<td>Total</td>
<td>98.4</td>
<td>Total</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Note: agr. prod.: agricultural production; agr. mark.: agricultural marketing; non-agri.empl.: non-agricultural employment; house.task: household task.
The pattern of trip activities is different for each household group. This indicates that there is no ‘one-size-fits-all’ pattern that can be generated from these villages. Nevertheless, some broad trends in travel activities are identified for discussion.

First, no matter the condition of the transport network and the types of households, agricultural production trips are predominantly undertaken by walking. The one exception to this conclusion is in the Mappasaile agricultural households which are involved in fishing activities. This indicates that agricultural production (farming) is still traditional in practice. Even farmer households living close to the Sulawesi Highway make agricultural production trips mainly by walking, similar to other farmer households living away from roads. The expansion of the modern transport system to rural areas in the form of roads and motorised transport does not seem to change the predominant on-foot style of agricultural production trips.

There could be four major explanations for this situation. First, the location of farms might be within walking distance of the home so people do not need to use a vehicle to go to their fields. Second, the cost of taking a vehicle to the farm is perceived as uneconomic compared to the production outcome. For example, a Kalabirang farmer stated that he preferred half an hour’s walk to the farm every day rather than investing in a vehicle to help him with such travel as he thought that the annual value of production was only a fraction of the cost of vehicle. This is, however, complicated by the third factor. People might not have enough information about the added costs and benefits of using vehicles for agricultural production trips. What is more, the use of a wheeled tractor as a transport vehicle “on” as well as “to” and “from” the farm, and even to markets (as has been widely the case in rural India, for example) is rare in the study areas. This is, however, not just because the people are not provided with such information, but also because tractors are not among motorised vehicles permitted for people/goods transport on Indonesian public roads. Lastly, even though villages might be accessible to motorised vehicles, most farms and fields are not. Taking a motorised vehicle to the farm would then mean parking the vehicle on the roadside and walking the rest of the way to the farm.
On the other hand, non-agricultural income generation trips associate very closely with the non-walking transport system. As indicated in Table 8.8, the role of non-motorised transport in non-agricultural employment trips is significant for “non-agricultural” households of both Mappasaile and Kalabirang. In these two communities, horse-carts and bicycles are mainly used by the people who engage in “non-agricultural” jobs. Meanwhile, motorised transport contributes significantly to non-agricultural employment trips in the “mixed” households of Kalabirang and Rante Kalua, and in “non-agricultural” households of Rante Kalua.

There are several explanations for this situation. First, the availability of rural non-agricultural jobs is facilitated by “paved roads”. The rural bank in Benteng Ambeso was established after the road was paved, and generated new rural jobs. Two local staff of this bank were provided with motorcycles to support the bank’s operations in the region. Second, non-agricultural employment in urban areas becomes more accessible for rural people with the availability of motorised networks. Rural people can still live in their village while working in the city. A small consumer goods trader in Kalabirang, for example, took a minibus for return travel to the urban market nearly every day.

Relating the situations described above to the fact that those households which rely on “non-agriculture” are better-off than those who only rely on “agriculture” is a fascinating issue. It is clear that travel for agricultural production is relatively untouched by improvements to the rural transport system. The fact that only the main transport link in the village is the target of improvements means that village to farm networks remain inaccessible for motorised vehicles (and improved production technology, accordingly). Furthermore, improvements to the rural transport system provide expanded opportunities for rural people who work, or intend to work in non-agricultural sectors. With modern transport making relatively little contribution to agricultural production trips, the expansion of modern transport in the non-agricultural sector leads to a disparity in mobility, and generates contrasting well-being conditions, that become striking between those who completely rely on “agriculture” and those whose livelihoods are “non-agricultural”.

Compared to agricultural production trips, agricultural marketing trips are fewer in number and make use of motorised and non-motorised vehicles. This is understandable,
given the fact that people sell their produce to the market normally on market day (once a week), while trips to the farm can occur everyday. Fewer marketing trips, however, occur also because many farmers prefer to sell their produce at the farm gate, avoiding costs associated with transporting their produce to the market. The improvement of the Benteng Ambeso access road meant, for example, that urban traders could more easily purchase coffee and cloves directly from the local farmer in the village. Accordingly, the price of such produce is determined mainly by the traders rather than by the more transparent interplay of supply and demand in the market. This indicates that while agricultural marketing trips are important for farmers, the improvement of the agricultural marketing network must go beyond simply expanding the transport system. Improving the mobility of farmers must also address the farmers' lack of capacity to sell their agricultural produce in a broader trading network, an issue associated with the problems of imperfect information and high transaction costs.

Trips for income generating purposes are only part of the travel activities of rural people. Social trips make up the other significant part (see Table 8.7). Trips made going to worship, visiting friends or relatives, and attending social gatherings are important for the people in these villages. Social trips by walking are the most significant trip type for all types of households in Mappasaile. Walking to a mosque was a major trip type for the Mappasaile respondents, who were all Moslems and worship five times a day. Trips to the mosque, especially the one for the evening prayer, were normally coupled with socialising. In addition, social trips by walking are among the five major trip types for all the other household groups, except for "mixed" households of Benteng Ambeso where such trips ranked sixth. These results indicate that social trips are important for people in these five villages, regardless of where they live, the nature of their transport situation and what livelihood they follow.

Trips for leisure activities are among five major trip types in "agricultural" households of Rante Kalua, Benteng Ambeso and Pabuaran and "mixed" households of Benteng Ambeso. All such trips are undertaken by walking. These trips were significant because rural people frequently engage in leisure activities after completing their main tasks. Farmers, for example, visit their friends to watch television after spending the whole day on the farm. Children play in their friends' houses after returning home from school. It is difficult to measure the benefits of these trips to the livelihoods of rural households,
but they are surely significant in cementing the social relationships between households in the village as well as contributing to the psychological welfare of the individual.

Another trip purpose classified as social is the trip to education. Education trips by walking were most notably made by children in the form of return trips to school. It is worth remembering that primary schools were located in all five village territories (a return trip to school for the households studied varied between one and ten km), a junior high school was not available in Pabuaran meaning that a return walk of at least 16 km a day was required for the students living in this village, and senior high schools were only found in Mappasaile and Rante Kalua. Walking to school is clearly significant in all village-household categories, except for “mixed” households of Pabuaran and Mappasaile. The only two households belonging to the “mixed” category in Pabuaran had no children attending school. Meanwhile, a substantial proportion of the children in the “mixed” households of Mappasaile rode bicycles, tricycles or horse carts to school. Several conclusions emerge from these situations. First, children walking to school are a substantial feature of rural communities. Second, the existence of various non-motorised vehicles in the village can help reduce the travel burden of children, as in the case of “mixed” households of Mappasaile. However, this depends largely on the ability and willingness of households to provide better transport for their children.

Trips for health care were fewer and not among the five major trip-types for any household category. This does not mean that such trips are not crucial for rural people. The nature of these trips is that they are made only when health treatment is needed and so, in terms of aggregate trip frequencies, these trips were insignificant. However, the need for medication for ill people, or immunisation for children, means that each trip for health care is of considerable importance for rural people.

Another type of trip that can be economic as well as social in function is that made for household tasks. These trips are relatively short, numerous and primarily on-foot. Women and children are mainly responsible for these trips. These trips are significant in all types of household category, except for “mixed” households of Mappasaile. In fact, these trips made up 12% of all trips (more than the role of agricultural production trips which was only 10%) and shared among walking, non-motorised and motorised vehicles. This indicates that some household task trips that were normally made by walking have
been transferred into non-walking trips with the availability of various non-motorised and motorised vehicles in the village.

### 8.5 The Poorest and the Richest: Comparing the Travel Patterns

In conjunction with examining the link between travel patterns and rural livelihoods, as discussed in the previous section, this section examines the relationship between welfare levels and travel patterns of rural people. Welfare level is defined by the consumption level of households.\(^{38}\) The analysis is based on socio-economic and travel activity data from the 190 households of the above five villages. Households were ranked according to their consumption level. The highest 20% of households were grouped as the “richest” (38 households), while those in the lowest 20% were categorized as the “poorest” (38 households). The “richest” were found in all villages except for Pabuaran, and the poorest were distributed in all villages. The “poorest” group was dominated by Paburan households (42% of the 38 households), while Mappasaile and Rante Kalua households shared the most in the “richest” group (each contributing 32% of the 38 households). This, in a broad perspective, indicates that the better transport connections of villages with public facilities provide more opportunities to increase household welfare. Table 8.9 presents the general characteristics of these two groups.

<table>
<thead>
<tr>
<th>Description</th>
<th>The Poorest 20%</th>
<th>The Richest 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of households</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Percentage of “agriculture only” households</td>
<td>79</td>
<td>5</td>
</tr>
<tr>
<td>Average household size</td>
<td>4.4</td>
<td>5.2</td>
</tr>
<tr>
<td>Average household consumption (rupiah)</td>
<td>483,829</td>
<td>2,167,542</td>
</tr>
<tr>
<td>Average non-food consumption (rupiah)</td>
<td>150,726</td>
<td>1,104,389</td>
</tr>
<tr>
<td>Average land owned per household (ha)</td>
<td>3.82</td>
<td>5.22</td>
</tr>
<tr>
<td>Average education score*)</td>
<td>25</td>
<td>55</td>
</tr>
<tr>
<td>Motorised vehicle ownership level*)</td>
<td>15</td>
<td>48</td>
</tr>
<tr>
<td>Non-motorised vehicle ownership level*)</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

*) This measure is explained in Section 8.2

Four out of five “poorest” households live by “only agriculture”, while just one out of 20 “richest” households relies completely on agriculture. These points indicate a close

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\(^{38}\) It should be noted that the measure for welfare level used in this section is different from the one employed in Chapter VII.
association between an agricultural livelihood and rural poverty, as well as between more non-agricultural employment opportunities and improved rural well-being. The former relationship is well represented by Pabuaran households, while the latter can be illustrated by Mappasaile and Rante Kalua households. The richest also have higher education levels (more than two times) than the poorest. In terms of vehicle ownership, the “richest” have more than three and four times the motorised and non-motorised ownership than the poorest, respectively. The implication that the “richest” have greater mobility than the “poorest” is analysed next. Table 8.10 compares the “richest” and the “poorest” by converting the average travel pattern measures to a percentage of the larger value in each case.

Table 8.10: Households: Travel patterns of the richest and the poorest

<table>
<thead>
<tr>
<th>Description</th>
<th>The Poorest 20%</th>
<th>The Richest 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comparison of trip activities</strong></td>
<td>(largest value = 100)</td>
<td></td>
</tr>
<tr>
<td>Number of trips</td>
<td>61</td>
<td>100</td>
</tr>
<tr>
<td>Total travel distance (km/six months)</td>
<td>23</td>
<td>100</td>
</tr>
<tr>
<td>Total travel time (hr/six months)</td>
<td>68</td>
<td>100</td>
</tr>
<tr>
<td>Average travel speed (km/hr)</td>
<td>34</td>
<td>100</td>
</tr>
<tr>
<td>Total expenditure on travel (rupiah)</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Load carried when walking (ton-km)</td>
<td>100</td>
<td>33</td>
</tr>
<tr>
<td><strong>Comparison of trip distance by mode used</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By walking</td>
<td>100</td>
<td>78</td>
</tr>
<tr>
<td>By private non-motorised transport</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>By public non-motorised transport</td>
<td>28</td>
<td>100</td>
</tr>
<tr>
<td>By private motorised transport</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>By public motorised transport</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td><strong>Comparison of trip distance by trip purpose</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trips for agricultural production</td>
<td>49</td>
<td>100</td>
</tr>
<tr>
<td>Trips for agricultural marketing</td>
<td>22</td>
<td>100</td>
</tr>
<tr>
<td>Trips for non-agricultural employment</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>Trips for education</td>
<td>18</td>
<td>100</td>
</tr>
<tr>
<td>Trips for household tasks</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Trips for social purposes</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>Trips for leisure activities</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Trips for health care</td>
<td>32</td>
<td>100</td>
</tr>
</tbody>
</table>

Low mobility is closely associated with poverty. As shown in Table 8.10 (first section), the rich travel more frequently, further, for a longer time, faster and pay higher travel
costs but carry smaller loads when walking than the poor. Numbers of trips and total travel time may show a moderate gap, as these aspects are largely conditioned by the time available in the day. But, much wider gaps in total travel distance, average travel speed, total travel expenses and total load carried when walking indicate the much lower mobility of the poor compared to the rich. In terms of total travel distance, for example, the rich travel more than four times farther than the poor. In travel speed, the poor’s travel speed is 3.9 km/hr (34% of the "rich" value) indicating that the predominant mode of travel is walking. Meanwhile, the average "rich" travel speed is 11.4 km/hr (100%) indicating that a combination of motorised and non-motorised vehicles is used. The rich also spend 20 times more than the poor in expenditure on travel, indicating overwhelmingly greater ability and willingness to pay. When walking, the poor carry aggregate loads three times heavier than the loads of the rich.

The use of various transport modes helps explain the greater mobility of the rich (Table 8.10 second section). The rich dominate the use of all types of transport modes (motorised and non-motorised vehicles, private and public transport) which facilitate longer distance travel. In terms of non-motorised transport, the total travel distance of the rich is more than three times farther than that of the poor. In terms of travelling by motorised transport (either private or public), the distance ratio between the rich and the poor is 12.5:1. This ratio clearly indicates a huge disparity in the use of motorised transport between the poor and the rich and leads us to question the role of modern transport in facilitating transport for the poor.

The availability of various transport modes (and the ability to use them) enables the rich to travel farther for all trip purposes than the poor (Table 8.10 third section). Greater mobility for all types of trip enables the rich to enjoy more opportunities in socio-economic activities. Greater mobility for agricultural production/marketing and non-agricultural employment as well as for household tasks helps explain the higher income of the rich. Greater mobility for health care, social and leisure activities contributes to better social welfare for the rich. Greater mobility for education leads to better employment opportunities and to higher incomes.
8.6 Conclusions

In this chapter, I have analysed factors influencing accessibility, mobility and travel activities of rural people and examined the relationships between these factors and rural livelihoods. Some key findings are summarised in subsequent paragraphs.

First, accessibility is affected by location and transport connection. In this analysis, village accessibility is a function of the location of the village vis-à-vis its relevant facilities and transport networks connecting the village with these facilities. The pattern of the improvements of these facilities and transport network is, however, affected by the way development, including transport improvement, is conceptualised and implemented in rural areas. The adoption of a neo-classical model based on the demand/supply approach in the development process means that the less "productive" the region (e.g. low population density, few economic resources), the less attention was given to developing infrastructure and services into the region, resulting in lower accessibility for the village residents and leaving them disadvantaged relative to other areas.

Second, mobility is affected by the socio-political and economic situation of rural areas. The socio-political aspects include social relations between individuals (e.g. men and women, local people and migrants) to gain access to and use of desired transport services, while the economic aspects refer to economic ability (e.g. incomes) to afford transport services. The preceding analysis revealed a positive link between the welfare level of rural households (represented by the consumption level) and rural mobility in relation to motorised vehicle ownership (Section 8.2). Non-motorised vehicles are also crucial for supporting rural mobility. Their existence, however, is affected mainly by topographical condition, culture and history, but also by the penetration of the modern transport system into rural areas. The analysis also signified the strong relation between accessibility and mobility. Improved transport infrastructure encourages the operation of various transport modes in the village and may improve the mobility of rural people. On the other hand, improved rural mobility leads to better use and supply of transport services and rural facilities.

In general, better accessibility of rural areas and greater mobility of rural people result in people having more control over their trips. Section 8.3, however, indicated that this
relationship is dynamic and is influenced by many factors. These factors can be classified into four categories: (i) local characteristics (e.g. location, topography, population density, settlement pattern, culture/tradition and natural resources), (ii) doctrine, organisation and policy of development, which mainly refer to the way modern development is introduced into rural areas, (iii) socio-economic situation of rural people (e.g. income/consumption, political power, and gender relations), and (iv) transport system conditions (e.g. transport infrastructure and services). Together, these four factors influence rural accessibility and mobility (Figure 8.10). The figure implies that disparities in accessibility and mobility originate from structural conditions of rural areas and from the political and economic aspects of development.

Figure 8. 10: Rural accessibility and mobility and factors affecting them

Improved accessibility of rural areas with respect to their urban centres provides more opportunities for rural people to gain non-agricultural employment. Section 8.4 indicated that, as the village became more accessible to the urban centre, more agricultural households were involved in non-agricultural employment and enjoyed higher socio-economic welfare. On the other hand, villages with poor rural-urban connections had a majority of their households living by traditional agriculture. Such situations create different patterns of mobility and travel activities, not just among villages with different accessibility levels, but also among different household livelihood
groups ("only agriculture", "mixed", and "only non-agriculture" households) within the village. Some key points on the travel activities of these household types are:

- **Agricultural production trips** are significant and predominantly undertaken by walking, regardless of the condition of the transport system and the category of livelihoods. These trips have little connection with modern transport improvements taking place in the village.

- **Non-agricultural employment trips**, on the other hand, are associated with non-walking transport systems (motorised and non-motorised vehicles), and particularly benefit from motorised transport improvements.

- Although relatively few, trips for agricultural marketing are crucial, and carried out by various transport modes. For farmers, however, the issue of marketing agricultural produce goes beyond an improved transport network: it is about having power to deal with a broader trading network.

- **Social trips** (e.g. going to worship, visiting relatives or friends, and attending social gatherings) are important for rural people, regardless of where they live, the nature of their transport situation and what livelihood they follow. These trips are predominantly by walking, but the moderate use of non-walking transport modes is found among "mixed" and non-agricultural households.

- **Trips for leisure** (e.g. playing sports and visiting friends for leisure purposes) are significant in some villages and are mainly undertaken by walking. "Mixed" livelihood households, however, use motorised and non-motorised vehicles for such trips.

- **Trips for education** are significant in all villages and for all livelihood categories. They are carried out by children and mainly by walking. The availability of various transport modes and the capability of households to provide better transport for their children, are the key factors to improve children’s mobility for education.

- **Trips for health care** are relatively few in number, but they are crucial for rural people. Accessiblity and mobility of rural people to reliable health centres influence their behaviour when seeking medical treatment or delivering children for immunisation.

- **Trips for household tasks** are numerous and important for all household-livelihood groups. These trips are mainly by walking and undertaken by women and children.
Finally, higher levels of mobility are closely related to better rural well-being. The rural poor travel less frequently, shorter distances, at slower speeds, and pay lower travel costs but carry heavier loads when walking than the rural rich. The main reason is the poor travel mainly by walking, and the rich employ various transport modes for travelling. The use of a variety of transport modes helps explain the greater mobility of the rich. The travel distance analysis (Table 8.10) illustrates that, with motorised vehicles (either private or public), the rich group travel 12.5 times farther than the poor group. This indicates a great disparity in modern transport activities between the rich and the poor, and means that “motorised transport development” has done little to promote mobility of the rural poor. I will continue to elaborate this issue using several village case studies in the next two chapters.
This chapter is concerned with the interaction between transport improvements and the rural economy, through which I challenge the belief that transport is undoubtedly positive for the economy. Many scholars have tried to examine the effects of transport improvements on rural change, but the dynamics of these relationships is still hardly elaborated (Rigg, 2002; Leinbach, 2003). This chapter, with the intention to fill this gap, explores the dynamics of transport development vis-à-vis rural change. Two key issues, based on a two-way perspective of the relationship, are examined. From the transport perspective, the issue is: under what circumstances are transport improvements introduced to rural communities? From the rural change perspective, on the other hand, the question is: to what extent does the rural population respond to the new opportunities brought about by transport improvements? In dealing with these questions, a village level analysis is applied based on the case of Benteng Ambeso Village of Tana Toraja. The chapter is structured in three sections. In the first two sections, the process of transport improvements in Benteng Ambeso is presented and the way this process was shaped by state and societal institutions is analysed. Working further with the case of Benteng Ambeso, the second section examines the way transport improvements provide opportunities for changes and how rural individuals respond to those opportunities. Lastly, conclusions are drawn to emphasise the role of institutions in the interaction between transport and the rural economy and the need to take this principle into account in the formulation of transport studies and policies.

9.1 Benteng Ambeso: Transport Improvements and Institutions

Benteng Ambeso, located in west Tana Toraja, is a customary village extending from time immemorial.\(^39\) Long before any modern institution came into the region, an

\(^{39}\) Customary village *(desa adat)* is a popular Indonesian term for an autonomous community that employs distinct customs and social structure. In Toraja, it is called "lembang". There were 65 lembang in the
autonomous customary regime had been established, guiding the interaction of the population.\textsuperscript{40} The village's existence as a separate legal territorial unit was finally acknowledged in 1998, with the birth of the Indonesian Reform Era. During the colonial period (1906 – 1945), the Dutch administrative system combined this customary community with two other customary villages, under the name of Gandang Batu. Gandang Batu was, in fact, another customary village, adjacent to Benteng Ambeso, but closer to the regional administration centre.\textsuperscript{41}

The Dutch approach to administering the Tana Toraja region was similar to what they did in Java in the early nineteenth century, and involved shifting the function of villages from a closed 'little republic' to strictly administrative and territorial units (Hart, 1986). The colonial state used such a form of village administration to impose control over the two sources of wealth in any colony – people and land (Breman, 1980). This Dutch model was also imposed by the central government of Indonesia during the independence era, until a new village administration law was introduced by the Soeharto government in 1979. Law 5 of 1979 on Village Administration, however, is not substantially different from its predecessor. A "village" in this New Order Law is defined as the lowest level of district administration. In practice, village governments were no more than a nominal reflection of higher administration levels. Based on the 1979 Law, a new administrative boundary of Gandang Batu Village was drawn, but the customary village of Benteng Ambeso was still part of it.

Tensions between elites and people from both customary villages have been undeniable given the fact that Gandang Batu people gained many advantages from that system (i.e. the village office was in Gandang Batu, the village heads were always Gandang Batu men, and public facilities were mostly built in Gandang Batu). Political struggle by Benteng Ambeso people eventually succeeded in separating their village from Gandang region, which is now called Tana Toraja (Sandra, 1998). Toraja itself is a term imposed by the lowland people on people in upland South Sulawesi around the Sa'dan river basin. People in that region started to call themselves the Toraja in the 1930s (Bigalke, 1981).

\textsuperscript{40}A more detailed discussion on Torajan customary institutions can be found in Section 9.2

\textsuperscript{41}Both villages are significantly different in customary philosophy. Benteng Ambeso custom is based on the philosophy of "Ma'indo manu", which means "people follow what the leader says". Meanwhile, the philosophy of Gandang Batu is "Londong Padaoni", which means "people (men) have the same right to talk".
Batu in 1998. Later on, with the implementation of Law 22 of 1999, which abandoned Law 5 of 1979, the District Government of Tana Toraja introduced a new village system (Tana Toraja, 2001). This system provides greater autonomy for the village communities in managing their village affairs. One breakthrough is the direct election system used to elect a village head and a village council to control the authority of the village head. In 2002, for the first time, members of the village council of Benteng Ambeso were publicly elected followed by an election for the head of the village. The long history of Benteng Ambeso incorporates institutional change from a village controlled by strong traditional norms to one with formal written rules. I examine how this institutional setting has related to the process of transport improvements in the next subsections.

9.1.1 Transport Improvements

Before modern roads came into the region, the people were mainly subsistence agriculturalists relying on wet rice production and upland dry crops such as cassava. Transport activities were mainly internal to the village. The significant increase in coffee cultivation in west Toraja in the late 19th century, in response to the growing demand of the international coffee market (Bates, 1997), stimulated a few external journeys from and into the region. West Toraja, as one of the centres of coffee production in South Sulawesi, was easily integrated into a broader South Sulawesi transport network. At that time, the Sulawesi transport network was formed mainly by earth tracks connecting to some outlet ports. Bigalke (1981:35) identified a network of coffee traders connecting west Tana Toraja with the three main ports in South Sulawesi: Bungin and Pare-Pare in the south and Palopo in the north (Figure 9.1a). Coffee trading, however, was dominated by Buginese traders. Transport from the production centre to those three ports was conducted by both horse and human power. In the late 19th century, it normally took one to two months for a return trip to and from those ports (Bigalke, 1981). Beyond the three ports, coffee was transported by traditional sailing ships to Makassar. The landlocked situation of Tana Toraja, accentuated by the exercise of political and economic power by the Buginese traders over the regional market in South Sulawesi, insulated the Torajan

42 Coffee was introduced into the Toraja highlands, most likely by Arab and Buginese traders, in the 16th century - although the cultivation of substantial amounts was not achieved until the late 19th century (Bigalke, 1981:32)
farmers from information about the regional coffee market. This situation led to imperfections in the coffee market, resulting in marginal gain for the coffee farmers (Bigalke, 1981).

Figure 9. 1: Benteng Ambeso and the South Sulawesi transport network
Source: base map from US Defense Mapping Agency (1992); additional data of (a) from Bigalke (1981: 35), of (b) from Bappeda Tana Toraja (2001a)

The road network connecting Toraja highlands with the lowlands was initially built in the early 1900s by the Dutch East Indies government. Some of the road network overlapped with the coffee trading routes. The Dutch needed that road to strengthen their political control over the upland region. A gravel road was built and it was gradually improved by the Indonesian government for use as the main Sulawesi road network. During the Soekarno period (1945-1966), the road network was practically unused owing to the rampant ‘rebellion activities’ in the region. The Soeharto administration (1966-
1998) successfully stabilised this political unrest and continued the development of the road network. In the early rehabilitation of the Makassar – Toraja road in the 1970s, the journey by bus from Toraja to Makassar might take one to two days. By the 1990s, the equivalent trip only needed eight hours (Figure 9.1b).

Two feeder roads now connect Benteng Ambeso with the regional arterial road. One is the main feeder road, “horizontally” reaching the main road at Mebali (henceforth denoted by Mebali – Ambeso road). The second (signified by Sudu – Ambeso road) approaches Benteng Ambeso from the south through Sudu, another village located on the main road (Figure 9.2). The former road fully belongs to Tana Toraja District, while the latter is predominantly part of Enrekang District. As Benteng Ambeso is administratively a Tana Toraja village, the Sudu – Ambeso road has mainly been treated as a “back route” in the district transport system. No reliable information was found to indicate when these two routes were first opened, but from Bigalke’s study of trading networks (1981), both paths were possibly related to the coffee trading network in the past.

Figure 9.2: Benteng Ambeso Village (April 2002)
The Mebali – Ambeso road was initially improved in the 1920s. The Dutch used that path to strengthen their control over the south-west region of Toraja. The path connecting Mebali to Buntu was gravelled and widened to one or two metres. Buntu is a hamlet of Benteng Ambeso, where the local market is located. As the road penetrated, a traditional market was gradually formed in Buntu. The market served communities in the south-west region of Toraja, mainly by, from and for them, but the continuing integration of the region into the regional coffee trading network increased the attractiveness of the market to outside traders. People who lived as swidden and wet-rice agriculturalists in scattered settlements (Adams, 1995) came to the market to exchange their surplus coffee, rice and crop production for other subsistence needs. Transport of people and goods was carried out by walking and horses. Horses were mainly for goods transport, but people who did not own horses would carry their own goods by walking. At that time, motorcycles and cars were only found in two Tana Toraja towns, Rantepao and Makale, and were used by the colonial government officers (Wilcox, 1949).

The location of Buntu Market brought advantages for Benteng Ambeso people. They did not need to travel as far to reach the market as people in the outback villages (e.g. Rano, Bonggakaradeng and Simbuang), who required one to two days walk to reach the market. Agricultural production from Benteng Ambeso, mainly coffee and horticultural crops such as cabbages, potatoes, and beans, were relatively easy to transport to Buntu Market. In addition to coffee production, according to an older male resident, Benteng Ambeso has been well known as a source of vegetables since the Dutch period. This is, of course, due to the role of Buntu Market as the collector market for the southwest region, at that time.

The Mebali - Buntu road was improved to a dirt road and widened to four metres in 1968, early in the New Order Era, as part of the systematic effort of the new Soeharto government to strengthen their security control over the region. People from areas surrounding the road, including Benteng Ambeso, were mobilised to work on the road project under the coordination of the Indonesian army. The road was then passable for trucks in the dry season. In 1984, this road started to receive formal attention from the District Government of Tana Toraja, and was given new status as a district road according to the Road Law of 1981. In 1985, an asphalt pavement was introduced through macadam penetration construction. This steady improvement of the Mebali –
Buntu road took place for 15 years, and by the end of 2000, the 15 km road was completely sealed. The road is not just sealed with penetration macadam, but with hot-rolled asphalt construction. Apart from district budget, Inpres District Road (IPJK) funds were also put into this road. The money allocated from the latter budget to this road was spent mainly between 1990 and 1995, when the head of the district of Tana Toraja was a Gandang Batu man.

Until the end of 1985, transport between Benteng Ambeso and Mebali was mainly by walking (horses were used for carrying goods). Public transport started operating on this road in 1986. Three motorised vehicles, owned by Gandang Batu and Mebali households, served the route at that time (a minibus, a truck and a pick-up), and all carried both goods and passengers. Travel time from Buntu to Mebali was three hours, which meant that a return service could only be provided once a day. At the beginning of the operation the tariff per person was 300 rupiah, but it had jumped to 2,000 rupiah by 1990. With the improvement of the road, transport became easier and faster, although not cheaper. The number of public transport vehicles increased. By 2002, the number of public transport vehicles servicing the Buntu – Mebali route could reach 22 on a Buntu Market Day, of which six were owned by Benteng Ambeso households. The tariff of 3,500 rupiah per person had been in dispute between people and transport operators for some time before it was implemented at the beginning of 2002. Travel time to Mebali has been reduced significantly to only 30 minutes, which allows a minibus to make three to four return trips during Market Day. On normal days, the demand for travel is low, reducing the number of public transport vehicles operating on this route to about 10 - 15 and the maximum return-trip frequency for each vehicle is two. It is worth noting that there has been no official specification of the number of public transport vehicles for this route, as the route is still not registered for public service operations by the District

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43 Penetration macadam is a type of road pavement done manually, in which stone/aggregate materials are laid separately with asphalt. Such work requires a labour-intensive approach. Hot-rolled asphalt is an advanced type of road pavement, in which aggregate and asphalt is firstly mixed in an asphalt mixing plant before being mechanically laid on the road. The structural strength of the latter is two times the former (Direktorat Jenderal Bina Marga, 1990)

44 Market day is a day when a market is opened to traders and buyers coming from greater distances. In Tana Toraja, the markets are based on a cycle of six days. This tradition started before the Dutch came to Toraja, where markets were tied into a series of interlocking circles, each consisting of six markets (Bigalke, 1981:36).

45 There is no timetable for the minibus public transport operation, so vehicles can wait until they have enough passengers before departing.
Government of Tana Toraja. Minibuses operating on this route in fact hold a licence for either the Makale – Mebali or Makale – Salubarani routes. This licence provides flexibility for any licensed public transport vehicle to operate on any unregistered feeder route. The lack of registration also opens the possibility for some illegal public transport (plat hitam: i.e. private) vehicles operating on that feeder road.

Road improvements also lead to an increase in the number of motorised vehicles owned by Benteng Ambeso people. Before 1990, no motorised vehicle was owned by the people, but many households owned horses to support their transport needs. In the mid 1980s the number of horses reached 250. With road improvement, residents started to sell their horses to people in more remote villages. The first motorcycle owned by a Benteng Ambeso person arrived in 1990, and then people started to think about having a motorised vehicle. In 2002, 10 motorcycles and eight cars/trucks were owned by the villagers. Horses were hardly found.

The other feeder road connecting Benteng Ambeso with the main road, but through another side of the village to the south, is the Sudu – Ambeso road. The road length is 28 kms intersecting the main road at Sudu Market, the regional market of Enrekang District. The 23 kms of this road within Enrekang District have been fully paved since 1999. Ironically, the 5 kms of road on the Tana Toraja side were still impassable for a standard motorised vehicle because of relatively steep gradients. The District Government of Tana Toraja was reluctant to improve that part of the road because of its potential to facilitate the infiltration of Sudu Market into the southwest regional economy, drawing it into the Enrekang District mainstream. In terms of trading activities, Benteng Ambeso is closer to Sudu than to any of the other regional markets in Tana Toraja (e.g. Mebali/Rante Kalua, Makale and Rantepao). The Sudu traders, who are mainly Buginese, have traditionally been well-known for their high capacity to buy agricultural produce from Torajan farmers. They have good links with regional markets in Makassar and Kalimantan. The economic link between Ambeso and Sudu, although long established, has become more substantial since the emergence of the Sudu market in the 1960s. Surplus agricultural production from Benteng Ambeso is better accommodated at Sudu Market. In the 1980s, Sudu was the main regional market for Benteng Ambeso people. Transport to Sudu was mainly carried out by horses with a return tariff of 3,000 rupiah per person. Even nowadays, most farmers prefer Sudu as
their regional market. The transport connection can be made either through the improved Mebali – Ambeso road or the traditional Sudu – Ambeso road. For the latter, Benteng Ambeso people need to hire trucks or walk to the border to pick up the Enrekang public transport there.

Following the improvement of the road to Mebali, other rural facilities and technologies were introduced to Benteng Ambeso. The first television set enjoyed by people and introduced in 1982, was a gift from the head of Tana Toraja District. Public electricity, however, entered the village in 1996. Before 1996, TV and house lighting were powered by generator sets. The number of generator sets increased from one in 1982 to five in 1996, serving about 45 households in that year. A household paid 1,500 rupiah per month to the owner of a generator set for electricity from 6 to 10 p.m. By 2000, the proportion of households owning TV was 9%, and 28% had public electricity. In terms of agricultural production, the first hand-tractor owned by a resident was introduced in 1995. Until 2002, only two were found in this village. Rice production still relies mainly on buffalo and human power for two crops each year. People do not have large wet-paddy areas as the region is hilly, which also hampers the modernisation of the irrigation system. This is probably the reason why the hand tractors are not really valued by the people. The first mechanical rice mill was introduced in 1987, and in 2002 there were five in the village. A mechanical coffee mill was introduced to the people in 1991, and by 2002 they numbered more than 20. One facility built by the government is the school. The first primary school for the village was built in Buntu in 1986, followed by a junior high school in 1987. Before that time, parents sent their children to a primary and junior high school in Gandang Batu, which is about 8 km from Buntu. Interestingly, a branch health centre was built in Buntu in 1971 long before the government road project. The health centre was served by a village nurse. Today, the health centre is still served by nurses. There was a grant from CARE Canada to the village for a drinking water project. The project built a 9.5 km arterial water pipe to serve almost all hamlets. People were expected to connect their household to the main pipe. The project has been relatively successful in supplying clean water to the village. Another facility that came into the village is the local bank. A local Toraja bank (Balo Toraja) built a branch in Buntu in 2001, creating better accessibility for Benteng Ambeso people to “banking facilities”.

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9.1.2 Institutions that Shape Transport Improvements

Interaction between institutions and the organisations that have evolved as a result of the incentive structures provided by these institutions shapes the pattern of transport improvements. In examining this thesis further in the context of Benteng Ambeso, it is worth recognising the three major institutions that have contributed to the process of change in the village: (i) Torajan custom, (ii) the Dutch colonial regime, and (iii) the government of the Republic of Indonesia. Considering Lin's (1989) classification, the first (Torajan custom) is the main engine for an 'induced' change: a voluntarily initiated institutional change by individuals or a group of individuals in response to opportunities, while the second and the third promote an 'imposed' change: an institutional change introduced and executed mainly by government orders or laws. These three institutions have worked interactively in shaping the pattern of development, including transport development, in Benteng Ambeso.

First, before the penetration of the modern state into Toraja highlands, the customary Torajan institution had guided the interactions among the population. Solidarity and cooperation were central to this customary institution, as expressed by its traditional motto of "with one vision we will live, but with diverse vision we will perish" (misa' kada di patuo, pantan kada di pomate). The institutional arrangement was based on a kinship system at the local level and a federal system at the medium and top levels. The lowest community organisation in the traditional Torajan society was called Tongkonan, which is a group of households (Banua) tied by a strong and hierarchical family relationship. After Tongkonan, the next levels of the community organisations were based on a federal system: Bua or Tondok (a federation of tongkonan), Lembang (a federation of bua or tondok), and federations of Lembang (e.g. Tallulembangna: the federation of three lembang consisting of the Lembang of Makale, Sangalla and Mengkendek). The nature of the relationships between these federal organisations was different, depending largely on the leadership capability of the headmen of the organisations. Warfare between tondok was not rare, but twice they united to face the invasions from Buginese armies in the late 17th century (Andaya, 1981) and the Dutch colonial forces in 1906 (Adams, 1995). Nowadays, although Toraja custom is not recognised in the formal administration system, its value system is still strongly
acknowledged among Torajanese transcending the administrative boundaries of Tana Toraja District.\textsuperscript{46}

In the beginning, the people were subsistence agriculturalists who lived in scattered hill settlements, maintaining social relationships based on the customary institutional arrangement. For agricultural activities, travel was mainly within village territories. External journeys were conducted mainly for social purposes, like attending funeral and marriage ceremonies (rambu solo' and rambu tuka') or helping other communities in building their tongkonan houses, but also for infrequent trading activities. The cultivation of coffee in Benteng Ambeso, as discussed earlier, had encouraged more external trips and helped integrate the region into a broader regional transport system. The transport system was completely non-motorised. Walking and horses carrying loads were the predominant modes of transport. Paths and tracks were mainly built by tongkonan groups to facilitate internal and external travel. Such self-help action was widespread in traditional Torajan society, indicating the crucial role of social capital in cementing community participation. This collective action model virtually disappeared with the emergence of modern state institutions. In today’s Torajan society, the collective action of tongkonan groups can only be seen in cultural ceremonies. On such occasions, people that belong to the tongkonan groups and the tondok (including many of them who live outside Tana Toraja) are involved in clearing the land, building ceremonial houses, and clearing the path to the ceremony location.

The Dutch colonial regime, the first modern institution penetrating into the customary community of Benteng Ambeso, and Torajan society in general, forced the abandonment of the practice of customary institutions. The customary community system was replaced by a territorial and administrative system. Distributed political power in the form of federations of tongkonan groups became highly centralised power in the hands of the Dutch East Indies government. Two towns, Makale and Rantepao, were built as the regional centres for the centralised Dutch administration. Likewise, Christianity, a modern religion, was introduced into the society, and the traditional religion that had historically been associated with the indigenous social norms was rejected by the Dutch.

\textsuperscript{46} Informal organisations of tongkonan and lembang can now be found in many cities in Indonesia. These organisations are used by the Torajanese who live away from Tana Toraja as a means for social interaction and to maintain their relationship with their homeland.
Reformed Mission, GZB (Ngelow, 2004). Understandably, transport improvements (e.g. road building) were to assist the Dutch East Indies Government and GZB in controlling the region and introducing the Christian faith, respectively. The road network was, therefore, centralised on Makale and Rantepao.

The institution of the independent Republic of Indonesia is best represented by the New Order government (1966-1998), which continued to override the traditional Toraja institution. The introduction of Law 5 of 1979 that subordinated villages to the central government structure is a clear indication of the rejection of local social norms in development practice. In the context of Tana Toraja, this powerlessness at the village level was accentuated by the political marginalisation of the whole region due to location, religion and a diffuse power structure (Adams, 1995). Transport development was centralised. The road network, as regulated by the Road Law of 1981, was hierarchically structured from the centre to the periphery, so that road improvements would always be controlled from the centre. The strong adaptation of a modernisation approach based on a neo-classical model for transport development policy has ensured that regions with low economic (and therefore low political) power would receive low priority in transport programmes. Understandably, the project to improve the 15 km Mebali – Ambeso road took almost the whole period of the New Order government to complete. The objectives of transport development during the New Order administration, which focused on national unity and economic growth (see Chapter V for the discussion), can clearly be seen in the way the Mebali-Ambeso road was built. Although the road has received more attention during this regime period than during other development eras, the prime motive of building the road was to serve the interests of the central government. The improvement of the road in 1968, for example, was to strengthen the government’s political control over the west Toraja region. The road project funded by IPJK was mainly to integrate the region into the mainstream economy. Overall, the existence of the local customary organisation has been overlooked during the whole development process.

47 Tana Toraja, given its land-locked situation, had long suffered from economic isolation. The majority of the population are Christian, a minority religion in South Sulawesi and Indonesia. In addition to these conditions, the political bargaining power of the Torajanese has been much weaker compared to the Buginese and the Makassarese (Andaya, 1981; Waterson, 2000)
Two types of village community participation in road improvement can be identified during the New Order period. One was carried out under Indonesian army coordination in the early years of the administration, and the second was under the coordination of contractors (working under a formal contract with the District Bureau of Public Works) that were in charge of the road project since 1984. In the first version, villagers were "voluntarily" mobilised, while in the second one villagers were paid as labourers in the project. In both cases, the coordination between the rural communities and the Indonesian army or the contractors was done through the village head. The weak political bargaining power possessed by the village head (and the rural people accordingly) made them powerless in the road construction process. They wanted a good road, but they had no power to determine their involvement in the construction process. In the last project, more ironically, people were cheated by the contractor who abandoned the project without paying for some of the work completed by rural people. In addition, none of these types of road improvement has involved the customary organisation, the role of which has weakened with continuing exclusion from the formal development process. The idea of community participation in these two forms of transport improvement can be said to be losing its essence as people were involved mainly as an object, rather than a subject, of development.

More active participation of rural individuals in transport development can be seen in public transport businesses. Here, some rural people took the new opportunity, brought about by paved roads, to become public transport operators on the Mebali – Benteng Ambeso route. But, owing to too little intervention of the government in regulating the operation of rural public transport, plus the asymmetries of information on, and access to, the opportunity, outsiders took the greatest benefits, while the rural people enjoyed only the marginal ones. The pervasive roles of money, modern technology and market that overwhelmingly dictate the process of rural transport development, neglect the role of customary institutions. Ironically, the majority of rural people still live in the traditional way (e.g. using the local language and practicing cultural values), and have limited access to money, modern technology and markets.

The consistent hegemony of modern state institutions in Tana Toraja since the last century illuminates the path dependent pattern of the way in which transport development has been promoted. The two modern institutions (i.e. the Dutch and the
Republic of Indonesia administrations) have introduced a road-based and motorised transport system into the region. The introduction of such a technological innovation was highly centralised based on a classical economic model, in which towns were created, markets were located in towns, and motorised transport networks were always generated from these central points. These institutions with their high bargaining power determined “solutions” for district and village development. On the other hand, the customary institution of Toraja has been given marginal, or even no, space in the development process. This institution is different from the modern ones as it acknowledges the distribution of power across villages (tondok or bua), and the participation of people in building their villages. Transport development by this institution was based on a non-motorised transport system (i.e. walking and horses). In this highly decentralised system, no centres were created, markets were localised, and transport improvements in the form of paths were initiated by the community groups (tongkonan or tondok). The marginalisation of the developmental role of Torajan custom by the modern states has indicated the power of the states in shaping the pattern of development (including the way the motorised transport system has been promoted), in which the alternative path offered by customary institutions (e.g. community participation in development, non-motorised transport improvements which benefited all villagers) has been shunted aside.

The dominant role of the state in development and institutional change is, in fact, not a peculiar phenomenon. The state, according to (Lin, 2000), plays a great role in promoting technological development and, therefore, becomes the most important organisation in institutional change. In Lin’s analysis, the state may provide incentives suitable for positive institutional change in which the new opportunities brought about by the change are equally distributed. The government, in this sense, functions as an agent that maintains the equalisation of development, and guards against the potential for an uneven distribution of the resulting opportunity set. On the other hand, the state can also become an agent that promotes disequilibrium (e.g. monopoly or coercive power) in institutional change if it provides too little, or even too much intervention in the process of change. In the Benteng Ambeso case, the state has failed to ensure that village institutional change had a sufficiently distributional role. Economic differences and social conflicts that occurred within the village and between the residents and outsiders indicate such a failure.
The Indonesian Reform government with a new regional autonomy law (Law 22 of 1999) has provided people with a greater say in development. In Tana Toraja, the introduction of District Law 2 of 2001 following Law 22 of 1999, has changed the village institutional arrangement, bringing more control of development to the people. It is, however, still too early to provide an evaluation of this period. But, with some recognition of the customary institution in the District Law, one might expect better participation of customary organisations in the development process. In addition, it is not an easy task to change the mental model of the community from a fully state-driven development to development initiatives based on cooperation between the state and the people. Again, the process of institutional change is evolutionary, and the outcomes may not be seen within this generation.

Another lesson originating in the above case study is that institutions and organisations determine the motives for transport improvements. Those motives then shape the way transport improvements are introduced. Rigg (2002) mentioned two primary motives that drive transport development in the context of Southeast Asia. One is the political factor, which is the need for the state authority to strengthen its administrative and security control over its territory. The second is the economic imperative, which is the need to integrate a region into the economic mainstream through market expansion. In real situations, those two aspects are mixed (Rigg, 2002). With respect to political considerations, at least four political motives have driven the improvements of the Mebali – Ambeso road: (i) the Dutch colonial desire to control the occupation of the southwest region of Toraja in the early 1900s, (ii) the Indonesian government’s idea to strengthen their control over the regional rebellion in the 1960s, (iii) the intention of the District Government of Tana Toraja to take economic control of the region, and (iv) the desire of the head of Tana Toraja in the 1990s to strengthen the relationship with his constituents in Gandang Batu. Those motives have applied at different times, and during those times economic motives have also influenced the transport improvement process. The presence of Buntu Market and the projection of Benteng Ambeso into the regional economic mainstream explain the interplay of economic motives in this region. Overall, the case of Benteng Ambeso has clearly indicated that state intervention in rural transport development is not only driven by economic rationale, but also (and even more heavily) by political motives.
Although transport is a primary technological factor that promotes institutional change, the facts that other technological developments occur in rural areas, and that they together promote institutional change, cannot be overlooked. In the case of Benteng Ambeso, modern technology was brought into the village together with, or after, the improvement of the feeder road. Electricity as well as information and communication facilities were installed into the villagers' houses. Applications of modern technology to agricultural production were introduced, moving farmers from subsistence growers to market-oriented agriculturalists. In all of these improvements, similar institutional arrangements applied like those that accompanied the improvement of the village transport system.

To sum up, the Benteng Ambeso case shows us how institutions, and the organisations that have evolved as a result of the incentive structure created by those institutions, have shaped the pattern of transport improvements. The dominant role of the state in the development process, leaving marginal space for local (customary) institutions, has rendered transport improvements into exogenous forces influencing rural society. In this sense, modern transport improvements have promoted an imposed, rather than an induced, institutional change. In addition, the external forces of transport improvements have largely represented the interests of the state, rather than the needs of the people. With the low political and economic bargaining power possessed by Benteng Ambeso, it took nearly a century after the first modern transport intervention, for the 15 km access road to be completely sealed. The role of the Torajan custom, which was powerful in development before the penetration of the modern state, must not be overlooked. This institution offered an alternative path that inherently exists in the rural community system. Therefore, integrating customary institutions into a modern development platform may help promote an effective combination of imposed and induced institutional change.

9.2 Benteng Ambeso: Rural Change and Institutions

How have the transport improvements in Benteng Ambeso brought about by better road transport affected the socio-economic life of the people? Or, using Wilson’s (1973)
formulation, how have people responded to opportunities created by transport improvements? The next sub-sections discuss the dynamic interaction between transport improvements and rural changes.

9.2.1 Rural Change

First, road improvements can directly create job opportunities for local people through their involvement as labourers on the road project. This, however, was not necessarily the outcome in the case of the Mebali – Ambeso road, especially when the project was carried out by contractors (1984 – 2002). One of the village men confirmed:48

My father and many people from this village were involved in the construction of this [Mebali – Buntu] road in 1968. The involvement was voluntary under Siliwangi Army coordination. …When this road project was given to contractors, our involvement became little. The contractors came from Makale and brought their own labourers. They did employ a few of our people, but there were always tensions between outsider labourers and our people. …In the recent project [while pointing to the road in front of his house], the contractor did not pay for some of the work done by our people. The people got angry and hijacked the contractor’s bulldozer. A week later, officials from the Public Work Bureau came here and took the bulldozer from the people, while abandoning the unpaid work. They said that, this is a government bulldozer, the contractor only hired it.

Second, apart from direct employment, better roads also create greater opportunities for other indirect non-farm employment. In 1985, almost all households lived by agriculture alone. By 2002, there were about 60 households (10%) which relied on non-farm employment as the main source of income. Most of them, however, still did farming for home consumption.

The operation of public transport on the Mebali – Ambeso route has created new non-farm employment for Benteng Ambeso people. As mentioned above, six passenger minibuses were owned by Benteng Ambeso residents, which means the creation of at least 12 jobs (six drivers and six conductors). The minibuses were owned by three families who then employed their relatives as drivers and conductors. None of the

48 All interviews with Benteng Ambeso residents were conducted in confidence, and the names of interviewees are pseudonyms.
owners actually operated their cars, as they preferred to work as traders or middlepersons. The driver and conductor were not paid on a monthly basis. Normally, they shared 25% of the net profit of the daily minibus operation. This is, however, not enough to fulfill their household consumption needs. This reflects lack of information on, and access by rural people to, a fair contract system in public transport operation and for other non-farm jobs. In this situation, support from other family members such as wives and children who mainly work on-farm is very important for the household’s livelihood.

It is also interesting to note that opportunities created for public transport operation in the Mebali – Ambeso route were responded to more quickly by urban people. More than half of the public transport vehicle owners lived in Makale. They were mainly ex-Benteng Ambeso or ex-Gandang Batu people, working in various urban sectors in Makale and operating public transport as their second or third source of income. The drivers and the conductors were, of course, those who lived in Makale. To compete with the village-based operators, they would not hesitate to mention to a potential village passenger, that the owner of the vehicle was also a Benteng Ambeso man/woman who just happened to live in Makale.

Another source of non-farm employment opened up by the road is ‘white-collar work’ with either government bureaux or private companies. With three primary schools and one junior high school, 31 teachers were working in Benteng Ambeso schools. From this total, six teachers were originally from, and still live in, Benteng Ambeso, six teachers have moved to Benteng Ambeso (temporarily) to get closer to their workplace, while another 19 teachers lived outside the village. A few of them live up to 20 kms from their workplace and travel each day by motorcycle. This is another indication that rural opportunities are more progressively taken up by non-rural people. The health centre also creates employment. The three officials who in 2002 were working in that health centre also lived in the village. The new local bank similarly creates employment. A Benteng Ambeso woman, who graduated from a university in Makassar in 1990,

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49 There was no formal contract between the owners of vehicles and the drivers and conductors. The owners determined their share of 75% to cover costs for vehicle maintenance and possible opportunistic behaviour of the drivers and conductors. Yet, the owners’ act to unfairly determine the share of such an informal contract is, by itself, opportunistic behaviour. Lack of trust in this business increased transaction costs (see also Nabli and Nugent, 1989: 68-69 for a similar discussion).
returned home after failing to get a job there, and found work in that bank. She was still living with her parents and contributing to the household expenditure.

Being a trader is another type of non-farm employment enhanced by road improvements. How local people shift from farming to becoming a trader is clearly illustrated by the story of the Ambe Ullan family. The family of Ambe Ullan was traditionally an agricultural household living in Benteng Ambeso. They had nine children who also supported their family livelihood by working in agriculture. In the late 1980s, Ambe Ullan received an offer from a trader in Sudu to be an agricultural collector in Benteng Ambeso. Since then, Ambe Ullan and some adult members of the household have actively approached local farmers to buy their produce. Ambe Ullan borrowed money from the Sudu trader, collected agricultural produce from local farmers and, once a week, carried the yield to Sudu using a truck provided by the trader. Local farmers enjoyed an advantage. They did not need to transport their produce to the Sudu market (which was very difficult at that time), even though they now had to sell the produce at a lower price. The farmers, in fact, enjoyed a very small margin from their produce owing to the transport constraint. Ambe Ullan received a bigger margin, and the trader, of course, was the winner of this game.

Within five years, Ambe Ullan experienced a significant improvement in economic status. In the mid 1990s, a new house was built, a new truck was financed by the bank, a new passenger car was bought, and some of his children started to become involved in the business. Profits from trading were also used to expand the area of agricultural land that he owned. Today, one of his daughters, Indo Sampe, is the strongest agricultural broker in the region. She specialises in estate crops including coffee, vanilla and cacao. She has a very strong network with more than 20 people working to collect the farm produce by going from door to door. She gives money in advance to any farmer on the condition that the farmer sells all their produce to her. Local farmers with few resources have no option as they need cash to support their livelihood. If they want to take their produce to a market the transport fare is costly. Some farmers do avoid Indo Sampe by taking their produce to other traders or markets, but such strategies do not make much difference to their returns because of the transport costs, or the possibility of being trapped by other middlepersons.
What about those who are living by agriculture? In general, better transport provides opportunities for cheaper agricultural inputs like seed and fertilisers and improved technology. This reduces production costs, which then increases the capacity of farmers to compete on a wider market. Application of new technology will also increase the quantity and quality of production which then enables local farmers to supply more consumers. With those factors operating, farmers will gain more profit which enables them to increase their consumption and/or income from their extra production. In the case study area, improved agricultural production, however, does not automatically lead to the increased participation of the farmer in the market economy. Other economic factors (i.e. agricultural transaction costs and the rural credit market) brought about by the multiple effects of transport improvements can intervene, as the cases of the Ambe Bongga and Koto households reveal.

About 500 metres from the Ambe Ullan family house live the Ambe Bongga family. This family has one hectare of farm land, which was planted with a range of vegetables, coffee and vanilla. Ambe Bongga acknowledged that his production has slightly increased over the last 10 years. In addition, he is now starting to plant vanilla, which is relatively new for the villagers. Increase in production, however, does not necessarily improve their welfare. They have two children who help them in farming and who stopped school after completing junior high school. Sending their children to a senior high school to Makale would be an enormous burden on their household budget. The burden would be either daily travel expenses or the cost of boarding in a different town, but, the income from farming is only enough to support their basic household needs. Ambe Bongga gave me one example of how difficult it is to obtain a livelihood as a farmer in this village.

When it was time to harvest cabbages, he heard from people coming back from Sudu Market that cabbage was sold for 1000 rupiah per kilogram there. Rather than selling in the local market, where the return was only 500 rupiah and the demand for cabbages was low, he thought that it would be a good gain if he could take his cabbages to Sudu. The next day he and another three farmers took 10 sacks (about 400 kg) of cabbage to

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50 The spread of coffee plantations in Tana Toraja, including the investment of several big companies in the coffee industry in this region, has reduced the opportunities for Benteng Ambeso farmers in coffee. This has been another reason for the farmers to move from coffee to vanilla cultivation.
that market. They hired a private truck for 150,000 rupiah to travel to the market, and also spent approximately 50,000 rupiah for porters, taxes and food. They were expecting to bring home 200,000 rupiah. The traders in Sudu, however, valued their cabbages at only 500 rupiah per kg. They said that there were too many cabbages in the market now. Facing no alternative, Ambe Bongga and his friends despairingly sold their cabbages at that price and returned home with nothing. That was, in fact, not a first experience. They know that the price is always changing but, because the price in the local market was low and demand was not high, they had to go to the Sudu market if they wanted to sell more produce. Many farmers have chosen to let their cabbages go unharvested when prices were low.

But this is only part of the story. Experiences of selling such produce as coffee, cloves or cacao are even more bitter. One of Ambe Bongga’s comments was, “...the price was going up and down. Last year I sold cloves at 80,000 rupiah per kilo. This year, the price was only 22,000 rupiah per kilo. This was not a fair price, as I calculated I would have no profit unless the price was higher than 25,000 rupiah”. Coffee was sold to coffee traders within the price range of 2,000 – 5,000 rupiah per kilo. “But, we cannot wait until the price was 5,000 as we need cash to support our livelihood”, he continued. This was a really unfortunate situation. Farmers were happy to sell their coffee at the price of 5,000 rupiah but they probably never knew that export quality Toraja coffee is sold at a price of 200,000 rupiah per kilo in a hotel in Jakarta, the capital of Indonesia.

Another farmer family is that of Koto and Meta. They live with three children, two of them are now in primary school, and the youngest is still at home. Koto raised the need for financial support to improve their farming production. For seed there is no problem, I can plant 1000 or 2000 coffee trees if I want, but the problem is the quality of seeds, fertilisers and pesticides. It takes three years for a coffee tree to come to a first harvest, and unless you have much money you could not plant that much. One of my friends planted 1000 coffee trees four years ago, and last year he just harvested about a hundred [the other 900 had failed to survive].

The presence of a financial institution in the village does not guarantee farmers access to credit. One farmer argued:
The local bank is too tough. Our economy is dependent on the vegetable harvest, which is done only 2 times a year. If we borrowed money today we have to start repaying it next month, something that is impossible to do. At that time our vegetables are just growing, and we have to wait for four to five months to have our vegetables sold.

From a discussion with an official of the local bank, it was found that the majority of borrowers in that local bank are those who work in non-agricultural sectors. They have more capability to provide collateral and to pay the interest as it becomes due than farmers. The manager of the local bank said: "This is not our intention. The bank was opened in order to improve the access of rural people, who are mainly farmers, to financial resources".

The situation of the farmer struggling with financial resources is complicated by the integration of Buntu Market into the urban economic mainstream brought about by an improved transport network. The market is now more open to the outsiders. Traders and buyers came from all over South Sulawesi. Table 9.1 describes the commodities sold, traders and buyers, on a market day in October 2002 in Buntu Market. At this time of the year, coffee and cloves are harvested in the south-west region, attracting more potential players to the market. The people from the southwest region sold their coffee, cloves, vanilla, 'tuak' (palm-wine), and vegetables, while traders from outside sold rice, fish, chili, vegetables, tempe and tofu, eggs, and clothes in the market.

The penetration of market players from outside the southwest region (e.g. Makale, Rantepao, Sudu, Palopo, Sidrap, Pare-Pare, Pangkep, Makassar and Jeneponto) alters the pattern of exchange. First, urban penetration of rural markets offers more consumption items to the local people and increases the competition among traders resulting in more competitive prices for the items sold. Local buyers enjoy a greater variety of consumption goods and lower prices than 10 years ago. Second, a more competitive market pushes farmers out of direct participation in the market. With the farmers' growing need for cash stimulated by the availability of more and more consumption items, the local farmers are effectively forced to sell their agricultural produce at prices determined by the outsider buyers. Higher demands for consumption items decrease the money available for further production inputs.
Table 9.1: Items sold at Buntu Market on October 2002

<table>
<thead>
<tr>
<th>Items</th>
<th>Item Origins</th>
<th>Seller Origins</th>
<th>Buyer Origins</th>
<th>Destination of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>Sidrap (150km), Barru (300km)</td>
<td>Makale, R.Kalu</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Fish</td>
<td>Barru (300km), Pinrang (300km), Palopo (85km)</td>
<td>Makale, Palopo</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Duri (40km), Sudu (30km), Sillanan (12km), G.Batu (8km), B.Ambeso</td>
<td>Duri, Sudu, Sillanan, G.Batu, B.Ambeso</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Chilli</td>
<td>Jeneponto (450km), Palopo (85 km), Duri (40km)</td>
<td>Jeneponto (450km), Palopo (85 km), Duri (40km)</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Tempe, tofu</td>
<td>Makale, Cakke (40km)</td>
<td>Makale, Cakke</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Eggs</td>
<td>Sudu, Makale</td>
<td>Sudu, Makale</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Coffee</td>
<td>South-west region</td>
<td>South-west region</td>
<td>Rantepao, Makale, Sudu</td>
<td>Makassar or exported</td>
</tr>
<tr>
<td>Cloves</td>
<td>South-west region</td>
<td>South-west region</td>
<td>Rantepao, Makale, Sudu</td>
<td>Makassar or exported</td>
</tr>
<tr>
<td>Vanilla</td>
<td>South-west region</td>
<td>South-west region</td>
<td>Rantepao, Makale, Sudu</td>
<td>Makassar or exported</td>
</tr>
<tr>
<td>Tobacco</td>
<td>South-west region</td>
<td>South-west region</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Palm wine</td>
<td>Pabuaran (8km)</td>
<td>Pabuaran</td>
<td>B.Ambeso, G.Batu, Sillanan, R.Kalu, Makale, Rantepao</td>
<td>South-west region</td>
</tr>
<tr>
<td>Chicken</td>
<td>Sudu, Makale</td>
<td>Sudu, Makale</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Clothes and footwear</td>
<td>Makassar (320km), Pare-Pare (160km), Palopo (85km), Rantepao</td>
<td>Makale, Rantepao</td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Food</td>
<td>B.Ambeso,</td>
<td></td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
<tr>
<td>Prepared food</td>
<td>(e.g. instant noodles)</td>
<td></td>
<td>South-west region</td>
<td>South-west region</td>
</tr>
</tbody>
</table>

Note: South-west region consists of Benteng Ambeso (B.Ambeso), Gandang Batu (G.Batu), Sillanan, Pabuaran, Bonggakaradeng and Simbuang

Better transport provides opportunities for village people to enjoy better educational services. Parents do not need to send their children to a school outside the village until they complete the junior high school level. Educational needs have shifted and now, the main concern with education is where to go after junior high school. Junior high school graduates have very low access to employment in formal sector jobs. If parents want their children to go beyond junior high school, they need to save sufficient money to pay for the cost of boarding and fees at a school outside the village. This creates an additional burden on the household economy.
In terms of health services, a branch health centre has been established in Buntu since 1971 but, until today, the health service provision is still limited. This is due to the non-availability of doctors and the lack of medical supplies from the District Health Bureau. The centre and its staff are only equipped to cope with simple ailments, such as flu and coughs. For a more complicated illness, patients will be referred to Rante Kalua Health Centre (17 kms) or Makale Hospital (33 kms). Better transport connections give village people a choice about where to go when sick, including private clinics in Makale, Rantepao or Makassar. Those who are economically able, go directly to the main hospital in Makale. Those who are poor, however, must still rely on the Buntu Health Centre.

Better information technology is now enjoyed by the people of Benteng Ambeso. Mr. Rinding, the head of the farmers’ group, can now enjoy more than five foreign TV channels, let alone seven national TV programmes, with the help of a satellite antenna installed in his house. Ironically, the satellite antenna cannot receive the regional and local programme broadcast from Makassar. As a result, Mr Rinding and farmers in the village are more sensitive to national and international issues than to regional and local ones. In addition, Mr. Rinding learned some new agricultural techniques from a Chinese TV programme. One month, he watched the way Chinese farmers planted vegetables using green-house technology to deal with weather vulnerability. Nevertheless, he was not sure whether such methods could be implemented in Benteng Ambeso. Almost every night, between 7 and 10 p.m., a group of farmers, all men, came to Mr Rinding’s house to watch TV. His house has become a place for farmers talking about many issues ranging from the village to the national sphere. On the other hand, the availability of TV in the village stimulates consumerism, multiplying the demands of rural households for consumer goods.

Migration patterns have changed slightly since the road was improved. Before the road was paved, Benteng Ambeso people who migrated to cities mainly for continuing education and seeking jobs would never think to return home. Now, returning home after failing to get job anywhere is much more of an option. Five university degree holders are now living unemployed in Benteng Ambeso. One of them said: “No connections means no jobs. …I have sent job applications to probably more than 100 places, but without any luck. I even went to Malaysia to seek a job, but the result was nothing. I decided to
go home, as I think I only waste my parent’s money”. After returning home, this man with a desire for an ‘urban lifestyle’ is now helping his father on the farm.

In addition, with a higher level of education available in the village, the young people now migrate mainly after completing their junior high school. Mince, for example, is a Benteng Ambeso girl who migrated to Makassar after completing her junior high school in Buntu, five years ago. Her mother, who is a widow and lives by agriculture, could not continue to pay Mince’s education. As junior high school qualifications are not enough for a formal sector occupation, Mince survives by working as a housemaid for a Toraja family in Makassar. The family pays for Mince’s further education. She is now in the second year in a finance institute in Makassar. Next year she expects to graduate. When asked her plans after graduation, she said: “I will first try to get a job here (in Makassar). If that fails, I will go home to seek a job in Makale or Rantepao, … or probably in Palopo, where I have a sister. …I do not think going back [to Benteng Ambeso] will be a good option. There will be no job for me there”.

Returning home, after a long time living in the city, can create another tension related to land ownership. According to the village head, the improvement of the road meant that the problem of land is now more complicated than before. He gave one example:

There is one family, they moved to Palopo for a job 20 years ago. After retirement, they returned home and wanted to become farmers again. When they left, their half hectares of land was given to the husband’s brother, who then farmed the land. Now, they want to regain that land from the brother, but he rejected their request. He said that he has maintained that land for 20 years, which means that the land has been automatically transferred to him. What makes my head ache is nobody wants to compromise. …There are another two similar cases.

When asked about the relationship between that problem and the improved Mebali-Buntu road, the head of village replied: “Of course, if the road was not improved, they would never think to return home”.

With economic and social life in Benteng Ambeso becoming more and more volatile, subject to more outside forces, tensions emerge (e.g. between off-farm and non-farm

51 Land in Benteng Ambeso is traditionally regulated by customary law. According to this law, the village head is responsible for resolving problems related to land ownership.
employees or, more specifically, between farmers and traders). One cause of the tension is the increasing differentiation in income and welfare. For example, the economic gap between traders and farmers is obvious. In a discussion with a farmers’ group, the chairman of farmers told me:

We realise that on average the economy of people here has improved, but a few people enjoy a very great improvement, while the majority of us do not. ...to be honest, we farmers have gained little benefit from the road. The person who gets maximum benefit from that road is Indo Sampe and her family. She now has a new car and a good house from the revenue of trading our agricultural produce. Farmers are more in need of a strong farmer organisation and financial support so they do not need to rely on a trader like Indo Sampe.

9.2.2 Transport Improvements and Village Institutional Change

Transport is commonly a pioneering sector in rural development. Its main role is to provide access to and within rural areas to facilitate the operations of other development sectors and to generate the capacity of rural people to respond to opportunities created by the development. Such a role leads to the popular perception of a positive link between transport development and socio-economic improvement in rural life. Many micro studies like those that were conducted by Cervero (1990), Levy (1996) and Fekpe (2002) showed that improved transport contributes directly to better rural livelihoods. The fact that transport development has a long and complex connection with the rural life process and change has been widely overlooked. In real life, as shown in the case studies above, (i) transport development is a dynamic process motivated by different forces and takes place in different space and time frames, (ii) the process of transport development interacts dynamically with other development forces in rural and urban settings, and (iii) rural life is a complex situation that also responds to changes in these transport and other development sectors in dynamic ways. These three processes altogether are shaped by different structural conditions (e.g. geography, climate, and natural resources) and different institutional environments (e.g. customs, traditions and state constitutions and policies). Out of these emerge different economic opportunities, creating different paths of interaction between players or organisations (e.g. between the rural population and the outside traders) to take advantage of the opportunities and resulting in different outcomes for different rural areas.
Rural transport improvements increase rural accessibility and mobility, promoting better integration of rural communities into the regional economy, and bringing more economic and social opportunities to the rural population. This process, however, does not necessarily ensure an improved wellbeing for the population. One reason is due to time differences in diffusion and adoption of innovations. Barlow (1998), in the context of rural Indonesia, showed that different types of rural technological innovations require different periods of adjustment, and the key to a successful adoption of these innovations is the role of government in helping rural people move from traditional to more technological approaches. The second reason relates to the distributional impact of transport improvements. Wiggins (2000), based on 26 village case studies in Africa between the 1970s and the 1990s, confirmed that access to markets is essential for agricultural development. But, accessibility is only part of the story. The author raised the issue of increasing social discrepancies among the peasantry with improved access. “When and where the farm economy blossoms, it seems that the great bulk of the marketed surpluses comes from a small fraction of the farmers” (Wiggins, 2000: 638).

The third reason is related to the first two factors, and concerns market imperfections. As information is asymmetrically distributed between players, the market functions imperfectly. Therefore, those with better information will gain more economic benefits from technological development. Barrett et al. (2000, quoted from Dorward et al., 2004), for example, argued that “only as links with urban areas develop will opportunities for non-farm tradeable activities develop, but these will often be “high barrier to entry” activities limiting the benefits to the poor”. In the context of rural India, Kanwar (2000) showed that the agriculture, infrastructure and service sectors affect the process of income generation in the urban sector (manufacturing and construction), while the reverse effect is weak. The reason is that the majority of the rural households are either relatively small farmers with small operational holdings and tiny surpluses, or else landless labourers. These all signify the need for a critical attitude in understanding the interaction between transport improvements and rural change. I have elaborated the first institutional factor that shapes the pattern of transport improvements. The second factor that shapes the direction of rural change as argued by Wilson (1973), North (1990) or Redmond (2003), the mental constructs of human beings in adopting changes in the opportunity set, are also crucial and discussed next.
The case of Benteng Ambeso outlines how transport improvements stimulate changes in the rural economy through the reconstruction or deconstruction of spatial, economic, social and political boundaries of rural areas. Those boundaries become less clear-cut with improved transport connections. Spatial interpenetration occurs changing the opportunity set of the rural population. In the case of Benteng Ambeso, changes in the opportunity set can be unpacked into several components: (i) agriculture, (ii) employment, (ii) produce markets, (iv) rural credit, (v) land values, (vi) migration (vii) education and health care (Figure 9.3). This categorisation is made for the purpose of simplifying the analysis in order to provide better understanding of the phenomenon of rural change. In real life, all components of rural change are inextricably related and it is inconceivable to find that one component works in isolation from the other components. These components of rural change have affected the overall institution of the village economy, summarily represented by greater economic opportunities, but with increasing economic gaps and social conflicts among the population.

Changes in Agriculture

Before the coming of modern transport into rural areas, agricultural activities were mainly directed at household subsistence. Transport improvements stimulate changes in agricultural production opportunities, which are formed by the interaction between forces from inside the rural setting (i.e. farmers and the land resources available to them) and
from the outside (e.g. input suppliers, traders, agricultural equipment dealers, and the rural credit market). A greater variety of consumption goods available in rural areas increases the expectations of farmers to improve their production. In the case of Benteng Ambeso, varieties of seeds and fertilisers were introduced into the village as well as machines such as tractors, rice-mills, and coffee mills, after the improvement of the feeder road. These new technologies have enabled farmers to diversify or intensify their production. The agricultural production of the village has slightly increased, and some farmers have moved from subsistence to market-oriented agriculturalists. This process, however, has been constrained by several factors. One is the structural condition of the region. The hilly topography of the village, for example, has hampered the introduction of a modern irrigation system. Second, information about agricultural inputs was lacking and also asymmetric in the sense that it differs between farmers. A similar situation has occurred in accessing credit for agricultural production, which has been accentuated by the difficulties that farmers have when dealing with the requirements of the formal rural credit market. Third, high transaction costs due to a lack of information about market prices for agricultural produce, have hampered the direct participation of farmers in the market, as shown in the cases of Ambe Bongga, Koto and Meta, above. This issue will be further examined in the next subsection. Overall, although there is potential to improve agricultural production, the structural conditions and the imperfect rural market have reduced the possibility for farmers to take advantage of the new agricultural production opportunities associated with transport improvements.

Changes in Employment

Transport improvements, through better rural accessibility, facilitate more non-farm employment opportunities in rural areas. To what extent do rural people benefit from those opportunities? The case of Benteng Ambeso shows that those opportunities do not only advantage rural people, but also other key-players from outside the village. There are, at least, four groups of players that can be included in this system.

1. Rural people, who are mainly farmers. Transport improvements mean more non-farm employment available for rural people, either in direct ways (as labourers on a transport project or for public transport operations), or in indirect ways (as government officials, traders, or workers in private enterprises).
2. People who previously had no or little connection with the local rural system. With the lack of information available to the rural people about the new opportunities, infiltration of individuals from urban areas or other regions is unavoidable. “White collar work”, for example, has largely been taken by these people as they were well-informed about the opportunities and possessed the qualifications needed by those jobs.

3. Rural people who migrated to the cities but could not gain a good foothold in the urban economy and returned home to local employment made possible by road improvements. These people, with more knowledge about urban lifestyles and more qualifications have been another group of competitors for the new rural opportunities.

4. Rural people who migrated to, and enjoyed higher incomes in, the city and subsequently invested in business opportunities in rural areas. These people received better information about business opportunities that could be emulated in their home village. The case of a private transport operator living in Makale and investing in the Mebali - Ambeso public transport service is just one example.

Those four types of key-players compete in a dynamic way creating the more advanced rural economy, but also contribute to a more complex rural situation. Asymmetries of information – the differences in information between, say, the rural farmers and people from urban areas – have created market imperfections in rural non-farm employment. The overall rural economy might be improved with better transport connections, but the reality is that outsiders take an increasing proportion of the income generated locally. This provides an answer to the question of Vyas (1982: 53) who asked: “Why could not more employment opportunities be provided for the rural poor in non-agricultural occupations?” Authors such as Byres (1984) and Rigg (2001; 2002) have failed to explore such a question, which led them to the sweeping but potentially misleading conclusion that the deconstruction of rural boundaries improves the livelihood of rural people rather than undermining them. The Benteng Ambeso case study shows that some rural farmers have succeeded in gaining better livelihoods by shifting from on-farm to off-farm employment. However, such a gain is achieved in a situation where the majority of the non-agricultural occupation opportunities have been intercepted by the players from outside the local rural social organisation.
Changes in Produce Markets

The change in the rural produce market in Benteng Ambeso that has been associated with the introduction of a modern transport system can be well illustrated by the coffee market. Before the penetration of modern transport, the coffee market operated by means of poor tracks and a non-motorised transport system. Poor transport connections into the upland Toraja region contributed to the asymmetries of information available to different market players, leading to an imperfect coffee market. Bigalke (1981) indicated that the price of Torajan coffee in the late 19th century at the farmer level was 30 Dutch florins (henceforth abbreviated “f”) per pikul (60-65 kg), which was very low compared to the price on the Holland market. According to Bigalke, the local farmers felt themselves cheated by the coffee traders, but they could not do more as the farmers had no trading access to the international market. Asymmetries of information among players in the coffee market resulted in an imperfect market and this situation led to high transaction costs experienced by the coffee producer. As a comparison, Manado coffee, which was of similar quality to Torajan coffee, was valued f 101.57 per pikul on the Holland market (Bigalke, 1981). By assuming that the international price of Toraja coffee was similar to that of Manado coffee, it can be said that the total transaction costs of Torajan coffee (adding costs from the local farmers to the international market) was 200% higher than its local price.

Has the improved Benteng Ambeso transport system reduced the transaction costs of coffee? As in 2002, the price of coffee at the farmer level varied between 2,000 and 5,000 rupiah per kg. The prices at the collector and exporter levels were about 6,000 and 7,000 rupiah per kg, respectively. This still indicates high transaction costs (40-250% higher than the local price). The transaction costs were even much higher if calculated in terms of the international retail price, which reached 200,000 rupiah per kg. The local farmers, however, have little information about the price of coffee at the collector, exporter and international retail levels. In other words, the coffee market was still imperfect, even after the penetration of modern transport into rural areas.

An imperfect market does not just occur in the coffee market, it also happens in other commodity markets. As shown in Table 9.1, the penetration of modern transport into Benteng Ambeso has attracted outside traders to the Buntu market. The outside traders
came to the market with better information about regional prices of goods traded in the market. On the other hand, the local players have little information about such prices. Local farmers have no information about how the price of cloves, vanilla and other crops could fluctuate in the regional market. Consequently, they suffered from high transaction costs whether they tried to take their own produce to more distant markets or whether they relied on the outside traders at the Buntu market.

Changes in Rural Credit

The informal credit market operated by moneylenders, traders, landlords and so forth was the only credit system available in the traditional Torajan society. This system offers relatively high interest rates, given that village people lacked information on, or access to, the formal credit system. The government of Indonesia, especially since the New Order period, introduced a series of formal credit market organisations (e.g. agricultural credit and small enterprise credit) for the rural population. Such schemes, however, were normally found in those rural areas with good access to banking facilities. The condition of the rural transport system, therefore, matters for the effective operation of the formal credit market in rural areas. Many authors, furthermore, have widely criticised formal credit systems in developing countries as asymmetries and therefore provide less benefit to the rural poor (see for example Hoff et al., 1993). These authors demonstrated the continuing prevalent operation of the informal credit market in rural areas as the formal credit market lends primarily to larger farmers who can easily provide formal collateral.

As illustrated by the case of Benteng Ambeso, rural transport improvements have been associated with the introduction of the formal credit market. A branch office of the local and privately operated Toraja bank (Balo Toraja) was established in the village with the intention of providing the people with better access to the formal credit market. In addition, although without a branch office, the state-owned bank (Bank Rakyat Indonesia, abbreviated as BRI) has also operated through an agent in the village to make government credit available to the people. This bank, however, is less flexible than Balo Toraja, in terms of understanding the real problems of rural creditors in the region. For example, the BRI was strict with the formal land collateral mechanism (only land with a state-certificate can be used as loan collateral), while Balo Toraja may except land without such a certificate, but with a legal guarantee from the village head. This
difference is probably unavoidable given that the credit rule of the BRI is nationally standardized, while that of Balo Toraja is more locally based. As most of the land in Benteng Ambeso has not been formally certificated, BRI credit has been accessed mainly by a few larger farmers. Meanwhile, the credit market offered by Balo Toraja has been more popular among the middle-class group in the region.

Although the BRI and Balo Toraja have introduced the formal credit market into the village, the informal credit market is still widely operated in the village. This can be seen in the case of Indo Ullan who, in the position as a middleman, trader and rich farmer, has also played a monopoly role as the village moneylender. Her operation, with a very flexible lending requirement (e.g. no collateral is needed for the agricultural credit, as long as the produce will be sold to her at prices determined by her) has been very popular among the rural poor. The rural poor, mainly owning small areas of land and/or with their land being uncertificated, plus a lack of information on rural banking facilities, are still isolated from the formal credit market offered by the two modern banks. With all these factors operating, I can conclude that rural transport improvements have not necessarily generated a rural credit market that meets the needs of the rural poor.

Changes in Land Values

Land in Benteng Ambeso was traditionally ruled by the customary institution, in which the headmen had the responsibility for managing the distribution of land among communities including mediating conflicts emerging from any land-related problems. The coming of state law into the village has created two different systems of land ownership: land that is customarily owned and land with a formal state certificate. The latter has put more pressure on the former as rural people start to formally certify customary land. One main reason is because customary rights to land are not acknowledged by the formal land system. Certifying land, however, is not an easy matter, as a sum of money plus time to do this business in the city is needed. Furthermore, information on how to get land certified was unevenly distributed among the rural population. Those with better access to urban centres would possess better information about the certification process than those with limited access.
In addition, the improvement of the feeder road has increased the overall value of village land and stimulated some changes in land ownership. First, some rich farmers have added to their land by buying land from other farmers who needed cash. This was illustrated in the case of Indo Sampe who, with savings from her business, bought some agricultural land from village people. This process has created greater differences in land ownership among the villagers. In addition, rural people returning home after a long time living in the city (made easier by the improved transport system) also create pressure on land ownership. The village head has become busier in trying to mediate conflicts about land ownership. His authority, however, is now limited only to that customary land which has not been certified. Social conflicts between people, as represented by the case of the family returning to Benteng Ambeso, emerge with the increasing value of land in the village.

Changes in Migration

The pattern of migration has changed with the improvement of transport networks. Before the transport connection was improved, the migration pattern was mostly coloured by (permanent) out-migration. Better transport networks create a two-way migration pattern. On the one hand, out-migration increases as better transport provides more accessible education and employment opportunities in urban areas. On the other hand, return-migration emerges, as rural people who fail to obtain a better life in urban areas will use their reserve opportunity to return home to compete for rural non-farm employment openings created by improved transport.

The return-migration phenomenon also affects land-ownership patterns. As more migrant rural people return home, land-ownership becomes a sensitive issue. Given that land in rural areas was traditionally regulated by customary laws, aimed mainly at the social well-being of the community, the situation becomes more complicated when the land gains economic value as an outcome of improved transport.
Changes in Education and Health Care

Rural transport improvements facilitate improvements in the delivery of social services such as education and health care. More rural children now go to school as a primary school is found in almost every village. Furthermore, teachers and educational supplies are more easily provided with better transport connections. The education problem moves the question from one of school availability to one of parents' economic ability to send their children to higher levels of education when the children complete those levels of education readily accessible to them. In addition, lack of information about higher education and employment options may lead parents to an inappropriate selection of further education for their children.

In the health sector, better transport facilitates better provision of rural health services. This is however not the case in Benteng Ambeso. Health service delivery is more complicated than the case of education. Doctors are reluctant to visit or live in rural areas when the transport connection is poor. This makes the direction of change between education and the health pattern slightly different. Improved transport connections provide more options for rural people to choose when they are sick. A rural health clinic without a doctor or adequate medical supplies is not going to meet rural health needs effectively. Wealthier villagers, or those who possess motor vehicles, could make their own way to a more distant, but better resourced, clinic. Other villagers will have to make do with the health clinic as it stands or do without formal health care.

9.3 Conclusions

Transport is unquestionably needed for rural development to take place, but the way the various components of development interact is influenced by the various roles of different institutions. The improved Benteng Ambeso transport network has drawn the village closer into the mainstream of politics, economy and society. This has stimulated changes in the village economy. The rural change process is initiated by the creation of opportunities for rural communities to improve their socio-economic livelihood. These opportunities come in the forms of improved agricultural production, more non-farm employment, a widening of the produce market, an expanded formal credit market,
increasing land values, better access to education and health facilities, and can lead to a higher standard of living. But, owing to a long period of socio-political marginalisation and economic isolation, the opportunities are more progressively responded to by outsiders, and by those villagers who are already among the political and economic elite of the village. This creates conflicts and enhanced differentiation in each of the abovementioned types of change. More non-farm employment creates tension between village people and outsiders. Within the village, tension emerges between those who take non-farm employment opportunities (especially traders) and those who are still in agriculture. Urban market penetration pushes the bargaining position of local farmers to marginal levels. With regard to farmer livelihoods, growing demands created by marketisation and consumerism conflict with the need to have more cash to increase productivity and/or production. Better education opportunities create new needs to send children to higher education levels, despite uncertainties about gaining employment upon graduation. With these factors operating, the improvement of socio-economic livelihoods is contested by socio-economic differentiation. This has made it nearly impossible to generate a simple conclusion on the nature of the link between transport development and rural change.

Two questions emerge from the institutional perspective on the case of Benteng Ambeso: (i) To what extent has the institutional environment of development shaped the way transport has been promoted? and: (ii) To what extent have transport improvements promoted changes in the village opportunity set and affected the mental constructs of rural individuals?

Regarding the first question, the case of Benteng Ambeso has indicated how institutions (represented by Torajan custom, the Dutch regime and the Republic of Indonesia government) and the organisations that have evolved as a result of the structures created by those institutions, have shaped the pattern of transport improvements. Transport changes have mainly been “imposed” rather than inherently “induced”, and “exogenous” rather than “endogenous”, given the overwhelming role of the two modern states in development. A motorised transport system was introduced without considering its potential synergy with a non-motorised transport system. Transport development undertaken by these two modern institutions has been mainly driven by two main motives: political and economic. The first is the intention to strengthen political control
over rural regions, while the second relates to integrating rural regions into the mainstream economy. Both of them have mainly been to serve the interests of the states and the regional economy rather than the rural population. On the other hand, the customary Torajan institution has played no recent role in transport development as it has been perceived as traditional and inappropriate. Nevertheless, the facts that many tracks were originally built through the collective action of local communities mean that the customary Toraja institution can contribute in rural transport development. With the government’s lack of capacity to provide sufficient funding for complete rural transport development, incorporating customary institutions into the modern development platform may offer an effective approach for promoting rural accessibility and mobility.

The case of Benteng Ambeso has also indicated that transport improvements stimulate changes in the rural opportunity set (represented by employment patterns, agricultural production, rural produce market, rural credit market, land values, migration patterns, and education and health services). Adoption of these changes by rural individuals has varied, affected mainly by the different mental constructs and economic capacities of individuals. These, however, are affected by asymmetries of information between individuals plus the costs required to access the opportunity set which together have created imperfect political and economic markets. Rural people now enjoy greater economic opportunities, but life becomes more complex and is increasingly coloured by competition and tensions among key players. To better understand who gains benefits, and who does not, it is crucial to explore the role of each key-player. The analysis showed that almost certainly the outsiders take many of the benefits away, leaving a smaller proportion of benefits to be competed for by rural people. Rural people who take the remaining benefits force the rural poor to stay poor or even poorer. The question is to what extent do transport improvements contribute to this situation? There is no simple answer, as transport works with other technological innovations in promoting rural change. This chapter, however, has indicated that transport cannot be taken for granted anymore, if we are concerned to develop an effective transport policy for the rural economy. The fact that transport improvements may even increase the differences in information, the differences in transaction costs and the imperfections of the market, may lead to a conclusion that transport improvements, although they may promote economic growth, also increase rural differences and conflicts. For transport development to be effective in promoting the rural economy, the discourse on transport policy and research
should transcend its traditional boundaries, and address the complexities of markets, rational individuals and their institutions.
CHAPTER X: TRANSPORT IMPROVEMENTS AND THE RURAL SOCIETY

In the previous chapter I discussed, through the case study of Benteng Ambeso, Tana Toraja, the domination of state institutions in shaping the direction of rural transport development. The implications have been twofold: the introduction of a motorised transport system as the only solution for transport development and, in relation to this, the establishment of the motorised transport network has been always initiated from, and concentrated in, state political and economic centres. Societal institutions, which have the potential to promote rural transport, although in different ways, have been systematically excluded from the process of improving transport. This chapter takes this issue further, examining the role of societal institutions in promoting rural transport and development. Two questions are raised: To what extent can rural communities contribute to rural transport development and in what circumstances can the incorporation of such community institutions into the process of rural transport development effectively improve the rural economy?

The first section extends the case of the land-based transport system and highlights some self-help initiatives of rural communities in developing their transport system. The discussion takes advantage of the already extensive research on land-based rural transport in Indonesia and other developing countries. Two case studies of local communities working to improve their land-based transport system are briefly discussed in the first section. The next two sections deal with water-based communities. Section Two is focused on the small-island community of Balang Lompo, Pangkajene Kepulauan and Section Three examines the initiatives of the riverine community of Beraur, Sorong in facilitating their transport needs. These case studies strongly indicate the persistence of community institutions in rural transport improvements. From the analysis, two issues emerge: (i) the struggle of those communities to cope with their transport and development needs is accentuated as they receive little or no support from formal development institutions, and (ii) the differences in the ways these communities use their social norms to solve their transport problems. These two issues are reviewed in the fourth section, using the lessons from the four case studies to analyse the potential for incorporating societal institutions into modern transport development systems.

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The analysis is based on the theory of institutions. The theory argues that societal or informal institutions which can be associated with local, traditional, indigenous, endogenous or grass-root communities (see Uphoff, 1986; Woolcock, 1998; Platteau and Abraham, 2002; Krishna, 2003; Watson, 2003), are significant in promoting development and change. Societal institutions can be traditions, conventions, norms, and beliefs, but they are all rooted in and shaped by one overarching institution: culture. Their organisations involve households, kinship groups, village organisations, ethnic groups, religious groups, or other civil society groups. North (1990) argued that, while in the short-run culture defines the way individuals respond to changes in the opportunity set, in the long-run it plays a crucial role in the gradual evolution of institutions. The way the economy changes is therefore shaped by the interaction between persisting informal institutions and the imposed formal rules (North, 1990). In Woolcock's (1998: 177) development terminology, this process combines "bottom-up" (initiated by community organisations) and "top-down" (imposed by the state) development initiatives, and involves complex social relationships. Woolcock identified four major types of social relationships: (i) within local communities, (ii) between local communities and groups with external and more extensive social connections to civil society, (iii) between civil society and the state, and (iv) within the state organisations. These social relations determine whether interactions between bottom-up and top-down initiatives will be successful. I will analyse how these relationships are maintained in the context of rural transport and development in Indonesia in three geo-topographical contexts: land-, island- and river-based areas.

10.1 Community Initiatives and Land Transport

The case of Benteng Ambeso (Chapter IX) provided little evidence of the participation of informal institutions in rural transport development because of the strong hegemony of the colonial and independent states. There are, however, examples from Indonesia that indicate the active role of rural communities in improving their transport system. Three distinct preconditions that may stimulate the active participation of rural communities can be identified: (i) the institutional environment that provides sufficient support for informal community institutions to evolve and participate in development, (ii)
circumstances of little or no state intervention, so rural people are forced to independently seek their own transport solutions, and (iii) the existence of local or indigenous institutions with strong social capital. I will demonstrate these situations in the case studies of rural road improvements and provision of rural transport services that follow.

10.1.1 Community Initiatives in Building Rural Roads

International reports on community self-help in rural road improvements in developing countries date back to the 1970s (see Irvin, 1975; McCleary, 1976; Lal, 1978; Carnemark, 1979; United Nations, 1979; de Veen, 1980; Glaister, 1980). Irvin (1975), for example, described how the Iranian government introduced labour-intensive methods for road construction. Glaister (1980) reported the self-help approach of rural road improvements in Afghanistan, in which the workers donated their services free or for the provision of food. In Indonesia, this community initiative and cooperation in rural road construction was initially implemented between 1975 and 1978, through the Padat Karya Gaya Baru (new style labour intensive) programme (Leinbach, 1978). In this type of programme, rural roads were constructed through a gotong-royong system (the mutual and reciprocal assistance that traditionally binds an “Indonesian” community) in which, although local people received cash incentives through their involvement in the road construction, the basis of participation is community solidarity to improve the village economy (Leinbach, 1978; Institute for Development Studies, 1984). The programme was coordinated by the Ministry of Labour and funded by USAID. The notion of padat karya (labour-intensive) was later on adopted by the Ministry of Public Works which was directly in charge of rural road development. Overall, developing countries and international development agencies, mainly associated with the work of the ILO, have set the basis for incorporating local needs and initiatives in rural transport development (Barwell et al., 1985).

However, most of the community participation projects by those governments and agencies and which, in that era, were based on the practical objective of creating employment opportunities, narrowly focused on a “conventional highway and car” solution, and with highly centralised decision making (Donnges, 2003). Such approaches
have been contra-productive for many local communities, "providing the wrong interventions in the wrong places often using inappropriate technology" (Donnges, 2003: 8). In Indonesia, the gotong-royong idea used by the New Order government has been severely contested (see Bowen, 1986; Nordholt, 1987). These authors argued that the notion of gotong-royong was deliberately utilised by the central government to mobilise local community in "development", and lead to a weakening of the autonomy of this local institution. The key step toward achieving successful rural road infrastructure development is that the needs for building strong local institutions and participation by beneficiaries were not seriously addressed by the international development community in that period (Cernea, 1984; Ostrom et al., 1993).

Since the late 1990s, strengthening community institutions has become an important policy for international agencies in financing the Third World development (Mansuri and Rao, 2004). This initiative was approached through community-based or -driven development programmes. In Indonesia, the World Bank in association with the Indonesian government introduced a community-driven development project called Kecamatan Development Programme (KDP) (see Chapter V for the discussion). This project has been cited by many authors as one of the good examples of strengthening local institutions and promoting "social capital" among rural communities (Bebbington et al., 2004). Rural road improvements have been an important component of this programme. In 1999, the first year of the KDP implementation, rural roads accounted for 54% of the total loan, while the remainder was shared by other infrastructure and economic activities (KDP National Secretariat, 2000). Whether or not this programme can successfully strengthen community institutions remains to be seen. However, with the change in the institutional setting of central-local relationships that provides greater autonomy to local institutions (Law 22 of 1999), we can expect better recognition of community institutions in the development process. On the other hand, some criticism did emerge that was mainly associated with the initiative of the World Bank to scale-up such community-based development projects, which simply overlooked the constraints associated with complexities at the local level (Krishna, 2003; Mansuri and Rao, 2004), including the "new power" exercised by local elites (Platteau and Gaspart, 2003; Platteau, 2004). This debate, however, does not necessarily comply with some experiences in rural Indonesia in which local communities engage in building their rural roads within a supportive local institutional environment.
The experience of the rural communities of Manggarai, West Flores in building their district and village access roads is probably the best and well-reported example of community initiatives in rural transport in Indonesia so far (Winkelmann, 1999; Hurmali, 2001; Ndoen, 2001). In 1980s, the total length of district roads in Manggarai was 1,835 kms and only 400 kms were in a good condition (Winkelmann, 1999:20). In addition, there were about 1,400 kms village access roads and almost all were in poor condition (Ndoen, 2001). Poor rural accessibility and the government’s lack of capacity to improve district and village roads had motivated rural people to participate in building these roads. Given the difficult topographical conditions, these efforts often failed because villagers had neither the necessary skills in road construction nor the proper tools (Winkelmann, 1999). Over the period 1985-1999, the rural communities in association with the Catholic Church of Manggarai and financial and technical assistance from the Swiss Organisation for Development and Cooperation (Intercooperation) have built 179 kms of gravel roads, 43 kms of dirt roads and six bridges (Ndoen, 2001).

This rural road project depended largely on social relationships possessed by the Flores community, which are characterised by a strong kinship behaviour pattern (Winkelmann, 1999). The participation of the community in the form of voluntary unpaid labour was only possible due to mechanisms of social control within the community (Winkelmann, 1999). In addition, the Catholic Church that came to the region in 1555 and has been well incorporated into the Flores culture, provided the community with a strong local organisation. The Catholic Church helped the local community to organise the project. The district government of Manggarai had relatively little role in the project, but did promise to provide incentives for the maintenance of district roads built by the community (Ndoen, 2001). In the end, the government failed to comply with this promise and many community-built district roads were left without proper maintenance (Hurmali, 2004: pers.comm.). The community, on the other hand, is still active in maintaining their village access roads (Hurmali, 2004: pers.comm.). Lastly, Intercooperation played a role as an external organisation that provided the community with assistance in the planning, implementation and supervision of the project (Winkelmann, 1999).
The case of Manggarai indicated the interplay of the three preconditions mentioned above. First, there was a conducive institutional environment at the local level that has enabled the rural communities of Manggarai to exercise their social capital, based on the true *gotong-royong* spirit, in building their rural infrastructure. The active role of the Manggarai Catholic Church needs to be recognised in facilitating such an environment. Second, there had been little intervention of the state in building rural roads in the region. The district government of Manggarai put little effort into building the rural road network, forcing the local community of Manggarai to seek their own solutions. Third, strong local organisations represented by the local community of Manggarai and the Catholic Church helped the people to organise and actualise their social capital. These three aspects also explain why the strong top-down approach implemented during the New Order period seemed to have no effect on the way the project was implemented (Hurmali, 2004: pers.comm.).

### 10.1.2 Community Initiatives in Providing Transport Services

In October 2002, while in the process of writing this thesis, I attended an international workshop on Improving Mobility for the Rural Poor in Rajasthan, India. The workshop was organised by International Forum for Rural Transport and Development (IFRTD) and was aimed primarily at widening debate on inadequate rural transport services in developing countries, developing strategies to increase rural mobility, and proposing realistic action plans to be promoted by the participants at the country and international levels (IFRTD, 2002). In light of the last, I worked with two participants from the Philippines and proposed an action plan for Indonesia and the Philippines that was: promoting intermediate means of transport (IMT) to reduce the isolation of rural and indigenous people (IFRTD, 2002). The proposal was based on the reality that while IMTs have proven very important in promoting mobility of the rural poor (Riverson and Carapetis, 1991; Starkey, 2001; Porter, 2002a; Starkey et al., 2002), they have not obtained appropriate recognition in the transport development institutions of these two countries. As a result, IMT services that are largely dependent on local community initiatives have been forced to face the large-scale penetration of modern transport modes. This situation can be seen in the case of public IMTs in Pangkajene Kepulauan, as presented below.
Despite the fact that a variety of public transport modes operate in mainland Pangkajene Kepulauan: tricycle (becak), horsecart (bendi), motorcycle (ojek), and minibuses (pete- pete'), only the later have legal status to operate as public transport. The main reason is that the Indonesian Road Traffic Law (Law 14 of 1992) does not acknowledge the operation of such IMT vehicles as public transport for people on a public road. Yet, IMTs provide alternative solutions for improving rural mobility, especially in areas where public minibuses have operational difficulties (e.g. unpaved roads and tracks) or where demand for minibus public transport routes is low. While minibus public transport may offer faster and, to some extent, cheaper services than IMT services, it has limited flexibility compared with public IMTs. More than that, improving rural mobility can also be seen from the perspective that IMT services in themselves provide employment for many rural poor that in turn will improve rural mobility (see Bryceson, Maunder et al., 2003 in the context of boda-boda services in Uganda). The problem is that there has been no institutional arrangement in Indonesia that coordinates the operation of public minibuses and public IMTs on a complementary basis. The district government regulates routes, issues licences and, more importantly, works together with financial institutions in providing credit for minibus public transport operations but, on the other hand, does nothing to promote the effective operation of IMT services. These situations have led public IMTs operators to struggle in the face of the penetration of public minibuses into the region.

In the competition with minibus public transport, many IMT operators, who are predominantly from local communities, organise themselves for protection against the operation of public minibuses in their region. Horsecart operators in one subdistrict, for example, formed an informal organisation and created an informal regulation on minibus operations in this region. The regulation was unwritten, but contained at least three major points: (i) public minibuses are not permitted to operate on some feeder routes where horsecarts operate, (ii) horsecart drivers will take physical action toward any public minibus if it openly operates on these particular routes, and (iii) horsecart operators will set their tariff competitive with the tariff regulated for public minibuses. This informal regulation has been strongly implemented in the region where social solidarity among IMT operators is tight. Some physical tensions between public minibus operators and horsecart operators even emerged in this particular region when the former intentionally
carried passengers on the horsecart routes. One of the leaders of the horsecart operators said that this was the only way they could preserve their profession. Otherwise, they would have to start to seek other employment opportunities, something that is very difficult given they have little knowledge or skill to obtain other non-farm employment.

10.2 Rural Community and Insular Transport: The Case of Balang Lompo

Rural transport studies have given very little attention to insular transport. This transport system is, in fact, vital for many rural communities living in archipelagic regions. To a significant extent, insular transport faces a more complex situation than a land-based transport system because of the insularity and economic peripherality of islands (see Biagini and Hoyle, 1999). In Indonesia, with 2,149 inhabited small islands (Salam, 2003) associated mainly with small populations and remoteness, the insular transport system raises a classic development problem: low demand for transport and therefore low priority for transport improvements. As a result, small island communities have historically been forced to independently provide for their transport needs. In this light, it is important to understand the historical dimension of the way traditional insular transport systems have evolved before determining possible interventions for modern transport improvements (Hoyle, 1999). The case of Balang Lompo Island of Pangkajene Kepulauan is discussed next to examine how a small island transport system has historically evolved and what has happened when formal development by the state was introduced into the island.

10.2.1 The Society and Transport Improvement

Balang Lompo is a small island, only about three km², situated 22 km off-shore in the Makassar Strait (Figure 10.1). The island, together with the other 75 inhabited small islands, administratively belongs to Pangkajene Kepulauan District. The population of Balang Lompo was 1,762 in 2000 (Akhmad, 2002: pers.comm.), dominated by the Makassar ethnic group with a few Buginese. The island economy is heavily dependent on fishing and all the fishers are engaged in small-scale operations.
Historically, the island was firstly inhabited by peasant fishing communities of the Bajau ethnic group (Reid, 1999: 110). The coming of the Makassar ethnic group in Balang Lompo (and the displacement of the Bajau) was associated with the rise of Makassar kingdoms (Gowa and Tallo) during the 16th and 17th centuries. The Bugis, another major ethnic group in Pangkajene Kepulauan also reside in the archipelago, but mainly on the islands to the north of Balang Lompo. These Makassar and Bugis ethnic groups, as well as the Bajau people were traditionally known as talented seafarers for trading and fishing. Their unmotorised boats sailed over the Southeast Asian archipelago, into the Pacific, and even across the Indian Ocean to Madagascar (for discussions see Andaya, 1981; Pelras, 1996; Reid, 1999).

Bajau is an ethnic group characterised by a life spent primarily on boats, and a total dependence on the sea for a livelihood (Reid, 1999). They are widely dispersed throughout the coasts of Sulawesi, eastern and northern Borneo, the southern Philippines and parts of Maluku.

Makassar and Bugis are the main ethnic groups in South Sulawesi, both of whom have a distinct history and culture. In today’s society, however, these ethnic groups are confusedly associated in a composite term: Bugis-Makassar. Pelras (1996:14) argued that “this confusion is not without its grounds, and it reflects the present feeling of at least part of the South Sulawesi Muslim population, of a common identity which supersedes ethnic and linguistic differences.”
Trading and especially the fishing profession have characterised the socio-economic lives of the Balang Lompo people and, to a large extent, have shaped the cultural identity of the people. Strong social cohesiveness lays the foundation for the interaction among the fishing communities of the Makasarese and Buginese. Pattappe (2002b) identified some values that originated from the condition of being completely reliant on the seas and have shaped the lives of the island community of Pangkajene Kepulauan: (i) mutual honour, (ii) mutual understanding, (iii) positive thinking, (iv) openness, (v) solidarity and (vi) respect for nature. These values are strongly held by the island community to ensure the harmony of living on islands and in interaction with other communities and with their surrounding seas, which are, to a great extent, seen as “sources of life and death” (Pattappe, 2002b: 39)

The social solidarity value operates in all aspects of socio-economic activities either internally within the fishing community or externally in relations with other fishing communities and non-fishing communities. The internal social relationship can be found in all aspects of fishing activities starting from constructing and launching boats, building and operating fishing platforms, and organising fishing production. Patronage relationships structured by a system of pervasive and interlocking networks of clientele, and which are linked to kinship ties, have traditionally been the basis of those activities (Meereboer, 1998; Pelras, 1998). The external social relationships with other fishing communities can be found in production and marketing activities. Fishermen from several different islands may cooperate in fishing and selling their produce. Meanwhile, the social relationship between fishing and non-fishing communities can be seen through the interaction between fishermen and fish traders on the mainland.

The introduction of mechanised fishing methods into the islands in the early 1980s in association with a growing demand to increase production have stimulated changes in fishing activities. Small-scale fishing communities associated with traditional fishing methods were forced to mechanise their fishing techniques to cope with the penetration

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54 This is basically the relationship between a leader and followers, or a patron and clients (Pelras, 1998).
of large-scale fishers into the region. With the lack of attention from the government to the needs of the traditional fishing communities in acquiring new fishing technologies, the informal credit market has played a predominant role. Some businessmen in Makassar injected cash into the Balang Lompo fishing community, to change their methods of fishing from non-motorised to motorised boats, and from traditional to mechanised fishing techniques. To obtain a loan, the fishermen did not need to provide collateral, nor to repay the loan immediately. However, all fishing products gathered with the use of the facilities funded by informal credit have to be sold to those businessmen, with the price being under their control. In addition, the fishermen still have to pay interest on the loan. With this change, the conventional patronage relationship internal within the fishing community has also shifted to a new patron-client relationship based on strong commercial ties (Meereboer, 1998). The Makassar businessmen have now become patrons with fishers as their clients. The use of mechanised fishing gear has increased the production capacity of fishermen, but the income gained is unfairly distributed at the expense of fishers. Overall, the institution of the fishing community of Balang Lompo has changed with the introduction of mechanised fishing methods.

Transport activities were traditionally intertwined with fishing. Travel of people and movement of goods were organised through fishing networks. Economic trips such as going to market to sell fishing products, to buy fishing equipment or to buy household necessities were well incorporated into fishing activities. Likewise, social trips such as attending cultural ceremonies or taking patients to obtain traditional health care in other islands were also coordinated through fishing trips. On such occasions, fishermen would meet to decide the boats to be used. In addition, although fishing is predominantly a male-related activity, women and children used fishing boats for transport. Travel to

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55 Dahuri (2000) argued that one of the causes of poverty in insular communities was the structural differences in fishing activities in Indonesia. In 1999, 82% of fishermen were small-scale fishers, while 18% were large-scale fishers. The former were trapped in a vicious cycle associated with low productivity and poverty, while the latter enjoyed a high income as they had sufficient capacity to acquire technology, capital, and markets.

56 Formal collateral is something that is difficult for a small-island community relying on fishing to provide. One reason is because most land is not certified. Second, fishing devices and boats are not accepted as collateral as they are valued, compared to land, as materials with limited and uncertain durability.
visit families on the mainland, to buy gold\textsuperscript{57}, or to take children to the hospital is readily integrated into the schedule of fishing activities. The coming of mechanised technology in fishing activities has made travel easier whether to the mainland or to other islands. Furthermore, that travel can be better coordinated with fishing. In practice, fishing activities with either traditional or mechanised techniques have incorporated the travel activities of islanders.

\textbf{10.2.2} The State and Transport Improvement

Formal development, including transport improvements, was introduced into Balang Lompo, following the appointment of the island as a sub-district capital in 1972.\textsuperscript{58} The implementation of Law 5 of 1979 meant that the village system was standardised and informal community institutions have been given no role in village development. Accordingly, top-down development approaches were introduced into Balang Lompo and have largely overlooked the nature of the island and the existence of a local fishing community. The top-down development approach treated islands similarly to mainland situations. Some examples are listed below:

- Public facilities such as the sub-district office and local police office are centralised on Balang Lompo with the intention to serve the whole sub-district population which is dispersed over 41 islands. Likewise, the health centre and junior high school were built to serve the population on 12 islands. Meanwhile, there has been no effort to develop a public transport system to connect those islands with the capital on Balang Lompo. Public motorboats (that will be explained later) only served the connection between the island and the mainland. As a result, people came to rely on public facilities on the mainland, firstly because of better transport connections direct to the mainland, but mainly due to the wider variety of services to be found on the mainland.

\textsuperscript{57} Gold is an important asset in the competition for social prestige in this region and fishermen seem more inclined to buy their wives a gold necklace than to invest in house improvements or education for their children (Meereboer, 1998)

\textsuperscript{58} The 76 islands of Pangkajene Kepulauan are grouped into three subdistricts: Liukang Tuppabiring, Liukang Tangaya and Liukang Kalmas, and Balang Lompo is the capital of the first.
Sub-district organisation was developed through officials who were mainly appointed from the mainland with little knowledge about, or interaction with, island and fishing communities (Pattappe, 2002a: pers.comm.). They frequently used to be absent without leave. The physical existence of government organisation on Balang Lompo contrasts with that of local communities. For example, one finds a complex of government offices characterised by brick buildings but with low staff attendance, surrounded by, but having little interaction with, fishing communities with their unique character of elevated wooden housing and dynamic fishing activities.

Teachers, doctors, and nurses were mainly mainland people, who had no cultural relation with the islands. As a result they never stay long on the island and always seek possibilities of moving to the mainland (Pattappe, 2002a).

In the transport sector, the central government with its sectoral approach through the Ministry of Transport, has provided the island with transport infrastructure and services. Three wharves were built, two routes for motorboat public transport were set, and a licence for motorboats to operate as public transport on these routes was issued. As the wharves were poorly maintained, the first built wharf had become completely derelict and the second one was partly idle. Only the last one that was built in 2001 still operated at the time of my visit in 2002. The two regulated public transport routes were Balang Lompo - Pangkajene Port and Balang Lompo - Paotere Port, a special port for local vessels and boats in Makassar. The travel distance to both ports from Balang Lompo is about the same (travel time averages one and a half hours). Three motorboats were licensed to serve the first route and another three for the other. Those motorboats provided a daily return service, leaving Balang Lompo at 7 a.m. and returning to the island by 11 a.m.

No public motorboat route is set for connecting Balang Lompo with the other islands in the subdistrict. The reason is that such travel is very infrequent, and only economic on particular occasions. This means that, although the distances between islands in Liukang Tuppabiring are short (e.g Balang Lompo – Karanrang is four kms), there was no means of public transport to connect them. To visit the subdistrict office in Balang Lompo from other islands in Liukang Tuppabiring one needed to travel to Pangkajene or Paotere first, and to use another motorboat to Balang Lompo.
The business of motorboat public transport is less dynamic and attractive than fishing activities. Those six motorboats operated with an average occupancy less than 50%. I travelled 12 times on these routes, and the occupancy of the boats that I used was just 33%. According to the crew members, the motorboats are only fully occupied on particular occasions such as Iedul Fitri, when many islanders who worked on the mainland wanted to return home to celebrate Iedul Fitri with their relatives on the island. When I asked why the public motorboat services were not carrying many passengers, two general answers emerged. First, many of the island population still relied on their own motorboats to travel to the mainland. This was done either in coordination with fishing or by their own non-fishing boat. Second, travel using motorboat public transport was mainly for household tasks and social purposes, and rarely for economic purposes. People who travelled to the mainland using the public motorboat service were going mainly to shop for household necessities in the market or to visit friends or relatives on the mainland. Economic trips, which are focused on fishing, were mainly done through the fishing network, which is untouched by the formal public transport system.

The implementation of Law 22 of 1999 (which provides local government with a greater say in managing their region) has brought change to the development process. With this authority, the district government of Pangkajene Kepulauan has given special attention to the development of the islands, principally based on an understanding of the characteristics of the island communities (Pattappe, 2002a: pers.comm.). Transport is one out of many needs of the island communities, and can only be effectively addressed by an integrated approach to development. The Head of Pangkajene Kepulauan told me his experience and views:

With the more reliable transport connecting islands and the mainland, teachers, nurses, and village officials were able to travel more frequently to the mainland and stayed longer in the mainland rather than in the islands. ... I learnt that providing better transport connecting the mainland and the islands is not a sufficient solution for improving services to the island communities. I learnt that, culturally, islands are different from the mainland. Land-based people will never feel comfortable living on an island, and [as transport improved] they will always seek a reason to return to the mainland. The more effective way to improve basic services in the islands is preparing local communities in providing services to their own community. (Pattappe, 2002a: pers.comm.)

59 The capacity of a motorboat public transport is 35 passengers or four tons of goods. The total number of passengers carried during my 12 trips was only 97 plus about five tons goods (33% of the capacity). Goods carried included rice, kerosene, diesel fuel, cement, etc.
A series of special programmes introduced by the district government of Pangkajene Kepulauan sought to provide basic services through empowering island communities. They were among other things: (i) equipping traditional nurses who operated in the islands with basic health care skills plus medical equipment required to deal with such tasks, (ii) increasing the entree of nurses and teachers from the island communities by providing special scholarships for junior high school children from the islands who wanted to be a nurse or a teacher, and in relation to this, (iii) a special programme was introduced to directly appoint (without a test), as a civil servant, those who have graduated, if they go back to serve their community, and (iv) a subsidy on the purchase of generator sets for island electricity will be granted to those islands that show strong organisation in maintaining the supply of electricity. In transport, the district government transferred the monies, allocated for pioneer transport services, to the construction by island communities of two wooden ships to be used for coastal services. Nevertheless, the success of these programmes will largely be dependent on the ability of fishing communities to strengthen their internal organisations and to actively engage in the process of development.

10.2.3 Two Separate Transport Systems?

With these factors operating, I can conclude that there are two separate transport systems operating in Balang Lompo. The first is a formal transport system. This transport system is regulated by the government, served by the government licensed motorboats, connecting the island and the mainland, and is mainly used by the island community for household and social purposes. The second is an informal transport system, which has inherently evolved in the community and operated through fishing activities. This system is unregulated, and therefore illegal for public transport, but more flexible in terms of routes (it connects other islands as well) and schedule. This transport system serves the economic as well as social interests of the fishing community.

The government approach to developing a formal transport system has undervalued the potential of the fishing community of Balang Lompo to manage their own transport system through fishing activities. This fishing transport network, which has been
increasingly mechanised since 1980s driven by the commercial interests of the mainland market, offers opportunities for improving the mobility of the island community. Lack of integrated action in small-island development has meant that the formal effort to improve island mobility was ineffectively implemented, thus increasing the opportunities of uncontrolled markets to exploit island resources at the expense of island community.

To sum up, the case of Balang Lompo illustrates the importance of understanding local institutions when introducing development, including transport development, into small-island communities. First, the fishing community of Balang Lompo was traditionally contextualised by strong social relationships. The introduction of modern technology to fishing in the 1980s has brought a more strictly economic flavour into community lives. The penetration of businessmen from Makassar made fishing activities more productive but, owing to the imperfect fishing market, the income gained has been unfairly skewed against fishers. The government with its formal, sectoral and top-down approach has failed to understand the characteristics of the island, and accordingly, has also failed to address that market imperfection problem.

Transport improvements were carried out, but they failed to incorporate the traditional transport network implemented through fishing. As a result, two transport systems exist separately: (i) a formal transport system, which is commercially unattractive, serving mainly social and subsistence travel, and (ii) an informal transport system, which is "illegal" but carries fishing business and other types of travel. The separation between these two systems has been the cause of the underdevelopment of transport system in the region. A more integrated approach in developing an effective transport system in this region is required through close coordination between the informal and the formal transport system.

10.3 Rural Community and River Transport: The Case of Beraur

Although travel by river is very ancient, its role in promoting rural accessibility and mobility has largely been neglected and undervalued (Hilling, 1996; Palmer, 1998; IFRTD, 2003). Modern development is strongly associated with roads and motorised vehicles and has significantly changed the pattern of mainland transport networks from a
system that integrated inland waterways with land-based transport to a solely road-based transport system. In fact, in many rural areas, where roads are difficult to construct due to topographical ‘constraints’ and governments lack the resources to build roads in those regions, river transport may offer an appropriate solution. In addition, for indigenous riverine communities, rivers are not only the means of transport but, more importantly, a significant part of their socio-economic activities. Understanding rivers as the means of transport for riverine communities, therefore, should be approached through an understanding of the history and culture of these communities. The case of the riverine Beraur community is discussed next.

10.3.1 Rivers and the Society

Beraur is a subdistrict of Sorong, located in the Bird’s Head of Papua, the easternmost province of Indonesia (Figure 10.3). This subdistrict is unique in terms of geographic and population structures. The region covers approximately 1,500 km², of which more than 60% lies in swampy, coastal and riverine areas. There are three big rivers crossing Beraur from their headwaters in the highland Bird’s Head to their mouths in the Ceram Sea. They are the Beraur, Klabra and Seremuk Rivers. Those rivers average about 50 metres wide in upstream reaches and are up to two km wide downstream. The Seremuk River is the longest, stretching more than 150 kms from inland Sorong, while the Beraur River is the shortest, flowing about 40 kms to the south coast. Apart from these three main rivers, there are 19 smaller rivers in the interior that intersect with them. It is inevitable that rivers have been a major element of Beraur’s geography.

In Beraur, people traditionally live along the riverbanks and use rivers mainly for transport and water resources. There are nine indigenous villages: seven of which are located on the riverbanks and only two are in the hill region. The people of those two villages, however, will have to use boats, apart from walking, for any travel to other villages. The subsistence activities of people are significantly influenced by the ecological situation of their area (Walker and Mansoben, 1990) and the inhabitants of Beraur communities, who are mainly swamp and riverine dwellers, are sago and swidden agriculturalists as well as fishermen.
The main ethnic groups living in Beraur are Moi and Kalabra. These people are among approximately 240 different Negroid language groups living in Papua (Silzer and Heikkenen, 1984). The Moi mainly reside in Klamono, Klawana, Disfra and Wanurian (western villages), while the Kalabra live in the eastern region of Beraur. Nevertheless, both ethnic groups are categorised into the same sub-group of cultures with another three communities in Bird’s Head, Tehit, Seget and Moraid (Silzer and Heikkenen, 1984). The ethnic pattern is rooted in Melanesian culture but characterised by some Malay influences. At this point, it is worth noting that the Bird’s Head region including Moi and Kalabra is a transitional region between Melanesia and Southeast Asia (Healey, 1997), even between Asia and Oceania (Miedema, 1994). Socio-culturally it fails to conform with the stereotypes that have been constructed for either region (Healey, 1997). The use of *kain timur* textiles in ceremonial exchange systems, the slave-trading activities, and incorporation of villages into a centralised political system indicate some penetration of

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*Kain timur* (cloths from east) refers to old cloths originating in the Eastern Indonesian archipelago, from whence they were for centuries imported into the Bird’s Head in exchange for slaves and birds of paradise. The cloths became highly esteemed as brideprice goods in the exchange of women between kinship groups, particularly in the interior of the Bird’s Head region (Miedema, 1994).
Southeast Asian culture into the Melanesian culture in the context of Bird’s Head (Miedema, 1994).

Rivers have played a major role in the interaction process between the Melanesian and Southeast Asian cultures in the Bird’s Head region. The flows of kain timur, for example, from the western maritime region of the island of Papua and Northern Maluku into its centre in inland Bird’s Head region used rivers as the main means of transport. In that sense, Timmer (2002: 3) argued that “[people in the interior of Bird’s Head] cannot be characterised as isolated or solitary. On the contrary, they have been connected to the world economy for centuries”.

10.3.2 Modern (Transport) Development and the State

A series of modern development initiatives has been delivered in the Beraur Region, from both private and public sectors. The first of these can be traced back to the 1930s when the Netherlandse Nieuw Guinea Petroleum Maatschappij (NNGPM) started exploration in Klamono in 1935, and commenced oil production in 1948 (Sumule, 2002). After the transfer of administration from the Dutch to Indonesia in 1963, those oil wells were handed over to Pertamina, the Indonesian public oil company. The Klamono oil is exported and contributes to the economic growth of Indonesia. In 1999/2000, for example, the export value of oil from the Klamono wells was about US$ 60 million (BPS Kabupaten Sorong, 2000), but has provided little benefit to the Beraur people. The employment of Klamono people as labourers in the oil exploration sites changed the livelihood pattern of households from subsistence agriculturalists to unskilled employees, but had very little impact on alleviating poverty in the area. In 2000, 56% of Klamono households were classified as pre-prosperous and prosperous level I, and 82% of Beraur communities were in the same category (Analysis of BPS, 2001a).

Along with the exploration in Klamono, the road network from Sorong to Klamono was built to support the transport of supplies to the Klamono wells. The road was later handed over to the Government of Indonesia and has become part of the Trans Papua road network that is planned to connect all main cities in Papua and reduce the isolation of the people. To reduce the isolation of inland communities in the Bird’s Head region, a
road connecting Sorong to Ayamaru (another subdistrict in inland Sorong) through Klamono, has been under construction since the 1980s. Until 2002, however, a section of the road was still not accessible to any motorised vehicle due to the major difficulty of building roads in a mountainous inland area with limited development funding. According to the government plan, if this main network can be built, access roads connecting off-road communities to the main network will reduce rural isolation. As part of that plan, an access gravel road connecting Wanurian to the main Klamono–Ayamaru road was constructed in 1987. This 48 km road project, however was never used because the main road was not completed.

Another attraction of Beraur is its forest. In 1990, an army owned logging company was granted a logging concession over the whole area of production forest in Beraur. The right was given by the national government without informing the Moi, who hold customary rights over the land. The Moi and Kalabra could not take any advantage from such a top-down decision. In recent years, with the implementation of the Special Autonomy Law,61 the company began to supply local people with the materials they needed, such as boat engines, housing materials and chainsaws. These materials are given in exchange for the customary rights of indigenous people over their forest resources.

Logging companies have used rivers as their main means of transport. Several logging vessels operate along the rivers to transfer logs to larger ships in the Ceram Sea. In addition, motorboats operate to transport logging workers from Klamono to the forestry site. Apart from logging activities, rivers in Beraur have also been used to transport shrimp from fishing areas to Klamono and to cold storage facilities in Sorong before being exported. Several motorboats operated specifically to transport such produce. It can be said that logging and fishing industries have been the main users of modern river transport operations on Beraur’s rivers.

The government has made no effort to invest in river transport in Beraur, apart from regulating the transport fares on the Klamono–Teminabuan route and running two motorboats on that route. In 2001, the government granted a licence for the operation of

61 Law 21 of 2001 dealing with the special autonomy of the Province of Papua ensures the protection and control of the rights of the indigenous peoples of Papua, including rights over natural resources.
two high speed ferries connecting Sorong to Teminabuan via a coastal route. The operation of those ferries has drastically reduced the operation of motorboats that serve the same origin-destination ports (but by different routes) to the disadvantage of river transport operators. Some of the indigenous Beraur households operating public transport motorboats on the Beraur river have lost their source of income. In addition, there has been no plan prepared for improving the navigability of the rivers. Problems like soil erosion originating from logging activities and the resultant shoals that occur in Beraur’s rivers have not been touched by any government intervention. In contrast, road development seems to have full attention from development agencies at all levels.

10.3.3 The Society and River Transport Improvements

How has the indigenous Beraur community coped with their needs for travel? How have they coped with the lack of support from the government for river transport development? What have been the efforts of the community in building their own transport system? In the following paragraphs, I elaborate three initiatives carried out by this indigenous community in promoting their river transport system.

Collective action in purchasing boat engines

The modern river transport activities taking place on Beraur’s rivers originated from the timber and fishing industries and contrast with the traditional activities of the local people along the rivers. Local people can readily be found on the rivers paddling their traditional boats on trips from and to their bivouac sites for agricultural production or fishing. Nevertheless, a few local households have started to own and operate motorboats since the late 1990s. In 2002, at least two to five motorboats (wooden longboat equipped with a 40 horsepower outboard engine) can be found in every Beraur riverine village. The boat hull was constructed by the local people, while the engine was obtained from the involvement of local people in non-subsistence economic activities (e.g. working as labourers in logging) or in exchange for logging rights.

62 Every indigenous Moi and Kalabra household in the riverine Beraur owned at least one boat. The boat was self constructed and used for daily subsistence activities.
The Disfra community, for example, bought two outboard engines through their recent collective involvement in logging operations. Before 1990, all households were subsistence agriculturalists. Today, they still do the same thing, but also engage in logging activities. When there are orders from logging traders for producing logs, the village head will organise the men in the village to take this ‘employment’ opportunity. In most cases, they take their family close to the logging location, stay in a bivouac site for four to five days and, while the men do logging, the women and children produce sago and fish for daily consumption. From this involvement in logging activities, Disfra people enjoy a cash income, which increases their capacity to buy consumer items. Apart from two motorboat engines, the village also bought a generator set which was used to produce electricity for some public facilities and houses in the village. A television set with a satellite antenna was installed in the village head’s house, and so the villagers can watch television. Disfra households paid a sum of money coordinated by the head of the village for the operation of the generator set. The head of Disfra Village confirmed the villagers’ involvement in the cash economy:

Our main income now comes from logging. Normally, the boss of the logging company comes and talks to me ...about how many cubic metres they need. I then organise village people to work on it. ...It depends on the order. We can work to produce logs, just cutting the trees, and the company will come with their vessel to take the logs, or lumbering, cutting and sawing the logs into beams. For the latter, we work jointly with Buginese traders who provide saw-machines and their operators for producing lumber. ...The price of logs is 50,000 rupiah per cubic metre, and lumber is 250,000 rupiah per cubic metre. [For the latter] we need to share with the Buginese trader. We normally got 100,000 rupiah. ...By working in logging we can enjoy cash. The cash, apart from for supporting our livelihood, is also allocated to general village interests like motorboats, electricity, public television and building our church. ...Yes, I can say that our economy is a little bit better as a result of logging activities in Beraur.63

Although the involvement of local people in logging activities is mainly illegal, as they deal primarily with illegal loggers, they enjoy a better income. The fact that their effort in producing logs or lumber is undervalued does not really matter to them. The 50,000 rupiah that they enjoy from every cubic metre of logs produced, seems enough to satisfy their basic needs, despite the fact that the standard price of logs in Sorong is more than one million rupiah per cubic metre. On the other hand, some management problems have emerged. First, nobody seemed to know about the maintenance of the village electricity

63 Interview with the village head of Disfra, 19 October 2002.
system. As it was poorly maintained, the generator set once stopped operating, and it took two months for the community to collect money to get their generator set repaired in Sorong. Second, in the recent logging “contract”, the way the village head chose the village people to be involved created potential conflict within the village. One of the local people said, “the village head only chooses people who are close to him”. These problems conflicted with the needs of the Disfra community to improve the local economy.

Collective action in long-distance travel

For the indigenous Beraur community, motorboats were mainly for long-distance and non-routine travel (e.g. from the village to Klamono or Teminabuan). For short-distance and routine travel the people still relied on traditional canoes. As the fuel for motorboats was very expensive in relation to the standard of the local economy, a journey by motorboat was normally planned to involve several travellers from different households to spread the costs of fuel. The village head of Buk, for example, scheduled a regular trip to Klamono with his motorboat in the first week of each month. People who wanted to join the trip would be asked to pay for the fuel required for a return travel. The share of fuel costs would depend on the number of passengers, and the size and the value of goods to be sold or bought in Sorong. In many cases, the village head had to pay for the fuel first as the people rarely had cash when leaving their village. He would be reimbursed after the people sold their goods. This system worked quite well and the people seemed to enjoy such a cooperative action led by their village head.

For some very poor households in Buk, travel to Sorong every month was still too expensive. In these cases, the village head would organise the produce of these households to be distributed among those who would make the trip to Sorong. The village head would also help these households to buy their requirements by using the cash received from selling their produce.

Collective action in motorboat public transport operations

The Beraur community was also involved in a public transport operation that was based on Klamono. The District Government of Sorong only regulated a single public service
route from this base, that is Klamono – Teminabuan. For this 120 km route, the one-way tariff per person was 120,000 rupiah, and the normal travel time was nine hours. In practice, however, motorboats are operated not just on this particular route, but also to other destinations like Bintuni (another oil exploitation site) and Inanwatan. There were 12 motorboats officially operating in 2002, six were owned by Klamono people, four by Buginese and Moluccans, and two were run by the district government of Sorong. Each of these motorboats was equipped with at least two outboard engines (40 hp each). Of the six motorboats that were owned by the Klamono people, two originated from the central government IDT project (1995-2000), and the other four were from private efforts of Klamono people. All six, however, operated in a similar way through a clan (marga) system.

In 2000, a logging company gave several outboard engines to the clan of Morot (pseudonym) of Beraur in exchange for logs taken from the clan customary forest. In the clan meeting, the members decided to run a motorboat public transport service. Hermanus (pseudonym), one of the elders of the clan who lived in Klamono was given the responsibility to run this business. The Morot clan motorboat was then registered for the Klamono – Teminabuan route. The motorboat started a public transport service in the early 2001 operated by two of Hermanus’s sons. The income from the motorboat operation was put in a private bank in Sorong by Hermanus on a monthly basis. Any dividend would be distributed to all households of the clan at the end of the year.

Unfortunately, this income flow could not be consistently maintained. In late 2001, the district government of Sorong issued a licence for the operation of two express ferries (owned by businessmen in Sorong), connecting Sorong with Teminabuan through the coastal route. This has meant that the operation of motorboat river transport practically ceased. Passengers from Sorong to Teminabuan prefer to travel by ferry rather than by motorboat for several reasons. First, travel by ferry is direct. There is no need to change “vehicles”, as happens on the river route, where one needs to ride a minibus from Sorong to Klamono, first, before catching a motorboat to Teminabuan. Secondly, travel by ferry is reliable with a fixed schedule, while travel by motorboat depends on passenger demand. Thirdly, travel by ferry is two hours faster and more convenient but with the same transport cost. On the other hand, the only reason why people prefer to travel to Teminabuan by the river route is if the passenger travels with a lot of goods. Travel with
a large amount of luggage is not allowed on the ferries, as they are regarded as being mainly for people. Fortunately, between June and October, the express ferries cannot operate due to the coastal route being unsafe (monsoon season), and thus river transport becomes the only mode available for Sorong – Teminabuan travel.

Before the operation of the two express ferries, the Morot clan motorboat could make return trips to Teminabuan between nine and 11 times every month. After the operation of the ferries started, such a performance could only be achieved from July to September 2002, when the two ferries were idle due to the monsoon season. These fluctuations have affected the families in Beraur who engage in river public transport operations, including the Morot households. They cannot expect their business to be long-lived.

The case of the riverine Beraur community has illustrated the struggle faced by indigenous communities in providing their own transport. Government programmes, focused mainly on road improvements, have made little or no effort to improve the local transport system. On the other hand, the penetration of extractive industries into the region has provided opportunities for the indigenous population to engage in the cash economy and to improve their river transport system. Social capital possessed by the indigenous community has played a crucial role in this effort. Better understanding of the transport needs of local communities would make the government more sensitive and effective in setting policy and programmes in the rural transport sector.

10.4 Acknowledging the Role of Societal Institutions in Modern Transport Development

While development has conventionally been managed by state institutions, research has shown that societal and local-level institutions can play important roles in development (see for example Uphoff, 1986; Blunt and Warren, 1996; Krishna et al., 1997; Mosse, 2002; Krishna, 2003). Institutions that work through local, traditional, indigenous organisations identify their needs and potential solutions better than any other institutions. The cases of rural Indonesia discussed above strongly demonstrated that local communities understand their own development needs and have tried to fulfill these
needs relying mainly on their communal spirit and solidarity, even in situations where little or no support was provided by formal development institutions (Table 10.1).

Table 10.1: Community initiatives in rural transport development

<table>
<thead>
<tr>
<th>Region</th>
<th>Community Initiatives</th>
<th>Organisations that provide support</th>
<th>The Acts of Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manggarai, West Flores</td>
<td>Building 222 kms of district and village access roads between 1985-1999</td>
<td>Local Catholic Church Swiss Organisation for Development and Cooperation</td>
<td>Insufficient capacity to build district and village access roads</td>
</tr>
<tr>
<td>Mainland Pangkajene Kepulauan</td>
<td>Operating IMT public transport services on particular feeder roads</td>
<td>-</td>
<td>Promoting road and minibus transport system and no promotion of IMTs</td>
</tr>
<tr>
<td>Balang Lombo Island, Pangkajene Kepulauan</td>
<td>Incorporating transport activities into fishing</td>
<td>Mainland businessmen</td>
<td>Promoting a formal transport system which fails to incorporate the fishing transport network within it</td>
</tr>
<tr>
<td>Riverine Beraur, Sorong</td>
<td>Promoting the use of motorboats in river transport</td>
<td>Logging and fishing industries</td>
<td>Promoting road transport, neglecting local initiatives in river transport</td>
</tr>
</tbody>
</table>

These four case studies have indicated how local institutions in different forms of community organisations have played significant roles in building rural transport systems. Indigenous communities, as illustrated through a selection of community groups in the riverine Beraur, have worked together and tried to improve their transport system from the traditional use of non-motorised boats to the operation of motorboat services. The fishing community of Balang Lombo Island have improved their “informal” water transport system through the involvement in mechanised fishing activities promoted by the mainland businessmen. In addition, the informal organisation of horsecart operators in Pangkajene Kepulauan chose its own way to preserve their occupation from becoming redundant. Religious institutions as illustrated by the Catholic Church of Manggarai also played a significant role in facilitating a strong organisation for local communities. All of the above efforts have been made in an environment where there was insufficient support provided by the government. These facts provide us with a robust basis for incorporating societal institutions into modern transport development initiatives.

The analysis above also indicated that government driven transport development has been predominantly associated with road and car solutions. This has given little space for
any potential transport solutions that require interventions different from roads and cars. Road improvements are definitely important for a land-based region as the case of Manggarai shows, but not necessarily so for such non land-based regions as the island of Balang Lompo or riverine Beraur, where water transport solutions are more relevant. In addition, the focus on car solutions has overlooked the importance of IMT services. Such modes, in fact, provide alternative solutions for improving rural mobility, not just in terms of providing transport services for rural people but also by creating employment opportunities for them. Overall, at the local level it is clear that improving rural mobility has to be locally contextualised and an intervention that recognises such a local context will more appropriately address the problem of rural mobility.

The introduction of the new regional autonomy law (Law 22 of 1999) provides opportunities to better integrate societal institutions in formal development process. With greater autonomy given to regions, district governments can play a proactive role in understanding and responding to the needs of local communities, including empowering them to manage their transport problems. The district government of Pangkajene Kepulauan, for example, has tried to exercise this greater district authority in delivering development to the islands community, by employing an integrated approach aimed at strengthening community institutions. Transport development, according to this approach, is put within the framework of improving the capacity of the island community to provide their own services (e.g. education, health care, transport, and market). Only by having strong rural organisations can development, including transport, be effective in promoting the rural economy.

Finally, the analysis chapters of this thesis (Part Two) which started in Chapter V with the national level analysis of Indonesian rural transport institutions end here. This chapter has provided evidence of the pivotal roles of societal institutions in developing rural transport systems, something that has been missing in the national level analysis. The analysis chapters provide me with a strong basis to move toward a conceptualisation chapter, which will integrate all the analyses and seek the potential to build a mechanism that may incorporate all institutions, including informal institutions, in ensuring an effective linkage between transport development and the promotion of the rural economy.
CHAPTER XI: CONCEPTUALISING THE LINK BETWEEN TRANSPORT DEVELOPMENT AND THE RURAL ECONOMY

"[M]odeling which may seem simplistic, is in practice often a discipline that helps you avoid being even more simplistic. But, there is more: a formal model, which may seem like a ridiculously stylized sketch of reality, will often suggest things that you would never think of otherwise" (Krugman, 1995: 80-81)

This chapter models the relationship between transport development and the rural economy. While it is not possible to draw a simple model of the relationship between each type of transport development and each aspect of the rural economy, it is important to conceptualise the patterns and paths of interaction, and factors that influence the relationship, for at least two main reasons. First, the model will systematically integrate this research to help answer its main question: “To what extent and in what circumstances does transport development improve the socio-economic well-being of rural people?” Second, and more importantly, the model will provide academics and policymakers with a strong basis to formulate appropriate policies and programmes for rural transport development as well as to help identify further research needs.

The conceptual model of transport development and the rural economy that is presented and elaborated in this chapter is the outcome of the analysis in the previous chapters, initiated with a broad review of the rural transport literature, continued by the policy analysis of the Indonesian transport sector, and the district and village level analysis of connections between transport improvements and the rural economy. The model links transport development and the rural economy and formulates factors that influence the relationship (Figure 11.1). Five main propositions form the model:

1. At the very core of the model, transport development is conceptualised as conscious and systematic efforts to improve rural accessibility and mobility. Such efforts need to be based on an appropriate understanding of development issues.

2. In terms of the linkage with the rural economy, transport development, through improving rural accessibility and mobility and, in association with other development
sectors, stimulates changes in the rural opportunity set. These changes contribute to
the local rural economy, but also to the national/regional economy.

3. From the perspective of the rural economy, institutions determine the extent to which
the rural economy may benefit from changes in the rural opportunity set. First, state
institutions (e.g. laws and rules) set the environment within which economic
opportunities are created and people are guided to take up these opportunities.
Second, societal institutions (e.g. social norms and culture) shape the capacity and
rationality of individuals in promoting as well as responding to economic
opportunities.

4. From the perspective of transport development, institutions shape the characteristics
of the transport sector. State institutions deliberately determine organisations, policy
and programmes of the transport sector. Societal institutions, on the other hand,
determine their organisations and initiatives that promote transport development in
more informal ways. In practice, the modern transport sector has been heavily
influenced by state institutions, neglecting the inherent roles of societal institutions in
improving rural transport systems and promoting the rural economy.

5. The key issue, if transport development is to effectively promote the rural economy
and alleviate rural poverty, is to base transport policy and programmes on a sound
understanding of the linkage between state and societal institutions in development.
This understanding will better incorporate transport policy and programmes into an
integrated rural development approach and focus transport policy and programmes on
the objectives of improving accessibility and mobility.

The first two propositions explain the core idea of the relationship between transport and
the rural economy, while the last three propositions are about the institutional framework
of the relationship. The remainder of this chapter will focus on the first two propositions
leaving the last three for discussion in Chapter XII. Initially I focus on the concept of
rural transport development as the integration of rural accessibility and mobility and the
relation of the concept with wider development issues. The second section elaborates the
way transport improvements link to various aspects of the rural economy. The last
section summarises the essential points and relates them to the main theme in the next
chapter.
Figure 11.1: Conceptualisation of transport development and the rural economy
11.1 Incorporating Accessibility and Mobility into the Development Nexus: Emergence of the Third Generation of Rural Transport

The meaning of rural transport development has undergone a rapid transformation over the last three decades. Until the late 1970s, rural transport development was associated mainly with infrastructure, more specifically roads (see for example Carnemark et al., 1976). There was an unquestioning belief that, if roads were provided, transport services would automatically follow, peoples’ access to relevant facilities would be improved, and their socio-economic capacity would increase. This belief is rooted in a series of classical and neo-classical economic concepts promoted by writers such as Adam Smith (n.d.), Schumpeter (1934) and Rostow (1960) who saw transport innovations (e.g. roads, bridges, canals, harbours, railways and electric power) as prime-movers for economic growth.

The assumption that transport infrastructure is automatically good for the economy has been heavily criticised since the 1980s by many authors in rural transport studies, although these criticisms could all be heralded by some earlier work carried out by Hirschman (1958), Owen (1964), and Wilson (1973). The second generation of rural transport studies emerged in the early 1980s and has been well underway until recently, based on the intensive work of some rural transport experts in association with the ILO and other international development agencies. This generation challenged the “automatic” belief of the role of transport infrastructure in rural development, providing evidence that strongly indicated that transport infrastructure is not enough (Dawson and Barwell, 1993). This school of transport studies also called for broadening the rural transport definition from transport as mainly infrastructure to include transport needs of people at the local level (Barwell et al., 1985) and to focus on improving rural accessibility rather than mobility (Barwell et al., 1988; Dennis, 1998; Edmonds, 1998; Winkelmann, 1999). The issue of accessibility was considered in depth through a series of ILO projects, which have evolved from Integrated Rural Transport Planning (IRTP) to Integrated Rural Accessibility Planning (IRAP) (Donnges, 2003). IRAP has

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64 Mobility, by this generation, was understood as “a measure of the ability of people to move themselves or their goods around” (Barwell et al., 1988). Accessibility includes mobility, but extends the definition to take location and quality of facilities into account. These definitions defined accessibility as a function of mobility and the proximity of facilities (Edmonds, 1998; Barwell, 1996).
recently been adopted by international agencies and implemented in many developing countries as the main tool for rural transport improvements. It covers three aspects of rural development: (i) transport infrastructure, (ii) means of transport, and (iii) non-transport rural facilities (Barwell, 1996; Dennis, 1998; World Bank, 1998). The recent development of IRAP incorporates the issues of (i) linkages between transport, access and poverty, (ii) local investment planning, and (iii) local participation (Donnges, 2003).

11.1.1 The Third Generation: Balancing Accessibility and Mobility

The present thesis, although rooted in the second generation of rural transport studies, provides criticisms of that generation on several grounds. One is based on its heavy concentration on accessibility, including the way it understands mobility as merely physical movement and subordinates it to accessibility. This approach depreciates the wider definition of mobility, which covers the idea of transport capabilities and the bounded rationality of human beings in making decisions over their travel activities. Indeed, mobility is shaped by social, cultural and political relations between individuals (e.g. men and women, local people and in-migrants, on- and off-road villagers, rural and urban people) or economic relations (e.g. farmers and traders, employers and employees, the rich and the poor) (see for example Bryceson and Howe, 1993; Porter, 2002c; Bryceson, Maunder et al., 2003). A focus on accessibility that relates mainly to proximity and spatial interaction issues does not address such an interpretation of mobility. Mobility, in the way this research has approached the concept, cannot be simply understood as a measure of physical movements. It is inextricably related to the capacity (power) that every human being has in exercising their activities, including transport activities. Such capacity is bounded by the physical, socio-economic, and political standing of individuals in interaction with their society.

The concepts of accessibility and mobility are of equivalent importance, intertwined and central to the model of rural transport and development (as represented by the two intersecting ovals in Figure 11.1). These concepts were examined in Chapter VII to grasp the definition of transport as the movement of people and goods by any conceivable means for any conceivable purposes (see Figure 7.1). Differing from the interpretation of the second generation, I defined mobility as "the twin sister" of accessibility: both
contain the same elements of transport infrastructure and services, but each of them relates to different aspects of transport systems. Accessibility covers the idea of spatial interaction between places and individuals with transport systems being required to facilitate the interaction, while mobility is viewed as the bounded capacity and rationality of individuals (as a result of their social, cultural, political and economic positions) to make use of the transport systems relevant to them. These accessibility and mobility principles generate different transport conditions (e.g. transport connections to resources) and travel activities (e.g. trip purpose and frequency) for different rural areas.

Chapter VIII made a more detailed explanation of rural accessibility and mobility. Rural accessibility is a function of (i) locational factors (such as proximity of villages to urban centres, topography, and population density), and (ii) transport connections (e.g. conditions of transport infrastructure and services between villages and the urban centres). Rural mobility is also a function of transport connections. But, instead of locational factors, such transport connections in the rural mobility definition are associated with the social, cultural, political and economic capabilities of individuals. Several factors that affect such capabilities were examined in Chapter VIII: physical make up of individuals, household consumption or income, social and political power, gender relations and attitudes to transport.

Putting the concept of accessibility ahead of mobility may lead to an incomplete understanding of rural transport development. Many transport projects are aimed only at improving rural accessibility and assume that rural mobility would automatically be improved by the accessibility enhancement (see for example World Bank, 2001). Indeed, improved rural accessibility provides more economic opportunities for the rural population (e.g. non-farm employment). But, for the rural population to take maximum advantage from these opportunities, greater rural mobility is required (e.g. improved household capability to engage in transport activities).

Transport development needs to address these two issues simultaneously in order to ensure that the rural population is not left behind from the benefits made possible by transport improvements. In many cases, transport improvements enhanced rural accessibility but failed to have equivalent effects on improving rural mobility. The main reason is because the essence of improving rural mobility, which is strengthening the
social, political and economic power of rural individuals, is not the issue of transport development initiatives. The improvement of the Sorong-Klamono road, for example, enhanced the accessibility of the Beraur communities to the economic centre, but the mobility – the capability of the people to make use of the road – was not improved. A majority of the people were too poor to use the road for economic purposes.

Recent international literature has also challenged the heavy emphasis of rural transport development on accessibility issues that undervalue the importance of mobility (Bryceson, Mbara et al., 2003). Porter (2002c), in the context of off-road rural settlements, mentioned that the issue is not one of how to get access to the locations of markets, credit or medical care, but more in terms of the power relations between roadside and off-road settlements, with specific reference to access to the political process in the context of decentralisation policies. “This focus is essential since we cannot explain people’s travel experience in off-road areas without reference to the configurations of power which mediate relationships between individuals and institutions” (Porter, 2002c: 286). The present thesis, in line with the critiques made by these authors, has strongly indicated the emergence of the third generation of rural transport studies. This generation is based on a broad understanding of rural accessibility and mobility as the main prerequisite for effective transport development (as highlighted by the central part of Figure 11.1).

11.1.2 The Third Generation: Linking Accessibility and Mobility with Development Issues

The next criticism of the second generation literature is based on its failure to incorporate the role of development institutions in understanding accessibility and mobility concepts. Leinbach (2000) and Porter (2002c) asserted that accessibility and mobility are embedded in the development nexus in all-embracing ways. Leinbach (2000) argued that conventional transport research (e.g. macro impact studies) is not a particularly useful way of assessing the role of transport in development because it fails to analyse the complex interaction between transport and society. “What are required are new conceptual frameworks and indeed methodologies for analyzing the complex ways in which accessibility and mobility are embedded in development issues” (Leinbach,
In other words, accessibility and mobility can only be appropriately understood through a thorough examination of the economic, political, cultural and social lenses of development. The basic question for rural transport development is, therefore, not what specific type of rural road is needed, what transport services are required, or what rural facilities are to be built. It lies beyond these questions and focuses on whether such improvements can lead to effective and equitable outcomes for the rural population. With this emphasis, any attempt to improve rural accessibility and mobility has to be put in the context of strengthening social, political, cultural and economic institutions of rural communities.

The model developed in the present thesis incorporates transport, accessibility and mobility into development issues (Figure 11.1). One implication is that improved rural accessibility and mobility are the product of development institutions including development policies, organisations and programmes. A second implication is that improved rural accessibility and mobility affects development outcomes. I briefly elaborate these two points in the next paragraphs. A more detailed discussion of these issues, as they are more related to institutional issues, will be provided in the next chapter.

First, rural accessibility and mobility are promoted by transport improvements in association with other development programmes. These development programmes can have a variety of approaches. They can, however, be classified into two extreme approaches: (i) efficiency-led and (ii) equity-led. The former is based mainly on economic criteria (supply-demand law) and aims at economic growth. The nature of such an approach is technologically-driven because technology is seen as the prime mover of economic growth. The second approach is rooted in a wider development perspective that combines social and political as well as economic criteria. It focuses on the equitable distribution of economic resources. The approach may also include technological innovation, but it is introduced by considering the capability of the society to adapt to such innovation. Transport improvements interact with these two approaches in dynamic ways. But, there has to be a balance between efficiency- and equity-led approaches for transport improvements to promote accessibility alongside mobility. Appropriate development policies and organisations are required to promote such a balance, including integration with other development sectors. These can only emerge
from appropriate coordination between institutions of development, between state and societal institutions.

The model (Figure 11.1) also indicates that improving rural accessibility and mobility influences development outcomes. Improving rural accessibility and mobility brings changes in the rural opportunity set. Such changes determine the outcomes of development for the rural economy, but also for the regional economy. The rural economy refers to micro economic forces (normally associated with consumers, producers and markets) that promote the economy in the rural areas. The regional economy refers to the functioning of the economy as a whole aimed at regional economic growth. Two institutional forces also influence the change in the rural opportunity set. These institutional forces are: (i) state institutions including state laws and rules that guide development as a whole, and (ii) societal institutions consisting of values and social norms that inherently guide the interaction within rural communities and between them and other communities. The roles of these two institutions in rural development, together with changes in rural accessibility and mobility, determine the way the opportunities are distributed between the regional and the rural economy.

11.1.3 The Third Generation: Application of An Appropriate Development Theory in Understanding the Link between Transport Development and the Rural Economy

Reforming the theoretical base of transport studies is required if transport development is to bring about maximum benefits to the rural economy. The present thesis is important from the point of view that it urges the application of the theory of institutions in rural transport studies. The institutional approach provides a counter to the neo-classical economic model in several principal aspects (see Chapter III for the detailed discussion). The neo-classical approach, with its market-oriented approach, fails to understand the nature of rural transport. The application of the institutional approach in transport studies offers a more effective way to address the characteristics of rural transport and the rural economy.

- It requires that the transport system be examined from wider social, cultural, political and economic perspectives rather than as a purely economic matter.
It criticises the supply-demand principle in the economy. Rather, it acknowledges the complex institutional structures that bind a society and its economy. Different societies would have different histories, cultures, traditions and social relations. These conditions affect the performance of any society and determine the way its market and economy grows.

It acknowledges that the market operates imperfectly due to asymmetries of information and high transaction costs. These imperfections disadvantage rural people in gaining access to the market even after the improvement of transport systems.

Different structures that bind a society also facilitate the emergence of different ways in which the society would deal with technological change, including transport improvements.

It conceptualises technological change, including transport innovation, as a function of a long-run historical process (an endogenous factor of market extensions), rather than just a consequence of market extensions.

Overall, the institutional framework elaborates the role of institutions in promoting transport development in relation to political, cultural, social and economic changes in the rural environment. In turn, the framework helps us to understand the nature of rural change more effectively for the proper design of transport development policy. The model (Figure 11.1) confirms the application of the institutional framework in understanding the relationship between transport development and the rural economy. Institutions, either state or societal, are the main determinants in the relationship. These institutions shape development policies including transport policy and the organisations that are involved in managing and implementing these policies. Similar institutions influence changes in the rural opportunity set and determine the way this opportunity set would be distributed between the regional and the rural economy.
11.2 Transport Improvements and the Rural Economy: A Complex Connection

The second proposition of the model in Figure 11.1 focuses on the effort to clarify the linkage between transport improvements and the rural economy. This proposition can be broken down into three components:

1. Transport improvements, through improving rural accessibility and mobility, and in interaction with other development programmes, stimulate changes in the rural opportunity set.

2. Changes in the rural opportunity set – although inextricably related – can be classified into several components: (i) agriculture, (ii) employment, (iii) produce market, (iv) rural credit, (v) land values, (vi) migration, (vii) education and (viii) health care.

3. Changes in the rural opportunity set influence the micro/rural economy but also the macro/regional economy.

In the present thesis, these three issues were examined in Chapter IX, through the case of Benteng Ambeso. The case study revealed how transport improvements interacted dynamically with other development forces stimulating changes in the rural opportunity set. In addition, the case study elaborated the complex situations of rural life that influenced the responses to these changes in dynamic ways. It was found that regional economic forces responded more progressively to the rural opportunity set than the rural economic forces. The analysis showed that almost certainly outsiders took most of the benefits away, leaving a smaller proportion of benefits to be competed for by local rural people. Rural people who were able to take the remaining benefits forced the rural poor to stay poor or even poorer.

The detailed analysis of the Benteng Ambeso case study helps to identify factors and forces that build the relationship between transport improvements and the rural economy. However, one Indonesian village can provide only limited evidence to support the conceptualisation of the linkage between transport improvements and the rural economy. Further evidence is provided in the next sections from studies carried out in other parts of Indonesia and elsewhere around the world.
11.2.1 Transport Improvements and Agriculture

The case of Benteng Ambeso indicated that transport improvements stimulate changes in agricultural production opportunities. Some households have moved from subsistence to market-oriented agriculturalists. The potential to take full advantage from these opportunities is, however, constrained by the structural conditions of the region (e.g. the hilly topography hampered the introduction of a modern irrigation system) and imperfect rural markets (e.g. asymmetric information on prices for agricultural inputs and produce). This evidence indicates that transport improvements are not straightforwardly related to agricultural productivity and many other rural aspects contribute to the dynamics of the relationship. The case study, however, provided a pathway to establish a link between transport improvements and agricultural production.

First, improved rural transport systems can promote agricultural productivity. Research has demonstrated that conditions of rural roads, especially roads connecting town and villages, villages and farms, and villages and villages, can be positively associated with agricultural productivity (see for example Institute for Development Studies, 1984, for the case of Indonesia; Ogunsanya, 1987, for the case of Nigeria; Ali Shah and Azam, 1991, for the case of Pakistan; Levy, 1996, for the case of Morocco). Levy (1996), for example, found that rural road improvements were associated with increases in: volume of production, productivity of the land, and monetary values of the output. In addition to rural roads, better transport services also have favourable effects on agricultural production. With the lack of development attention given to rural transport services, research has indicated the significant role of intermediate means of transport to support the transport of agricultural production from farm to village, and from village to market [(see for example: Riverson and Carapetis, 1991; Barwell, 1996; Sieber, 1996; Porter, 2002b; Starkey et al., 2002, for the case of countries in Sub-Saharan Africa); Barwell et al. (1985) for the cases of countries in Asia and Pacific; Ellis (1996) for the cases of Thailand, Sri Lanka, Ghana, Zimbabwe and Pakistan]. Barwell (1996) emphasised that the benefits of intermediate means of transport for agricultural production were enabling farmers to extend the distance over which agriculture was practised, and increasing the efficiency with which the household labour endowment was utilised. Overall, better integration of development with rural transport infrastructure and services is required for transport to be effective in promoting agricultural productivity.
Without an effective strategy, transport improvements can also be negatively associated with agricultural productivity. Blaikie et al. (1977) and Seddon (2000), in the context of Nepal, found that rural road improvements did reduce the price of agricultural produce being transported, bringing benefits to consumers, but not necessarily to producers. New roads increased the access of consumers (e.g. urban traders) to agricultural produce, but harmed pre-existing rural economic activities, such as local handicrafts and portering (Seddon, 2000). Similar results were found in the works of Kanwar (2000) for rural India. In addition, in the context of intermediate means of transport, research in Ghana indicated that the government’s initiative to promote the use of such vehicles for farming communities was less effective due to farmers’ lack of capital, poor road networks, and inadequate knowledge about equipment maintenance (Anchirinah et al., 2000).

An integrated rural development approach, of which the transport sector is a part, is required if rural people are expected to take maximum advantage of agricultural production opportunities. Pender et al. (2004), in the context of Uganda, demonstrated that, in addition to transport, other rural development aspects are important to increase and sustain agricultural productivity: expansion and intensification of agricultural production, promotion of non-farm development, improvements to irrigation systems, and empowering community institutions. Those efforts are contextualized by structural characteristics of regions, such as population density, climate, natural resources and original cropping systems. Dorward et al. (2004) added some other aspects such as education, health, governance and macroeconomic stability. In the specific context of Indonesia, distribution of agricultural land ownership to support small-scale farmers is also crucial (Jamal et al., 2002; Bahari, 2004). The basis of all efforts should be, however, on policies eliminating information and transaction barriers, and increasing rural producer profits (Dorward et al., 2004).

11.2.2 Transport Improvements and Non-Farm Employment

The case of Benteng Ambeso (plus the outcome of the village level analysis in Chapter VIII) signified a positive link between transport improvements and rural non-farm employment opportunities. Similar findings were also found elsewhere (see for example
Various non-farm jobs were created with, or became available after, the improvement of rural transport systems (e.g. labourers in road projects, transport service operators, government officials, traders, or workers in private enterprises). The case study indicated that these job opportunities were competed for by people from within and outside the village. Differences in capabilities associated with asymmetries of information between these people have created market imperfections in rural non-farm employment. The overall district economy is improved with better transport connections, but the reality is that outsiders take an increasing proportion of the income generated locally.

Indeed, rural non-farm employment provides opportunities for the rural population to improve their well-being. Research has indicated the role of rural non-farm employment in promoting the rural economy (Saith, 1992; Bryceson and Jamal, 1997; Lanjouw and Lanjouw, 2001; Rigg, 2001; Start, 2001; Leinbach, 2004). But, the trends indicated in the case of Benteng Ambeso provoke a question: to what extent does the rural population benefit from non-farm employment opportunities? Booth (2004), using macro indicators of the Indonesian economy between 1984 and 1993, showed that non-farm income grew more rapidly than on-farm income among agricultural households during this period. The growth of non-farm income, however, is skewed towards the upper income groups (Booth, 2004:Table 2.8). The extreme evidence was that, while households with income between 20,000 and 100,000 rupiah per month enjoyed only a quarter of their income from non-farm income, households with income greater than 400,000 rupiah per month obtained more than half of their income from non-farm employment. This is a challenge for the conventional wisdom that believes in the positive linkage between non-farm employment opportunities and the rural economy. While rural non-farm employment provides opportunities to improve the rural economy, the critical issue rests on how these opportunities can be proportionally directed to the rural poor.

An improved rural transport system is, however, only one out of many rural development determinants that are required to improve access by the rural population to non-farm employment opportunities. Kusago (2002), in the context of rural Indonesia, found several major determinants of rural non-farm employment: demographic structure, educational attainment, rural infrastructure, agricultural technology, and locational
factors. In a wider context, Gordon (2000) added several others: health and nutrition, rural finance, land ownership, and social networks that can help to reduce information and transaction barriers. Social relations in rural communities have been seen as an important factor in stimulating the rural non-farm economy (see for example Lanjouw et al. (2001) for the case of Tanzania, and Smith (2001) for the case of Uganda). Overall, an integrated rural development policy that strategically incorporates the transport sector with the other sectors is required for maximum utilisation of non-farm employment opportunities by the rural population as a whole, not just those from wealthier households.

11.2.3 Transport Improvements and the Rural Produce Market

The case of Benteng Ambeso illustrated the positive relationship between an improved rural transport system and the size of the available market. This finding was similar to research in other parts of the world (see Porter, 1995; Jacoby, 2000; Wiggins, 2000; Heltberg and Tarp, 2002; Kaumbutho, 2002; Yunusa et al., 2002). In the Benteng Ambeso case, the improved access road was associated with extension of the rural market, from one that was essentially local and traditional to a regional semi-modern market. More outside traders participated in the market. The market, however, operated imperfectly because local farmers had limited information about the prices of their agricultural produce and, therefore, suffered from high transaction costs. The lesson from this case study is that improvements of rural transport system extend the functioning of rural market, but this is not a guarantee of reducing the information and transaction costs of local people.

Access of farmers to markets is essential for the rural economy. The key strategy for increasing such access is by reducing market failures, especially for poor farmers, and constructing strong rural/agrarian institutions (de Janvry and Sadoulet, 2000). Market failures exist in a situation where there are differences in economic capabilities among market players, which can be the cause of asymmetries of information among producers and purchasers about produce sold in the market. Wiggins (2000) mentioned the importance of addressing the problems of differentiation among the peasantry if the market expansion policy is to achieve agricultural growth. The key issue is that of
addressing the high transaction costs and low producer profits that constrain pro-poor market development (Dorward et al., 2004).

It is clear that better transport is a necessary but far from a sufficient condition for improving the rural produce market. Rural transport improvements need to be coordinated with other development sectors if the rural market is to function equitably. In other words, transport improvements may lead to an effective outcome for the rural economy and the rural poor if an integrated approach, that incorporates the transport sector, can effectively reduce information and transaction costs that have long burdened the rural economy.

11.2.4 Transport Improvements and the Rural Credit Market

Poor transport hampers the access of rural people to formal credit markets (see Hine and Riverson, 1982; Richards, 1984; Arndt et al., 2001; Porter, 2002c). Porter (2002c), in the context of Ghana, indicated that, in remote and off-road areas, problems associated with obtaining credit often seem even more difficult than in more accessible locations. This situation triggers the operation of informal credit markets offering credit to rural people but with high interest rates. The case of Benteng Ambeso revealed that the improvement of the village access road has been associated with the introduction of the formal credit market. Improved transport allowed credit sources to come to the village and people to travel to the credit sources. Two rural banks, one operated nationally by the state and another run by local cooperatives, offered credit to the rural people. In practice, the operation of these rural banks has mainly benefited rich and middle-class farmers (those who can provide collateral for formal credit), while poor farmers still rely on more costly informal credit markets. The locally operated rural bank, however, has increasingly improved its credit schemes and become more sensitive to the difficulties the rural poor have in providing formal collateral as a requirement for lending. Such a rural microfinance institution can be more effective in addressing poverty alleviation than a state-run microfinance programme (Miyashita, 2000).

The rural credit market provides opportunities for rural people to improve their livelihoods in various ways (e.g. credit for running small enterprises, credit for new
technology in agricultural production, and credit for higher levels of education). Empirical research in economics, however, has indicated that the ineffective operation of formal rural credit markets is due to a number of market imperfections, such as monopolistic informal moneylenders, imperfect information and, most importantly, high costs associated with credit screening, monitoring and enforcement (see Hoff and Stiglitz, 1993). More recently, Tsai (2004), in the context of China and India, provided four reasons for the prevalence of informal rural credit markets: (i) the limited supply of formal credit, (ii) limits on state capacity to implement policy, (iii) the political and economic segmentation of local markets, and (iv) the institutional weaknesses of many microfinance programmes. These conditions, accentuated by the lack of capacity of the rural poor to provide collateral, reduce the positive effect of the credit market on the rural economy. In the context of Indonesia, Otken and Osili (2004) emphasised the role of community and family networks in addressing these problems. These authors noted the role of such networks in providing information and thus lowering the search costs of the borrower (e.g. in gaining awareness of new credit sources) and the monitoring and enforcement costs for the lender. The latter has been demonstrated in the case of Benteng Ambeso, where the local rural bank can rely on third party (i.e. village head) guarantees to screen borrowers.

Improved rural transport systems provide more opportunities for rural people to access the rural credit market, but the utilisation of credit by rural people is dependent upon their socio-economic capacity and awareness of these opportunities. An integrated rural development policy to increase sensitivity of rural banking institutions to the needs of rural people is required. This is another indication of the highly complex relationship between transport and the rural economy.

11.2.5 Transport Improvements and Land Values

Improved transport systems facilitate changes in land values. This issue has long been examined by geographers from von Thunen (1826) until recently (see for example Rigg, 2001; Rasul et al., 2004). In the case of Benteng Ambeso, the improvement of the feeder road has stimulated changes in land values and land ownership. Partly this is due to the introduction of a formal land certification system to replace the traditional customary-
rights system of village land ownership. People with better urban networks possess better information about the certification process than those with limited networks. Changes in land ownership also occur because the increased value of village land puts pressures on the rural poor to sell their land. Such changes increase economic differences and social conflicts between rural people. The question is, in what circumstances can transport improvements facilitate changes in land values with minimum disruption to rural livelihoods?

Change in land values is the result of the interaction of several biophysical, socio-economic and institutional factors (Rasul, et al, 2004). Through the case of Bangladesh, these authors argued that traditional farmers responded well whenever any opportunity arose for adoption of a more productive land use. Their efforts, however, were largely constrained by poor institutional support, including lack of land title, poor extension services, inadequate credit and marketing facilities, and poor transport and communication facilities.

Land ownership is also interlinked with the credit market since land is the main source for loan collateral (see Bardhan, 1989a; Hoff et al., 1993). Feder and Feeny (1993) and Basu (1997) indicated that farmer access to the credit market is systematically affected by the amount of land owned by the intending borrower. The only sustainable means to increase poor farmers’ access to the formal credit market would be to increase the amount of land owned (Basu, 1997). In the context of Indonesia, land reform is required to ensure that agricultural land is equitably distributed among rural households (Otsuka, 2002). But, even if land ownership is fairly distributed, transport improvements are highly unlikely to provide transport connections to every farm. Inevitably, some landowners will experience greater increases in land values than others.

The conventional von Thunen theory considering agricultural land use as a function of distance to market centres and transport costs is not necessarily useful in explaining the linkage between rural transport and land values. This linkage is complex and is affected by many non-economic as well as economic variables. Transport is only one determinant that stimulates change in land values. How such change occurs cannot effectively be explained from the transport point of view. Only by integrating the transport sector into a comprehensive development approach aimed at fair distribution of land ownership
among rural households and equal access of farms to improved transport networks, can the linkage between transport improvements and change in land values be effective for the rural economy.

11.2.6 Transport Improvements and Migration

Research has indicated the link between rural transport improvements and changes in migration patterns (see for example Richards, 1984; Rigg, 2001; Windle, 2002). In the case of Benteng Ambeso, improved transport networks increased both out- and return-migration. Out-migration increased as better transport provided better access to education and employment opportunities in urban areas. Meanwhile, return-migration emerged as improved transport was associated with more economic opportunities in rural areas (e.g. non-farm employment and increasing land values). Although both processes were driven by economic rationales, social networks played a significant role. The effects of such processes have been twofold. On the one hand, out-migration generated additional incomes through remittances to rural households which had members working in urban areas. On the other hand, in-migration increased social differences among rural communities as more migrants return home (with capital, education and urban knowledge) to compete for the new opportunities created by improved transport.

Theoretical orthodoxy in migration studies conceives the migration process mainly from economic perspectives, that is the interplay between “push” (i.e. unemployment in rural villages) and “pull” (i.e. business or employment opportunities in destination areas) factors. Such an approach has, however, been much criticised since factors such as political constellations and struggles, social networks, changing perceptions and identities of race, gender and ethnicity have been recognised as equally important in understanding why, how and under what conditions people migrate (Basch et al., 1994 quoted in; Saptari and Elmhurst, 2004: 32-33). In the context of Indonesia, Silvey (2001) and Elmhurst (2004), for example, saw social networks in interaction with gender and age play a large role in influencing the pattern of migration. Improved transport systems facilitate the migration process, but the process by itself is a product of the complex interaction of social, cultural, economic and political factors.
11.2.7 Transport Improvements and Education

Rural transport improvements facilitate the supply of education services (Richards, 1984; Seddon and Shrestha, 2002; Yunusa et al., 2002). Schools are often built following the construction of new rural roads. In the case of Benteng Ambeso, the supply of education facilities was improved with the improvement of the road. The availability of a junior high school in the village means that children have sufficient access to education up to the junior high school level. For higher education, parents need to send their children to district or sub-district capitals.

In addition to the role of the rural transport system, Vasconcellos (1997) mentioned several factors that hamper the access of children to education: (i) widely dispersed rural schools, and (ii) the political, social and economic conditions of rural populations which induce early entrance of children into the job market. These factors, however, have their root in an overarching problem: equity and access to education. Lee (1998), in the context of Asia, emphasised that discrepancies in school access and completion are evident between genders, across income levels, as well as among regions and ethnic groups. These differences are strongly associated with poverty. Developing political will and effective strategies are central challenges for improving access and equity in education (Lee, 1998). In relation to transport, the key political requirement is that transport has to be seen as a right when it is found to be necessary to ensure children’s access to schooling (Vasconcellos, 1997).

11.2.8 Transport Improvements and Health Care

Research has indicated that improved rural transport is positively associated with better health care delivery (Richards, 1984; Airey, 1991; Porter, 2002c; Yunusa et al., 2002). A public health centre (and its branches, in the context of Indonesia) is normally built with the improvement of transport systems. In Indonesia, as in many developing countries, public health services play a major role in providing health care to rural people. Such facilities are placed in subdistrict capitals and normally headed by a medical practitioner (or a nurse in remote regions) equipped with facilities to deal with four main components of basic health care: (i) maternity services, (ii) children’s health services, (iii) preventive
services, and (iv) curative services for basic illnesses. At the village level, branches of public health centres are established to deal with the very basic health care needs of rural communities. The case of Benteng Ambeso indicated that the poor performance of the branch clinic encouraged people to seek medical services in the district hospital with the result that the utilisation of services became a function of ability to pay for transport.

International research on rural health services has indicated factors that influence the underutilisation of public health services. According to research from Indonesia (Alisjahbana et al., 1995), Cambodia (Yanagisawa, 2004), India (Kamat, 1995; Vissandjee et al., 1997), Ghana (Eades et al., 1993) and Ethiopia (Kloos, 1990), these factors are: (i) low quality of services (lack of medical staff, equipment and supplies), (ii) treatment costs, which are mainly related to the economic status of patients, (iii) distance and transport costs to public health centres, (iv) reluctance to seek "modern" treatment, (v) type and duration of illness, and (vi) availability of special programmes like family planning and vaccination services.

Transport is mentioned by all of these authors as one of the factors associated with the utilisation of rural health services. In Gujarat, India, women were more sensitive to travel time and costs to the public health centres than the treatment costs (Vissandjee et al., 1997). But, it is clear that improvements to the transport system need to be integrated with other aspects of the health sector in order to effectively address the problem of public health services in rural areas.

11.3 No Simple Linkage

Any conclusion that sees the relationship between transport development and the rural economy as unambiguously positive, neutral or negative is misleading. Some forms of transport improvements may lead to beneficial outcomes for the rural population, others may be harmful. But, there is no simple linkage. The present research with support from the wider rural transport and development literature has strongly indicated that the relationship is highly complex and likely to be different in different development contexts for different localities. Several principles, however, can be established to better understand the relationship between transport development and the rural economy.

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First, in the context of the rural economy, transport development needs to be approached as a conscious and systematic effort to improve both rural accessibility and mobility. This effort is embedded in development issues in two main ways. One is indicated by the fact that rural accessibility and mobility is a product of development forces (i.e. organisations, policies and programmes). The second is that changes in rural accessibility and mobility have the potential to alter development outcomes. The model in Figure 11.1 signifies the influence of rural accessibility and mobility on rural and regional economies.

Second, the process of transport improvement, through improving rural accessibility and mobility, interacts dynamically with other development sectors, promoting changes in the rural opportunity set. These changes – although intertwined – can be classified into several major components: (i) agriculture, (ii) employment, (iii) produce market, (iv) rural credit, (v) land values, (vi) migration, (vii) education and (viii) health care. The analysis of the links between transport improvements and these changes indicated that transport is a necessary, but far from a sufficient condition, for improving access and the capability of the rural population to respond to the changes in the opportunity set. In other words, transport improvements need to be strategically integrated with other development sectors for maximum utilisation of the rural opportunity set by the rural population.

Third, rural life is a complex situation that responds to these changes in dynamic ways. One is that changes in the rural opportunity set are responded to by actors in the local rural economy and by actors in the national/regional economy. In many cases, the latter have been more progressive than the former. In addition, the responses made by rural individuals vary, affected mainly by differences in the economic capability and bounded rationality of the individual concerned. This process is affected by asymmetries of information availability between individuals plus the costs required to access the opportunity set which, consequently, have created imperfect political and economic markets. The major trend is that the regional economy is improved, but the rural economy becomes more divided and increasingly marked by unfair competition and tensions among key players.
The above principles indicate that the crucial issue of the linkage between transport development and the rural economy revolves around the way transport development in association with other development sectors can create opportunities that effectively benefit the rural economy with special attention to the rural poor. This issue leads the discussion into the third proposition of the model in Figure 11.1: institutions matter for the rural economy. Two types of institutions are of significant importance in determining the extent to which the rural population may benefit from changes in the rural opportunity set:

- One is state institutions (e.g. laws and regulations). These institutions lay the basis for the creation of rural economic opportunities and the promotion of modern development including the transport sector, through which the rural economy may benefit.
- The second is societal institutions (e.g. social norms and culture). These institutions shape the capacity and rationality of the society in initiating development and economic activities as well as in responding to economic opportunities.

Finally, this chapter has elaborated the inner parts of the relationship between transport development and the rural economy. The analysis acknowledged that these inner parts are embedded in a wider development framework. That framework is the outer part of the transport and rural economy relationship and will be elaborated in the next chapter which focuses on the institutional framework for rural transport development.
CHAPTER XII: THE INSTITUTIONAL FRAMEWORK FOR RURAL TRANSPORT DEVELOPMENT

This chapter continues to elaborate the model described in Chapter XI (Figure 11.1) but focuses on the institutional framework that influences the relationship between transport development and the rural economy. The main argument in this chapter is that institutions are the critical variable in development, and an appropriate institutional framework is required to facilitate an effective relationship between transport development and the rural economy. Three interrelated issues, which are the last three propositions of the model (see Chapter XI, the introductory paragraphs) are discussed: (i) the roles of state and societal institutions in promoting the rural economy, (ii) the roles of these institutions in transport policy and programmes, and (iii) key strategies for building an institutional framework for the transport sector that can effectively promote the rural economy and alleviate rural poverty.

12.1 The Role of State and Societal Institutions in the Rural Economy

The last paragraphs of Chapter XI introduced two types of institutions, state and societal, that play significant roles in determining the extent to which the opportunity set brought about by transport and other development sectors may benefit the rural economy. State institutions were created as the basis for the functioning of a nation, for the promotion of development, including the creation of economic opportunities. Societal institutions, on the other hand, evolve through history in the forms of social norms and values. They shape human rationality and behaviour, including the way people respond to economic opportunities. These two types of institutions intertwine in the development process in the sense that the influence of state institutions on the development process is constrained by societal institutions, and vice versa. The interaction between state and societal institutions shapes the pathway of development for the rural economy.

The next four sub-sections elaborate the interaction between institutions and the rural economy. The first sub-section conceptualises how state and societal institutions are embedded in the development context. The next two sub-sections discuss the roles of
state and societal institutions in the rural economy. The last sub-section discusses the interaction between state and societal institutions in the development process and in the creation of economic opportunities as well as the way these processes benefit the rural economy.

12.1.1 State and Societal Institutions in the Context of Development

Before incorporating state and societal institutions into the development context, it is important to clarify the concept of development used in this model. The term 'development' has been narrowly understood as efforts carried out by various agencies including the state aimed at the improvement of socio-economic well-being. This definition associates development mainly with the state's initiatives, for example, to build such public infrastructure as roads, markets, schools and health centres, or to provide public services such as public transport, credit markets, school and health facilities. Natural initiatives by communities to improve their well-being are hardly recognised in this view of development. Such initiatives may include efforts by households to build their own water closet, to purchase bicycles, to seek markets for agricultural produce or to invest in a child's education. In fact, such efforts may have significant effects on progress. The model (Figure 11.1) conceptualises development either as deliberate state efforts or spontaneous community initiatives, as well as combinations of the two.

The above conceptualisation follows Cowen and Shenton (1996) and Thomas (2000). Cowen and Shenton (1996) distinguished development as both intentional and immanent. Intentional development refers to deliberate policy and initiatives of states and development agencies to promote higher levels of well-being. On the other hand, immanent development implies a spontaneous and natural process of improvement embedded in communities. These two views of development are in line with Thomas (2000) who defined development: (i) as consisting of deliberate efforts aimed at improvement on the parts of various agencies, including governments and (ii) as an historical process of social change in which societies are transformed over long periods. The former runs parallel with intentional development, while the latter refers to immanent development.
In this model, state institutions are linked with intentional development (Figure 11.1 upper part). First, the state is intentionally created. Second, the state intentionally establishes formal rules that guide the interaction of its citizens, including the functioning of the market. Third, the state intentionally acts on behalf of its citizens to promote development. The state intentionally creates development organisations and policies and implements these policies to bring about improvement in all aspects of development, including the rural economy.

On the other hand, societal institutions display immanent development (Figure 11.1 lower part). First, societal institutions evolve over the history of the society. Second, societal institutions immanently operate within every society through social norms. Such norms influence the rationality of communities and individuals in responding to economic opportunities. Third, societal institutions inherently determine the nature of community organisations and their initiatives in promoting development and change.

12.1.2 State Institutions

State institutions are formal rules that are deliberately created by the state (and in particular situations, groups of states) with the objectives of providing order, security, law and the property rights of the citizens of the state. State institutions may consist of constitutions, laws, decrees, and rules. These institutions are driven by political or economic forces that control the functioning of the state. Accordingly, state institutions are sensitive to dynamic change. They can even change abruptly when there are political or economic pressures that force them to change. The Indonesian reform movement in 1998, for example, which had emerged from a combination of economic and political crises between 1997 and 1998, put pressures on the state to change its constitution and certain important laws. Between 1999 and 2003, the constitution was amended four times to cope with the dynamic aspirations of its citizens. One significant change brought about by these amendments was the move from a centralised administrative system to a decentralised one, as defined by the new regional autonomy law (Law 22 of 1999).
State institutions influence changes in the rural opportunity set through direct and indirect ways (Figure 11.1, upper part). State institutions through laws and orders directly determine the way opportunities are distributed into communities. The state through the government enforces laws and orders, which citizens are expected to obey. The state, for example, can enact an agrarian law that determines the way people engage in landholding and agricultural production. Such a law can have a significant effect on land values and agrarian structures in the country and so determine the way the agricultural opportunity set is distributed among the citizens. The absence of an agrarian law, as in the case of many countries including Indonesia, may result in an uneven distribution of landholdings among the population.

In the context of transport, the Law of Traffic and Road Transport introduced by the government of Indonesia in 1992, for example, authorises motor vehicles (excluding motorcycles) as the only legal public road transport mode for passengers. This law promotes opportunities for public transport businesses, especially for entrepreneurs with the financial capability to own motor vehicles. On the other hand, the law limits the opportunities of those who want to operate, or have operated, non-motorised public transport services. Another example can be given based on the Indonesian Road Law (Law 13 of 1981). This law classifies roads according to their significance to the state (central government). In terms of opportunities to obtain state funds for improvement, village roads which are under the authority of village governments, have the lowest priority.

With respect to the indirect roles that state institutions have in determining rural opportunities, the state establishes organisations and policies to promote development. State organisations may include departments or bureaux under central and local governments. These organisations might have different functions and tasks, but they all support the intention of the state to develop society and economy. Out of these organisations emerge development policies. Each organisation would have different policies, but they are all rooted in state institutions. Development programmes are formulated as the products of development organisations and their policies. Transport improvements along with the construction of schools, clinics and markets, are part of these development programmes. They together shape the patterns of rural accessibility.
and mobility. Changes in rural accessibility and mobility in interaction with other development forces generate changes in the rural opportunity set.

The Republic of Indonesia that has evolved through several development administrations, for example, creates organisations and policies for development. In the transport sector, the Ministry of Transport and Ministry of Settlement and Regional Infrastructure (previously the Ministry of Public Works) were created to manage the national transport system. These ministries create policies and transform these policies into programmes. Transport programmes in association with other development programmes (which are implemented by other ministries) promote changes in rural accessibility and mobility. Different programmes and different processes of coordination between programmes would result in different accessibility and mobility patterns and affect changes in the rural opportunity set.

It is worth mentioning that, in the context of developing countries, state organisations such as those mentioned above work in cooperation with international development agencies (e.g. the World Bank, Asian Development Bank). These agencies are, in fact, other forms of state-created institutions. The World Bank, for example, was intentionally created by a group of developed states led by the United States to provide financial support to build new emerging countries after World War II. The power possessed by such multilateral organisations, however, differs from developing countries’ organisations. The state organisations have very limited control over multilateral organisations. In contrast, the latter have a great influence over development policies of the former. These multilateral organisations establish “orthodox” development practice and they provide funds for approved development projects. Some argue that international development agencies have been no more than agencies that promote donor country domestic policy concerns to recipient countries (Martens, 2000; Peet, 2003). International principles for transport policy, for example, have traditionally been developed in the World Bank based on a neoliberal approach, and have been imposed on developing nation governments as a requirement for loans. Overall, the interaction between state organisations and multilateral organisations determines the pathway of development as an intentional process for the creation of economic opportunities.
I have discussed how state institutions affect changes in the rural opportunity set in both direct and indirect ways. The model then indicates that the nature of change in the rural opportunity set is significant for the rural economy as well as for the national economy. The rural economy refers to economic forces (consumers, producers, and markets) that promote the economy in rural areas. It may involve players from inside or outside rural areas. Urban traders that compete in rural markets and contribute to the rural economy (although they can have adverse effects) are classified as rural economic forces. In contrast, the regional economy refers to the functioning of the economy as a whole with the objective of regional economic growth. The regional economy is often measured by Gross National/Regional Product (GNP/GDRP), which is a country's/region's total output of goods and services. The performance of the national/regional economy is influenced by the rural economy. On the other hand, the former contributes to the performance of the latter.

The state's development policies and programmes primarily aim at promoting the national/regional economy. As depicted in the model (Figure 11.1), development efforts of the state would mainly contribute to the regional economy rather than to the local rural economy. This happens in all countries, although with variations in the degree of the linkage between the regional and the rural economy. Accordingly, development programmes, including transport programmes, would be prioritized based on their contribution to the regional economy. As a result, economic opportunities created by state institutions would primarily appear in the regional economy.

Two classical assumptions justify the way the state focuses on the regional economy. One is the assumption that the state is responsible for the regional economy as a whole, of which the rural economy is a part. The rural economy is, therefore, seen as a small part of the regional economy. The other assumption maintains that, by promoting the regional economy, the rural economy will automatically benefit. These assumptions have been matters of debate during the lifetime of modern economics. But, there are problems with these assumptions. First, the rural economy is a part, but not the only part of the regional economy. There are many other local economies, including many different rural economies in a country. Unless the state can recognize such differences and effectively accommodate them in its regional economic platform, the rural economy cannot simply be developed by association with the regional economy. Second, the view that regional
economic growth automatically stimulates rural economic growth is flawed. Regional economic growth can occur in sectors (e.g. mining) that have minimal links with the rural economy. Likewise, asymmetries of information that cause market imperfections negatively affect the spread of regional growth impulses into the rural economy. Regions with a strong political and economic connection with the state will benefit more than regions with limited connections. Unless the state has an effective redistributive instrument for regional economic growth and can make sure that benefits of the growth can be distributed fairly to the rural economy, there is no automatic connection between regional and rural economic growth.

The performance of the regional economy determines the adjustment of state institutions to change. The state will adopt a new institution only to the extent that the benefits to the state are higher than the costs. The Indonesian Road Law (Law 13 of 1981), for example, categorizes roads according to their relative importance to the state. Village roads have the lowest priority in this law and their management is given over to the village government. Unless there is a strong political and economic argument about the importance of village roads to the regional economy and to the state, there would be no change to the status of village roads in the future road law. However, with the introduction of Law 22 of 1999, which provides greater autonomy to the local government, it is likely that local roads including some village roads will obtain greater recognition in the future. Overall, state institutions will change as a response to political pressures accompanying the dynamics in the national economy. State institutional change is thus inevitable in the process of development.

12.1.3 Societal Institutions

Societal institutions inherently evolve throughout the history of the society. These institutions include ways of life, traditions, conventions, norms, and beliefs, but they are all rooted in, and shaped by, one overarching institution: culture. Culture in this model is seen in wider development perspectives, in which it dynamically interacts with other development forces (see Appadurai, 2004; Rao and Walton, 2004; Sen, 2004). Societal institutions normally operate under informal (unwritten) “rules”, but are strongly embedded in the lives of their people. These institutions shape people’s rationality
including economic behaviour, political participation and social solidarity. The economic behaviour of Torajan families, for example, can be strongly influenced by their social status in the community. The “obligation” to participate in *rambu tuka’* and *rambu solo’* festivities may encourage them to work hard and to save money for such ceremonies. On the other hand, the penetration of modern economic forces (e.g. market and technology) into the Torajan society, encourages people to modify these cultural activities in more efficient ways.

In contrast to state institutions, societal institutions change slowly. The evolution of societal institutions is influenced by interaction with modern forces, including state institutions. Torajan society can provide an example. Although state institutions have come to Tana Toraja since the early 20th century, and penetrated people’s lives by means of the state (the Dutch and the Republic of Indonesia), along with modern religions, and modern way of life, the Torajan culture has not been changed dramatically. Social norms that have existed before the coming of the modern states are still widely practised today (e.g. the kinship system) albeit with some adaptation to modern values.

Similarly to state institutions, societal institutions shape changes in the rural opportunity set in direct and indirect ways (Figure 11.1, lower part). In terms of the direct way, societal institutions shape people’s rationality in responding to the rural opportunity set. In the case of Benteng Ambeso, for example, changes in land values facilitated by the improvement of rural roads gained different responses from villagers. To some extent, societal institutions through social norms influenced such different responses. Different perceptions of the customary law that traditionally regulated the landholding system influenced villagers’ responses to the opportunities created by the state landholding system.

In terms of transport, rural people responded differently to opportunities to use public transport after the road was paved. One can say that this was because of different economic capabilities among rural people. Economic capability, however, is often associated with social status. Women and children may have lower economic capabilities because their social status is lower than men. But, there is a more straightforward relationship between opportunities and societal institutions. For cultural reasons, people may respond differently to the use of motorised public transport. In many Islamic
communities, women may be less willing than men to ride motorcycle taxis as the drivers are mostly men. In the riverine Beraur community, indigenous people traditionally relied on the river for transport. The coming of road transport systems into the region did not immediately change their travel behaviour from river to road transport. Similar explanations can be given in the context of Tana Toraja. As walking was so embedded in Torajan tradition (see Section 8.3), the responses of rural people to the opportunities of motorised transport are, to some extent, influenced by such customs. For an unclear (but not just simply economic) reason, men can adjust to the motorised transport fashion more quickly than women.

Furthermore, it is important to acknowledge the roles of resource endowment in affecting the capability and rationality of individuals in responding to economic opportunities. Resource endowment may be influenced by location, topography, climate, and the natural resources available in a society. Low population densities and the consequent distances involved, for example, negatively affect the capacity of people in some areas of Sub-Saharan Africa to respond to the emergence of rural markets (Platteau, 2000). This finding was in line with several case studies provided in the present thesis, where low rural population density has been associated with the concentration of markets in urban areas (see the cases of Sorong, Pangkajene Kepulauan, and Tana Toraja). In addition, the hilly topography of the Toraja region hampers the introduction of a technical irrigation system. Farmers have difficulty with increasing their paddy production because they must rely on traditional irrigation systems.

Indirectly, societal institutions establish the needs of communities to evolve and to improve their well-being. Societal organisations emerge as responses to such needs. Such organisations involve households, kinship groups, village organisations, ethnic groups, religious groups, professional associations, business groups or other civil society groups. These organisations may include farmer cooperatives, transport operator organisations, trader organisations or even exporter and importer associations. The need to improve techniques in agriculture, the need to have more control over public transport tariffs, the need to penetrate to wider markets, or the need to access wider international markets, encourage these organisations to emerge. Initiatives are developed by societal organisations to satisfy these needs. Transport improvements are among these initiatives. The initiative of the Manggarai community to build their village access
roads, the attempt of horsecart operators in Pangkajene Kepulauan to preserve their jobs or the effort of the Beraur community to organise their local transport are all driven by social norms that exist in the community. Strong social solidarity that forms the basis of the societal institutions makes these efforts possible.

The above discussion has pointed out that societal institutions, through direct and indirect means, promote changes in the rural opportunity set. Similar to the role of state institutions, changes in the rural opportunity set lead to impacts on the rural economy as well as the regional one. The difference, however, is that development initiatives driven by societal institutions would make stronger impact on the rural economy than the regional economy. Village access roads built by the Manggarai community would have a stronger impact on the rural economy than similar roads constructed by the state in the same region (Hurmali, 2004: pers.comm.). The reason is that the community-built roads would be responsibly maintained by the people who have voluntarily spent their energy to build the road. On the other hand, maintenance of state-built rural roads would depend on state initiatives. With the lack of development budget, many state-built rural roads in Manggarai are left unmaintained (Hurmali, 2004: pers.comm.).

Lastly, the dynamics in the rural economy create pressures on societal institutions to evolve and change. The society will be likely to adopt new values that are dominant in rural dynamics, and to abandon traditional values that are not compatible with new forms of the rural economy. It is difficult to evaluate and control the change of societal institutions due to their slow and gradual evolution. The dynamics of the Torajan economy, for example, put pressures on the Torajan culture to change. Change, however, has been slow and gradual. Social hierarchy in the society has changed gradually from a purely lineage-based system to one based on a combination of the economic and social relations of individuals.

12.1.4 Interaction between State and Societal Institutions in the Development Process

Having explained the operation of state and societal institutions in ‘separate’ ways, this section discusses how these two types of institutions interact and generate pressures for
institutional change through the creation of economic opportunities that lead to the promotion of the regional and rural economies. Figure 11.1 incorporates the convergence of state and societal institutions' pathways along the inner line of the model, from the interaction between state and societal organisations and policies that creates development programmes to the effect of opportunities on the economy. The interaction, however, is two-sided: societal institutions impose causal constraints on the evolution of state institutions and, by the same token, the evolution of the former is constrained by the latter. There will be different degrees of interaction which may result in different effects on the economy and institutional change. For the convenience of the discussion, I elaborate these interrelationships from two perspectives: (i) how societal institutions shape the formation of state institutions, and (ii) how state institutions affect the evolution of societal institutions.

Societal Institutions Shaping the Formation of State Institutions

The emergence of state institutions is shaped by their dynamic interaction with the societal institutions that exist in the country. State constitutions, laws, organisations and policies are established with reference to norms and values that exist in the society. New Zealand's constitution and laws, for example, were shaped by the two main societal institutions that exist in the country: European and Maori. The Republic of Indonesia, which was formally proclaimed in 1945 after a long occupation by a colonial power, was also shaped by the values and cultures of different ethnic groups. Indeed, the state institutions that were introduced mainly by the Dutch during the colonial era provided a basis for Indonesians to build their modern state. Some formal rules (e.g. the legal system) were transferred from the Dutch system. The state, however, adopted values and norms that emerged from societal institutions in the country. The state through its Constitution accommodates the diversity of cultures and ethnic groups. It also acknowledges the diversity of religions and beliefs practised by people in the country. It makes use of cooperatives, an economic organisation model operated by many ethnic groups in the past, as a basis for a just society. The adaptation of these norms in state institutions ensures the continuing existence of the Republic of Indonesia.

To illustrate this type of interconnection in the context of transport and development, the way the institution of the Indonesian transport sector has been evolving is presented here.
As mentioned previously, the current Traffic and Road Transport Law (Law 14 of 1992) authorises only motor vehicles as public transport for passengers. There has been pressure from society about the importance of supporting other transport modes for passenger travel (see Gadjah Mada University, 2001). Based on this pressure, a new land transport bill has been drafted, which will authorise more transport modes as legal public passenger transport. In another case, the current Road Law (Law 13 of 1980) does not recognise the status of many local village roads. The change in the local government administration system (Law 22 of 1999) generates pressures for the greater acknowledgement of village roads in the new draft of the Road Law.

State Institutions Shaping the Evolution of Societal Institutions

In all societies, from the traditional to the modern, societal institutions (social norms and culture) evolve through their interaction with state institutions. Differing from state institutions that can be deliberately shaped and changed, the evolution of societal institutions is hard to predict. It is now hard to find a traditional community that still exists with its indigenous values intact. Even in very isolated communities such as those along the Beraur River in Sorong, indigenous people who traditionally rely on river transport want paved roads and motorised vehicles to pass their village and expect the state to provide such facilities. They want to put their children in school so the children do not need to inherit their traditional occupations. They want to improve their techniques in agricultural production so that they may have a surplus to be sold in the urban market. All of these indicate a striking example of how state institutions shape the evolution of societal institutions.

In the context of rural transport, the effect of state institutions on the evolution of societal institutions can be seen in the indigenous community of Beraur, Sorong. State institutions with their centralised approach to development focusing on roads and motorised vehicles have affected changes in the societal institutions of this riverine community. The coming of roads into the region has gradually shifted the way the people travel from rivers to roads. This has also affected some societal values that have their roots in rivers (e.g. living and working along the river).
12.2 Transport Improvements: From Institutions to Programmes

The fourth proposition of the model in Figure 11.1 focuses on conceptualising the influence of state and society institutions on the transport sector. State institutions through their organisations deliberately determine policy and programmes for the transport sector. In more informal ways, societal institutions stimulate societal organisations to engage in initiatives for improving transport systems. In the context of Indonesia, the Ministry of Transport with its policy and programmes is the product of state institutions. On the other hand, such organisations as the association of horsecart operators in Pangkajene Kepulauan, or community organisations in Manggarai that engage in rural road improvements are the output of societal institutions. Trade-offs between state and societal institutions occur (see Sub-section 12.1.4). Interaction between these two types of institutions in forms of their organisations and policies/initiatives shapes the pattern of development programmes, including transport programmes. For modelling purposes, I begin with categorising transport policies and programmes according to their origins: the state or the society.

The approach to transport programmes is another dimension of transport development created by the interaction between state and societal institutions. Whatever the pattern of interaction (whether state- or society-driven or some combination of the two), transport programmes may end up with two dichotomous approaches: efficiency and equity (see also Gannon and Liu, 1997; van de Walle, 2002). Transport improvements with efficiency objectives are primarily directed at maximising the total output for the economy. Market forces, with the support of technology, are the main drivers of this approach. The equity-based approach in transport programmes, on the other hand, is associated with welfare distribution objectives. The basis of this approach is not in markets and technology, but in social justice, how the benefits of transport programmes can be distributed as equally as possible to the society. So, rather than maximising output for the economy, the equity-based approach focuses more on maximising the distribution of economic resources to the society as a whole.

Trade-offs between the efficiency- and the equity-based approach will occur in most transport programmes. But, it is unlikely that transport programmes can maximise both efficiency and equity at the same time. For example, road projects aimed at maximising
efficiency would be concentrated in regions that have potential to benefit the regional economy (e.g. roads linking urban centres and resource-rich areas). These projects would mainly benefit urban entrepreneurs and those who control the resources. Few benefits would be enjoyed by those who have low accessibility to such roads or have no link with the resources. What is needed is a combination of the two at the programme level in a mutual way: transport programmes that promote efficiency but do not hurt equity, and vice versa. The question is: To what extent can such a model of transport programmes be designed and implemented?

If we combine these two dimensions of transport improvements into a single graph, we get a matrix such as that in Figure 12.1.

The matrix divides neatly into four quadrants that have very different consequences for rural accessibility and mobility. Quadrants I and III represent transport improvements that are mainly driven by the state with efficiency- and equity-based approaches, respectively. Quadrants II and IV denote transport improvements emerging from societal institutions that target efficiency and equity. Transport improvements can be initiated at any point within the four quadrants. The closer the point to the centre lines, the higher the trade-offs between institutions and approaches in transport improvements. For example, although programmes A and B are located in the same quadrant, similarly driven by the state with an efficiency-based approach, they are different in terms of the...
relationship with other initiatives and approaches. The latter is highly efficient and heavily driven by the state. On the other hand, the former interacts more closely with societal initiatives and an equity-based approach.

In practice, however, it is unlikely that a clear line can be drawn separating transport improvements according to their origins and approaches. Even in a fully state-driven transport programme, there will be always the involvement of societal institutions. A state road project, for example, would to some extent involve local communities in the construction process. In addition, even in a transport initiative that has highly equitable objectives, some efficiency principles may be involved. The initiative by several Beraur communities to provide equitable access to the village motorboat would be overtaken by efficiency issues when it came to the point of operating in a way that did not lose money. The model, although dividing transport improvements into four main categories, acknowledges such conditions. The next subsections, discuss these four types of transport improvements in relation to some transport programmes and initiatives examined in the present thesis.

12.2.1 State-driven Policy with an Efficiency-based Approach

Some state transport policies analysed in Chapter V target efficiency. Pioneer transport services and Inpres for District Road Improvements (IPJK) are among them. Although the stated objectives of both policies are to help reduce interregional disparity through subsidy schemes, in their implementation at the district level, projects are designed according to an efficiency-based approach. Inpres for District Road Improvements programmes, for example, were prioritized using an economic benefit-cost analysis method (SK 77 of 1990): the greater the net economic value of a road proposal, the higher its rank in the planning document. As a result, priorities were always given to district road networks that were ‘economically’ strategic to the district.

By focusing on strategic rural transport networks, these types of policies have been relatively successful in a regional context, primarily through their roles in connecting urban centres (or district capitals) with sub-district capitals. The operation of two pioneer ships in Maluku Tenggara Barat which stopped in all sub-district capitals of the district,
for example, helped to increase accessibility of the population in some main islands to relevant socio-economic facilities. More economic opportunities are created in the region (e.g. the potential ease of farmers to transport their copra to regional markets) as a result of the operation of these ships. The support from the state for this type of policy in the form of regulations, organisational structures at all government levels, and systematic planning tools, represents the state’s greater awareness of the need to promote development in rural regions.

There is, however, a downside to this type of programme. First, with the focus on ‘strategic’ rural transport networks, many local networks perceived as ‘uneconomic’ are left unmaintained. In fact, these networks are important for the local rural people (see for example Barwell et al., 1985). The focus of rural transport improvements on ‘strategic’ transport networks may create gaps, primarily between those with good access to these networks and those with no or limited access to them. The latter case is normally associated with poor communities. For example, the two pioneer sea services in Maluku Tenggara Barat served only 11 of the 88 islands of the region. The pioneer air services in the region served only two main islands. The effectiveness of these two programmes in terms of providing access to the whole population, in particular to the rural poor that are distributed across the 88 islands of the region, is minimal. Second, with the centralised and top-down nature of the policies, local characteristics were hardly recognised. Between 1991 and 1998, for example, the World Bank and ADB injected a considerable amount of money for district road development in Eastern Indonesia districts through Inpres for District Road Improvements. This boosted the significance of the transport sector budget in all of the districts (see Figure 6.1 as an example). Ironically, even in regions where roads are relatively less important than water transport because of the numerous islands (e.g. Maluku Tenggara Barat), the transport sector budget was allocated mainly to road improvements.

But more importantly, although targeting regional efficiency, this type of programme was still inefficient in some ways. Research indicated that pioneer transport services, either sea or air, carried insignificant volumes of cargo (O’Sullivan, 1983; Blankfeld and Fritz, 2001). The low demand for cargo space has largely been a function of low levels of productivity of the island population. In other words, the subsidy on transport costs has not been effective enough in promoting the productivity of the people, resulting in
the minimal use of the pioneer services for transporting cargo. In addition, market imperfections due to asymmetries of information between players in the region and high transaction costs have ensured that the benefits of subsidised transport were unevenly distributed across the population at the expense of the rural poor. From the perspective of the transport model of this present thesis (Figure 11.1), this type of policy targets rural accessibility rather than rural mobility.

12.2.2 State-driven Policy with an Equity-based Approach

Two policy schemes examined in Chapter V are based primarily on equity objectives: Inpres for Underdeveloped Village Infrastructure Improvements (P3DT) and Kecamatan Development Programmes (KDP). Although the full title of these projects, especially the latter, includes "community-driven development", in this context they belong to state-driven policy category, mainly because it is the state that promotes such development. Projects that were funded by these programmes were distributed equally to villages or village clusters categorized as "underdeveloped". In the KDP projects, groups of villages categorised as underdeveloped receive the same amount of development funds annually for three consecutive years. The people of those villages, with the help of non-governmental organisations, decided the allocation of the money into specific projects within those villages. Although there would be no guarantee on how equitable the outcomes of the project would be on the whole village population, this project, at least, warrants being classified, at the input level, as equity-based.

Besides its equitable distribution of development resources, another positive side of this type of programme is that the recipients of the projects are actively involved in the project planning and implementation, and may have direct control over the decision-making process, including the management of development funds. This policy has the potential to strengthen local institutions and to empower local people compared to the preceding programme category. The KDP projects, for example, involve local people in the whole process of planning, implementation and monitoring. This approach results in better planned projects, better target benefits and better monitoring over corruption and other rent-seeking activities. By means of active participation in the development process, rural people can increase their socio-economic and political capability. In terms
of our transport model (Figure 11.1), improving such capabilities in the context of transport projects may well lead to greater rural mobility.

From the perspective of policy-makers, this type of programme can be designed to equitably target rural people. In practice, however, problems arise. First, the state would always have limited financial resources to support transport development in an equitable manner. The needs (and demands) of people grow with improved transport systems. With the rising needs of the people, more funds are required to maintain and improve transport systems in an equitable fashion. Second, adequate participation of local people in this type of programme requires the state to have a deeper understanding of local circumstances, which necessitates substantial time commitments (Abraham and Platteau, 2004; Mansuri and Rao, 2004). State projects that are normally implemented according to a yearly timeframe would be limited in dealing with such commitments. Third, projects with high levels of community participation like KDP are not without problems at the implementation level. The evaluation of the KDP project indicated the domination of "clever local elites" in the planning process (Sahputra, 2003). Research in Sub-Saharan Africa also indicated the vulnerability of such projects to local elite capture (see Platteau and Abraham, 2002; Platteau and Gaspart, 2003; Platteau, 2004). Mosse (2002) introduced four factors that can induce this "elite capture" syndrome: (i) local relations of power, authority and gender, (ii) outsider agendas are expressed as local knowledge, (iii) local collusion in the planning consensus, and (iv) manipulation of the very notion of people's participatory ideas by development agencies. Overall, careful interpretation of the specific nature of local communities is required when designing and implementing this type of policy category.

12.2.3 Society-driven Initiatives with an Efficiency-based Approach

In orthodox development practice, society-driven initiatives are positively associated with an efficiency-based approach. This practice follows the classical and neo-classical economic doctrine that believes that free markets with the support of technological innovation (including transport) would lead to an efficient allocation of resources. In this present research, this type of initiative can be seen in the case of the Balang Lompo Island community (see Chapter X). The growing demand for fish attracted more
economic players into the fishing industry in the region. With more money being put into fishing production by urban traders, more opportunities became available for the island community to increase their fishing capacity through the adoption of mechanized technology. Through a free market mechanism, the community moved from a traditional fishing system relying on traditional boats to a commercial one supported by motorised fishing vessels. Accordingly, the travel pattern of the island community changed from non-motorised boats to motorised ones.

The main driving force of this type of initiative is the free-market. The neo-classical model argues that the market would efficiently distribute benefits to any party that participates in this type of initiative because of its self-regulating mechanisms. In addition, it is claimed that the state does not need to intervene in this process, thus reducing the burden of the state in seeking funds for development. With limitations on state finance for transport development, society-driven initiatives through a free-market system can be one possible solution to improve rural transport systems.

In practice, however, markets never work in isolation from societal and state institutions. The failure of the state to set regulations and property rights for market functioning and its inability to understand the unbalanced structure of the society causes market imperfections. Market failures are a common phenomenon in developing countries. In the case of the Balang Lompo community, the small-scale fishing communities competed with urban businessmen in highly unfair market circumstances. The latter have better market information and more economic capability than the former. The competition that was framed by high transaction costs due to the lack of property rights and the lack of consensus on formal contracts, resulted in market imperfections at the expense of local fishermen. Indeed, the fishing community increased its production and income, but the majority of the profits from the fishing went to the urban traders. This condition widened the gap between the island community and their mainland counterparts. So, while the society-driven initiative may efficiently promote the economy at a regional scale, its inequities may devastate the rural economy and the rural poor.
12.2.4 Society-driven Initiatives with an Equity-based Approach

Transport improvements driven by societal institutions may also target equitable outcomes. The effort of the Manggarai community in building their village access roads and the collective action of the riverine Beraur community in building their river transport system (both cases were examined in Chapter X) are examples of this category. In the former case, the local community with the support from two other societal organisations (the Manggarai Catholic Church and Swiss Organisation for Development and Cooperation) built more than 200 kms of rural roads that were not among the priorities of the state. Similarly, the Beraur case signified the spontaneous effort of an indigenous community in coping with their transport needs under the circumstances of the state’s lack of interest in promoting river transport. Both initiatives are categorized as an equity-based approach as they sought to distribute economic opportunities (in the form of transport improvements) to the society as a whole.

The cornerstone of this type of policy category is social capital, consisting of trust, norms and networks (Putnam et al., 1993), that are embedded in societal institutions. Such values are inherent forces for a society to drive its own development. Every society possesses these values, but may have different degrees of representation and acknowledgement. Development practice may benefit from these values, but a systematic effort is needed to incorporate social capital into modern development programmes. The case of the Manggarai community indicated a systematic effort of the community to incorporate social capital into the society’s transport development initiatives.

There are, however, limitations to this type of initiative. First, social solidarity that is embedded in communities is primarily rooted in traditional norms, which are quite often unfitted for development. Development, for example, requires a well-structured organisation adopting economic principles, whereas traditional communities may have no such organisation. Many authors have argued that some elements of traditional values (e.g. caste systems) are even harmful for development as they favour inequality, and therefore need to be modified (see for example Kuran, 2004; Sen, 2004). For a society to effectively exercise its social capital in promoting equitable outcomes in development, it
must be aware of the need to relinquish traditional values that harm development and to adopt more positive attitudes toward structuring development in a more equitable way.

Second, differing from societal initiatives driven by market forces, the initiatives that are driven by equitable objectives face difficulties with accessing funding and technology. There are unlikely to be outside players willing to fund initiatives if the outcomes are rigorously equity-based. Rather, local people need to find their own ways to access financial resources and technology to develop their own community. Only with support from the state or other societal organisations (e.g. the case of the Manggarai community), can such problems be tackled.

12.2.5 Toward an Integrated Transport Development Policy and Programmes

The discussion above indicates that advantages and shortcomings were found in every policy/initiative category. There is a need to re-evaluate each individual policy and initiative in order to increase its effectiveness in development. But, the bottom line is creating transport development strategies that integrate all of these policy/initiative categories for the purposes of gaining maximum benefits from their advantages, while minimizing their shortcomings. These strategies balance the roles of the state and the society in promoting transport development. Within this state-society framework, any effort to promote transport improvements requires a balanced interaction between efficiency and equity-based approaches. As also illustrated in Figure 11.1, there are four interrelated forces that shape transport improvements: (i) state organisations and policies, (ii) societal organisations and initiatives, (iii) the interaction with development forces based on efficiency principles, and (iv) the interaction with equity-based development forces. In order to effectively promote rural accessibility and mobility, the design of transport policy and programmes needs to be based on a harmonious interaction between these four forces.

Figure 12.2, based on the simplification made in Figure 12.1, conceptualises the way transport improvements need to be designed in an integrated way, accommodating the principles of state-society driven development and efficiency vis-à-vis equity-based
approaches. In principle, design of transport policies and programmes is directed to optimum trade-offs between state and society organisations and between equity- and efficiency-based approaches. In practical terms, strong political will from the state is necessary to create an institutional framework conducive to the promotion of such trade-offs.

![Figure 12.2: An integrated approach in transport development](image)

Let me put this model (Figure 12.2) into an example using the case of transport development in Maluku Tenggara Barat. First, the central government runs pioneer transport services connecting several main islands in the region (state-driven with efficiency-based). Some of the routes (e.g. Ambon – Saumlaki) are relatively attractive and can be offered to the private sector (society-driven and efficiency-based). This would increase the capacity of the government to invest in less economic routes. In addition, the operation of pioneer transport services would have a greater impact on the rural economy if there are government schemes to provide incentives for the construction and operation of local boats to serve islands that are not connected by pioneer transport services (state-driven and equity-based). All these programmes should be integrated with local community initiatives to improve their local transport systems through many different ways (society-driven with equity-based). What is more, effective government policies are required to promote and support community efforts in improving their transport and economic situation. For example, the collective action of island communities to operate their own boats for bringing their agricultural produce to regional
markets would not be effective if there is no policy scheme to promote a fair market for such communities. Overall, only by understanding and recognizing local characteristics in every rural community including the way its societal institutions work, can integrated transport development policies and initiatives be promoted effectively.

12.3 Key Strategies for Rural Transport Development

The last proposition of the model deals with the conceptualisation of key strategies for rural transport development in order to effectively promote the rural economy and alleviate rural poverty. As the state plays a leading role in building and implementing these strategies, the focus of this section is on what roles the state can perform in promoting an effective institutional framework for rural transport development. To maximise rural benefits through these roles, however, systematic incorporation of societal institutions, their organisations and initiatives is necessary. So, what is needed is an institutional framework that recognises and incorporates societal efforts in transport development into the state transport sector. To achieve this approach it is necessary to base transport organisations, policies and programmes on a sound understanding of the linkage between state and societal institutions in development. Such an understanding will better incorporate transport policies and programmes into an integrated development approach and to direct transport policies and programmes to the objectives of improving accessibility and mobility for the rural economy.

The state needs to develop effective strategies that drive the institutional framework for rural transport development. These strategies include several institutional aspects: laws and regulations, organisations, policies, planning and implementation, and evaluation. Based on these aspects and in the context of the model (Figure 11.1), five key strategies for rural transport development are suggested and elaborated in the following subsections:

1. Strengthening laws and regulations so that the transport sector more effectively incorporates societal institutions into transport development
2. Strengthening the organisations of the transport sector through improving their integration with other development organisations and ensuring closer coordination among transport sector organisations.
3. Strengthening the policies of the transport sector through a more effective incorporation of societal initiatives in transport development.

4. Developing an integrated planning tool for the transport sector that has the objective of improving accessibility and mobility.

5. Developing an evaluation mechanism for transport programmes to examine whether they effectively target the rural economy and the rural poor.

12.3.1 Strengthening Laws and Regulations of the Transport Sector

An appropriate understanding of the relationship between state and societal institutions in development is a prerequisite for developing transport laws and regulations that will effectively support rural development. We have learned from the preceding sections that state institutions lay the groundwork for organisations and policies in the transport sector, but also for the creation of rural economic opportunities through many development lenses. On the other hand, societal institutions determine the way the society engages in transport development and, by the same token, shape the rationality of the society in responding to rural economic opportunities brought about by various development forces. Given these interrelated roles, recognizing and incorporating societal institutions including their organisations and initiatives is central to the effort of strengthening laws and regulations in the transport sector.

How should transport laws and regulations be designed in this context? First, the bottom line for any transport laws and regulations is the recognition of various societal institutions that exist in the society. Indeed, as the present thesis has analysed, different rural communities characterized by unique resource endowments may have different types of societal institutions. Different structures of societal institutions create different responses to transport development. For example, although residing in the same region, the indigenous Beraur community and the Javanese migrants in Klamono hold different views of river transport systems. These migrants were traditionally land-based communities, whose perception of rivers is as water resources for irrigating their farms, different from the indigenous communities who use rivers as their means of transport (Aditjondro, 1989). The main challenge for the state is, therefore, to develop transport
laws and regulations that may well recognise various attitudes of communities to transport development.

Second, to deal with the above principle, effective coordination between laws and regulations is required. Potential disputes that may create conflicts of interest at organisation, policy and implementation levels should be avoided. The two laws that regulate the Indonesian road transport system, for example, conflict in several ways (see Chapter V for the discussion). Different standpoints in positioning road transport systems have made these two laws ineffective at the implementation level. One way to eliminate the conflict is by merging these two laws. Likewise, the new bill on the national transport system that is designed to be an umbrella for all transport law (Sinar Harapan, 2002), including the two current road transport laws, needs to progressively anticipate any coordination problems that may arise.

Third, transport laws and regulations need to accommodate the role of society in transport development. The current road transport laws (Law 13 of 1980 and Law 14 of 1992), for example, primarily authorise and acknowledge the role of the state in transport development. Ironically, the potential that society has for promoting transport development is not proportionally accommodated in these laws. Law 13 of 1980, for example, gives the state a monopoly in authorising and managing the whole road system, including toll roads. The overwhelming authority given to the state for managing the road system results in the state’s lack of capability to maintain a reliable road system for the whole nation. In practice, the state could only focus on “strategic” regional road networks, leaving the majority of rural roads, including village access roads and community paths, unattended to.

Obviously, the state will never have sufficient monetary resources to satisfy all the needs of society for transport development. In the case of Indonesia with its varied geography and uneven population distribution, even to achieve a level of “minimum access” to the population would be hardly possible. Promoting transport development based on equity measures will be constrained by budget limitations. On the other hand, to proceed with an efficiency-based approach will continually increase gaps in opportunities between and within regions. Although an efficiency-equity based approach as introduced by van de Walle (2002) seems ideal, in practice there will never be enough government resources
to develop an efficient but equitable rural transport system. Many governments chose to increase their spending on the transport sector, but at the expense of other development sectors (see Chapter V and VI for the cases of central and local government in Indonesia, respectively). More sadly, many developing nation governments took a short-cut by borrowing more money from international development agencies for transport improvements. As transport networks are expanded through loan schemes, the state becomes more and more dependent on international development agencies to maintain the already-built networks. So, trying to fix transport problems by increasing state capacity in financing transport development (i.e. reducing other sectors' expenses or increasing loans) is not a viable solution.

The crucial issue for transport laws and regulations is to integrate state efforts and societal initiatives in managing the transport system, including rural transport. Chapter X presented four case studies that indicated the active role of rural communities in transport development. Transport for them is clearly more than just paved roads and motorised transport, but the integration of all types of transport including community paths, non-motorised vehicles, river and island transport. In addition, the community is not just the user of the transport system (as primarily conceptualised by the Indonesian transport laws), it can also be the investor, operator and owner of the transport system. All these aspects need appropriate recognition in transport laws and regulations.

12.3.2 Strengthening Transport Sector Organisations

The next strategy in building an effective institutional framework for rural transport development is to develop an organisational structure that acknowledges the roles of both state and societal organisations in managing the transport sector. This structure needs to be legally recognised through transport laws, regulations and other types of rules. Equally important is a political environment conducive for promoting such a structure at the practical level. The legal arrangement may ensure that all organisations engaging in transport development have their say in proportionate ways, but when it comes to practicality, the political power embedded in each organisation plays a more crucial role. For example, although the Regional Autonomy Law (Law 22 of 1999) has succinctly regulated the coordination between the central and local governments, including between
provincial and district governments, in practice, there are always tensions between these governments benefiting those with greater decision making influence. So, a political environment that warrants equitable access of all organisations involved in transport development to decision-making processes is necessary for a strong structure of transport sector organisations.

There are, at least, three dimensions of the organisational structure of the transport sector that need to be strengthened. The basic one is coordination between state and societal organisations at all levels of the development context. State organisations consist of international development agencies, central and local governments. Societal organisations may include international, national and local NGOs, as well as traditional community organisations. A strong environment of coordination between state and societal organisations is the key for an effective transport sector. In the context of rural transport, those organisations need to coordinate their roles and responsibilities for promoting rural accessibility and mobility.

The second organisational arrangement that needs to be strengthened is the level of coordination among state organisations, as well as among societal organisations. In the context of state organisations, for example, there is a need to strengthen coordination between central, provincial, district and village governments. Such coordination is based on the understanding that each government has unique roles and responsibilities in managing development. Village governments have the function to promote transport development at the village level. This effort should be well-coordinated with the efforts of district, provincial and central governments to promote transport development at the regional level.

Thirdly, coordination should also be strengthened between divisions or ministries within one organisation. In the context of rural transport, The World Bank needs to strengthen the coordination between the economic and infrastructure division and the social development division. Both divisions, although working on transport issues in rural areas, lack coordination at the policy making level, which leads to conflicts of interest at the implementation level (see Sub-section 4.2.3). At the central government level, the Ministry of Public Works that is responsible for managing rural roads needs to
strengthen the coordination with the Ministry of Transport that is in charge of regulating rural transport services.

12.3.3 Strengthening Transport Policy

At the policy making level, the basis of policy design needs to be the recognition that transport development occurs in various rural settings. Different rural communities would have different societal institutions, which create different responses to development. So, transport policies need to be designed with better understanding of the diverse forces embedded in rural societies. In this context, two key issues matter: (i) how can transport policies be designed to better incorporate a diverse range of societal institutions including the various resource endowments that influence these institutions, and (ii) how can transport policies be designed to better recognise community initiatives in transport development. Integrating these two issues into transport policies will ensure a more effective promotion of transport improvements with the objective of improving accessibility and mobility for the rural economy.

First, incorporating various societal institutions into transport policies requires the active involvement of people in the policy-making process. This means that state organisations at all policy-making levels need to work closely with societal organisations to comprehensively understand the nature of the societies. While at the national policy-making level transport policies can be based on general principles of the integration of local characteristics, at the local policy-making level transport policies should be unique and contextually-specific. Consultation with rural people in Pangkajene Kepulauan during the field research, for example, strongly indicated the need for a policy that could integrate the operations of various modes of traditional public transport with modern ones, both on the mainland and across the islands. This would not be the case in Tana Toraja, where the transport system reveals a major contrast between those who have access to motorised transport and those who do not and rely primarily on walking. Transport policy design between these two districts should be different. The central government should provide an umbrella policy that promotes all types of transport modes

65 Chambers (1983; 1997b) argued decisively about the need to put people at the centre of development process, including policy decision making (see Chapter III).
to operate in rural areas. The local government should develop a more specific policy that deals with the uniqueness of the transport system in its region.

The second issue is acknowledging and encouraging community initiatives in rural transport development. With transport policies becoming more decentralised and contextually-specific, it is impossible for the state to perform a single-stakeholder role in transport development. Transport policies need to be more sensitive and friendly to community initiatives. Efforts such as communities building their own transport infrastructure or operating public transport need appropriate accommodation in transport policies. The state could provide incentives (i.e. regulations, policy frameworks and financial support) for such community efforts that have the potential to promote the rural economy and alleviate rural poverty.

In principle, these issues need to be coordinated with efforts to develop effective transport development policies and programmes (Sub-section 12.2.5). Transport policies need to be designed within an environment that promotes the integration of state- and society-driven initiatives, and between efficiency- and equity-led approaches (Figure 12.2).

12.3.4 Developing an Integrated Planning Tool

Approaches to transport planning have been dominated by narrowly focused, primarily technical and economic, and particularly ex-ante methods (e.g. cost-benefit analysis and multi-criteria analysis). Although some effort has been made, mainly at the international agency level, to improve the ability of these methods to deal with more non-technical and non-economic issues (e.g. the World Bank with its HDM-4), there is still a vigorous debate on whether such methods are reliable enough for measuring the complexity of development benefits. As shown in the model (Figure 11.1), transport improvements are inextricably linked with other development initiatives in promoting rural accessibility and mobility, as well as creating economic opportunities. But the more crucial issue is that the responses made by human beings to these economic opportunities differ and are affected by their rationality and perceptions of the situation. Transport planning methods will never be adequate to measure benefits to the rural economy, unless these two
conditions can be incorporated into these methods. So, more work is needed to develop a more integrated planning tool. But, the focus should be on better understanding and incorporation of wider development issues into transport planning, and more specifically on integrating all institutional factors that affect the relationship between transport and the rural economy.

One way to improve the capability of transport planning tools is to combine ex-ante and ex-post approaches. While the former deal mainly with highly predictive methodologies based primarily on a supply-demand model, the latter provide evidence about the effects of specific contexts on the interaction between transport development and the social, political, cultural as well as economic circumstances of development over a particular period of time, and highlight lessons that can be learned for delivering transport improvements in the future. Drawbacks and satisfactions are found in both approaches, but combining the two would be likely to increase the credibility of transport planning tools.

The use of evidence-based planning tools in transport planning would increase the sensitivity of transport projects to the local context. As indicated in the present thesis, some types of ex-post evaluation methodologies have been useful in understanding the specific linkage between transport improvements and the rural economy (see Chapters VI, VII, VIII, and IX). Chapter VII, for example, measured the relationship between transport conditions, accessibility, mobility and rural livelihoods. It was found that a connection occurs among these four, but that the connection was also affected by other factors, such as the structural conditions of regions, the social norms embedded in communities and the nature of development initiatives. In Chapter IX, the rural community of Benteng Ambeso was examined to identify factors that affected their well-being, including their views on previous road transport improvements. Overall, these approaches helped to identify connections between transport improvement and rural livelihoods, points that could never be specifically elaborated by an ex-ante planning method.

The question is: Where should we start to integrate the ex-ante and ex-post transport planning tools? In the context of rural transport, the ILO has come a long way to formulate integrated rural accessibility planning (IRAP) (see Dixon-Fyle, 1998;
The IRAP method identifies development problems of the target rural community, integrates transport with other development needs, and actively involves rural people in designing their development projects. These features refer to an evidence-based planning approach. On the other hand, the method employs a predictive planning tool through its association with geographical information system (GIS) tools (see Tarik-ul-Islam et al., 1997). More effort needs to be made, however, in order to make the IRAP method more effective as a planning tool for transport development. Specifically, this effort should focus on: (i) moving from the focus on accessibility objectives to an approach that targets accessibility and mobility in equal ways, (ii) incorporating some qualitative approaches in the methodology especially in dealing with such specific issues as gender, culture and issues related to vulnerable groups, (iii) exploring the potential to integrate the IRAP approach with predictive planning tools, such as HDM-4, and (iv) involving more societal organisations in the planning process.

12.3.5 Developing an Evaluation Mechanism

While the transport sector has been progressive in advancing its planning tools, efforts to develop effective evaluation methods have been far from adequate. Policies and programmes need to be thoroughly evaluated in order to understand how they can be shaped and modified in a manner that matches the diversity inherent in local community contexts. Appropriate evaluation of current procedures, processes and outcomes, will be the basis for developing effective transport organisations, policies and programmes in the future.

In terms of procedure, there are many ways by which the evaluation of transport policies and programmes can be carried out. In relation to rural transport development, the present thesis has demonstrated four methods:

- Evaluation of changes in transport network conditions at the village level (Chapter VI).
- Evaluation of the correlates of transport situations based on a multivariate analysis of transport conditions and rural welfare (Chapter VII).
- Evaluation of factors that affect the relationship between transport systems, accessibility, mobility and rural livelihoods (Chapter VIII).
• Evaluation of the process of transport development and the way such a process interacts with other forces that affect changes in rural societies (Chapter IX).

The outcomes of evaluation are as equally important as its procedure. Again, rural people should be the key players for evaluating any transport initiatives related to them. Rural people who are affected by transport development know the outcomes better than any other party, including the state. Effective consultation with rural people should be the core of developing any evaluation methods for transport policies and programmes. Equally important is the courage of transport policy makers and planners to incorporate people’s aspirations into their policy and planning document. Overall, the state is expected to provide mechanisms that enable such an environment to emerge.

12.4 A Clearer Linkage?

The concluding section of the previous chapter revealed that there was “no-simple linkage” between transport development and the rural economy. It was found that many ‘outside’ factors affect the linkage between transport development and the rural economy. Having examined the outer parts of the relationship in this chapter, a clearer linkage can now be drawn, by broadening our interpretation of what transport development is about and how it links with wider development issues. Of course, ‘clearer’ does not necessarily mean ‘clear’, but I am now confident that there is an identifiable pathway that connects transport development and the rural economy. This pathway is summarized in the following paragraphs.

First, interaction between state and societal institutions shape the pathway of development, including transport, for the rural economy. State institutions determine organisations and policies for the transport sector, but also affect the creation of rural economic opportunities through many development lenses. On the other hand, societal institutions lay the basis for the way the society engages in transport development, and shape the rationality of the society in responding to rural economic opportunities brought about by various development forces.
Second, transport development is jointly affected by forces embedded in state and societal institutions. The interactions between the two shape the approaches to transport improvements, which can be either efficiency- or equity-led, or represent some combination of the two. An integrated approach that combines initiatives from both state and societal organisations and gives equal weight to efficiency and equity, directs transport improvements to improving accessibility and mobility for the rural economy.

Third, to maximise rural benefits through transport improvements, an effective institutional framework for rural transport development is necessary. The framework would be based on a systematic incorporation of societal institutions, their organisations and initiatives in the state's transport sector. The framework requires the strengthening of laws and regulations, organisations, policies, and planning tools, as well as improving evaluation procedures and processes of transport development.

With the linkage clearer, I am now in the right position to end the journey of this thesis. The next chapter will conclude the thesis by examining the extent to which this thesis has met its research objectives. Accordingly, the implications of the present research for further actions and research needs will be recommended.
CHAPTER XIII: CONCLUSIONS – FROM CONCEPT TO IMPLEMENTATION

The term “development” has made the link between transport and the rural economy ambiguous and complex. While we have no problem accepting that transport is indispensable to the rural economy, the problem is with the way transport has been developed and connected with complex rural development issues. These problems have challenged me to embark on this research with the main question: “To what extent and in what circumstances does transport development effectively improve the rural economy?” In addressing this question, five tasks were set and Indonesia was chosen as the research location. The tasks examined the linkages between transport development and the rural economy at various scales, from the national, district, and village to the household level. In this concluding chapter, I summarise the extent to which the research question, and its five tasks, have been addressed. Following from this, a series of operational implications and research needs is identified in an attempt to continue the progress made by the present thesis. To start with, if there is one key lesson to be learnt from the outcomes of these tasks, it is that development institutions and the specific characteristics of rural areas have crucial roles in shaping the effectiveness of transport development for the rural economy.

13.1 The Theoretical Approach

I have chosen an institutional approach as the theoretical basis for addressing the research question. The approach, based primarily on the new institutionalism theory, offers a theoretical understanding appropriate to examining the complex and dynamic linkages between transport development and the rural economy. The institutional approach requires that the transport development process be examined from wider social, cultural, political and economic perspectives rather than from a purely economic direction. It acknowledges the complex institutional structures that shape the performance of societies and determine the way the market and the rural economy grow. It recognises that the market operates imperfectly due to asymmetries of information and high transaction costs. These imperfections disadvantage rural people in gaining access
to the market even after the improvement of transport systems. The theory also acknowledges that different structures that bind a society also facilitate different ways in which the society would deal with technological change, including transport improvements. The approach conceptualises technological change including transport innovation as a function of a long-run historical process (an endogenous factor of market extension), rather than just a consequence of market extension. Overall, the institutional approach is highly relevant for the rural transport context and has equipped the present research to address its five main tasks.

13.2 The Five Tasks

13.2.1 Task One: The National Level Analysis of the Transport Sector

The first task was to analyse transport development doctrines and policies in Indonesia and their linkages to the roles of improving the rural economy and alleviating rural poverty. In response to this task, I examined the development context and transport sector policies and programmes of the national government of Indonesia, from the 1960s to 2004 (Chapter V). It was found that the linkages between the transport sector and the efforts of promoting the rural economy and alleviating rural poverty were determined primarily by the institutional environment (doctrine, organisation and policy) that circumscribed national development. The New Order regime (1966-1998), for example, with its strong neo-classical economic ideology, prioritised the transport sector as the main engine for economic growth and national unity. Management of the transport sector during this era was fully centralised, top-down in approach and, therefore, was insensitive and unfriendly to the highly variable characteristics of rural areas. Some transport policy schemes with redistributive objectives, such as pioneer transport services and Inpres for District Road Improvements (IPJK), were implemented in rural regions, but were insensitive to the specific nature of the rural society and variation between districts. These schemes were also far from effective in terms of ensuring that the opportunities that they created were equally available to the rural population.

The Reform administration (1998-present) brought significant changes in the institutions of national development. The current regime established a decentralised and more
bottom-up approach to development (Law 22 of 1999). This new institutional arrangement provides the transport sector with the potential for a closer linkage to the rural economy and poverty alleviation issues. In addition, the greater authority given to local governments in managing their transport programmes indicates greater opportunities for the accommodation of rural people's aspirations and for sensitive responses to local conditions in transport development. Some 'community-driven development' schemes have started to bring rural people and their institutions to the centre of development practice. Nevertheless, as the institutional reform process is not yet settled, the long-term effects of such new institutional arrangements on the rural economy remain to be seen. But, the fundamental premise is strong institutional reform in the national development process that consistently promotes an environment conducive to a decentralised and bottom-up approach. This will give the transport sector a strong focus on promoting the rural economy and alleviating rural poverty.

Chapter V revealed that selected aspects of institutional reform in the transport sector need attention to equip the sector with an effective framework for promoting the rural economy and alleviating rural poverty. One is the incorporation of the 1998 reform spirit (with its strong appeals to democratisation, decentralisation, clean governance, bottom-up approaches and redistribution of economic assets) into all transport laws and regulations. It is also necessary to ensure effective coordination among transport laws and regulations. There is a great need to amalgamate Road Law (Law 13 of 1980) and Traffic and Road Transport Law (Law 14 of 1992) in order to establish a single standpoint in viewing the road transport system. More importantly, this merger would remove unnecessary conflicts of interest at the organisation, policy and implementation levels. Another new bill on the national transport system, that is intended to be an umbrella for all transport law (Sinar Harapan, 2002), must progressively anticipate any coordination problems that may arise. Furthermore, organisations and policies of the transport sector must significantly integrate the poverty alleviation objective with the economic growth target. There has to be a balance between efficiency- and equity-led approaches in transport development, which can only emerge from appropriate

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66 On 18 October 2004, the central government launched a new Road Law (Law 38 of 2004) to replace Law 13 of 1980. The Ministry of Public Works was primarily responsible for proposing this new law. Another bill is being drafted by the Ministry of Transport to replace the Traffic and Road Transport Law (Law 14 of 1992). This situation indicates a continuing coordination problem at the national level between the provision of road infrastructure and the management of road transport services.
coordination between institutions of development. But to make transport development more responsive to the needs of rural people, all transport laws, organisations and policies must acknowledge the importance of local rural transport systems.

It is not sufficient to rely only on this research to continue the institutional reform of the national transport sector. More research on the national transport sector is required. There is a need to scrutinise the ongoing effects of the decentralisation process on transport policies and programmes. Research on ensuring effective coordination and integration within the transport sector and between the transport sector and rural development sectors is necessary. This includes research on transport law and regulation to effectively promote rural transport systems in coordination with other transport systems. There is also a need for research into an evaluation mechanism at the national level which appropriately incorporates the diversities in rural societies and rural areas. The current transport sector requires a strong ideology that is based on the real circumstances and history of rural societies. Research on the evolution of transport and rural development in Indonesia is important in this sense, including the investigation of the colonial role in rural transport development.

13.2.2 Task Two: The District Level Analysis of Transport and Rural Livelihoods

The second task was to examine evidence at the district level for the statistical relationships between transport conditions and rural livelihoods, and to explore how the process of transport development has affected those relationships. Chapters VI and VII dealt with this task, and the analyses were based on four rural districts in Eastern Indonesia: Tana Toraja, Pangkajene Kepulauan, Sorong and Maluku Tenggara Barat, which were chosen because they represented a range of different geographical and transport situations. Chapter VI examined the implementation of national transport policy in these districts and the changes in the transport network since the mid 1970s, when the New Order government initiated various transport subsidy schemes. Changes in village transport networks in these districts between 1976 and 2000 were evaluated. The findings corresponded to the transport policies and programmes implemented in each district during this particular period and current transport priorities. It was found that
although the transport sector received the highest priority for district development funds, and would be likely to continue to do so in the near future as confirmed by all district policy makers interviewed, the condition of the transport system was far from sufficient to effectively support the rural economy. Transport conditions were relatively good in the regions where the economy grew, but poor in the regions where various forms of deprivation existed. The strongly centralised development approach focusing on roads as implemented by the New Order government helps to explain such outcomes. The regime was also blind toward the significance of local conditions. The need to develop a water-based transport system at the district level, for example, has been structurally hampered by the inflexible format of the top-down development approach.

The institutional change brought about by the Reform government has provided district governments with greater authority in determining priorities and needs for rural transport development. Some aspects of rural transport are of considerable importance to be proactively promoted by district governments. One is the enactment of the legal framework necessary to allow the emergence of a district transport system that is based on the specific institutional characteristics of districts. This framework can be in the form of a District Regulation for Transport (Peraturan Daerah tentang Transportasi). The key principles that underpin such a regulation are the acknowledgement of the diversity in local transport systems and the encouragement of the participation of various local stakeholders in transport development. This regulation should specifically address the nature of transport institutions at the district level. In Tana Toraja, for example, a district regulation for transport should acknowledge and promote the role of customary institutions in the transport development process. In Pangkajene Kepulauan, Sorong and Maluku Tenggara Barat, such a regulation needs to promote the integration between water and land transport systems. In Sorong, in particular, river transport must have an appropriate role in the district transport system. In all these districts, the operation of various public transport services (motorised and non-motorised) should be encouraged in addition to the participation of various community groups in the district transport sector. All these specific characteristics of district transport systems should also be acknowledged in the national transport system.

67 As of 2003, none of the four research districts had a district regulation for transport.
As this thesis only focused on four districts, there is a need to research a wider range of districts to identify the full extent of local conditions affecting rural transport development in Indonesia as well as development strategies that emerge from the evaluation of local conditions. It is highly desirable that studies on rural transport development should be carried out in each district of Indonesia in order to provide district governments with appropriate recommendations in determining transport policies and programmes at the district level.

Using the data from Village Statistics 2000 (BPS, 2001a), the statistical correlations between transport conditions and rural welfare were examined in the four research districts (Chapter VII). Transport variables were determined based on a broad definition of transport that equally incorporated accessibility and mobility. Accessibility is defined as the potential ease with which people can reach desired destinations or be reached by relevant services, while mobility refers to the ability of people to travel and incorporates aspects of human behaviour in addition to economic, political and social relationships. The hypothesis being tested was that one or both of these dimensions of transport would have significant statistical correlations with rural welfare measured by the percentage of rural households classified as pre-prosperous and prosperous level I (see Table 7.4).

The multivariate regression analysis indicated that in each district, and in each topographical region within the district, different transport measures were significantly related to the variability of rural welfare, thus underlining the different characteristics of the districts and regions. In Tana Toraja, for example, travel distance to public facilities and household vehicle ownership were the two transport variables that were most significant in explaining the variability in welfare among villages. In mainland Sorong, it was the household ownership of information and communication facilities and travel time to public facilities that were critical to the variability of rural welfare. These results signified the different roles of transport variables in each region. But, more importantly, they indicated different implications for rural transport development and a need for different policy instruments. In Tana Toraja, where the district government has long focused on expanding rural roads, the critical issues lie in the siting of public facilities and the capabilities of rural people to own motorised vehicles. For mainland Sorong, while transport infrastructure cannot be easily provided to all inland communities owing to topographical difficulties, the critical issue for rural transport improvement appears to
be on equipping rural villages with information and communication facilities. The availability of these facilities would help facilitate the access of the people to new socio-economic opportunities. In addition, the significance of travel time to public facilities in mainland Sorong indicates the need to bring public services closer to the people. Overall, the analyses in Chapter VI and VII have succeeded in delineating the way transport development processes affect the correlation between transport conditions and rural livelihoods at the district level. But, to examine the nature of such a correlation (e.g. whether or not causal relationships exist), a more detailed analysis is required.

It is worth noting the potential application of the methodology employed in Chapter VII to the procedures of transport planning and policy evaluation in Indonesia. The method provides measures and tools for a micro level analysis connecting transport conditions and welfare/poverty levels. First, the statistical analysis correlating transport conditions and the welfare level measures the statistical significance of transport variables in relation to the variability of the welfare level. This analysis equips policy makers and planners with statistical credibility on the real situation of the village in formulating transport policy and programmes at district and village level. This micro approach may complement the macro-level analysis of transport and economic growth that has conventionally dominated the planning and evaluation methods of the transport sector. But the statistical analysis in this chapter is only a starting point for more in-depth research on rural transport which requires additional attempts: (i) to incorporate more specific transport measures in relation to accessibility and mobility as indicated in Table 7.3, (ii) to include temporal as well as spatial analyses, (iii) to confirm whether or not the statistical relationships between transport and rural welfare can be regarded as causal, and (iv) to consider non-transport variables such as resource endowment, market imperfections, agricultural innovation, employment opportunities, educational levels and political participation of rural people.

The village level data collected by Statistics Indonesia measures various socio-economic indicators of development, including transport conditions and socio-economic performance of all Indonesian villages. The use of such data by policy makers and planners in transport ministries (i.e. the Ministry of Transport and the Ministry of Public Works) has been minimal as both ministries employ their own methods for data collection. These methods, however, have been focused on specific transport indicators
(e.g. traffic surveys and origin-destination surveys). Coordination in data collection (including identifying appropriate variables to be collected) and accordingly in the planning and evaluation process would benefit the (transport) development process as government agencies will have a more comprehensive measure of transport and socio-economic variables. In addition, the Ministry of Transport and the Ministry of Public Works may work in coordination with Statistics Indonesia to improve the usefulness and effectiveness of data collected for the formulation of transport policies and programmes.

13.2.3 Task Three: The Village and Household Level Analysis of Transport Systems and Rural Livelihoods

The third task started with seeking evidence at the village and household level on how the transport system contributes to the travel patterns and livelihoods of rural people (Chapter VIII). In dealing with this task, nine villages located in Tana Toraja, Pangkajene Kepulauan and Sorong, with different geo-topographical and transport conditions, were selected for further investigation. Out of these villages, 331 households participated in the travel activities and socio-economic survey. The village level analysis found that accessibility was affected by location and transport connections. The more remote the villages from the urban centre the poorer the transport situation, and the lower their accessibility level. This outcome is primarily affected by the way development, including transport improvement, is introduced into rural areas. On the other hand, mobility is influenced by the socio-political and economic situation of rural areas. The social and political aspects include social relations between individuals (e.g. men and women, endogenous people and migrants) to gain access to and use desired transport services, while the economic aspects refer to economic ability (e.g. incomes) to afford transport services. The analysis also signified the close linkage between accessibility and mobility. Improved transport infrastructure encourages the operation of various transport modes in the village and may improve the mobility of rural people. On the other hand, improved rural mobility leads to better use and supply of transport services and rural facilities. In general, rural travel patterns are influenced by the interaction between rural accessibility and mobility. Better accessibility and greater mobility result in people having more options for their trips. Disparities in accessibility and mobility originate
from the characteristics of rural areas (e.g. location, population density, culture/tradition) and from the political and economic aspects of development.

Having examined the linkage between transport conditions, accessibility and mobility, the next assignment in this task was to scrutinise how these variables related to rural livelihoods and welfare levels (Chapter VIII, Sections 8.4 and 8.5). Five villages (190 households), located in Tana Toraja and mainland Pangkajene Kepulauan, were included in the analysis. In the context of livelihoods, it was found that, as the village became more accessible to the urban centre, a higher percentage of agricultural households were involved in non-farm employment. On the other hand, villages with poor rural-urban connections had a majority of their households with livelihoods depending solely on agriculture. It was also found that households living by a “mixed” livelihood tended to have greater mobility than those living by “only agriculture” or by “only non-agriculture”. Greater mobility, in turn, provided more opportunities for a better livelihood. This was confirmed in further analysis of the travel pattern and welfare linkage. Rural households relying entirely on agriculture, and not necessarily living in remote areas, were closely associated with poverty. It was also found that, while the rural poor travelled mainly by walking, the rural rich employed various transport motorised and non-motorised modes for travelling. Mode use helps explain the disparity in modern transport activities between the rural rich and the rural poor, which means that motorised transport system has done little to promote the mobility of the rural poor.

From the analysis of Chapter VIII, selected themes for further research have been identified with the main focus on examining the specific role of transport in different rural environments. One theme for research is the need to take into account different settings of the physical, social and cultural environments when dealing with travel pattern analysis. Chapter VIII has tried to consider two aspects of difference (i.e. geotopography and transport connection), but there are more aspects of local settings that require specific research attention. The main objective here is to identify and clarify the roles of various determinants in affecting rural travel behaviour. Issues such as seasonality, cultures, gender differences, vulnerable groups, educational levels and vehicle ownership situations are among them. Also relevant to this theme is the need to explore changes in travel pattern activities in particular rural areas over time and to investigate the effects of the abovementioned factors on such changes.
Another theme for research is to continue the analysis of the linkages between accessibility, mobility, and rural livelihoods with specific reference to the non-farm economy and its relationship with the agricultural economy. Chapter VIII has carried out this analysis but it focused on selected land-based villages in South Sulawesi Province. There is a need to engage in similar research in regions with different local characteristics. For example, transport studies connecting accessibility, mobility and the small island economy would provide insight into the nature of the relationships between water transport systems and the island economy. Lastly, while the focus on travel pattern analysis has been mainly on "economic trips", the analysis in Chapter VIII has made it clear that "non-economic" trips (e.g. trips for social, leisure, education, health care) are also significant in rural activities. This indicates the importance of incorporating such trips into rural transport research.

13.2.4 Task Four: The Village and Household Level Analysis of Transport Improvement and Rural Change

The fourth task examined the process of rural transport improvement and its effects on the rural economy, including the players who contributed to the process. The basis of analysis was the village and household, and Chapters IX and X were devoted to this task. In Chapter IX, the case of Benteng Ambeso Village in Tana Toraja was discussed. It was found that transport improvements were shaped by the way state and societal institutions had interacted in the development process (the Dutch colonial administration and the Republic of Indonesia vis-à-vis Torajan custom). The domination of the state in promoting modern transport meant that rural transport systems were created mainly to serve the interests of the state rather than the rural population. Transport improvements, in association with other development sectors, also promoted changes in the rural opportunity set (represented by employment, agriculture, rural produce markets, credit markets, land values, migration, education and health services). Adoption of new opportunities by rural individuals has varied according to the different rationality and capability of individuals. This is accentuated by asymmetries of information between individuals plus the costs required to access the opportunity set, which have created failures in political and economic markets at the expense of the rural poor. These results
underline the need for a critical attitude in understanding the various forces that promote or inhibit the relationship between transport development and the rural economy.

While Chapter IX elaborated the domination of state institutions in rural transport improvement, Chapter X sought to understand whether or not societal institutions can make a significant contribution to such development. Four cases were discussed: (i) the rural communities of Manggarai building their access roads, (ii) the horsecart operators of Pangkajene Kepulauan preserving their public transport operation, (iii) the Balang Lompo fishermen improving their transport system, and (iv) the riverine Beraur communities promoting the use of motorboats. These studies strongly indicated that, with little or no state support, societal institutions have played important roles in rural transport improvement. The existence of rural institutions with strong social capital in addition to the environment that provides sufficient support for the exercise of this capital are the preconditions for such participation to take place. It was also found that societal institutions which work through local and traditional organisations identify their needs and potential solutions better than any other institutions. The riverine Beraur communities, for example, have worked together to improve their river transport system in the absence of state initiatives. The fishing community of Balang Lompo Island with its strong social solidarity has improved the island transport system, benefiting from the relationship with their mainland businessmen counterparts. These facts provide us with a robust basis for acknowledging the potential roles of societal institutions in improving rural transport systems.

It is clear from the analysis that the roles of societal institutions are significant in the transport development process. There is a need for the transport institutional framework to acknowledge various transport initiatives that have evolved within the community. The limited ability of the state to provide transport interventions for all rural communities means greater recognition must be given to the roles played by non-governmental organisations (NGOs) and community-based organisations (CBOs) in improving rural accessibility and mobility. Local universities can also play significant roles in improving rural accessibility and mobility. Studies on appropriate intermediate means of transport operating in rural areas can come from a coordinated effort between district governments and local universities.
The approach employed in Chapters IX and X indicated the importance of a qualitative technique in the transport planning and evaluation process to complement the more frequently used quantitative methods. The quantitative method as employed in Chapters VII and VIII can define the magnitude of the correlation between transport and the rural economy, but is not able to examine whether or not a causal relationship exists. Chapters IX and X have made it clear that qualitative techniques are appropriate for demonstrating the way transport affects the rural economy and vice versa. More importantly, the qualitative analysis as demonstrated in Chapter IX enables transport planners and policy makers to thoroughly understand the political and economic process of transport development and its interaction with the changing environment of rural areas, including the identification of those who gain the most benefits from, and those who have been left behind in, the process of transport development. The analyses in Chapter IX and X have also indicated that transport planning and evaluation should be approached in a multidisciplinary way, and cannot any more be the sole domain of transport engineers and economists.

13.2.5 Task Five: Conceptualisation of the Linkages between Transport Development and the Rural Economy

The final and most important task was to integrate the results of the whole analysis for the purpose of conceptualising the linkage between transport development and the rural economy. The model, as schematised in Figure 11.1, was elaborated in Chapters XI and XII. Chapter XI specifically conceptualised the inner part of the model explaining how transport development should be understood in the context of the rural economy. At the very centre of the model, transport improvement is conceptualised as conscious and systematic efforts to improve rural accessibility and mobility. This understanding is embedded in development issues in highly complex ways. The process of transport improvement, through enhancing rural accessibility and mobility and, in association with other development sectors, promotes changes in the rural opportunity set. The rural economy is a complex system which, in interaction with other economies (i.e. the regional economy), responds to these changes in dynamic ways.
Chapter XII conceptualised the outer part of the model with the main intention of broadening the understanding of what transport development is about and how it links with wider development issues. The core argument of this part of the model is that institutions constitute the critical variable in development and that an appropriate institutional framework is required to ensure an effective relationship between transport development and the rural economy. Two types of institutions, state and societal, shape the pathway of development, including transport, for the rural economy. State institutions determine organisations and policies for the transport sector, but also affect the creation of rural economic opportunities through their influence on other development sectors. On the other hand, societal institutions lay the basis for the way that society engages in transport development, and shapes the rationality of people when responding to rural opportunities brought about by various development forces. The present thesis acknowledges that the state remains an important player in shaping the agenda for the transport sector. This agenda should be based on a systematic recognition of societal institutions, their organisations and initiatives.

The conceptualisation of the linkage between transport development and the rural economy ended with the recommendation of five key strategies for rural transport development focusing on strengthening each stage of the process: (i) laws and regulations, (ii) organisations, (iii) policies, (iv) planning and implementation, and (v) evaluation mechanisms (Sub-section 12.3). While the operational implications of the first three aspects have been discussed above, my focus here is to recommend a more coordinated effort in the design of planning and evaluation tools for rural transport policy and programmes. Let me put this point in the context of rural roads. At the international agency level, the World Bank has recently implemented the fourth generation of HDM that incorporated measures to appraise "benefits" for low-volume rural roads (Gannon and Lebo, 1999; Veeraragavan and Rathnakara Reddy, 2003). The DFID has recently engaged in research focusing on the inclusion of social benefits in transport planning (Transport Research Laboratory, 2003). The ILO has also developed its own method based on rural accessibility measures (Dennis, 1998; Donnges, 2003). While HDM-4 (as it is associated with World Bank loans) has commonly been the tool to prioritise road proposals in developing countries, coordinated and integrated action at the international agency level is required to promote a more appropriate planning and evaluation tool for rural transport based on improving rural accessibility and mobility.
Although I have developed the model linking transport development and the rural economy, I would never claim to have filled the gaps in our knowledge on this theme. The model, however, may serve as a tool for policy makers in designing transport development institutions as well as implementation procedures for rural transport development. Research is required to test the applicability of the model in other regions and continents.

13.3 Implementing the Outcomes: A Proposal for Action

The task of implementing the results of this research will extend well beyond the bounds of this thesis. It is therefore important to provide guidelines and examples. The key for implementation is to promote an integrated approach at all scales of institutions. The integration work should involve stakeholders within the transport sectors but also key players in rural development sectors in which the aspirations of rural people can be fairly represented. As this thesis has dealt with the analysis at the national and district levels in addition to the village and household level, selected priorities are identified for implementation at these levels.

At the national level, integration across agencies responsible for transport and rural development needs to be strengthened. This can be done through the creation of a national coordination mechanism that aimed at promoting integrated approaches in the process of transport and rural development. The coordination involves state agencies related to transport and rural development (e.g. the Ministry of Transport, the Ministry of Public Works, the Ministry of Agriculture, the Ministry of Maritime and Fishing, the Ministry of Education, the Ministry of Health, BKKBN, Statistics Indonesia, Indonesian Science Institution), but also from non-governmental organisations involved in rural transport development (e.g. Indonesian Transport Society, Indonesian National Forum for Rural Transport and Development). Selected national universities may also be incorporated in this coordination process. The Coordinator Ministry for Economic Affairs, the Coordinator Ministry of Social Welfare or, Bappenas may function as the lead agency in this coordination process.
One practical example is the creation of a coordination board for transport and rural development. The board’s vision would be: “Improving rural accessibility and mobility through an integrated transport and rural development approach”. Five main objectives of the board would be: (i) to ensure that all issues related to improving rural accessibility and mobility are considered appropriately by policy making organisations at the central government level, (ii) to promote coordinated and integrated actions for the national policy and planning of transport and rural development, (iii) to work with district governments to develop strategies for an integrated district transport and rural development, (iv) to provide effective evaluation mechanisms for agencies or people involved in the implementation of the transport and rural development process, and (v) to promote research on improving rural accessibility and mobility through effective transport and rural development approaches. The various themes mentioned in the previous section, such as the effective incorporation of rural transport systems into any transport law and regulation, national coordination of the data collection and planning process and, the assistance to district governments in developing their District Regulation for Transport are among the real issues to be addressed by this board.

At the district level, I suggest the creation of a district forum for transport and rural development. This forum can be less formal than the similar body at the national level as it may accommodate rural people and various community organisations. The form of this organisation, however, is contextualised by the structure of state and societal institutions in the district. District governments through Bappeda together with local universities may play a leading role in this forum, but strong political support should come from the people’s representative council of districts. The tasks of this forum can be focused on: (i) investigating problems of accessibility and mobility at the village level, (ii) providing capacity building support for district and village governments as well as rural communities in solving these problems, (iii) promoting the operation of various transport modes as rural public transport, (iv) assisting district governments in developing regulations, policies and programmes for transport and rural development (e.g. a credit scheme for farmer organisations), and (v) networking rural communities with other organisations working in transport and rural development sectors in other districts or regions.
At the village and household level, the key issue is to promote strong village and household institutions. These institutions are the main partners of district and central governments in any effort to improve rural accessibility and mobility. Any attempt for transport and rural development at the village level must be supported along with the efforts of strengthening village and household organisations. Several practical initiatives may include: (i) the provision of credit markets, (ii) the provision of market information, (iii) the guarantee of agricultural property rights, (iv) access to non-farm employment, (v) access to better education and, (vi) access to reliable health services. These efforts need to be integrated with a series of attempts to increase the capacity of village leadership to participate in the district policy and decision making process. Following on from this, increasing the capacity of household leadership to participate in the village decision making process is necessary.

13.4 Concluding Remarks

Throughout this thesis I have demonstrated that the modern approach to transport development has done little to promote the Indonesian rural economy. Huge investments in transport by international development agencies and the Indonesian government have been made without an appropriate understanding of the characteristics of rural areas. My investigations of the roots of this mistake, brought me to four important factors. First, at the international and national policy making level, doctrines are chosen, organisations are created and policies are designed, all based on an "adopted" neo-classical assumption and without an appropriate understanding of the specific characteristics of transport and the rural economy. Second, at the local government level, there are few mechanisms available for people engaging in the practical development process to inform transport policy makers of the particular benefits and/or limitations of particular transport and rural development initiatives. Third, at the village level, rural people have been mainly passive agents, without opportunities to determine the transport intervention that they mostly need. Fourth, at the household level, rural individuals are not always able to respond to the opportunities created by transport development. All these have contributed to the failure of transport development to effectively promote the rural economy. These practices need to be stopped. The circular causation of transport development, as introduced in the preamble of this thesis (Figure 1.1) needs to be recognised and
strengthened, and rural people have to be the primary partner of any rural transport initiatives. Accordingly, the conceptual model established in this thesis (Figure 11.1) offers a tool to reformulate the current transport development approach.

I have found that doctrines, organisations and policies of (transport) development effectively determine the way transport improvements are distributed and significantly influence the way rural people respond to the opportunity set provided by transport improvements. I have also found that, while rural transport through accessibility and mobility is significant in contributing to the variability of rural welfare, the benefits of transport improvements have been skewed against rural areas and more specifically against the rural poor. The transport development process has failed to address the problems associated with the failure of markets in rural areas, deriving from asymmetries of information between individuals, and high transaction costs in rural markets. Rural people enjoy greater economic opportunities, but outsiders take many of the benefits away, leaving a smaller proportion of benefits to be competed for by rural people. For transport development to be effective for the rural economy, there is a great need for development doctrines, transport organisations and policies to understand these problems more clearly.

In the end, an effective relationship between transport development and the rural economy means an integrated development approach to improving rural accessibility and mobility supported by an environment conducive to greater recognition and participation of societal institutions in the development process. The integrated approach combines initiatives from both state and societal organisations, gives equal weight to efficiency and equity and focuses transport improvements on improving both accessibility and mobility for the rural economy. There is a crucial need for the transport sector to go beyond its conventional boundaries and to incorporate wider development perspectives that include the social, political, cultural as well as economic relationships of rural regions and rural people. But, the very core of this new approach is to engage “together” with rural people in the effort to improve rural accessibility and mobility.
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Appendix 1: The Outputs of the Multivariate Correlation Analysis on Transport Condition and Welfare (supporting materials for Section 7.2)
Region 1: Tana Toraja

Confirmatory method

**Model Summary**

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<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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a. Predictors: (Constant), PUBTRANS, PAVEROAD, TIME, COM.OWN, VEH.OWN, DISTANCE

b. Dependent Variable: PREWELFR

**ANOVA**

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a. Predictors: (Constant), PUBTRANS, PAVEROAD, TIME, COM.OWN, VEH.OWN, DISTANCE

b. Dependent Variable: PREWELFR

**Coefficients**

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a. Dependent Variable: PREWELFR
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a. Dependent Variable: PREWELFR

### Normal P-P Plot of Regression Stanc

Dependent Variable: PREWELFR

![Normal P-P Plot](image)

### Scatterplot

Dependent Variable: PREWELFR

![Scatterplot](image)

### Stepwise method

### Model Summary

<table>
<thead>
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<th>Model</th>
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a. Predictors: (Constant), DISTANCE

b. Predictors: (Constant), DISTANCE, VEH.OWN

c. Dependent Variable: PREWELFR

---

392
### ANOVA

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- Predictors: (Constant), DISTANCE, VEH.OWN
- Dependent Variable: PREWELFR

### Coefficients

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- Dependent Variable: PREWELFR

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- Predictors in the Model: (Constant), DISTANCE
- Predictors in the Model: (Constant), DISTANCE, VEH.OWN
- Dependent Variable: PREWELFR
Region 2: Mainland Pangkajene Kepulauan

Confirmatory method

### Model Summary

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<sup>a</sup> Predictors: (Constant), PUBTRDIS, VEHOWN, PAVEROAD, DISTANCE, COMOWN, TIME

<sup>b</sup> Dependent Variable: PREWELFR

### ANOVA

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<sup>a</sup> Predictors: (Constant), PUBTRDIS, VEHOWN, PAVEROAD, DISTANCE, COMOWN, TIME

<sup>b</sup> Dependent Variable: PREWELFR

### Coefficients

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<sup>a</sup> Dependent Variable: PREWELFR
Residuals Statisticsa

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a. Dependent Variable: PREWELFR

Normal P-P Plot of Regression Stanc

Scatterplot

Dependent Variable: PREWELFR

Stepwise method

Model Summaryc

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a. Predictors: (Constant), DISTANCE
b. Predictors: (Constant), DISTANCE, COMOWN
c. Dependent Variable: PREWELFR

395
### ANOVA

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a. Predictors: (Constant), DISTANCE

b. Predictors: (Constant), DISTANCE, COMOWN

c. Dependent Variable: PREWELFR

### Coefficients

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a. Dependent Variable: PREWELFR

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a. Predictors in the Model: (Constant), DISTANCE

b. Predictors in the Model: (Constant), DISTANCE, COMOWN

c. Dependent Variable: PREWELFR
Region 3: Pangkajene Kepulauan Islands

Confirmatory method

Model Summary

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a. Predictors: (Constant), PORT, PUTRANSD, VEHOWN, COMOWND, DISTANCE, TIME

b. Dependent Variable: PREWELFR

ANOVA

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a. Predictors: (Constant), PORT, PUTRANSD, VEHOWN, COMOWND, DISTANCE, TIME

b. Dependent Variable: PREWELFR

Coefficients

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a. Dependent Variable: PREWELFR
Residuals Statistics

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a. Dependent Variable: PREWELFR

Normal P-P Plot of Regression Stanc

Scatterplot

Dependent Variable: PREWELFR

Stepwise method

Model Summary

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a. Predictors: (Constant), PUTRANSD
b. Dependent Variable: PREWELFR
**ANOVAp**

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a. Predictors: (Constant), PUTRANSD  
b. Dependent Variable: PREWELFR

**Coefficientsq**

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a. Dependent Variable: PREWELFR

**Excluded Variablesp**

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a. Predictors in the Model: (Constant), PUTRANSD  
b. Dependent Variable: PREWELFR
Region 4: Mainland Sorong

Confirmatory method

### Model Summary

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a. Predictors: (Constant), PUBTRDIS, VEHOWN, PAVEROAD, TIME, COMOWN, DISTANCE

b. Dependent Variable: PREWELFR

### ANOVA

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a. Predictors: (Constant), PUBTRDIS, VEHOWN, PAVEROAD, TIME, COMOWN, DISTANCE

b. Dependent Variable: PREWELFR

### Coefficients

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<th>Model</th>
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a. Dependent Variable: PREWELFR
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A: Dependent Variable: PREWELFR

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### Normal P-P Plot of Regression Stanc

Dependent Variable: PREWELFR

---

### Scatterplot

Dependent Variable: PREWELFR

---

### Stepwise method

---

### Model Summary

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A: Predictors: (Constant), COMOWN

B: Predictors: (Constant), COMOWN, TIME

C: Dependent Variable: PREWELFR
## ANOVA

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a. Predictors: (Constant), COMOWN  
b. Predictors: (Constant), COMOWN, TIME  
c. Dependent Variable: PREWELFR

## Coefficients

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<th>Model</th>
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a. Dependent Variable: PREWELFR

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a. Predictors in the Model: (Constant), COMOWN  
b. Predictors in the Model: (Constant), COMOWN, TIME  
c. Dependent Variable: PREWELFR
Region 5: Sorong Islands

Confirmatory method

Model Summary

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a. Predictors: (Constant), PORT, VEHOWN, DISTANCE, COMOWN, PUBTRDIS, TIME
b. Dependent Variable: PREWELFR

ANOVA

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a. Predictors: (Constant), PORT, VEHOWN, DISTANCE, COMOWN, PUBTRDIS, TIME
b. Dependent Variable: PREWELFR

Coefficients

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a. Dependent Variable: PREWELFR
Residuals Statistics

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a. Dependent Variable: PREWELFR

Normal P-P Plot of Regression Stanc

Dependent Variable: PREWELFR

Scatterplot

Dependent Variable: PREWELFR

Stepwise method

Model Summary

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a. Predictors: (Constant), COMOWN
b. Predictors: (Constant), COMOWN, PORT
c. Dependent Variable: PREWELFR
### ANOVA

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a. Predictors: (Constant), COMOWN  
b. Predictors: (Constant), COMOWN, PORT  
c. Dependent Variable: PREWELFR

### Coefficients

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a. Dependent Variable: PREWELFR

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a. Predictors in the Model: (Constant), COMOWN  
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c. Dependent Variable: PREWELFR
Region 6: Maluku Tenggara Barat Islands

Confirmatory method

Model Summary

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a. Predictors: (Constant), PORT, DISTANCE, COMOWN, VEHOWN, PUBTRDIS, TIME
b. Dependent Variable: PREWELFR

ANOVA

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a. Predictors: (Constant), PORT, DISTANCE, COMOWN, VEHOWN, PUBTRDIS, TIME
b. Dependent Variable: PREWELFR

Coefficients

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a. Dependent Variable: PREWELFR
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a. Dependent Variable: PREWELFR

Normal P-P Plot of Regression Stanc

Scatterplot

Dependent Variable: PREWELFR

Stepwise method

Model Summary

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<th>Model</th>
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a. Predictors: (Constant), PUBTRDIS
b. Predictors: (Constant), PUBTRDIS, COMOWN
c. Dependent Variable: PREWELFR
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a. Predictors: (Constant), PUBTRDIS  
b. Predictors: (Constant), PUBTRDIS, COMOWN  
c. Dependent Variable: PREWELFR

## Coefficients

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a. Dependent Variable: PREWELFR

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a. Predictors in the Model: (Constant), PUBTRDIS  
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c. Dependent Variable: PREWELFR
Region 7: Mainland Maluku Tenggara Barat

Confirmatory method

Model Summary

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a. Predictors: (Constant), PUBTRDIS, VEHOWN, COMOWN, PAVEROAD, TIME, DISTANCE

b. Dependent Variable: PREWELFR

ANOVA

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a. Predictors: (Constant), PUBTRDIS, VEHOWN, COMOWN, PAVEROAD, TIME, DISTANCE

b. Dependent Variable: PREWELFR

Coefficients

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a. Dependent Variable: PREWELFR
Residual Statistics

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a. Dependent Variable: PREWELFR

Normal P-P Plot of Regression Stanc

Scatterplot

Stepwise method

Model Summary

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a. Predictors: (Constant), PUBTRDIS

b. Dependent Variable: PREWELFR
### ANOVA

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a. Predictors: (Constant), PUBTRDIS  
b. Dependent Variable: PREWELFR

### Coefficients

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a. Dependent Variable: PREWELFR

### Excluded Variables

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a. Predictors in the Model: (Constant), PUBTRDIS  
b. Dependent Variable: PREWELFR
Appendix 2: The Outputs of the Multivariate Correlation Analysis on Travel Distance and Welfare (supporting materials for Section 7.2)
Region 1: Tana Toraja

Confirmatory method

Model Summary

<table>
<thead>
<tr>
<th>Model</th>
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a. Predictors: (Constant), LOCMRK, HOSPITAL, JUNHIGHS, HEALTHCL, SENHIGHS, REGMRKT

b. Dependent Variable: PREWELFR

ANOVA

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<tr>
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a. Predictors: (Constant), LOCMRK, HOSPITAL, JUNHIGHS, HEALTHCL, SENHIGHS, REGMRKT

b. Dependent Variable: PREWELFR

Coefficients

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<tr>
<th>Model</th>
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a. Dependent Variable: PREWELFR
Residuals Statistics

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Note: a. Dependent Variable: PREWELFR

Scatterplot

Stepwise method

Model Summary

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a. Predictors: (Constant), HOSPITAL
b. Predictors: (Constant), HOSPITAL, SENHIGHCS
c. Dependent Variable: PREWELFR
### ANOVA

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^a. Predictors: (Constant), HOSPITAL  
^b. Predictors: (Constant), HOSPITAL, SENHIGHS  
^c. Dependent Variable: PREWELFR

### Coefficients

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<td>Beta</td>
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^a. Dependent Variable: PREWELFR

### Excluded Variables

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^a. Predictors in the Model: (Constant), HOSPITAL  
^b. Predictors in the Model: (Constant), HOSPITAL, SENHIGHS  
^c. Dependent Variable: PREWELFR
Region 2: Mainland Pangkajene Kepulauan

Confirmatory method

Model Summary

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a. Predictors: (Constant), LOCMRKT, HOSPITAL, HEALTHCL, REGMRKT, JUNHIGHS, SENHIGHS

b. Dependent Variable: PREWELFR

ANOVA

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<tr>
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a. Predictors: (Constant), LOCMRKT, HOSPITAL, HEALTHCL, REGMRKT, JUNHIGHS, SENHIGHS

b. Dependent Variable: PREWELFR

Coefficients

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<tr>
<th>Model</th>
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<th>Sig.</th>
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a. Dependent Variable: PREWELFR
Residuals Statistics

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a. Dependent Variable: PREWELFR

Normal P-P Plot of Regression Sta

Dependent Variable: PREWELFR

Scatterplot

Dependent Variable: PREWELFR

Stepwise method

Model Summary

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<tr>
<th>Model</th>
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a. Predictors: (Constant), REGMRKT

b. Dependent Variable: PREWELFR
### ANOVA

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- Predictors: (Constant), REGMRKT
- Dependent Variable: PREWELFR

### Coefficients

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- Dependent Variable: PREWELFR

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- Predictors in the Model: (Constant), REGMRKT
- Dependent Variable: PREWELFR