

Poverty and Transport

A report prepared for the World Bank
in collaboration with DFID

*David Booth
Lucia Hanmer
Elizabeth Lovell*

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Overseas Development Institute

Portland House
Stag Place
London SW1E 5DP
Tel: +44 (0) 171 393 1600
Fax: +44 (0) 171 393 1699

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Acronyms

CDF	Comprehensive Development Framework
IBRD	International Bank for Reconstruction and Development
IDA	International Development Assistance
ILO	International Labour Organisation
IMF	International Monetary Fund
IMT	Intermediate means of transport
MV	Motorised vehicle
NGO	Non-Governmental Organisation
NMV	Non-motorised vehicle
OECD	Organisation for Economic Co-operation and Development
OED	Operations Evaluations Department (World Bank)
SIDA	Swedish International Development Agency
WDR	World Development Report
WHO	World Health Organisation
WTO	World Trade Organisation

Executive Summary

This is the report of a study commissioned by the World Bank and DFID as an input into current thinking on the selection of instruments for inclusion in poverty-reduction strategies. The report contains the results of a survey of issues and evidence on the actual and potential contributions of the transport “sector” – or the field of possible transport interventions – to poverty reduction at the country level. It is not a contribution to specialist transport research or operational work, but an initial “take” on transport-and-poverty issues by a multi-disciplinary team of applied poverty researchers.

The study draws on a comprehensive search of published and grey literature in the relevant fields, with special emphasis on the interface between transport studies and topics linked to poverty or the livelihoods of poor people. It benefited from the generous cooperation of a number of distinguished transport specialists, who helped to guide the literature search and contributed ideas and feedback. .

The analytical approach adopted begins by exploring points of entry for transport conditions in a multi-dimensional conceptualisation of poverty. The sustainable livelihoods framework is then used to identify different ways in which transport interventions and policies might contribute to improved conditions for poor people in developing countries. This discussion occupies the main sections of Chapter 1.

There are five further chapters, which continue to make use as far as possible of the sustainable livelihoods concepts. This is least effective in Chapter 2, which addresses the “big picture”, probing the role of transport conditions and possible interventions in creating the conditions for poverty reduction through pro-poor growth. It is argued that the degree to which transport investments may be expected to improve the livelihoods of poor people should ideally be considered in a general-equilibrium context, using simultaneous-equation models, which has been done in at least one case, but with non-generalisable results. In the absence of such analysis, a number of more partial questions can be considered, with policy-relevant but technically limited results. The findings on transport conditions as a factor in trade development are particularly striking.

Chapters 3 and 4 provide overviews of current knowledge on transport issues in the livelihoods of the rural and urban poor respectively. There are remarkably strong conclusions about the scale and type of the transport burdens on poor people in both cases, and also some striking gaps in current knowledge that need to be filled before sensible policy advice can be offered. In the past, transport investments designed to assist poor communities have frequently missed the mark, either by emphasising the wrong scale of transport problem, or by emphasising transport infrastructure to the exclusion of transport services. Not all of the economic and social effects of investments in rural transport infrastructure are benign.

Access and mobility problems facing poor people in urban areas are becoming increasingly important in several senses. Although there are a number of policy measures that suggest themselves for addressing these problems – negatively a de-emphasis on private motorised transport and, positively, the careful redirection or reinstatement of public subsidies that meet the transport needs of the poor – many important things remain unknown about the role of transport in the livelihoods of the urban poor outside Latin America.

Gender-differentiated issues are considered throughout the study. However Chapter 5 is devoted to synthesising the rich seam of research on gender dimensions affecting the poverty-transport nexus. Women face distinctively heavy transport burdens, and are less likely to benefit from transport interventions than men. As with rural and urban livelihoods more generally, some of the solutions to women’s transport problems may be found in non-transport measures, notably those based on increased proximity of essential services.

In Chapter 6, the report draws together the policy implications of some of the preceding analysis and enriches these with further recommendations for pro-poor transport policies drawn from the surveyed literature. Nine key areas are identified in which well-designed transport policies can be expected to help the poor and contribute to the meeting of poverty-reduction targets. The report concludes with a discussion of two further policy topics: the advantages and disadvantages of labour-intensive rural infrastructure as an instrument of poverty reduction, and the trade-offs and dilemmas faced in reconciling the concerns of public safety and those of affordable transport services for the poor.

1. Introduction: focusing on transport through the lens of poverty

1.1 Character and context of the study

1.1.1 Responding to the challenge of poverty reduction

The international community has set itself ambitious targets amounting to a substantial reduction in world poverty during the early decades of the 21st century. It is recognised that meeting these objectives is going to be no easy task – especially in the areas of the world that have performed poorly in poverty reduction in recent times. There is a corresponding need for a critical re-examination of methods and instruments of development, with a stronger focus than in the past on their effectiveness in reducing poverty. In the coming years, no sector or area of development activity can expect to be exempted from the requirement to demonstrate explicitly whether and how it contributes to the meeting of poverty-reduction objectives.

This study represents an initial response to this challenge as it affects the field of transport. It contains the results of a survey of issues and evidence on the actual and potential contributions of the transport “sector” and transport interventions to poverty reduction. It reflects an effort to interrogate the field of transport research and policy from the point of view of the needs and prospects of poor people in the developing world, in as far as these are captured by current general thinking on poverty. It is not a contribution to specialist thinking on transport, but an initial “take” on transport-and-poverty issues by a multi-disciplinary team of applied poverty researchers.

The work was commissioned by the World Bank in collaboration with DFID. It forms part of a wide range of initiatives being taken by the Bank to 1) improve qualitative and quantitative understanding of the linkages between sector-level interventions and the welfare outcomes for poor households; and 2) assist countries in the development of their strategies for poverty alleviation by providing practical advice on issues, diagnosis, analysis, guidance on public actions, and evaluation. The complete terms of reference are contained in Appendix 1.

1.1.2 PRSPs and the focus on poverty reduction at country level

The views expressed in the report are those of the authors and should not be attributed to the World Bank or DFID. Nevertheless, our analysis is embedded in an increasingly shared set of understandings about the form and content of poverty-reduction efforts at the beginning of the new century. A number of such common assumptions affect the approach increasingly being taken to poverty-reduction efforts at the country level.

First, it is widely agreed that development assistance should be based on *partnership* between donor agencies and developing countries, with rights and obligations on both sides. Poverty reduction should be entered into as a common endeavour (DAC, 1999).

Second, partnership implies a change of donor behaviour. Greater *donor co-ordination* is needed with all donors pooling their resources and efforts behind a common framework for poverty reduction that is devised and led by the recipient government. This implies that donors should “[move] away from planting their flags on specific projects towards supporting a country’s overall development programme through a common pool of resources” (WDR, 2000: S-23).

Third, *sector-wide* approaches are generally held to be more consistent with a partnership approach to poverty reduction strategy than the traditional project approach. A sector approach may be expected to have a wider and more durable impact on poverty outcomes than a more narrowly targeted one, although this cannot be guaranteed.

Fourth, it is recognised that, to reduce poverty, interventions must be planned and co-ordinated *across sectors*. For example improvements in child survival are linked to improvements in female education; access to primary health care services; and, access to clean water and sanitation. This implies that sectoral strategies should be co-ordinated so that the poverty reducing impact of cross-sectoral linkages can be exploited (WDR, 2000 S-24).

Fifth, the role of *consultation* has taken on new importance. Experience suggests that policy implementation is more successful when policy-formulation processes identify the key stakeholders at the national, sectoral, district and community levels and draw them into the analysis of the problems to be addressed and the design of appropriate responses.

Recent developments in the international scene as it affects the poorest and most highly-indebted countries have helped to mainstream these understandings and give them a higher profile. Of particular importance is the agreement reached at the IMF-World Bank annual meeting in September 1999 to put poverty reduction at the heart of the programmes to be supported by the international community in the poorest countries.

As is well known, the IMF’s new Poverty Reduction and Growth Facility (PRGF) and other country lending operations by the Bank and the Fund will in future be based on the analysis and goals set out in a Poverty Reduction Strategy Paper (PRSP). The PRSP will be prepared in consultation with the Bank and Fund but the PRSP concept is premised on the importance of genuine country ownership for successful policy implementation. The goal is therefore for the PRSP to be government-led, poverty-focused and based on an open consultative process that extends beyond government and donor stakeholders to encompass civil society.

A major contribution expected of a PRSP is to set out how the country concerned can make its public expenditure more focused on poverty reduction and more

effective in improving outcomes for poor people. All sectors will have to re-examine their expenditure and budget allocations from a new standpoint and possibly re-prioritise accordingly. The ultimate objective behind the commissioning of this study is to generate the kinds of information and understanding that would assist transport sectors within countries in this regard.

1.1.3 Overview of methods and findings

The study is based on a comprehensive search of written, printed and Internet, sources, enriched by a rapid, selective consultation with a range of transport experts and specialists. The combination of literature search and consultation was intended to uncover in a quick and effective way the main lines of what is known, and what remains unclear or in need of further research, about the links between transport and poverty. Ultimately, the exercise is concerned to assess the potential of transport policies and related non-transport measures to contribute effectively to poverty reduction.

The literature survey entailed key-word searches of academic databases in order to access material relating to the nexus between transport issues on the one hand and poverty and poverty reduction on the other. Key word searches were undertaken for: transport & health; transport & education; (income generation/ poverty/ poverty alleviation/ income redistribution/ survival strategies/ social reform) & (transport/ motor vehicles/ cars/ buses/ trains/ railways/ public transport/ bicycles); and (gender/ women) & words associated with transport. The intention was to include perspectives, information and analysis of the links between transport and the attainment of goals related to poverty reduction from non-transport sectors – for example, increasing school enrolment rates, access to health service, female empowerment and improvements in agricultural productivity. Our search encompassed both quantitative and qualitative information on poverty and transport. We drew on Participatory Poverty Assessments to gain poor people's perspectives on transport and transport services.

The researchers visited specialist Websites, and consulted transport experts, personally or by telephone and e-mail. The transport experts directed us to specialist transport literature and grey material that links transport to poverty and many of them were extremely generous in providing us with other advice, guidance and feedback in the preparation of the study.¹

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Our work has led us to believe that, in an overall sense, the field of transport is well placed to contribute to the effort to focus and re-orient donor-developing country partnerships towards achieving poverty reduction. From the perspective of those concerned with poverty-reduction strategies, there is a remarkable abundance of research and hard thinking on certain key topics, although there are also some equally surprising gaps.

For example, a wealth of literature charts the impact of transport interventions on rural communities. Much of this work can be traced back in some way to the origins of the Intermediate Technology Development Group in the 1970s, which generated several groups and organisations which focused on the transport needs of poor communities, particularly in rural areas, in developing countries. In the light of this work, by the mid 1980s doubt was cast on the commonly-held belief that transport interventions in general and rural roads in particular bring automatic benefits to poor people (Howe and Richards, 1984).

The ILO drew the conclusion from a study of transport means, patterns and policies that “transport planning in most developing countries takes insufficient account of the needs and requirements of the bulk of the rural population” (Barwell et al., 1985:1). These and other findings influenced institutional and individual research agendas, resulting in fifteen years of publications which document the actual need for transport and use of transport by communities in many developing countries.

There are some notable gaps in the literature. For example, more is known about roads and paths than about waterways. More is known about the influence of gender on transport needs and interventions in Africa than in Asia. More is known about how to plan transport to meet the needs of the rural than the urban poor. And, more is known about the relationship between transport and access to social services in rural than in urban areas.

There is less knowledge than might be expected about the poverty impacts of development assistance and government spending on transport infrastructure. As van de Walle (1999) notes, “despite a general consensus on the importance of rural roads – including much anecdotal evidence and strong priors – there is surprisingly little hard evidence on the size and nature of benefits from such infrastructure” (1). Especially surprising is perhaps the lack of hard evidence on the relationship between health and education outcomes and improvements/deterioration in transport conditions.

The importance of such lacunae should not be overstated, however. An overall finding of the study is that enough knowledge and experience exists to make real headway on transport and poverty. With existing knowledge it should be possible to design transport interventions that are an integral part of a national poverty reduction strategy and contribute significantly to improving poverty outcomes.

The next section provides discussion of the scale, scope and justification of existing donor-supported transport interventions. The remainder of the chapter is then devoted to setting out the conceptual framework that is proposed for analysing the linkages between transport and poverty.

1.2 Current donor assistance to the transport sector in developing countries

Donors have a long history of emphasising the transport sector in the achievement of development goals. In the 1970s and 1980s the emphasis on integrated rural development led to an infusion of development finance into rural infrastructure, particularly rural roads. Transport was seen as the key to releasing the potential of rural areas. Between 1977 and 1984, World Bank lending for transport nearly doubled and the rural share of total roads financed increased from 38 per cent in 1966 to 93 per cent in 1977 (Edmonds, 1998).

Donor spending and focus on infrastructure is high, as Table 1.1 shows, though from the data provided by the DAC it is not possible to tell the extent to which rural infrastructure spending is favoured. Commitments to economic infrastructure are 23 per cent, 33 per cent and 43 per cent of the total aid commitments of the DAC members, the World Bank and Regional Development Banks respectively.

**Table 1.1: Commitments of development assistance by sector, 1996
(per cent of total commitments)**

	DAC %	\$ million	World Bank %	RDBs %
Social and Administrative Infrastructure	30	20117	35.5	26.2
<i>of which health</i>	6	4023	7.9	4.2
<i>Education</i>	10.8	7242	7.8	3.3
Economic Infrastructure	23.1	15490	33	42.6
<i>of which transport and communications</i>	13.9	9321	12.2	18.9
Production	13.1	8784	14.2	13.8
Other	33.8	22665	17.3	17.4

Notes: RDBs are Regional Development Banks, African Development Bank, Asian Development Bank and Inter-American Development Bank

Source: Table 14 (A37) and Table 19 (A46) in DAC, 1998

In 1996 transport and communications accounted for over half of the DAC's total commitment to economic infrastructure – \$9321 million overall, more than was spent on health or education. In 1999 the World Bank spent \$3,022 million on transport compared to \$2,014 million on education and \$1,726 on health, population and nutrition (World Bank, 2000).

Are these expenditures justified in poverty-reducing terms? Of the 28 transport interventions listed in the World Bank's 1999 Annual Report (World Bank, 2000), 14 are categorised as poverty-focused interventions. An adjustment operation is considered poverty focused if it eliminates distortions that disadvantage the poor, re-

orientates public expenditure towards the poor and/or supports programmes that provide safety nets or target specific groups of the poor (World Bank, 2000).

Table 1.2 gives details of the hypothesised linkages between Bank-supported transport interventions and poverty reduction in eleven countries. Future evaluations of these projects will be essential to verify whether the projects actually benefited the poor in the ways identified in the project description.

Table 1.2: Poverty focused transport projects

<i>Country</i>	<i>PTI¹</i>	<i>Description</i>
Bangladesh	No	IDA \$177 million. Dhaka's entire population but especially the urban poor will benefit from improved bus services, better pedestrian facilities and support for cycle rickshaws operating as feeder services and employing a large number of poor people.
Bangladesh	No	IDA\$20 million. This project will supplement the Second Rural Roads and Markets Improvement Maintenance project, designed to reduce rural poverty, by removing physical bottlenecks, reducing transport and marketing costs, creating employment and income generating opportunities and increasing institutional capacity for efficient rural infrastructure management.
Bangladesh	No	IDA \$6.3 million. This project will improve inland water transport operations and the effectiveness of sector agencies through institution building, a vessel safety improvement component, a waterways development component, and a country boat component to provide extension services to the country boat sector.
Bangladesh	Yes	IDA \$273 million. This project will provide and improve critical road links in the overall transport system and improve institutional capacity of the Roads and Highway Department in road maintenance, benefiting an estimated 22 million people.
Bolivia	No	IDA \$88 million. This project will improve transport conditions along a strategic north-south corridor, linking local Bolivian departments to Argentina and Paraguay, thus lowering transport costs, fostering economic development, improving incomes of the indigenous peoples, and establishing economic transport links between local and neighbouring territories.
Brazil	No	IBRD \$150 million. This project supports the development of a fully integrated urban transport system by transferring the ownership and management of the Salvador subdivision of the Brazilian Urban Transport Company system from federal government to state and municipality hands.

Colombia	No	IBRD \$137 million. This sustainable private-public partnership will improve transport conditions along a strategic road corridor linking Bogotá with Medellín and the ports on the north coast. Efforts will seek to reduce transport costs, maintain adequate private services to mobilise equity and debt finance for road improvements, and strengthen capacity for project preparation and policy implementation.
Croatia	No	IBRD \$101 million. This project will support modernisation and restructuring of the Croatian railway company in order to diminish its financial burden on the national budget and improve infrastructure.
Lao People's Democratic Republic	No	IBRD \$27.8 million. Critical basic infrastructure will be extended to two remote northern provinces, benefiting an estimated 52,000 people in 125 villages and district communities by helping to improve living standards and socioeconomic potential and to achieve gradual integration into the national economy.
Malawi	No	IDA \$30 million. This five-year project aims to help the government reform its road sector, in support of economic growth and diversification by reducing transport costs and improving access.
Nepal	Yes	IDA \$5 million. This learning and innovation credit aims to strengthen the institutional capacity of a decentralised local governance system in its planning and managing capabilities to improve the quality, efficiency, and sustainability of rural roads in selected districts with active participation of project beneficiaries.
Panama	No	IBRD \$85 million. This project will improve transport efficiency and safety, reduce traffic congestion, improve the administration and maintenance of roads and environmental impact analysis, as well as upgrade efficiency in the public road passenger transport industry.
Russian Federation	No	IBRD \$400 million. The loan will improve the selected high-priority road network on the federal road system, including in Siberia and the Far East, and improve contract management by the Russian Federation Federal Highway Administration.
Senegal ²	Yes	IDA \$90 million. An estimated 2 million people will benefit from improvements in the supply and performance of transport infrastructure, including services, in order to create an environment for improved economic growth through expanded mobility and reduced transport costs.

Notes: 1. Programme of Targeted Interventions. These projects include a specific mechanism for targeting the poor and/or the proportion of poor people among their beneficiaries is significantly larger than the proportion of poor people in the population (World Bank, 2000). 2. The Senegal project is not classified as poverty-focused, but only as a PTI.

Source: World Bank Annual Report, 1999 (World Bank, 2000)

Transport interventions may also qualify as pioneers of the new partnership approach (see Box 1.1). An OED evaluation of the sector's success in delivering on the principles of the CDF found that traditional infrastructure sectors performed better than others. On a scale of 1 (poor) to four (excellent) the Bank's contribution

to helping countries implement the principles of partnership in client countries were scored as 2.7 in the transport sector compared to about 3 for telecommunications and energy and 2 for education (World Bank, 2000).

Box 1.1: Transport interventions: pioneers of partnership

The Ghana Feeder Roads Project shows the benefits of ownership and strong partnerships among donors. The Department of Feeder Roads, the implementing agency, exhibited strong ownership and commitment during all stages of the project. The project's institutional development activities improved the department's work programming and resulted in a thriving construction and consultancy industry in Ghana. partnership with the Danish Co-operation Agency DANIDA and the UK Department for International Development was exceptional, with periodic formal meetings enhancing co-ordination.

Source: World Bank, 2000

From the donor point of view, transport sector interventions have much to recommend them. Transport is widely viewed as a catalyst for development and transport interventions can be hypothesised to be of direct and indirect benefit to poor people. Substantial funds can be disbursed through them (see Table 1.2) and the transport sector may be more capable than many other sectors of taking forward new partnership principles.

But what analytical and empirical support is there for the strength of the linkage between transport and poverty? Can transport interventions be understood, in a holistic way, as one component of a poverty reduction strategy? And how can donors and their developing country partners improve the poverty focus of transport spending?

We examine these issues in the subsequent chapters. First, it is necessary to undertake some ground-work. The next section discusses some implications for transport analysis of the modern, multi-dimensional conceptualisation of poverty. The final section outlines the framework we use to examine the links between transport interventions and poverty reduction.

1.3 Transport and the dimensions of poverty

Two things are implied by "focusing on transport through the lens of poverty". One is that transport issues are considered in a broader way, in relation to the range of poor people's needs and aspirations, than may have been the case in the past. The other is that the causal links between transport conditions and poor people's livelihoods are thought-through in a comprehensive and critical fashion.

It is now widely accepted that poverty is a multi-dimensional problem and needs to be addressed as such. There has been a degree of convergence on a many-stranded approach to the conceptualisation of poverty:

“poverty is a multidimensional phenomenon, encompassing inability to satisfy basic needs, lack of control over resources, lack of education and skill, poor health, malnutrition, lack of shelter, poor access to water and sanitation, vulnerability to shocks, violence and crime, lack of political freedom and voice” (World Bank, 1999).

The 2000/1 WDR conceptualises poverty as the complex interplay between empowerment, security and opportunity. For the present purpose, it may be useful to focus more narrowly on the dimensions that need to be included in a *definition* of poverty – that is, on the ultimate outcomes that anti-poverty action aims to influence. Current research and specialist opinion suggest six dimensions that need to be covered in a definition of poverty that is adequate to its purpose:

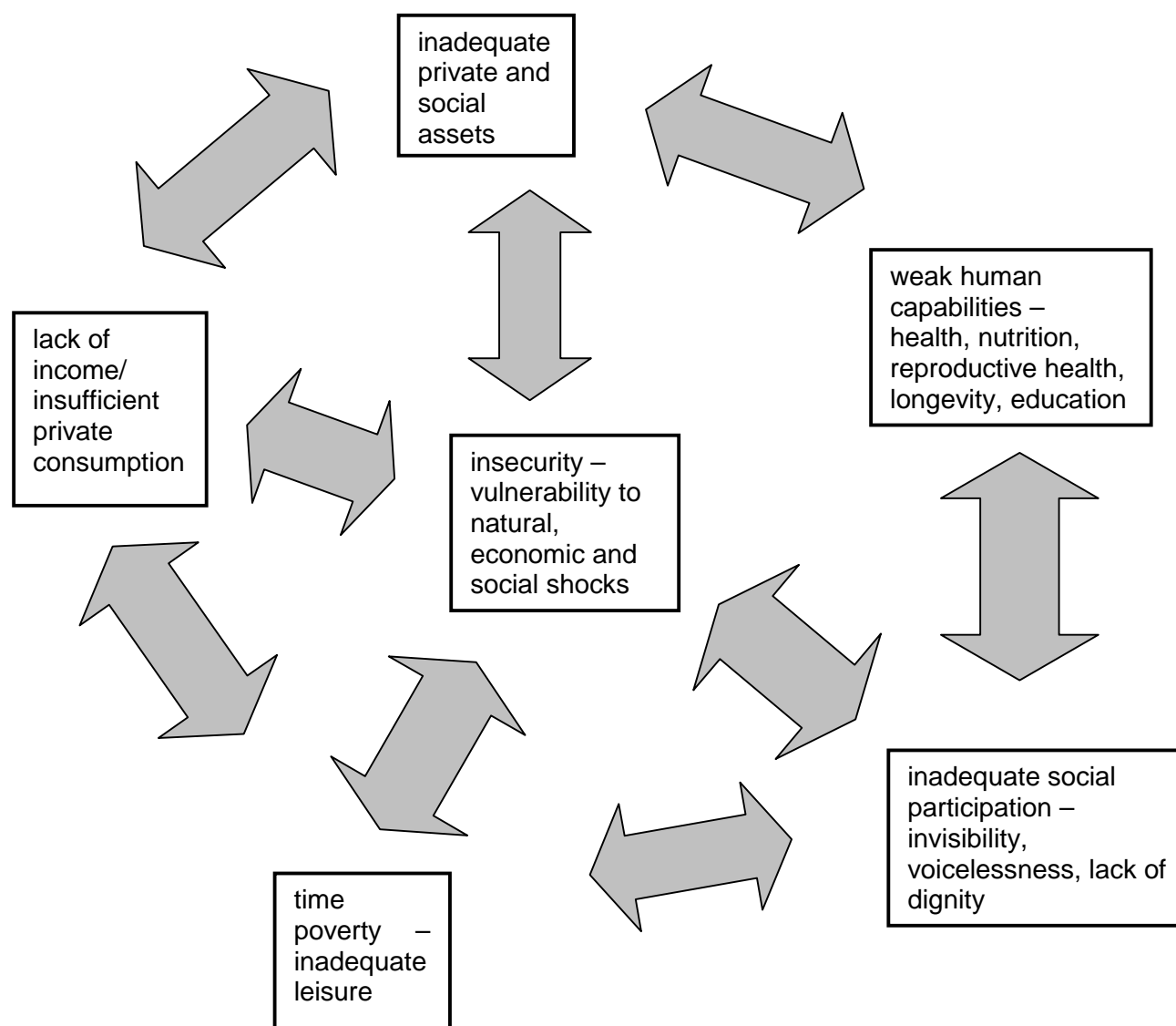
1. income/consumption;
2. human capabilities;
3. private and social assets;
4. time and its use;
5. attainment of minimal social participation;
6. security, in respect to risks, shocks and violence.

These dimensions and their interaction are illustrated in Figure 1.1.

Some important links between transport infrastructure and services and the different dimensions of poverty are immediately suggested:

- Inadequate infrastructure is a common symptom of the inadequacy of the poor’s *access to social (common property) assets*. Geographical isolation and difficulty of access by national roads, rail or other transport infrastructure can limit poor communities’ *participation in labour and product markets* and constrain their *economic opportunities*. Lack of affordable transport services or means of transport can mean that provision of transport infrastructure alone may not alleviate this constraint. In different ways, inadequate transport conditions can thus contribute to both the causes of *lack of income and consumption* and *inability to accumulate private and social assets*.
- Particularly in rural areas lack of transport infrastructure and services may constrain access to facilities and resources, such as schools, health centres and water, by the poor. Lack of transport services and infrastructure can thus contribute to *inability to strengthen human capabilities*.
- Poor people’s lack of *access to assets and technology* means that production for the market and for the household is time- and energy-intensive. The greatest proportion of the lowest productivity, most time-consuming work is done by women. Improving transport infrastructure and services can thus be an essential component of a poverty reduction strategy that aims to reduce time spent in low productivity, high energy-consuming tasks and address gender inequity.

Figure 1.1: Dimensions of poverty and their interaction



- Poverty creates an environment for individuals which separates them *from decision making* in the broader society, *participating* in cultural events and the *development of social relations*. Lack of transport services and infrastructure can be a contributory factor to creating an environment characterised by *voicelessness* and lack of *links with the broader society*.
- Lack of income and consumption, inability to accumulate private and social assets and inability to strengthen human capabilities all combine to increase *insecurity and vulnerability* to natural, social and economic shocks. Inadequate transport services and infrastructure constrain livelihood strategy options and

thus restrict poor people's capacity to cope with, respond to and adapt to risks, shocks and violence.

- Transport interventions and construction of new transport infrastructure can *exacerbate* exposure to risk. Increased mobility may be associated with exposure of communities to new disease through in- or out-migration. In some of the AIDS-afflicted countries, the highest HIV prevalence rates are found on major transport routes and truck drivers are frequently considered a high-risk group.
- The essential implication of a multidimensional definition of poverty is to underline the way *public actions in different sectors* – e.g. health, education, agricultural extension, water, roads and the environment – are needed to address the needs of the poor. Transport needs must be considered in relation to other needs that are conventionally seen as belonging to other sectors if their significance to poverty and its reduction is to be understood.

Closer consideration of the causal linkages suggested here is facilitated by a somewhat broader conceptual framework for analysing the livelihoods of poor people. This is introduced, with further discussion of the points of entry of transport issues, in the next section.

1.4 Transport issues in a sustainable livelihoods framework

1.4.1 The framework

The relevance of transport to poverty reduction is facilitated by the use of the sustainable livelihoods framework. This framework was developed as a result of a widespread dissatisfaction with the consumption/income approach to the analysis of rural poverty and what to do about it. It reflects the general trend towards a multi-dimensional poverty concept, but also originates in several more specific concerns.

The sustainable livelihoods framework has several advantages over the conventional neo-classical microeconomic approach to the household. First, it recognises that poor households derive their standard of living from a multitude of activities, that not all of these activities are marketed and that many may not easily be assigned a monetary value.

Second, it emphasises that a combination of assets is needed by poor people to sustain themselves and that their disimprovement depends on the accumulation of these assets in a sustainable way.

Third, the framework notices that material assets alone do not determine the standard of living and whether it increases or decreases. Assets include social and human capital as well as natural, physical and financial capital.

Fourth, it recognises that institutions – the government, the private sector, traditional and other organisations – and processes – policies, laws, customs, incentives and gender relations – affect both ownership and access to assets and their rate of return.

Fifth, the livelihoods framework recognises that structural conditions – conditions that are unlikely to change over the short run – will influence both the level and type of assets that the poor can draw on and may differentiate the prospects different socio-economic groups have for disimpooverishment in the same (national) institutional context.

Figure 1.2 illustrates the sustainable livelihoods framework. Our discussion of it draws in the main on Carney et al. (1999). The framework centres on analysis of *five types of asset*, indicated by the hexagonal figure and capital letters SHNFP. The assets are described in Box 1.2.

Box 1.2. Different forms of capital asset

Natural capital: The natural resource stocks from which resource flows useful for livelihoods are derived (e.g. land, water, wildlife, biodiversity, environmental resources).

Social capital: The social resources (networks, membership of groups, relationships of trust, access to wider institutions of society) upon which people draw in pursuit of livelihoods.

Human capital: The skills, knowledge, ability to labour and good health important to the ability to pursue different livelihood strategies.

Physical capital: The basic infrastructure (transport, shelter, water, energy and communications) and the production equipment and means which enable people to pursue their livelihoods.

Financial capital: The financial resources which are available to people (whether savings, supplies or credit or regular remittances or pensions) and which provide them with different livelihood options.

Source: reproduced from Carney (1998: 7), adapted from Scoones (1998).

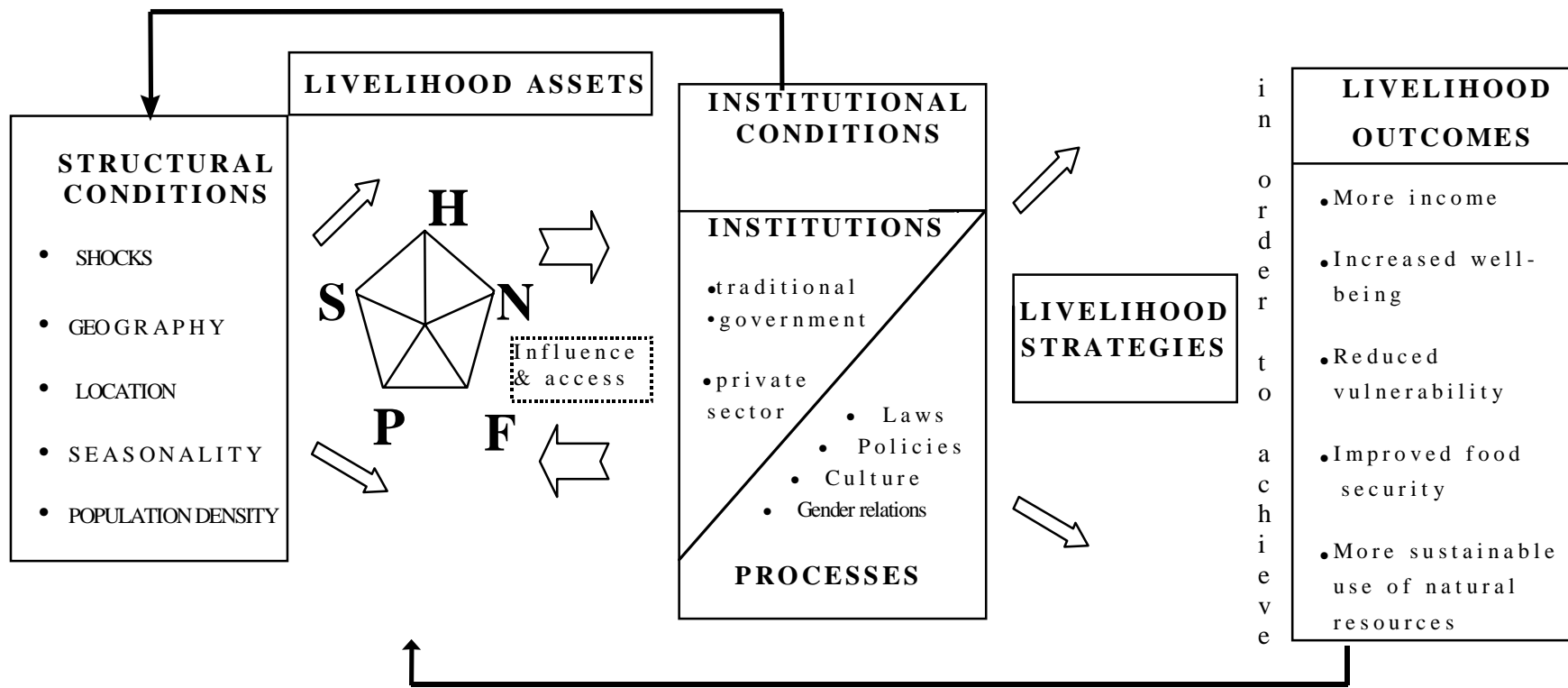
The arrows leading from *structural conditions* to the asset configuration illustrate that the context in which assets exist affects how they can be used. By structural conditions we mean factors which cannot be changed in the short term – vulnerability to droughts, geographical isolation and vulnerability to man-made disasters. Structural conditions can also be positive – proximity to fertile volcanic soil, good access to markets, good climate and peace.

Institutional conditions, in the middle of the diagram, are the result of the combined effects of organisations and processes – again they influence how assets can be used and who has access to them.

In turn, the asset holdings and institutional conditions define which *livelihood strategies* are available to which socio-economic groups. The livelihood strategy adopted will result in a *livelihood outcome*, illustrations of which are shown in the box on the right.

Figure 1. 2: The Sustainable Livelihoods Framework

Key
 H = Human Capital S = Social Capital
 N = Natural Capital P = Physical Capital
 F = Financial Capital



Source: Developed from Carney et al., 1999

Livelihood outcomes impact on asset holdings, as indicated by the feedback arrow. In good circumstances they allow the stock of assets to be built up. In adverse circumstances, stocks of assets will be drawn down to enable households and individuals to meet their minimum basic needs.

1.4.2 Multi-dimensional poverty in the sustainable livelihoods framework

The livelihoods approach is fully consistent with the multi-dimensional definition of poverty outlined in section 1.3 and depicted in Figure 1.1. It may be helpful to indicate the different points of correspondence.

Some of the dimensions of poverty shown in Figure 1.1 are linked directly with assets, *viz* :

- Lack of income and insufficient private consumption relate to the quantity of natural, financial and physical assets and the rate of return to them (which are determined by institutions, process and structural conditions).
- Time poverty is related to the rate of return to assets, particularly labour. If rates of return are low, people have to allocate most of their time to meeting basic needs and have little leisure time.
- Weak human capabilities are the expression of inadequate human capital.
- Inadequate social participation can be related to inadequate private and social assets, particularly social and human capital.

Other dimensions are linked first and foremost with structural conditions and institutional processes. Thus:

- Inadequate private and social assets are linked to structural conditions and an institutional context in which poor households and individuals adopt particular livelihood strategies which make it impossible for them to accumulate assets.
- Insecurity and vulnerability can be related to initial structural conditions and the institutional context. The initial conditions determine the probability that communities will be affected by natural or man-made shocks, e.g. droughts, floods, wars and insurgencies, and the institutional context will determine the amount of organised protection communities can expect to receive from the risks they face.

1.4.3 Sustainable livelihoods and transport

Transport has been defined as “the movement of people and goods by any conceivable means for any conceivable purposes” (Howe, 1997). It has two distinct elements:

- transport infrastructure, and
- transport services.

We now discuss the entry-points of each of these elements into the different components of the livelihoods framework. The discussion is not meant to be exhaustive, but illustrative of the range of possibilities. It is not intended, either, to constitute a general model. Transport-livelihoods linkages will obviously vary across countries of the world, and between communities within single countries.

Structural conditions

Structural conditions set the transport scene. Geography determines whether people travel on inland waterways, coastal routes, railways or roads and paths. It also determines basic access conditions – the degree to which access varies seasonally and whether there are particular transport bottlenecks – e.g. rivers, ravines or mountains. Location sets the spatial dimensions to the transport problem – how far individual households are from markets, social facilities and other members of the community, and how distant the community is from other communities and the cities, including the capital. At the same time, population density will influence transport service supply, by determining (together with the level of income) whether there is enough effective demand for transport services to operate. Structural conditions thus determine the opportunities and constraints for transport interventions to contribute to sustainable livelihoods.

Livelihood assets

Means of transport are part of the asset portfolio of poor people – at the individual, household or community levels. Various studies have shown that rich and poor peasant households are differentiated particularly by their ownership of oxen and carts (Moyo, 1997; Barwell et al., 1995). And poverty assessments show that transport assets – bicycles, carts and trucks, vehicles, boats – are frequently considered indicators of wealth by poor people (for example, UPPAP, 1999).

In the last resort, people have their own (or other people's) labour power to use for transport. Means of transport thus fall under people's human as well as physical assets. The use of these assets in combination with other assets produces livelihood outcomes – they get people to schools, clinics and meetings; they get goods to market; and they get water and wood to the household. Means of transport owned by a firm or enterprise supplying transport services are part of the capital assets of the firm.

Where transport infrastructure – roads, bridges, paths and railways are not owned by private enterprises or individuals, they are part of the community's, or the local, regional or national government's, physical capital as defined by law. Some transport infrastructure may be owned by firms or businesses – for example toll roads, privatised ports, and roads in mining or industrial complexes. In these cases they are assets of the firm.

Institutional conditions

Institutions and process create the institutional conditions in which livelihoods are attained. They shape the opportunities for, and constraints around, meeting poor people's transport needs. Institutions include governmental organisations and arrangements, and those of the private sector. Local and national government policy and spending creates the infrastructure network which links local communities to national, regional and local markets. The private sector institutions - firms, business enterprises, non-profits and NGOs - create the goods and services, including transport services, that communities have to draw on in their livelihoods strategies. The private and public sector also create employment opportunities.

Processes include laws, policies, culture and gender relations. Laws regulate to a greater or lesser extent the provision of transport services and infrastructure. Policies determine which institutions supply transport services and how transport infrastructure is planned. Cultural relationships will determine the demand for transport – when and whether social visits take place and obligations to attend cultural functions, for example. The type of transport infrastructure demanded will thus be affected by culture.

Use of particular transport services will be affected by culturally-prescribed gender norms, e.g. by whether it is acceptable for women to travel on bicycles or public buses, and whether particular institutions – for example, *purdah* – restrict women's mobility. Gender relations determine whether men or women gain from new transport infrastructure and transport services, e.g. by affecting which market and non-market activities become less time-consuming as a result of better transport conditions and improved mobility.

Livelihood strategies

Transport infrastructure and services enable people to build up their asset base. Transport research has shown that poor people travel for a number of reasons. A sustainable livelihoods approach helps to explain this finding. It sets apparently non-productive travel in context, since many different kinds of trip can be interpreted as building up at least one of the asset groups.

For example, social travel – often assumed to be a non-productive use of time – may have the intention or effect of building up social capital. Research suggests that trips made by the poor are typically multi-purpose activities, and the reason may be that social trips build up financial capital and *visa versa*. Travel to markets to exchange agricultural produce for producer goods, and to obtain employment in other rural or urban areas, are common components of livelihood strategies. Migration results, in turn, in the need for additional social trips (and business trips) to communities of origin. Hence, transport is integral to many livelihood strategies (Ellis, 1999).

Livelihood outcomes

Livelihood outcomes attained by the poor result from their use of assets in a given set of structural and institutional conditions. Transport infrastructure and services are part of both the poor's asset base and the institutional framework that helps to determine its use. Improvements in transport services and infrastructure can, therefore, both improve the poor's asset base and make the institutional environment more favourable. Improvements in transport infrastructure and services open up the potential to make livelihoods more sustainable by:

- freeing up time;
- enabling livelihood diversification; and/or
- providing access to, and incentives to use, new technologies.

Alternatively they have the potential to negatively affect livelihoods by:

- worsening health, pollution, accidents and/or disease transmission;
- creating incentives for environmental destruction; and

- creating incentives for the destruction of indigenous minorities or their cultures.

Whether interventions in transport result in improvements in livelihoods or not is conditional – it depends on the broader structural and institutional context and the asset endowments of the people in question. The sustainable livelihoods framework generates no general conclusions in this regard. What it does provide is a valuable menu of questions to be asked in every case.

1.5 Outline of the report

The purpose of this study is to synthesise and assess what is known about how transport interventions can contribute to achieving livelihood outcomes that allow people to escape poverty. We also assess how better interventions in the transport field might increase the probability that poor people's livelihood strategies result in positive livelihood outcomes. This task is tackled in five steps in the chapters that follow.

First, in Chapter 2, we look at the big picture. This refers to the way transport conditions affect some of the basic enabling conditions for pro-poor economic development. We then turn to consider what is known about transport issues from the perspectives of the livelihoods of the urban and rural poor. Chapters 3 and 4 examine the links between poverty and transport in rural and urban contexts respectively.

The distinction between the rural and urban poor is somewhat problematic. It is well known that in many cases strong links exist between urban and rural areas – people migrate, temporarily or permanently, and income and resource flows within and between households cross rural-urban boundaries. Nevertheless, people's opportunities for sustainable livelihoods do differ depending on their urban or rural location. Very different transport policies and other complementary interventions are needed to meet people's transport needs and enhance their opportunities for achieving sustainable livelihood outcomes in rural and urban areas. We believe, therefore, that the rural-urban distinction is a useful one to make in this context.

Most of the chapters make reference to the gendered nature of transport issues. We see gender as a cross-cutting issue that affects urban and rural livelihoods, and needs to inform policy responses to transport needs. However, research on gender relations and transport is particularly rich and abundant. Much is known about how gender relations affect the outcomes of transport interventions, including those that are key for poverty reduction. Chapter 5 is included to do justice to these topics.

Chapter 6 draws together the conclusions of our survey of poverty and transport issues. Particular attention is given to what is known about how to make transport policy more poverty focused.

2. Transport and the enabling conditions for pro-poor development

2.1 Introduction

Transport conditions impinge on the poor, and their opportunities for livelihood-enhancement, in a host of direct and indirect ways. At one extreme, investments in transport can create economic and other opportunities for the poor in a very direct fashion, by providing employment in construction or enhancing the mobility of members of a household. At the other extreme, they may be equally relevant to reducing poverty because of their effects on the general conditions that enable a process of sustained economic growth to occur, indirectly enhancing opportunities for poor people.

We begin at this level, with the most indirect potential effects, as well as with a relatively narrow (economic) understanding of the process of poverty reduction. Subsequent sections and the following chapters become progressively more concerned with the conditions that make growth pro-poor, and that may assist in economic and other ways in including poor people in the benefits of a growing national economy.

Section 2.2 examines the links between transport and poverty reduction through economic growth. It discusses the general question of whether public expenditure on infrastructure reduces poverty through this mechanism. It then examines the particular issue of whether the export supply response is constrained by inadequate transport under conditions of adjustment. Section 2.3 turns to the impact of transport on trade. Large infrastructural programmes that aim to link isolated regions into the centres of economic activity are considered in Section 2.4. Section 2.5 draws some conclusions.

2.2 Transport and growth

Sustained increases in real per capita income are needed to reduce poverty. Creating the pre-conditions for economic growth by implementing measures to stabilise the macro-economy and provide the right incentives for the supply side are well recognised as important first steps. However, it is generally agreed that more than that is needed. Policies must ensure that the poor participate in the growth process – that is, that growth encompasses and includes the economic activities of poor people. Governments committed to poverty reduction must create a policy environment that provides the right incentives for partnerships between government, the private sector and communities that create the sorts of growth that are most effective in reducing poverty.

How can transport investments contribute to the conditions for pro-poor growth? The question is not an easy one to answer in general terms because of the multiplicity and complexity of the linkages involved and the resulting requirements of rigorous testing. A series of more partial questions, based on simplifying assumptions, may be of more practical value to policy makers under most conditions, although important uncertainties will necessarily remain.

2.2.1 Does public spending on transport infrastructure reduce poverty?

The 1994 World Development Report, which takes *Infrastructure for Development* as its theme, states that infrastructure (transport, power and communications) investment is not sufficient on its own to generate sustained increases in economic growth. The WDR (World Bank, 1994) cites a number of studies that note a positive correlation between the level of investment (or capital stock) in infrastructure on the one hand and growth on the other. It notes, however, that there are *a priori* reasons to expect the direction of causation to run both from growth to infrastructure and from infrastructure to growth.

Investment in infrastructure can contribute to economic growth through:

- growth of the sector itself:
 - creation of employment in transport and other infrastructure;
 - opening up new opportunities for entrepreneurs in transport and other infrastructure services and making existing businesses more profitable;
- public works that provide employment as a counter-cyclical measure to stimulate the economy (or particular regions of it) in recession;
- lowering the costs of inputs used in the production of almost all goods and services;
- raising productivity through reducing the time and effort needed in production;
- opening up new domestic and international markets;
- lowering the effective rate of protection of exports;
- enabling economies to respond to changes in the location and composition of demand.

If these effects encompass the economic activities and sectors in which the poor participate, investment in infrastructure will have a direct poverty-reducing impact. That is, it will contribute to the attainment of real increases in income by poor people. It is important to note, however, that many of the effects of investment in infrastructure noted here are feedback effects – adjustments in prices and quantities in markets that are related to infrastructure markets. Thus, the evaluation of the impact of investment in infrastructure on economic growth and poverty reduction requires a general equilibrium approach.² The impact of an intervention in infrastructure on poverty will depend on the net effect of outcomes in related product and factor markets on poor people's livelihoods.

² General equilibrium analysis determines the prices and quantities in all markets simultaneously and explicitly takes feedback effects into account. In practise analysis that evaluates the effect of a change in one market on all other markets is not possible and analysis is confined to two or three markets that are closely related (Pindyck and Rubinfeld, 1992).

The study by Shenggen et al. (1999) of rural India is the only research we found that examines the simultaneous effects of investment in infrastructure on factor and product markets and so provides a convincing account of the net effect of infrastructure expenditure on poverty. Box 2.1 reports some of the details.

Box 2.1: Markets are interlinked and poverty outcomes depend on the net effects of changes in labour and product markets on poor people's incomes

In India, state expenditure on agricultural research and extension, improved roads, irrigation and education had all contributed significantly to the total factor productivity growth in agriculture. In turn, total factor productivity growth and investments in rural roads, education and health have all contributed to increases in agricultural wages. And state expenditures on rural development, soil and water conservation, rural roads, health and literacy have promoted growth of agricultural output. But increased total factor productivity also lowers agricultural prices and increases landlessness. In the case of India the net effect is to reduce poverty as the poor are net buyers of food grains and hence benefit from lower prices and the increased landlessness effect is more than outweighed by the positive effects of increased agricultural wages, non-agricultural employment and agricultural productivity on rural livelihoods.

Source: Shenggen, Hazell and Thorat, 1999

The authors use 1970-93 data for 17 Indian states to estimate an econometric model of the impact of various categories of government expenditure on the twin goals of poverty reduction and economic growth. They point out that a single-equation model of rural poverty will be biased, as a) many poverty determinants, e.g. rural wages, productivity growth and prices, are endogenous to the system; and b) certain economic variables affect poverty through multiple channels – for example, rural infrastructure reduces poverty through its effect on agricultural productivity and rural wages, and non-farm employment opportunities. They develop a simultaneous-equations model to estimate the direct and indirect effects of government expenditures on rural poverty.

Increasing government expenditure on roads is associated with the following:³

- increases in total factor productivity (agricultural research and development, irrigation, literacy, rainfall);
- increases in rural wages (total factor productivity, health, education); and
- increases in non-agricultural employment (government spending on community development, government spending on conservation, literacy).

Examining the marginal effects of increases in different categories of rural expenditure, Shenggen et al. find that government expenditure on roads has the largest impact on poverty reduction as well as an impact on significant productivity growth. It is a dominant win-win strategy, associated with reducing poverty and increasing growth. Other win-win strategies are spending on agricultural research

³ Other independent variables shown in brackets.

and expenditure on education. It should be noted that the results are about *increases* in spending. Growth of investment in other categories of expenditure, e.g. irrigation, have been important in the past and current stocks need to be maintained.

The complex market linkages mean that the conclusion that spending on roads is a win-win strategy *is country specific*. However, a study of Ecuador (Lanjouw, 1998) supports the conclusion that good road infrastructure is important to increasing non-agricultural employment. In contrast, a study from El Salvador (World Bank, 1998) finds that rural infrastructure appears to have played only a modest role in enhancing the income-earning potential of rural households.

For many of the countries currently preparing poverty-reduction strategies, data of the quality necessary to undertake analysis of this type are unlikely to be available. Attention necessarily focuses on more partial forms of analysis, which have corresponding limitations but nonetheless may permit some worthwhile policy messages.

2.2.2 Roads are not enough

Public spending on transport infrastructure can take many forms – spending on roads, railways, ports and inland waterways is encompassed by the term. The discussion here is centred on roads, as we found no research literature that addressed the effects of public spending on other infrastructure on poverty. There is another and more serious sense in which the discussion about transport is now perceived to have been excessively centred on roads.

Howe's (1984) review of the impact of rural roads concluded that "the continuing optimism with which most road investment programmes are still regarded in relation to their effect on poverty reduction cannot be sustained" (p.80). This conclusion was supported by subsequent research in the late 1980s and early 1990s which found that the poverty impact of rural roads depends very much on context. The conclusion reached by many in the transport sector was that the explanation lay in the failure of improvements in roads to be matched by increased supplies of transport *services*.

In many poor countries, then, "roads are not enough". Improved access to transport services, increased ownership of means of transport and improvements in the transport infrastructure most used by the poor (not necessarily roads or the particular roads that have been built) are all required to have an impact on poverty (Barwell et al., 1985; Starkey, 2000).

One of the links made between improvements in rural transport infrastructure and increasing the economic opportunities of the poor is through income increases stemming from improvements in the commodity terms of trade for rural producers. Better transport is hypothesised to increase farm gate prices received for farm products and to lower the price of inputs and purchased consumption goods (Hine, 1993; Scott, 2000).

There is some empirical evidence to support this link. For example, Carnemark (1984) found that, other things being equal, agricultural supply of cash crops

responds positively to a reduction in transport costs as the net producer price increases. However, there are of reasons why lowering transport costs may not improve the commodity terms of trade for the rural producers:

- lower transport costs may not be passed onto the farmer due to monopolistic markets for transport services or monopsony power of cash-crop buyers;
- over the longer run, the increases in total factor productivity (to which improved transport contributes) may increase the aggregate supply of agricultural products and therefore lower agricultural prices (see Box 2.1 above).

Furthermore, rural producers are differentiated and not all will be equally able to take advantage of improved marketing opportunities. The rural poor may not benefit from improved commodity terms of trade for rural producers as:

- improvements in the agricultural terms of trade can have an immediate short term negative impact on the rural poor if they are net buyers of food (Misra and Hazell, 1996);
- landlessness increases as rising agricultural prices enable the richer, more productive farmers producing a net market surplus to buy out the poorer, less productive farmers who are net buyers of food.

Problems of identifying or predicting a clear causal link between improved transport and improvements in the commodity terms of trade for the rural poor arise because, as we noted above, transport interventions need to be analysed in a general equilibrium context.

2.2.3 Does lack of transport constrain the supply response from adjustment in low income countries?

There is remarkably little research on this topic for developing countries, though anecdotal evidence (see Box 2.2) suggests that in some countries, it may be the primary constraint faced by private sector entrepreneurs, where macroeconomic conditions otherwise encourage production growth.

In principle, infrastructure affects production costs in two ways:

- Increases in the quality/quantity of infrastructure lower unit costs of production and distribution.
- Firms adjust their use of factors of production as infrastructure increases, depending on whether infrastructure complements or substitutes for labour and capital.

Box 2.2: Inadequate transport is a non-tariff barrier to trade

India

Agro-industry processing is one of the most dynamic growth sectors of the commodity trade, a trend which is likely to continue according to the WTO. Various forms of non tariff, including the poor quality of India's infrastructure barriers (especially in power and roads) limit the entry of Indian goods [to developed country markets] the processors complain.

Uganda

Supply side constraints continue to be a major obstacle to the expansion of agriculture. Although the road network has improved considerably over the past decade, feeder roads remain in poor condition and serve as a major bottleneck in the movement of produce.

Most Ugandan exports go overland to Mombassa or Dar es Salaam by road. Delivery times range from 3 to 7 days, depending on delays at the border or vehicle breakdown. Few exporters use rail services because of their unreliability and cumbersome procedures.

Asked to rank constraints facing their firms using 1 as no obstacle and 4 as a major problem, a survey found that Ugandan industrialists ranked the quality of roads as 2.6 after power breakdowns (3.5), voltage fluctuations (3) and telecoms problems (2.7).

Source: Country Studies, Trade and Development Centre website: www.itd.org.

The first is the productivity effect and the second is the production structure effect (Feltenstein and Ha, 1995). This implies that investment in infrastructure contributes directly to pro-poor growth if productivity increases are accompanied by a production structure effect where labour is substituted for capital.

It is frequently reported that stabilisation policies that seek to control the government's fiscal deficit result in cut-backs in investment in public infrastructure, including road maintenance. Feltenstein and Ha (1995) investigate whether cut-backs in Mexico's public expenditure on infrastructure (electricity, transport and communications) constrained firms' supply response. They found that increases in public spending on transport infrastructure increased the cost of production in most industrial sectors (in contrast increases in electricity and communications lowered their cost of production). However transport infrastructure was a complement to labour and a substitute for capital, implying that increased spending on transport infrastructure is associated with increased demand for labour. We found no other study on the effects of investments in transport on firm or farm productivity and production structure in developing countries, although a literature exists for the OECD countries.

2.3 Transport and trade

Has poor transport inhibited developing countries' ability to participate in trade? Trade liberalisation policies implemented as part of structural adjustment packages have led to rapid export growth in many poor regions and countries. However, there has been less success in sub-Saharan Africa than in Asia or Latin America. Sub-Saharan Africa's poor trade performance is typically attributed to protectionist trade policies. However, there is dissent, with some arguing that African trade is no lower than should be expected given the region's income and distance from markets (Limao and Venables, 1999).

Much recent research does indicate that transport costs are significant in explaining sub-Saharan Africa's poor trade performance (Delgado, 1995; Limao and Venables, 1999; Milner, Morrissey and Rudaheranwa, 2000). In 1990, net freight payments to foreign nationals absorbed 15 per cent of Africa's export earnings compared to a developing country average of 5.8 per cent. For landlocked African countries the freight cost ratio exceeds 30 per cent (Amadji and Yeats, 1995). Furthermore, as Table 2.1 shows, transport costs get progressively more expensive per kilometre-ton (kt) from international to national to local travel.

Table 2.1 Average cost by country and level (CFAF per kilometre tonne)

Level	Cameroon	Cote d'Ivoire	Mali
Local (farm to local market using pickups on unpaved roads)	200.2	164.4	141.6
Regional (regional capital to interior of country)	64.3	72.9	52.5
National (regional capital to regional capital)	32.9	29.4	31.5
International (using semi-trailers on paved roads)	26.3	24.2	23.3

Source: Bonnafous, 1993:107, Table 1.

The ratio of international to local of costs is:

1:8 Cameroon

1:7 Cote d'Ivoire

1.6 Mali

Ultimately this cost hierarchy extends down to the peasant household, with most African agricultural field-to-home transport based on female portage (Bryceson and Howe, 1997). Human portage is probably the most expensive link in the chain as

research shows that food, even at times of great scarcity and high price, can only be carried over relatively short distances before the cost of transport consumes its value (Tiffen, 1995).

African freight costs are very high in relation to other continents (Bonnafous, 1993). Table 2.2. shows a comparative breakdown of costs for tractors and semi-trailers in Pakistan and Africa. It shows that the total cost per kilometre in Africa is over four times that in Pakistan. This must reflect the combined effects of vehicle type, efficiency of transport firms and the quality of the infrastructure used.

There are some differences in the structure of costs. Fixed costs account for a larger proportion of total costs in Africa than in Pakistan. Interest payments account for a higher share of total costs in Africa than Pakistan, which is related to the relative costs of vehicles and taxation in the two countries. Other fixed charges, licenses and taxes, also account for a higher share of fixed costs in Africa than Pakistan, suggesting that government taxes may be too high in Africa.

Table 2.2 Component costs for a tractor and semi-trailer, Africa and Pakistan (F FCA per km)

	<i>Africa</i>		<i>Pakistan</i>	
	<i>FCA</i>	<i>% total cost</i>	<i>FCA</i>	<i>% total cost</i>
Interest	35.2	7.6	4.3	4.2
Insurance	15.8	3.4	0.1	0.1
Crew	27.9	6.0	11	10.7
Licence and other taxes	7.8	1.7	0.4	0.4
Other fixed charges	42.1	9.1	2.9	2.8
Depreciation	66.1	14.3	8.9	8.7
Fuel	112.4	24.3	43.7	42.7
Maintenance	90.8	19.6	17.2	16.8
Tyres	48.1	10.4	6	5.9
Road expenses	17.3	3.7	7.9	7.7
Total costs	463.5	100	102.4	100
Fixed costs	128.8	27.8	18.7	18.3
Distance dependent costs	334.7	72.2	83.7	81.7
Total costs per tonne-km	21.7		4.5	

Source: Adapted from Rizet & Hine (1993)

Ill-advised policies have played some part in high national and international transport costs. At the international level, deregulation of international shipping and the promotion of competitive shipping services could significantly reduce freight costs (Amjadi et al.,1996). National governments' cargo reservation policies produce "high

rents” for shipping lines that have been shielded from the effects of competition. Their failure to maintain or improve port infrastructure has also played a role (ibid.).

In Cameroon, Ghana and Burkino Faso, the overall taxation rate is higher for smaller vehicles, which adds to the escalating costs of local transport. In these countries, also, the over-regulated *de jure* and virtually totally liberalised *de facto* system, generates perverse effects. It encourages violations in the form of illegitimate charges to hauliers and other forms of corruption (Bonnafous, 1993).

Lima and Venables’ (1999) analysis of intra-African trade flows indicates that their relatively low level can largely be explained by infrastructure limitations. The median predicted transport cost for intra sub-Saharan African trade is about \$7600 – approximately the same as the median predicted cost for trade between sub-Saharan African and the rest of the world. Latin America and the Caribbean, South and East Asia, and the Middle East and North Africa, all have lower predicted intra-regional trade costs of \$5000 or less. Poor infrastructure is also a major determinant of low bilateral (Africa to non-Africa) trade.

A case study of Uganda supports Limao and Venables’ conclusion. The implicit taxation of exporters that results from high transport cost ranges from 40 per cent for food exports to 24 per cent for coffee, goods that make up the majority of Uganda’s exports. Sectors that produce goods that are bulky relative to value and/or require imported inputs have an implicit transport tax rate in excess of 100 per cent. This includes manufactured foods, tobacco and beverages, textiles, clothing and footwear, building materials and chemicals (Milner, Morrissey and Rudaheranwa, 2000).

Uganda suffers particularly from being landlocked. However, research shows that landlocked countries can substantially reduce their high transport costs if their infrastructure and that of their transit countries is of a high standard. Additional transport costs from being landlocked are not completely explained by the extra overland distance to the sea. Likely explanations are border delays, transport co-ordination problems, uncertainty and delays creating higher insurance costs and direct charges from transit countries. A landlocked economy usually has about 30 per cent of the trade volume of a coastal economy of a similar income level. Halving transport costs increases the volume of trade by a factor of five (Limao and Venables, 1999).⁴

2.4 Transport policies and remote regions

Poverty Assessments of developing countries frequently identify regional dimensions of poverty. The *Africa Poverty Status Report, 1999* notes a strong correlation between poverty and remoteness or residence in a disadvantaged region. Rural incomes in Zambia in regions close to the railway lines were six times as large as those further away. Life expectancy at birth in Dar es Salaam (Tanzania’s capital) was one and a half times longer than among those born in the most remote region. Remoteness is a proximate cause of poverty, as “it reflects the poor state of

⁴ The elasticity of trade flows with respect to transport costs is estimated at 2.5.

communication and, above all, transportation infrastructure and hence is an outcome of political forces...” (Killick et al., 2000: 35).

Poverty is often concentrated in particular regions that are geographically isolated from national centres of economic and political activity. It is frequently these isolated regions that get left behind in the growth process. Geographical and sometimes political biases against them mean that they are unable to participate in new economic opportunities that growth creates and it is difficult to supply even health, education and other basic services to them.

The evidence on trade and transport suggests the corollary that better transport and communications could bring benefits to many remote regions. However, it is worth bearing in mind that not all large-scale national transport projects have entirely benign effects. A particular concern here, given our poverty theme, is with minority peoples, whose way of life may be negatively affected or destroyed by such developments.

The World Bank (1996) reports that transport is the largest cause of resettlement in the Bank’s portfolios. Resettlement is involved in 20 per cent of the Bank’s transport projects. Certain projects, for example, – Vietnam Highway Rehabilitation, Jamuna River Bridge, Bangladesh and Jabotek Urban Transport, Indonesia – caused large-scale displacement. The World Bank’s current approach is to “emphasise the importance of continuing to focus on reducing resettlement in the design of projects and enforcing proper standards of treatment of persons affected” (World Bank, 1996:82).

Some transport-related projects have been associated with minority and human rights violations as well as extensive environmental destruction (see Box 2.3).

2.5 The role of government in transport provision

The state has historically played a large role in both transport infrastructure and transport services supply. There are a number of reasons why the market may fail to supply transport infrastructure and services, including their public good characteristics, high sunk costs limiting competition and low levels of effective demand. Experience in many low-income countries is, however, that state provision of transport services is economically unsustainable. Transport parastatals operate inefficiently, making large losses, and funds for routine maintenance of transport infrastructure cannot be met from recurrent expenditure allocations to the sector. At the same time, poor infrastructure policies and inefficient provision absorb scarce fiscal resources putting upward pressure on the government’s budget deficit. This undermines macroeconomic stability, ultimately damaging the prospects for growth and hence the enabling environment for poverty reduction (World Bank, 1994).

How then can governments reconcile the need to intervene in the face of market failures at the same time as complying with demands for fiscal discipline? We discuss some aspects of this question under three headings.

Box 2.3: Roads, resettlement and the Amazon: minority rights and environmental destruction

The POLONOROESTE programme was a key element in Brazil's ambitious attempts to integrate the Amazon region into its rapidly growing economy. In the 1960s and 1970s highways were built and settlement programmes drawn up. In 1981 the Government launched the 'polonoroeste' with its goal to provide for sustainable settlements by expanding infrastructure and supporting agriculture and social services. World Bank loans supported pavement of the federal highway between Cuiba, Mato Grosso and Porto Velho, Rondonia (highway BR-364), extension of feeder road networks, consolidation of existing settlement schemes and creation of new ones, improvement of rural social services and measures to protect the environment and indigenous peoples... Roads were completed on time but agricultural support services, community facilities and Amerindian protection measures lagged behind. The Bank informally suspended disbursements in March 1985 and resumed them in August 1985 after federal authorities moved to protect several vulnerable Amerindian areas... (World Bank Approaches to the Environment in Brazil, Operations and Evaluation Department, 05/01/92).

'The presence of this highway [the BR364 – completed 1984] was one of the conditions for the invasion of the cattle raisers and loggers... deforestation and land conflicts occurred mainly on the highway. Especially in Rondonia in the course of the Polonoroeste invasions of Indian territory and uncontrolled woodcutting took place' (www.amazonlink.org).

'..with the development of the BR-364...the Nambiquara (Indians) so admired by Levi Strauss and numbering 20,000 at the beginning of the century were reduced to 650 discouraged souls. In the Yamnomu Indian territory the population was reduced 25% after contact with the road crews' (Hecht and Cockburn, 1990).

'The World Bank has been financing the PRODEAGO programme an attempt to mitigate the serious environmental and cultural devastation which resulted from the Bank's disastrous Polonoroeste programme. The most urgent situation facing the indigenous people has been the invasion of the Sarare reserve of the Nambikwara people by 8,000 gold miners and loggers. When the agreement for PRODEAGO was signed in 1992 the World Bank made the programme approval subject to the removal of invaders from the indigenous area. Today, nearly five years later the situation has not changed and there continues to be planned and predatory occupations of the natural habitat of the Indians, causing incalculable damage and threatening the survival of the indigenous people'.

Source: Serico Brasileiro de Justica e Paz, no 267, March 20, 1997: www.sejup

2.5.1 Public and private sector roles

The 1990s saw the introduction of new thinking on government's role in the transport sector, reflecting the "Washington consensus" of the time. Opinion was that the supply of transport infrastructure services should wherever possible be shifted from the government to the private sector (World Bank, 1996).

In this vein, the 1994 *World Development Report* outlined four options for infrastructure service provision:

- public ownership and operation through a public enterprise or government department run on commercial principles;
- public ownership but with private responsibility for all operations (e.g. concessions or leasing of rail, port and airport infrastructure and toll roads);
- private ownership and operation;
- community and user provision (e.g. maintenance of feeder roads by communities with some government funding or provision of materials).

Greater private sector provision implies an increased importance of government regulation, both to protect consumer safety and to ensure market competition. Government should thus be:

“the enabler of competition and the custodian of the environmental and social interests. This means that governments need to create the proper institutional framework for competition, set economically efficient charges for the use of publicly provided infrastructure, appraise the allocation of scarce public resources carefully and increase community participation in decision making, particularly in those areas where markets work poorly” (World Bank, 1996:85).

The 1994 *World Development Report* identifies three gains from transport sector reform:

- fiscal gains from reductions in subsidies;
- efficiency gains to service providers from improved technical efficiency (e.g. reducing investment in roads needed because of improper maintenance); and
- gains in economic progress and for the poor as a result of resources being freed up for more productive uses or expenditure that benefit the poor.

However, experience with liberalisation to date casts doubt on whether the gains are so easily achieved in practice. Many now believe that the importance of institutions in making markets work so as to achieve gains from liberalisation were underestimated by the policies recommended to developing country governments by the World Bank, IMF and donor community in the 1980s and 1990s (Stiglitz, 1998).

More recent thinking on the role of the state in poverty reduction has emphasised the need for increased long-term government spending on rural infrastructure (Mellor, 1999; Killick et al., 2000), implying a scaling up of state spending on infrastructure and related services in many low income developing countries. Current opinion retains the view that the state is not necessarily the best equipped to supply public services. There are a variety of ways that rural infrastructure may be state financed and supplied in partnership with the private sector (WDR, 2000). Among the interesting questions posed is whether current expenditure on subsidised transport services could be re-directed to finance such an investment effort.

Analysis of a number of public transport systems in Latin American cities shows that the benefits of subsidies go almost entirely to the middle classes (Carbajo, 1993). Could not this subsidy be re-directed to transport services that reached poor rural areas? In principle, this is an attractive option but analysis of poverty reduction

interventions has concluded that it is important to design policies that include the poor and are supported by more influential members of communities who are often richer (see Derbyshire and Vickers for specific examples on transport). It may in the end be counterproductive to target subsidies too narrowly.

2.5.2 Addressing the budget process

As reviewed in Chapter 1, national plans and visions are now regarded as the *sine qua non* of broad-based and sustainable efforts to achieve poverty-reduction outcomes. In this context, recent thinking emphasises the value of linking poverty-orientated plans to the budget process, preferably in a Medium-Term Budgetary Framework (MTBF) with a three to five year time horizon, annually adjusted (Healey et al., 2000).

MTBF processes typically entail the establishment of sector working groups (which often involve inputs from several line ministries) to identify poverty-reduction priorities. Often, increasing the opportunities of the poor entails multi-sectoral approach. For example, to improve rural livelihoods inputs are usually needed in transport, irrigation, agricultural extension, education and measures to improve access to land. The transport sector thus needs to assess its contribution to poverty reduction in the context of both the national plan for poverty and sectoral plans prepared by other line ministries. The toolkit that accompanies this report makes some suggestions about the types of knowledge that ministries of transport might draw on to make this assessment.

One promising step is that the distinction between current and development budgets is frequently dispensed with in the MTBF. This should help prevent the circumstances where road construction, rehabilitation or upgrading is undertaken with little or no provision for subsequent maintenance.

For example, in the Arsi-Bale region of Ethiopia, many different organisations had been involved in road construction but there had been little thought given to a budget and assigning responsibility for successive maintenance. Many roads had deteriorated so badly that they required rehabilitation almost equivalent to the construction of new roads (Diriba, 1997). In Cameroon, Nepal and Zambia, allocations emphasised construction of new roads over maintenance of old roads, even when the latter were clearly a priority (World Bank, 1994).

A transparent policy process for budget allocations at central and local level is required to ensure that users' needs are met. However, it may be necessary to balance desirable transparency against a measure of political realism. National and local governments can and do use transport interventions to further their political ends. UNDP (1998) reports that "[a]lthough some transport decisions are primarily technical, there is a widespread tendency to misuse the technical transport planning tools to justify decisions that are, in fact, primarily political in nature" (Barter, 1999: 148).

These may be linked to competition for votes, geographical-political splits resulting in "tit-for-tat" measures, or actions undertaken merely to spite political adversaries. For example, in Peru, President Fujimori reportedly put an informal moratorium on road

building in Huancavelica in response to the protests of the District Authorities against centralised government – and to curb the Mayor of Huancavelica’s political ambitions.

Box 2.4: Uganda: poverty priorities in public expenditure

Uganda’s Poverty Action Fund (PAF) comprises of expenditures with direct poverty benefits. It is subject to stringent monitoring procedures in which civil society participates. Expenditure on rural roads is the largest component of the expenditures that directly increase the incomes of the poor and its share is projected to increase to over 60% of this category (US\$. 37.2 billion or US\$28.4 million) by 2002/03.

Summary of PAF budget and budget projection, billion Ugandan shillings

	Budget		Projections	
	1999/00	2000/01	2001/02	2002/03
Directly increasing incomes of the poor	52.9	50.1	53.8	59.4
Rural Roads	24.5	30.5	32.9	37.2
Land Act	3	3	3.3	3.7
Agricultural Extension	6.1	6.3	6.8	7.7
Micro finance/Restocking	19.3	10.3	10.8	10.8
Directly improving the quality of life of the poor	268	371	410	486
Primary health care	28.2	51.1	70.1	92.1
Water and sanitation	17.4	37.6	39.5	44.6
Primary Education	222.4	281.4	299.8	348.4
Adult Literacy	0	1	1	1.2
Note: \$1= US\$.1500				

2.5.3 De-centralisation: new roles for central and local government in transport

There is some consensus that national poverty reduction plans and policies work best when they are implemented by government agencies that are close to the poor. Accordingly, it is thought that decentralising responsibility for transport to local governments will result in a greater likelihood that users’ needs are met (Barter, 1999). Decentralisation of transport was strongly advocated in the 1994 *WDR*, backed up by the much-cited finding that where road maintenance is decentralised backlogs are lower and conditions of roads better (World Bank, 1994: 75).

In principle the benefits of decentralisation for transport extend to waterways, railways, tracks and paths, and to roads in both rural and urban areas. In fact, most experience is with rural road decentralisation and hence the discussion below

focuses on this, though we note that efforts are being made to devolve transport regulation to local governments in urban areas too.

Some observers are careful to note that decentralisation may not necessarily bring benefits. They point out that institutional capacity and human-resource constraints may bite deeper, due to the loss of economies of scale, as responsibilities are moved from the national to the local levels (Burki, 1999). Without the appropriate planning tools, they argue, decentralisation will no more reflect people's realities than centralised planning; that is, decisions will remain top-down and sectoral (Dixon-Fyle and Frieling, 1990). Later World Bank publications pay more attention to the potential limitations of decentralisation due to resource limitations and inappropriate institutions at the local level (World Bank, 1996; World Bank, 2000). In recognition of these issues, substantial programmes for institutional capacity building at district level are being supported in many countries.

Nevertheless, as a result of World Bank and donor thinking, the implementation of sectoral programmes and policies is increasingly being devolved to district or local government. The implication for the transport sector is that new roles are emerging for the central and local government, with local government having more direct responsibility for road building and maintenance and central government providing the overall policy and regulatory framework.

These new roles require new skills and capacity building at local and central level, which are often lacking. For example, the Uganda Participatory Poverty Assessment Project (UPPAP) found that district administrations lacked the technical capacity to construct and manage feeder roads, as well as the supervisory skills to oversee work of local contractors. And private contractors' lack of essential equipment meant that a hire pool for local contractors had to be planned (*New Vision*, Tuesday Oct 20th, 1998).

Burki et al. (1999) identify a number of pre-conditions critical for successful roads decentralisation:

- adequate local governance, in terms of legal, financial and community participation;
- take a gradual approach – don't devolve all responsibilities at once;
- relate the road classifications to political responsibilities – national roads to national governments, municipal roads to municipal governments etc.;
- ensure that the mechanisms for financing are devolved with the responsibilities;
- identify and meet the technology and capacity building needs of the receiving institution;
- put monitoring and physical and financial accountability systems in place.

2.6 Conclusions

To sum up, there are a number of direct and indirect ways that transport can contribute to the growth process. Since the indirect effects work through a range of linked factor and goods markets, a general equilibrium approach is needed for a rigorous assessment of the impact of transport interventions on poverty.

Existing assessments of the impact of transport spending on poverty are limited to roads, although transport interventions encompass a wider range of activities. In many cases, also, methodological and data limitations mean that these assessments are unable to come to conclusions about the net impact of the roads on poverty over the longer term. One recent study of India (which does not have these limitations) found that spending on roads plays a significant role in promoting growth and poverty reduction. Thus, increasing spending on roads is a win-win strategy (Shenggen et al., 1999).

We have noted, however, that because of the complex linkages between markets this result is country specific – it cannot be concluded that increased spending on roads will reduce poverty and increase growth everywhere. As the authors are careful to point out, the Indian result depends *inter alia* on sufficient levels of investment in other infrastructure (especially irrigation) already being in place.

A more easily settled question is the relevance of transport provision to trade. The literature of the 1980s and 1990s emphasised the role that government policy had played in creating barriers to exports in many developing countries. Now that many of these tariff and policy barriers have been dismantled, attention is turning to the role that transport may play in creating non-tariff barriers to exports. Evidence is emerging that in sub-Saharan Africa and in low-income land-locked countries it is a significant factor. One estimate is that reductions in transport costs by 50 per cent could increase the volume of trade by a factor of five (Limao and Venables, 1999).

Against this, it is worth bearing in mind the lessons of Brazil where conflict over environmental degradation and the destruction of the cultural heritage of Amerindian peoples continues to result from attempts to integrate the peripheral regions of the country into the national economy through large-scale road-building projects. The World Bank is still struggling with the consequences of programmes it funded in Brazil in the early 1980s.

Finally we have seen how a transport sector reform can contribute to changes that take government out of the supply of transport services; achieve greater efficiency in spending as part of a poverty orientated budget process; and decentralise many transport-related functions to the local level.

3. The transport burden of rural people

3.1 Introduction

Travel and transport is an important part of the daily life of rural people to which considerable amounts of personal time are often devoted. However, as the title of the chapter suggests, transport conditions are frequently difficult and transport and travel are often a drain on the energy and resources of the rural poor. So, improving transport conditions has the potential to positively impact on poor people's lives and increase their ability to participate in economic growth. Conventionally the focus has been on how improved transport conditions may increase opportunities for income generation through improving access to labour and product markets which are important for the poor. This chapter takes a broader, more holistic approach. It considers how transport interventions can impact positively on income and non-income dimensions of poverty by increasing poor people's access to and ownership of assets. We focus particularly on one asset, time, and on access to services that can build human and social capital.

Section 3.2 presents an overview of the rural transport needs of the poor people. Section 3.3 examines in greater depth how transport contributes to households' asset formation. Transport interventions do not always enhance poor people's ability to attain sustainable livelihoods, however, and Section 3.4 presents some evidence of this. Conclusions are presented in 3.5.

3.2 Sustainable livelihoods and rural transport

Interest in rural communities' transport needs dates back to concerns that transport planning and interventions – sometimes in the context of integrated rural development programmes – were not successfully meeting the needs of rural communities. Much of this research on how rural people use transport, and what their transport needs are, is focused on rural *communities*. It seldom differentiates between poor and non-poor within communities.

In some cases this may not matter too much. While community assessments of poverty by poor people themselves always identify relative differences in people's wealth, generally arriving at three or four intra-community strata, external assessments may judge all people as poor in terms of a poverty line or other metric. Thus, findings from some areas may indeed represent the transport needs of poor people. In other cases, where differentiation is greater, for example where land size holdings or access to income from migrant working varies considerably between households, important differences may exist between the transport needs of rich and poor which may not be discernible from the research findings.

Research on rural travel and transport needs identifies six key points:

- In many poor communities the majority of agricultural transport demands relate to production and harvesting. These are of substantially greater magnitude than the transport demands for crop marketing.
- Studies show probably no more than half of all rural travel is related to waged employment, although the share increases with a country's level of development.
- Frequently trips within villages, as opposed to trips to a destination outside the village, are greatest in number and account for the most time and kilometre tonnes.
- The gender division of labour is a key determinant of transport demand and use of transport services.
- Personal travel is an important activity in rural life. Such travel principally involves men in the economically active age groups.
- Local transport services and systems exist and sometimes flourish. They often involve using non-motorised vehicles and animal traction to meet the demands of rural communities and can be an important source of income for their operators (Barwell and Malmberg-Calvo, 1989; Dawson and Barwell, 1993; Howe, 1997 and Starkey, 2000).

From the literature it is possible to distinguish a number of characteristics that relate particularly to the poor's use of transport. Barter (1999) notes that the poor travel shorter distances and make fewer trips, but take more time to do so than the rich. In the poorest areas, household travel is dominated by subsistence tasks, which give a local-community orientation to most trips. Frequent journeys are made with small loads over short distances. Social and welfare needs are the main motivation for longer-distance trips, for which roads may be appropriate.

We draw five further points from the literature:

- The majority of journeys undertaken by rural people take place within and around the village to collect fuel and water and to cultivate fields for subsistence needs.
- The majority of transporting is undertaken by headloading or other ways of physically carrying goods.
- Women, in rich and poor households are often time-impooverished as a result of the transport needs of the household. In Africa particularly, the vast majority of headloading and journeys to meet subsistence needs are undertaken by women.
- Poor people's transport is frequently constrained by lack of ownership of or access to means of transport. Very few poor households possess any form of vehicular transport – walking, cycling and animal-traction predominate.
- Poor people are frequently worst located when it comes to accessing services, such as water, grinding mills, health centre or school. This increases journey times and costs (Derbyshire and Vickers, 1997; Gannon and Liu, 1997; Howe, 1997 and Starkey, 2000).

Transport takes up a large amount of time and physical effort in rural areas in developing countries. Its demands frequently impact particularly heavily on women. Box 3.1 illustrates how transport figures in the daily life of a rural Zimbabwean household.

3.3 A rural livelihoods approach to transport

The findings on rural transport presented above indicated that time spent in transport is a key characteristic of the tasks that make up rural livelihoods strategies. We saw in Chapter 1 that time poverty is recognised as an essential dimension of poverty. It is influenced by rural people's access to private and social assets – when these are inadequate, people have little leisure time. We elaborate these links further below.

Box 3.1: The day to day transport pattern of a household in Zimbabwe

The Mapendere family live in village 34 on the Sachuru resettlement scheme about 90 kilometres from Sanyati, a thriving growth point. They are connected by a narrow but motorable gravel road which after 20 kilometres joins the main road to Sanyati which is good quality gravel. Despite good road access the family have no vehicle and rely on walking and hired vehicle services. The mother and daughter collect 20 litres of water twice a day which is a 40 minute round trip. Firewood is collected twice per week by mother and daughter; the mother carries 25 kilograms and the daughter 10 kilograms, and the round trip takes approximately 1 to 1.5 hours. Once a month the mother hires a donkey which she loads with 60 kilograms for the 12 hour trip to the village where the grinding mill is located.

The whole family helps with crop production: the mother and father walk 30 minutes each twice daily and the children help out on Saturdays. The father goes twice a year to Sanyati to collect maize and cotton seeds. He sets off at midnight to reach the main road for 4 am where he takes a bus into Sanyati. He normally arrives back at the village at midnight the following day. An animal cart is hired to transport the harvest from the fields to the village. A villager will then go into Sanyati to try and find a tractor or truck operator willing to come to the village to transport the harvest to market.

The family only goes to the market in Sanyati twice per year, and during the trip they also buy seed. If someone needs hospital treatment they have to travel 12 hours on foot because of the scarcity of vehicle service. The nearest school is one hour each way walking and is also where the mother and children go to church on Sunday.

Source: Ellis, 1996

3.3.1 Time

Means of transport are themselves physical capital which are part of the poor's asset base. These assets can be either publically owned e.g. nationally owned bus, boat or rail services, or privately owned e.g. bicycles, ox-carts or trailers. – Lack of ownership of or access to means of transport will increase the amount of time people spend in economic activities (both marketed and unmarketed) and contribute to time poverty. Any increase in the availability of or access to means of transport for the poor – through credit schemes or the introduction of new appropriate technologies – will thus contribute to reducing time poverty

Transport infrastructure – the roads, paths, bridges and waterways used by rural communities – make up part of the community’s (common property) physical capital assets. Improvements or investments in this capital can shorten journey times and contribute to reduced time poverty. Once more time is available to the household, it can be re-allocated to other tasks. In the first instance a household must sustain itself, and then “spare” time can be spent on a variety of objectives including better family care, health, education, leisure, cash crop production, better natural resource management, marketing etc. These activities in turn can build up human, social, financial and environmental capital and over the longer run enable households to invest in physical capital assets. Transport can thus help save time and through the use of the saved time enable poor women and men to acquire the other assets. Box 3.2 gives an example of this dynamic.

Box 3.2: Breaking the vicious circle of the transport burden

Often a vicious circle exists, particularly in relation to poor women in Africa. The transport tasks necessary for household survival i.e. fetching water, take up so much of their time that it keeps them effectively out of the market economy which in turn limits their ability to acquire transport assets (donkeys, bicycles or carts) which means that they cannot ease their transport burden.

A group of Maasai women in the Kajiada district have shown how this circle can be broken. By using their donkeys to fetch water they have now released time to carry out farming activities – something that the District Agricultural Office had promoted for a long time but which was not realised until the transport problems were solved. The women have also had time to build a school in the village particularly with the aim of giving their daughters an education. The irony is that most donors promoting intermediate means of transport interventions look for a direct economic return to the household from their ownership. But the methodologies used to assess return do not capture these sort of gains, so interventions that enabling poor women access to these intermediate means of transport for their domestic needs frequently cannot be justified by their economic rate of return.

Source: Priyanthi Fernando (IRT, London), personal communication.

3.3.2 Access

Access can be defined as “the ability to reach, visit or use”. It is a key determinant both of poverty itself and of opportunities to escape from the poverty trap (Edmonds, 1998: 6).

The multi-dimensional conception of poverty presented in Chapter 1 suggests that greater access can be linked to several dimensions of poverty:

- weak human capabilities due to inadequate access to health, education and other services;
- inadequate social participation – associational life requires movements to meetings and good communications systems;

- insecurity and vulnerability – poor access increases vulnerability to shocks and may increase their costs. E.g. without good access food cannot be brought to food-deficit areas or famine areas and people cannot be protected from civil conflicts by national security organisations.

“...poor access is one of the characteristics of poverty. In the first place, it has its effect at the most basic level of living. If there is poor access to health services, people will remain unhealthy; children will die; and any epidemic will be likely to have catastrophic results. If there is poor access to clean water, again health will suffer. If there is poor access to basic information the household will be unaware of ideas and technology that might help them to lift their level of living. And if there is poor access to education, children will probably share in the future limitations that confront their parents today” (Edmonds, 1998: 9).

Access to health education and services

It is helpful to think of access to services as being composed of two elements: 1) *mobility*, reflecting the ease or difficulty in travelling to a service or facility, and 2) the *proximity* of these services and facilities (Edmonds, 1998). There is evidence to suggest that access is related to levels of poverty – for example, infant mortality is linked to access to health services (I.T. Transport, 1999; Edmonds, 1998). Studies in the Philippines show that although there is no correlation between income and specific access to roads there is a correlation at a higher level between overall access to social and economic services and income level (I.T. Transport, 1999). In Lao PDR, research by UNICEF (I.T. Transport, 1999) has shown that levels of health and education are directly related to access.

In the case of health care, there is a clear association between levels of infant and child mortality and distance to health services. In a study from Cebu, the Philippines (Wagstaff, 2000), proximity to a public hospital emerged as significant explanatory variable. The elasticities indicated that a ten per cent increase in distance is associated with a two per cent increase in all three mortality rates.

There is some evidence to suggest that the space-reducing effect of a new road is more important than its effect on travel costs. Airey (1992) argues that in the case of the Meru District of Kenya, reductions in the cost of travel have not significantly changed the spatial pattern of in-patient utilisation. Out-patient data show that the hospital is attracting patients from further afield, though this involves a similar expenditure on fares to that prior to road construction.

In education, the major cause of drop-outs in primary schools is the distance that children have to walk to reach their schools (I.T. Transport, 1999). A study of Morocco (Khandker et al., 1994) shows that the presence of a paved road in the community especially influences the schooling outcomes of rural children. Thus in the absence of a paved road, 21 per cent of rural girls, as compared to 58 per cent of rural boys, ever attend school. If a paved road exists, the school participation rate increases to 48 per cent for girls and 76 per cent for boys.

Comparative survival rates by grade are also affected. In the absence of a paved road in the community, girls drop out in larger proportions than boys even before completing the primary cycles. The presence of a paved road increases girls' survival rate, though only at the primary level.

Inadequate social participation, increased vulnerability and limited access to services

Findings from the Uganda Participatory Poverty Assessment Project (UPPAP) (1999) illustrate how the three dimensions of poverty linked to access are intertwined in poor people's livelihoods strategies. Factors identified as influencing community well being and improvements in poverty are: good roads, proximity to urban centre, access to markets, nearby social services, presence of groups/community associations, etc.

"With a road the rest will follow" was one poor person's view that seemed to resonate with the more general finding. Lack of all-weather roads was commonly felt to hinder community development. The consequences of poor road and water access were said to include:

- injury and loss of lives, especially in rainy season;
- restrictions in children attending school, especially in the rainy season;
- difficulties in reaching health care facilities – health consequences;
- failure of information and services to reach communities – health workers, water drilling equipment;
- reduced incomes due to lost marketing opportunities – restricted access to markets to sell produce and to processing facilities; lack of buyers to buy produce; exploitation by middlemen; failure of merchants to reach communities with commodities;
- delays in security forces' reaching trouble spots and thus growing insecurity;
- delays/failure in arrival of information;
- isolation.

Poor people in Kitonze, Kabarole district, said "Where there is no road there is virtually no development, there is no immunisation out-reach and pregnant mothers are dying...the situation is worse during the rainy season". However, it is also clear that "roads are not enough". The people of the island district of Kalangala want a regular, safe and affordable *water* transport system which will improve access to health care, schools, markets, justice and security. And Kumi district has a reasonable road network, yet limited availability of transport *services* restricts market and health care access.

3.3.3 Access to product markets

Poor access to product markets can contribute to income/consumption poverty. Consultations with poor Ugandans illustrate this well. UPPAP (1999) found that basic factors needed to improve the livelihoods of the poor included: access to markets – proximity, improved transport (including water transport), and passable roads. Produce markets are highly valued but lack of access does not allow the poor an opportunity to obtain reasonable profits from the sale of their produce. Constraints reportedly include: distance to markets and lack of affordable transport;

exploitation by middlemen; and lack of market information, especially concerning prices.

Rural roads have long been linked to the development of agriculture (see Chapter 5 for assessments of their effects). An inefficient transport system can serve as a significant constraint on agricultural efforts in rural areas, both by raising the cost and effectiveness of inputs to production and by delaying the sale of harvested crops (World Bank website – Rural Transport Services and Intermediate Means of Transport: 2). Box 3.3 illustrates popularly held beliefs about how rural roads can 1) lead to agricultural productivity improvements through enabling a shift to higher value-added crops, production of new varieties and adoption of new techniques; and 2) lead to the development of off-farm employment opportunities.

Box 3.3: Impact of rural roads on agriculture and livelihoods in Morocco

A World Bank evaluation of a road project in Morocco found that in the project areas overall levels of agricultural activity increased in volume of production, productivity of the land, and monetary values of the output. The agricultural production mix was transformed as farmers were able to shift land from low value cereals to high value fruit orchards, which yield higher profits, thanks to the reduction in perishability risks brought about by the better quality and year-round operability of the improved roads. In two of the three study regions, land used for vegetables and fruits increased over 40 per cent over the study period. Livestock production shifted towards pure breed cows, also a higher yield activity. The use of modern agricultural inputs, especially fertilisers, increased as improved transport made distribution channels better. Use of agricultural extension services by the small farms increased by more than four times over the study period. The shift to higher value products, combined with improved yields for traditional crops, raised the value added per unit of cultivated land.

Improvements in the agricultural economy led to related economic changes in workloads, employment on farm and establishment of new shops; these changes followed different patterns depending on the region. Off-farm employment grew overall by more than six times in the project zones (compared to about three times in the control zones) and happened across all three regions. The study found that agricultural practices in the control zones, which did not benefit from improved roads, remain essentially the same today as a decade ago.

Lele (1989) makes the important point that feeder roads are important for *developing* rural markets. She argues that transport infrastructure, which results in increases in mobility and access, makes markets competitive by facilitating information flows and the entry of actors into trading. Edmonds (1998) argues that if access to markets is difficult, farmers are unlikely to diversify their production to include cash crops, or even to grow net surpluses of subsistence staples, as Box 3.3 illustrates. Rural livelihood outcomes are thus linked to the impact of the infrastructure on the development of markets. If markets are competitive the poor will benefit – they can buy at lower prices and competition between traders for the goods they produce can

lead to better prices. The livelihoods strategies open to the poor can also expand with the greater development of markets and information flows.

3.3.4 Access to income earning opportunities

Poor access to the labour market is linked to income/consumption poverty and constrains the range of livelihood strategies that the poor can adopt. This is particularly important since surveys of income-diversification literature converge on an estimate of roughly 40 per cent of African rural household income on average being derived from non-farm sources (Haggblade, Hazell and Brown, 1989; Bagachwa, 1997; Reardon, 1997; Ellis, 1998).

The literature shows the benefits that improvements in transport infrastructure and services can bring to the labour market opportunities of the poor. These fall into two main categories – access to rural and urban markets for waged employment and waged employment generated by the transport sector itself.

Rural and urban labour market opportunities

In Tanzania a study of the railways showed that people are able to take advantage of seasonal employment opportunities and travel to urban centres when the need for labour is scarce in the countryside (Blume et al., 1995).

Box 3.4: Access to markets and market development: the role of railways in Tanzania

In Tanzania poor people in the rural hinterland are dependent upon the service provided by the Tanzanian Railways Corporation as the road network does not reach many districts. Agricultural products are not the major bulk of the goods transported but in some under-developed regions no alternative exists for small-scale farmers to market their products. In addition, although they are not the typical users of those products transported up-country, the poor may benefit from the improved economic environment stimulated by this flow of goods. Information on opportunities to market agricultural products (e.g. prices in neighbouring villages or regional centres) is often spread by railway employees. Possible arbitrage gains for the local population are pointed out by the decentralised TRC staff. Station to station communication lines are often used to transmit this sort of information.

Source: Blume et al., 1995

Transport may not only enable people to travel to work. It may also generate work for the poor. The poor may work as hauliers (more urban), or in maintenance and repair. Goods transportation, including labouring jobs hauling goods on handcarts or by NMVs, also provides employment for the poor. There are strong linkages between the development of transport infrastructure (road, rail or water) and the development of new markets by the roadside, railway or port/harbour. For example,

poor people can be very active in taking advantage of passenger trains as a market for selling their products, either on the trains or at the stations.

Employment in the transport sector

Public works on transport infrastructure has been used to reduce poverty through providing employment in recessions or in areas of extreme need. In some developing countries employment in transport projects and programmes is used to provide a safety net to prevent poor people falling into destitution. Donor agencies and their developing country partners have tried to create more opportunities for labour-based work in the transport sector.

The term “labour-based” is used to describe works where, although mechanical means are possible, labour is heavily used, for example in the construction of culverts, gravelling, and surface and formation construction (World Bank Website). Opinions differ on the value of labour-based works. Clay (1986) argues that “projects which are simultaneously highly successful in terms of employment and income generation and have positive distributional benefits from asset creation in the long-run, are few in number”. On the other hand, Ravallion (1990) argues that in India and Bangladesh public works are among the most cost-effective measures for poverty alleviation.

Besides their advantages in employment generation labour-based road construction and maintenance can sometimes be more sustainable and cost-effective methods than capital-intensive alternatives. Labour-based methods can produce gravel roads of equal quality to equipment-based methods while offering short-term direct effects. The short term effects can include:

- savings in the cost of road construction;
- employment creation for the alleviation of poverty;
- savings in foreign exchange;
- an injection of cash into local economy;
- increasing skill levels of local people;
- an improved chance of future sustainability through a higher sense of local ownership;
- transfers of knowledge that familiarise people with the necessary operations for road maintenance and reduce damage to the environment.

Employment opportunities have, in some cases, been successfully targeted to benefit the poor. In Lesotho, non-participant households had, on average, 50 per cent higher incomes than participants, and this was explained by the fact that employment on the road project was seen “as a last resort, when more lucrative opportunities are hard to come by”. This indicates that the poor rather than the non-poor worked on the roads in Lesotho. The study concluded that incomes from the labour-based road construction project “probably” represented more appropriate programmes for poverty alleviation because of their distributive nature (Mhlanga et al., 1995:50, cited by Keddeman, 1998).

The impact of labour-based work can have indirect effects on the livelihoods of others as well as direct benefits for the individuals and their households who are directly employed on such schemes. One of the most striking and visible effects of

employment-intensive programmes are the forward linkages, which include spending of earnings during construction. An early study from Kenya shows cash earnings in road areas compared with non-road areas to be between two and six times higher. Teashops and food outlets also represent visible forward linkages. For example, in Nigeria a “phenomenal growth in front-porch retail business in the area of the road demonstration project” was reported. (Hussain et al., 1992).

Evidence from Bangladesh includes women working for number of years on the same project, establishing savings clubs etc. Phase III of the DFID-supported Rural Maintenance Programme in Bangladesh listed among its achievements:

- 61,000 women employed and integrated into the local economy;
- increase in purchasing power;
- savings;
- improved credit worthiness;
- increased employment skills;
- acceptance in the community as workers in non-traditional areas and as participants in non-traditional activities e.g. riding motorbikes;
- self-confidence and life skills;
- greater role in decision-making at household and community levels.

Box 3.5: Feeder roads in Uganda

A study of feeder roads in Uganda using a macro-economic model reveal the following benefits:

- For every job created in the feeder road programme by using labour-based methods, another 1.6 Jobs were created in the wider economy due to so-called ‘multiplier’ effects;
- Overall the use of labour-based methods created 3 times as many jobs as equipment-based methods;
- Labour-based methods generated about two times more GDP through indirect effects than equipment-based methods;
- Although the direct benefit of labour-based methods on public revenue is smaller than that of equipment-based methods, this is more than offset once indirect benefits are included. The overall effect is that labour-based methods result in a fiscal deficit of only 46% of that resulting from the use of equipment-based methods. Hence, higher net public revenues result from using labour-based methods compared to equipment-based methods;
- There is a significant saving in foreign exchange (62%) when using labour-based rather than equipment-based methods.

Source: Taylor 2000.

3.4 Adverse impacts of transport on rural livelihoods

Transport interventions may not benefit all people equally and in some cases improved transport conditions or new transport infrastructure can undermine people’s livelihoods and deplete their asset base.

Several studies suggest that transport interventions can increase differentiation in rural communities. Income distribution can become more unequal as some better placed households are able to take up new opportunities offered by improved access to product and goods markets and others are not (Howe and Richards, 1984; www.worldbank.org Rural Transport Services and Intermediate Means of Transport).

A study in Lao PDR found the poorest benefiting relatively little, if at all, from a road improvement. It concluded that being landless or belonging to an ethnic minority disadvantages individuals and households, who may be unable to make full use of the infrastructure and services provided (SIDA/Government of Lao PDR, 1998). Upgrading rural roads can increase access for motorised transport users at a cost to non-motorised users (Howe, 1981).

Changes in the epidemiological environment due to improvements in transport infrastructure can also negatively impact on the well-being of the poor (Airey, 1991). Airey (273) notes that the disease diffusion effects of greater personal mobility brought about by improved network connectivity and travel levels tend to be negative. Historical studies refer to the impact of the railways on the development of African health environments as being “a corridor for the movement of disease carriers” (Hogbin, 1985: 937). Research in Thailand suggested that “the greater potential for extending health services has been accompanied by a spread of other respiratory and intestinal infection along the roads” and “along with roads, cholera has reached areas from which it had previously disappeared” (Moore, 1979: 10).

More recently, the pandemic of HIV/AIDS has also been exacerbated by increased travel by individuals and transport employees (World Bank – Transport Website, 2000). Certainly, HIV/AIDS prevalence rates are sometimes higher in urban and rural communities with good transport and communications. A mid-term review on the Lao-Swedish road sector project noted an increased problem of STDs as an increased flow of young women from rural areas go to the cities to earn money as prostitutes.

Transport-sector workers, including those who build and maintain infrastructure, operate transport services, supervise and manage transportation projects, are particularly at risk. They are a mobile population whose jobs keep them away from

Box 3.6: HIV/AIDS and transport sector workers

A survey of 213 truck drivers in KwaZulu-Natal, South Africa, found that 35% of the respondents had more than one sex partner in the week immediately preceding the survey. High cross-border traffic exists between KwaZulu-Natal, Swaziland, Mozambique, increasing the risk of HIV transmission.

A 1993 survey of bus and truck drivers in Cameroon found that, on average, drivers spent two weeks away from home on each trip. Almost two-thirds (62%) had sex during the trip, while one-fourth (25%) had sex every night they were away.

Source: World Bank Transport Website 2000. Surveys originally cited in: The Futures Group International, 1999; The Commission of the European Communities, no date

their homes for extended periods of time, leading to increased opportunities to engage in HIV-risk related sexual behaviour (ibid.) (see also Box 3.6).

Other evidence of the negative effects of transport includes:

- With road improvement, changing settlement patterns increase environmental conflicts unless preventive measures are initiated (SIDA/Government of Lao PDR, 1998).
- Logging etc. damaging the environment.
- Adverse impacts of resettlement due to major transport infrastructure developments.

Box 2.3, in Chapter 2, illustrated how many of these impacts were experienced by Amerindian communities in Brazil.

3.5 Conclusion

A great deal is known about rural travel and transport and much is known about the needs of the rural poor in general. Five characteristics of rural poor people's travel emerged from our review of the research literature; (i) the majority of journeys are for reproductive or subsistence needs within and around the village (ii) headloading and/or other physical portage predominates (iii) the poor lack ownership and access to means of transport (iv) women are frequently time and energy impoverished from meeting transport needs and (v) the poor are worst located when it comes to accessing services, which increases their journey time and costs relative to the better off. The major gap in knowledge is how transport needs may differ among the poor, for example between rural landless labourers as opposed to small farmers or households in the bottom decile as opposed to the second or third decile of the income distribution.

Transport interventions have the potential to contribute to poverty reduction through delivering better livelihood outcomes through their impact on time and access. Greater time availability and better access to facilities that can help build the poor's human and social capital can enable help make the growth process pro-poor through giving the poor more opportunity to participate in it.

Transport interventions can free up time used in journeys, making it available for use in other activities which can help to build the poor's asset base. Time may not necessarily be reallocated to income generating activities but can be reallocated to other activities which are equally important in producing better livelihood outcomes, including better family care, more access to health and education and more leisure. Gender sensitive transport interventions are particularly important to get the maximum livelihood gains.

To improve the rural poor's access to services and markets a multi-sectoral approach which addresses both mobility and proximity is needed. Improved transport conditions to health and education services can help poor people accumulate human capital and better mobility can facilitate social capital formation. Better transport can contribute to reducing vulnerability of communities by enabling central governments

to respond faster and more effectively to crises such as famines and insurgencies. Rural roads have a long established importance in opening up product markets to the poor and stimulating market development through enhancing information flows. As income from non-farm sources as a large share of total rural household income (over 40% in sub-Saharan Africa) the role that transport interventions can play in linking households to labour markets and enabling their participation in non-farm economic activities is of increasing importance. And employment transport construction itself can play an important role in generating non-farm earnings for poor households.

However rural livelihoods are not necessarily improved by transport interventions and in sometimes people can be impoverished by them (see also chapter 2). Transport interventions can facilitate the spread of disease – most notably at present HIV/AIDS- and exacerbate income inequality.

The most important policy conclusion is that transport interventions need to be planned and co-ordinated with other sectoral interventions to achieve the positive livelihood results noted above and anticipate and counter potential negative outcomes. Information from, and the participation of, poor people in the planning process is needed to develop and execute plans.

4. Transport and urban poverty

4.1 Introduction

The transport problems of the urban poor have received considerable attention in the development literature, yet the role of transport in alleviating urban poverty is not clearly understood (UNDP, 1998). It is important to consider these linkages in the urban context for a number of reasons.

Firstly, as Fouracre et al. (1999) argue, “for cities to function well and serve the population there needs to be an effective and efficient and accessible transport infrastructure”. Secondly, with rapid urbanisation and the increasing number of poor economic migrants in the city, transportation is a key factor in people’s livelihood strategies. It is also important to consider the urban sector since in most developing countries it accounts for at least 50 per cent of the gross national product and in some countries over 70 per cent. Finally, cities in developing countries often devote 15 per cent to 25 per cent of their annual expenditures to their transport systems, and sometimes much more (World Bank Web Site: Urban Transport Overview).

Although there are a number of overlaps between this topic and that of the previous chapter, there are a number of distinct issues relating to transport within urban areas that need to be dealt with separately. Issues relating to rural-urban linkages will also be explored within the context of a livelihoods-transport focus. This chapter begins by considering urbanisation and urban livelihoods. The linkages between these and transport are then discussed.

4.2 Urban livelihoods

This section briefly reviews the key points about urban poverty and livelihoods. There has been less research into urban poverty on account of the prevalence of poverty in rural areas. Furthermore, the livelihoods literature evolved essentially from a rural focus on sustainability and natural resources. This section will firstly consider the increase in urbanisation and then focus on the livelihoods of the urban poor.

4.2.1 Urbanisation

The world’s population is becoming increasingly urban, and although the pace of change has varied between countries and regions, virtually every country in the developing world has been urbanising rapidly over the past forty years (Figure 4.1). Furthermore, this increase is not set to abate, and forecasters are predicting an increase in the size of cities worldwide (Table 4.1).

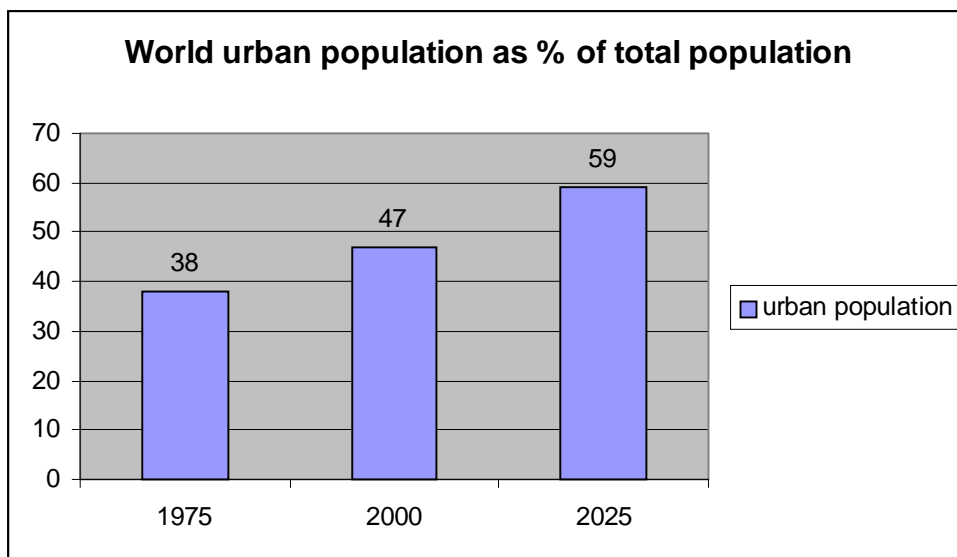
Urbanisation occurs due to natural population growth, and to rural to urban migration. The latter occurs primarily for economic reasons, but also in some

countries to escape violence in rural areas, and due to “natural”⁵ disasters. It is partly linked to rural isolation and a belief that life will be better for poor people in the city (Harris-Todaro model of migration).

There is little consensus about urbanisation: to what extent it is a problem per se, and if so what policy course should be taken in order to remedy the situation. Despite early optimism, the rapid urbanisation of parts of the developing world became a problem for policy-makers, and not a sign of progress (see Figure 4.1 and Table 4.1).

Lipton (1977) argues that migrants are not mistaken in this belief of a better life in the city. Very often, he argues, they will be better off because of government spending policies that favour urban areas. This is what Lipton refers to as ‘urban bias’. Lipton also believes that much of the apparent increase in urbanisation in the developing world is fuelled by circular, not permanent, migration to urban areas, and by the inclusion of working villages in the legal boundaries of expanding urban administrations. It is certainly true that definitions of urban and urbanisation, as well as definitions of poverty and its measurement, will influence statistics and theories about urban poverty (Wratten, 1995).

Figure 4.1: World urban population



⁵ Although disasters may be popularly labelled “natural”, man-made causes are frequent e.g. it is believed that global warming has influenced the phenomenon of El Niño which causes ‘natural’ disasters such as floods etc.

Table 4.1. Forecast population growth rates in selected cities

City	Population (millions)		% Increase
	1994	2015	
Beijing	11.0	19.2	74.4
Bombay	14.2	27.0	90.1
Cairo	9.0	14.1	56.7
Dhaka	6.9	18.5	168.1
Jakarta	10.0	21.0	110.0
Lagos	9.2	24.1	161.2
London	6.8	6.9	1.5
Mexico City	15.0	19.0	26.7
Sao Paulo	15.5	20.5	32.3
Tokyo	26.0	29.0	11.5

Source: Fouracre et al., 1999

4.2.2 The urban poor and their livelihoods

Overall there is less research and empirical data on urban than rural livelihoods, yet there is some evidence to suggest that urban poverty is increasing in prevalence (Lipton and Maxwell, 1992). As Wratten (1995: 11) notes,

“the numbers of urban people in poverty are likely to be growing at a faster rate – and in parts of the world are already greater in absolute terms – than the numbers of poor rural people. Whereas in 1980 there were twice as many poor rural households as poor urban ones, *by the year 2000 more than half of the absolute poor will live in towns and cities*” (emphasis added).

The urban poor are not a homogenous group, yet as Turner (1980) pointed out long ago, there are a number of identifiable characteristics that are likely to be prevalent (see Box 4.1). In addition to the characteristics identified by Turner, it is also true that amongst the urban poor there is an increasing proportion of single-parent, usually female-headed households; children are more likely to be involved in informal sector employment and/or undertake domestic responsibilities; and there are likely to be fluctuations in the size of the household on account of urban-rural linkages.

Box 4.1: A profile of the urban poor

Turner (1980) describes the urban poor as follows: they ‘tend to have very low family incomes, high unemployment and underemployment, with the majority of jobs in the informal sector. Standard of education and health care would be poor and there would be a high proportion of children and young people in the population. Environmental standards would be very poor, with unpaved roads, no drainage or sewerage networks and inadequate water supply, usually wells or common stand-pipes. As a result there would be a high incidence of gastro-enteric diseases, particularly amongst children. The houses themselves would be of traditional construction of mud, stone, brick or timber, etc. Quite probably there would be a government housing project build of modern materials which, equally probably, would be inappropriate to the climate and too expensive for the poorest people to afford. Land ownership or tenure would be difficult to resolve and the high incidence of squatting would compound the problem. Social and institutional facilities would be poor or non-existent and there would be little open space for recreation. Climatic conditions would be extreme, with serious water shortages during the dry season or danger from floods in the monsoons.’

Source: Fouracre et al., 1999, citing Turner, 1980

Remunerated employment is the main livelihood strategy of the urban population, with the majority of the poor self-employed and working in the informal labour market primarily as petty traders. The income from such activities is low but the poor lack the skills and capital to invest in alternative, more lucrative businesses (Government of Uganda, 1999). Prospects for moving out of poverty depend on availability of employment opportunities and the related wages earned, yet competition for work is fierce and there is a high incidence of both acute underemployment and unemployment in urban areas.

The urban poor tend to live in marginalised areas. Sometimes poor neighbourhoods are near to the centre of the city but more often than not they are concentrated on the periphery (Fouracre et al., 1999). Communities at the outskirts of cities are disconnected from job opportunities and urban services: not only do these areas suffer from a lack of basic amenities but the poor have accepted a trade-off between costs of housing and long distances from city centres (ibid.). Disempowerment results in:

- lack of access to services, and thus poor health;
- a sense of isolation and powerlessness;
- violence: an expression of their inability to integrate socially and economically;
- inefficient use of personal time and money to seek alternative forms of redress: payment of bribes; and
- dependence on non-official channels of organisations and representatives, which may lead to being members of gangs for protection and social identity.

4.2.3 Rural –urban linkages and sustainable livelihoods

The household’s livelihood often involves both rural and urban elements and in many cases, it is more useful to understand households as “multi-spatial” rather than “rural” or “urban” (Tacoli, 1998). Many urban enterprises rely on demand from rural

consumers, and access to urban markets and services is crucial for most agricultural producers. Migration is also an important element of livelihood strategies.

Tacoli (1998) argues that that rural-urban interactions involve a) linkages across space, e.g. flows of people, goods, money and information and waste, and b) “sectoral interactions”, which include “rural” activities taking place in urban areas and activities classified as “urban” which take place in rural areas. However,

“[I]t should not be assumed that reinforcing the physical infrastructure connecting rural and urban areas is necessarily beneficial (because it reinforces local interactions) or negative (because it extracts resources from the region bypassing local centres in favour of larger cities). A low intensity of rural-urban linkages can be the result of specific socio-economic conditions in a given rural area (which may also affect different groups in different ways), as well as of poor transportation systems” (Tacoli, 1998: 77).

4.3 Characteristics of urban travel demands

Rapid urbanisation means that not only are more people than ever before living and working in cities, but also that more people and more goods are making more trips in urban areas, often over longer distances (World Resources, 1996-7: 81). Fouracre et al. (1999) note that the main factors likely to influence travel demand are the city structure, the socio-economic characteristics of the community, and transport facilities and services available to the traveller:

- More people, more trips: each additional thousand population in a developing city can be associated with an additional 350-400 public transport trips per day;
- More population implies expanding area and the likelihood of longer trip lengths, increasing the burden on public transport as people are unable to walk or cycle the longer distances. Each additional square kilometre of city area is associated with the generation of an additional 500 public transport trips per day.
- In larger cities the trend is towards fixed-route bus services with result that journeys become more complex, possibly involving interchange and lengthy waiting and walking times. However, the unit cost of travel is likely to be lower: the price per mile of longer journeys tends to be less than that of shorter journeys.

Socio-economic characteristics also influence travel demands/characteristics:

- Household size affects the number of trips made.
- The sex, age and role structure of household members.
- Where incomes are higher more discretionary travel is made.
- Income affects choice of mode of transport.
- Fare levels impact on consumption of transport.
- Urban-rural linkages affect the travel behaviour of urban (and rural) people.

4.4 Transport and economic opportunities of the urban poor

Infrastructure planning and service provision are resources which, in combination, either enhance or disadvantage the livelihood of urban dwellers. As noted in Chapter 3, mobility and accessibility are related terms which include transport costs and times (e.g. Maunder, 1983) and more qualitative factors which define the degree of accessibility, such as frequency, time of availability, comfort etc. (Fouracre et al., 1999).

Tending to live in geographically marginalised areas, the urban poor are subject to high transport costs and long journeys, with poorer quality services and infrastructure than in more wealthy areas where housing is not affordable or available to those on lower-incomes. Lower-income families are to some extent trapped. They are unable to travel to relatively inaccessible jobs which might pay higher wages than ones that can easily be reached. At the same time, they may find it very difficult to attend courses which might train them for better-paid occupations.

4.4.1 Settlements, planning and housing

There are particularly strong linkages between housing, location, livelihoods of the urban poor and transport. WDR (1999) argues that firms and households must be able to make efficient decisions about where to locate within cities. Freedom of mobility, or the lack of it, profoundly affects urban economic growth. "Agglomeration economies, by definition, require proximity – firms to firms, households to places of employment" (WDR, 1999: 134).

Transport provision influences land use

Some would argue that "transportation infrastructure development may be far more influential in determining where development will take place than land use planning" (World Resources, 1996/7).

"Cities have traditionally responded to travel demand by expanding the transportation supply. In much of the developed world, that has meant building more roads, to accommodate an ever-growing number of vehicles, thereby creating a new urban form: the sprawling metropolis" (World Resources, 1996-7: 81).

The rate of settlement consolidation will depend in part on the extent to which public agencies are able to provide transport infrastructure and services (as well as other basic amenities) to spontaneous communities. This will depend on the efficiency of local service providers and the per capita income of the city, as well as topographical features. Transport infrastructure can also provide access to new areas, thereby enabling changes in the patterns of land use (World Bank, 1996; Firman and Dharmapatni, 1994).

Land-use also influences transport infrastructure and services and transport behaviour

“Once established land-use patterns largely determine the demand for transport” (World Bank 1996: 59; see also: Klassen and van der Meer, 1987; European Conference of Ministers of Transport, 1991; Matsuura and Numada, 1992; Offner, 1992). In other words, urban form influences travel behaviour (see Box 4.2).

Box 4.2: Land use policy in China

In China, land-use policies in the 1950s enforced the close juxtaposition of workplace and residence, thus promoting the use of low-cost transportation such as bicycles. With the liberalisation of labour and land markets in the 1980s and 1990s, much longer journeys are being generated that will reduce the use of bicycles and increase reliance on motorised vehicles and the associated negative externalities.

Source: World Bank, 1996

Cities tend to be mono-centric in form, partly because transport and other infrastructure is spatially concentrated and partly because high-income residents live close to the city centre. Strong spatial concentration of transport comes about because of limited resources; developing cities have a strong incentive to retain a compact, radial structure, which gives strong emphasis to low-cost public transport corridors (Thomson, 1977). Two of the most important tools the state has to promote this type of urbanisation are land use controls and public support for higher density housing near the central city or near public transit links (dos Santos Oliveira and Hook, 1994). Box 4.3 gives an example of good integrated transport and land use planning.

Box 4.3: The success of integrated transportation and land use planning in Curitiba's growth

Between 1950 and 1990, Curitiba mushroomed from a town of 300,000 to a metropolis of about 2.3 million. Despite this rapid growth Curitiba is a positive example of city management. The most important unifying feature of Curitiba's success is its emphasis on integrating transportation and land use planning. The key concept was to channel the city's physical expansion away from the central city and along five linear corridors or axes. Each axis is built around a central or 'structural' road that has exclusive lanes for express buses, for local traffic and for high-speed car traffic flowing in and out of the city. Zoning laws encourage high-density commercial development along these transport corridors, while land away from the corridors is zoned at low densities. The central city, where traffic congestion and noise have been greatly reduced, has been returned to pedestrians.

As a result of these efforts, the bus system is used by more than 1.3 million passengers each day. Twenty-eight per cent of direct-route bus users previously travelled in their cars. Despite having the second highest per capita car ownership rate in Brazil, Curitiba's gasoline use per capita is 30 per cent below that of eight comparable Brazilian cities, and air pollution levels are among the lowest in Brazil.

Source: Rabinovitch as cited in World Resources, 1996-97: 120-1.

4.4.2 The poor, location and transport

The dispersed patterns of many cities contribute to social inequalities, chiefly through limited access to jobs by the urban poor as well as proportionately higher transport costs and time spend travelling (Pendakur, 1986). In cities with large segments of low-income groups in squatter settlements at the periphery of the urban area, forms of isolation and inaccessibility exist because opportunities for employment, advanced education, recreation, and shopping are often located in wealthier areas in the city centre.

4.4.3 Public transport, transport costs/time for the poor

Public transport represents a particularly important physical common-property asset to the urban poor. Due to long distances between homes, workplaces and services in urban areas non-availability of public transport can considerably limit the livelihood strategies of the poor – for example, job opportunities and access to market places. Equally, good provision can enhance livelihood profiles and enable the poor to develop and broaden their asset base.

The available literature makes clear that there is a continuing problem in respect of the access and mobility of urban poor – unacceptable travel conditions, high expenditure, long journey times (Wegelin and Borgman, 1995; Fouracre et al., 1999). The very poorest may not even have access to public transport (Fouracre et al., 1991).

Public transport

Public transport in developing cities is characterised by the wide range of vehicle types in use (from rickshaws to metros) and services offered (see Box 4.4). Fouracre et al. (1999) note that, despite this variety of types, most are employed in one of two main ways: either providing a bus-like service with fixed routes and fares (for given trips) or a taxi-like service where the route is determined by the hirer of the vehicles and the charge is metered or bartered. Most public transport services are road-based and this looks likely to remain the case in the future.

Box 4.4: Urban transport in Latin America

The urban poor of Latin America spend a great deal of time travelling. The usual mode of transport is the bus, although there is an aversion to bus use by the middle-class, so majority of bus trips are made by poorer people. Walking is also a frequently used mode of transport. Use of the metro is limited since it is more expensive. Bicycles are only significant in a few cities. In Santiago, Chile, 75 per cent or more of work trips are made by bus, 15 per cent by bicycle and only 7 per

The availability of buses has an impact on the capacity and ability to travel, as well as standards of travel such as waiting times. South-East Asian cities have the highest ratio of buses per 1,000 residents, followed by Latin America, Africa and

South Asia (Kranton, 1991). For example, in Seoul in 1985 there were 4.6 buses per 1,000 population, compared with 1.9 in Lima, 0.6 in Harare and in Algiers 0.4.

As these statistics demonstrate, public transport is often not a priority for municipalities. For example, in Mexico City public transport accounts for only 4.5 per cent of the total vehicle stock while it takes care of 80 per cent of transport needs (Wegelin and Borgman, 1995; see also Harris, 1990; Kolstee et al., 1994). This illustrates the sharp social differentiation both in forms of mobility, the public costs of maintaining the service and the sources of pollution – i.e. private car owners.

Gaps in service provision are often filled by informal mechanisms (Wegelin and Borgman, 1995): in Lagos motorcycles carry passengers from neighbourhoods to the main transport interchanges or terminals. Similar informal operations use old cars and mini-buses operating in a demand-responsive manner. These unofficial, unregulated and unregistered services provide a service to the urban poor and are becoming more acceptable to governments. However, they are often expensive and unsafe.

Financial costs

For low-income people in many Asian cities public transport is either not affordable or constitutes a substantial financial burden (Barter, 1999). Members of poorer households tend to spend a larger percentage of their income on travel than do members of wealthier households (Alt, 1991; Kwakye, 1997). Estimates vary greatly on the percentage of household income spent on transport. Some reports suggest 5 per cent to 10 per cent, while others estimate 15 per cent (World Bank Website, Urban Transport Overview: 1); but levels as high as 20 and 30 per cent are also quoted (Wegelin and Borgman, 1995; Thomson, 1993). This clearly constitutes a substantial drain on already scarce financial assets and has negative implications for socio-economic equality.

With such a high percentage of incomes being spent on basic urban transportation the poor must ration their travel. In household budgets, the cost of the breadwinner's trip to work is prioritised (Thomson, 1993), which sometimes means that trips made by women, the elderly or the young, e.g. for schooling or health services, must be sacrificed or rationed (Thomson, 1993). Some poor urban residents will be unable to afford bus fares and intermediate technology is not always affordable. For example, in Dar es Salaam, Tanzania, many residents cannot afford bus fares, and even a bicycle costs, on average, about four times the monthly minimum wage (Rwebangira and Nnuma, 1994). In 1990, 14 per cent of households could only afford 20 bus tickets or fewer per month, and 40 per cent could afford only 53, compared with the average household which purchased 101 tickets in the same period (Barter 1999).

Time burden

In many cities, low income groups walk or use non-motorised transport (Wegelin and Borgman, 1995: 142; Narayan, 2000 (Philippines Poverty Assessment 1999); World Resources, 1996-7 on Sao Paolo). The impact of high or unaffordable fares is clearly linked to people's decision to walk (see Box 4.5). During the period of structural adjustment in Latin America (the 1980s), the proportion of the minimum

family wage represented by 50 bus fares per month increased from approximately 3 per cent to over 20 per cent. This stimulated the practice of walking instead of making an additional bus trip (Thomson, 1993). Long distances are often covered in walking to the boarding point, either to save paying an extra fare or because the bus service is scarce.

Box 4.5: Inadequate and unaffordable transport services in urban areas of Zambia

In urban areas of Zambia, 60 per cent of the core poor say that cost is the critical constraint to their using transportation services. Probably because of this the most common mode of transportation to work is still on foot and average walking distances within Lusaka are 3 km which takes approximately 65 minutes. In Lusaka, 71 per cent of the poor cannot afford public transport and walk to work. Monthly household expenditures on public transport range from over 42 per cent for low income households to 10 per cent for high income groups.

Levels of service provision to low income areas is also poor: 4.5 seats per 1000 population in Livingstone and 7 per 1000 in Lusaka (50 per 1000 is considered to be an appropriate level). Bus services are irregular and there are long bus queues at peak hours, with an average waiting period of one hour. Drivers prefer to operate the buses near where they live and avoid the poorer areas where the roads are the roughest. The least reliable routes appear to be those which run early in the morning – these are used predominantly by marketers, many of whom are women.

Hence the mere presence of roads is not sufficient to provide physical accessibility. They must be well maintained with adequate and affordable transport services provided.

Source: Narayan 2000 (Voices of the Poor - Zambia Poverty Assessment 1999)

Walking long distances has a negative impact on human capital, since it induces fatigue, and uses up both time and energy that could be spent on other tasks. Furthermore, pedestrians in urban areas are at high risk from traffic accidents and possibly also from attack. Even long-distance commuting by motorised transport can cause the poverty cycle to perpetuate itself: long distances and long travel times, tiredness and boredom combine to reduce productivity (Akinlo, 1998). In Lagos, it is estimated that long waiting times of over 30 minutes for half the commuters reduces the time available for productive activities, which by implication results in increasing poverty levels.

4.5 Transport and welfare

As in rural areas, access to services in urban areas is linked to transport provision. Because of the limitations discussed above, the poor tend to have less access to services such as hospitals, educational establishments and political institutions. To date, however, there is very little systematic evidence to corroborate this proposition.

Transport also has negative impacts on the poor's health and well-being through accidents, pollution, and attacks on users.

4.5.1 Access to services

To what extent access is determined by transport facilities, as opposed to other factors, e.g. user charges, is unclear. There is very little, if any, research on this subject. However it is very likely that the poor living in marginal areas of the city are less easily able to arrive at medical facilities than wealthier city dwellers. It is unlikely that hospitals are located in peripheral, squatter settlements and poorer districts. Furthermore, transport costs and poor routing from low-income areas to medical facilities are also factors limiting the poor's access to medical facilities. The same hypothesis can be applied both to education establishments, in particular above the primary level, and political institutions.

Poor access to hospitals, educational establishments and political institutions will inevitably have a negative impact on human capital. The urban poor also enjoy fewer opportunities to take advantage of public entertainment or recreational facilities that are provided free of charge or at low cost, such as parks, museums and zoos, than those who are well-off. Thus their opportunities for leisure and relaxation, both important in themselves and for well-being, and therefore ultimately human capital, will also be constrained.

At an aggregate level, urban-rural disparities remain marked, with urban households enjoying relatively better services and opportunities than those in rural areas. Journey distances to health centres and schools are much greater in rural areas: in Uganda the distance to the nearest clinic is four kilometres for rural dwellers but only two kilometres for those living in urban areas. Similarly, in Uganda the average distance to the nearest school from a rural community is two kilometres, but only one kilometre for urban households (Uganda Poverty Status Report, 1999). In rural Nepal the average time necessary to reach a health facility is an hour and a quarter, but 20 minutes is the comparable figure for city dwellers (Nepal Poverty Assessment, 1999).

Disaggregated figures would most likely show a great disparity between the urban population with the well-off enjoying a better level of access than the poor. However, this kind of data has not been collected. In the recent World Bank Participatory Poverty Assessments, mobility emerged as a key concern in urban areas both in and of itself (provision of public transport), and as a linkage with other forms of social services, especially education and health. Two-thirds of respondents in Mexico City complain of the poor quality and lack of access to health-care clinics. The lack of transport emerged as being particularly resented in the context of social ceremony and customs – for example, lack of transport to ferry the dead was bemoaned in numerous cases.

It is worth remembering here transport's role in rural-urban linkages. As argued previously, these relationships are often key to the livelihood strategies of both rural and urban dwellers. As such, there is an argument to suggest that we should encourage the positive linkages between spatially distant members by recognising

urban-based members' claims on rural assets and facilitating their contribution to the rural economy (Tacoli, 1998).

Fouracre et al. (1999) note that "links are perpetuated by frequent travel to attend family gatherings and village business interests". The Zambia Poverty Assessment (1999) recorded that even among the urban poor, well-being was considered to be dependent on having access to cultivable land to grow maize (1999: 113). Remittances from urban-based members can be an important income source for the rural-based members, who in turn may look after their migrant relatives' children and property. In Zimbabwe, women often travel "home" for longer periods than men, coinciding with seasonal peak harvest demands for labour on the land (Rakodi, 1995).

4.5.2 Negative externalities

Transport can facilitate mobility and access and thereby enhance the livelihoods of the poor. However, in rapidly developing urban transport systems designed primarily for motorised vehicles, there are health and safety trade-offs to be made which may impact negatively on all livelihoods assets of the urban poor. These will include: expensive road building and maintenance; clogged, congested streets that undermine economic productivity; high levels of energy consumption, with its attendant economic and environmental costs; worsening air and noise pollution; traffic accidents; and social inequities that arise when the poor find transportation services increasingly unaffordable (World Resources, 1996-7: 81).

Congestion

As cities increase in size, and distances between home and work become longer, demand for motor vehicles increases (Pendakur, 1986 on ASEAN cities). Congestion is the most visible manifestation of the failures of urban transportation and planning (World Resources, 1996-97). "It undermines the central purpose of the automobile: ready access to people, goods, and services. Clogged city streets exact a major toll on economic productivity and exacerbate air and noise pollution" (World Resources, 1996-7) (see also Box 4.6).

Box 4.6: Congestion in Bangkok

In Bangkok, the levels of congestion and air pollution are already very high: peak period traffic speeds in the city centre declined by an average of 2 kilometres per hour per year in the second half of the 1980s. As a result, an average car in Bangkok is estimated to spend the equivalent of 44 days per year stuck in traffic. Even so, 300 to 400 more vehicles are being added to the streets of Bangkok every day.

Source: Midgley, 1994

Severing communities

Expanding road construction is rarely an ideal solution to the problem of congestion. Traffic flows tend to increase in response to road building. Furthermore, it requires

both substantial financial resources and vacant land. In very dense cities, such as Bangkok and Shanghai, additional road construction would require destroying existing buildings and/or displace informal settlements. Communities form bonds that constitute a mutual aid network and form an important support against vulnerability. New transport infrastructure can destroy long-established communities or create barriers within them (Barter, 1999; Frybourg and Bureau, 1985; Lambert, 1986). The poor are particularly dependent on “the commons” which include public spaces such as streets, alleys, paths, parks, squares and, in peri-urban and rural areas, grazing land. New roads or rail-tracks can destroy these areas or make them unsafe e.g. crossing a road in order to access a park is a danger for children especially.

Pollution

In the developing world, automotive air pollution is mostly a problem in large cities with high levels of traffic such as Mexico City, Bangkok, and Lagos, Nigeria. Even in some smaller urban centres such as Peshawar, Pakistan, and Kathmandu, Nepal, air pollution from motor vehicles is becoming an increasing problem (Faiz and Gautam, 1994).⁶ In most cities in developing world, ambient lead levels still greatly exceed the accepted safe health standard (Faiz et al., 1994) (see Box 4.7). Furthermore, noise pollution can damage human hearing and affect psychological well-being (OECD and ECMT, 1995). Children are particularly vulnerable to noise and air pollution, in particular to lead poisoning. Poor children are exposed much more frequently to these than richer children (Barter, 1999). Poor maintenance of roads is also presented in the Poverty Assessments as a significant health hazard in and of itself, e.g. in Serenje and Mongu in Zambia, people complained about sore eyes and coughs from the dust during the dry season from June-October (Norton et al., 1994).

Box 4.7: Pollution by transport in Mexico City

A major source of air pollution in Mexico City is transport. The problem of vehicle emissions is exaggerated by the altitude (2,240 metres). A lower concentration of oxygen increases the emissions of hydrocarbons and carbon monoxide as compared to engine performances at sea level. Furthermore, the city is located at the end of a valley, with surrounding mountains at heights of 600 metres or so above the valley, enclosing it except to the north east and north west, from where air streams tend to guide contaminated air to the centre and south west of the city. In certain seasons this combination produce frequent climatic inversions. A city once famous for the clarity of its atmosphere is now beset by almost

⁶ On highly congested streets, traffic can be responsible for as much as 90-95 percent of the ambient carbon monoxide levels, 80-90 per cent of the nitrogen oxides and hydrocarbons, and a large portion of the particulates, posing a significant threat to human health and natural resources (Faiz and Gautam, 1994).

Traffic accidents

The rates of casualties from traffic accidents are particularly high in low and middle-income cities with over twenty deaths per 100,000 per year or 500,000 per annum in total (Barter, 1999; Jacobs et al., 1999). The number of deaths from traffic accidents are much higher in developing countries (Ross and Mwiraria, 1992): in India, for example, roadway death rates (road deaths per 1000 vehicles) are 18 times higher than those in Japan, amounting to 60,000 fatalities per year (World Bank, 1995). Critically for livelihoods, traffic accident deaths are a leading cause of death among people in economically active age groups (Ross and Mwiraria, 1992).

The urban poor are particularly vulnerable to traffic accidents and a high percentage of victims come from the poorer sectors of society (Jacobs et al., 1999). This is partly explained by the poor's modal choice and also their awareness of safety issues. Pedestrians, users of public transport and non-motorised road users are often the victims and the poor are disproportionately represented in this group of road users (ibid.). Poor children are particularly vulnerable to traffic danger (see Ghee et al, 1997 for statistics). Not only is the street likely to be a play area for them, but they are unlikely to have received much road safety education. Those children who work as street vendors are particularly exposed due to the hazardous nature of their work e.g. darting between cars (Barter, 1999).

Relatively little work had been done to determine the impact of road accidents on the poorest. It is known that there is a clear link between an injured person's likelihood of surviving a serious accident and the level of medical facilities available (Jacobs et al., 1999). The poor are also made more vulnerable than by their limited access to these facilities due to user charges (Jacobs et al., 1999). The cost to a household due to the injury or death of one of the household members, "productive" or "non-productive" is not known. It is, however, likely to be a considerable internal shock which would impact negatively on the livelihood of a poor household. Furthermore, the cost to developing countries is over US\$50 billion per annum (ibid.). Table 4.2 shows the number of working years lost per fatality due to road traffic accidents in a selection of countries.⁷

Crime

Poorly maintained transport infrastructure is linked to multiplying crime e.g. poorly lit areas make some areas perilous at night (Zambia Poverty Assessment, 1999), lack of effective enforcement of road rules, harassment on public transport etc. In areas with heavy traffic there are fewer pedestrians and therefore a lack of informal surveillance, which increases the risk/fear of crime.

⁷ The cost to the economy is worked out by the number of year multiplied by the wage rate plus a) an estimate of the lost output (from the accident victim); the cost of medical treatment; damage to vehicles and other property; and administrative and police costs.

Table 4.2. Number of working years lost per fatality due to road traffic accidents in selected countries

	Argentina 1990	Costa Rica 1989	Mexico 1991	Mauritius 1992	Puerto Rico 1991	Trinidad & Tobago 1991
Number of years lost per fatality due to road accidents	23.5	25.9	28.9	22.2	24.9	25.7

Source: Ghee et al. 1997

Crime and the fear of it will impact negatively on livelihoods in a number of ways. A reduction in material assets occurs due to theft and fear of theft of valuable assets will act as a barrier to ownership of, for example, bicycles. Physical attack is not only traumatic but may impact negatively on human capital, e.g. a person may be left psychologically or physically unable to work in the same way that they did before. Fear of theft, attack or harassment on public transport will deter use and curtail freedom of movement. This will affect people's ability to travel to their place of employment or access services. This is particularly so for women and Kaur (2000: 16) concludes that there is therefore a need to make public transport more safe so that women's economic opportunities are not adversely affected (see Box 4.8).

Box 4.8. Women and violent crime in Ecuador

Violent crime is a barrier to travel, especially for women. In poor, urban neighbourhoods in Ecuador (1996), qualitative evidence indicates that violence limits women's physical mobility to work far from or even outside the home. There has been a drop in the use of public transport, particularly at night, and an increase in the use of small trucks, especially by women. In a six-month period in 1992 one in five women in Cisne Dos was robbed on a bus, and one in two women had witnessed such an attack. The lack of safe transport during off-peak hours has caused girls, generally from the poorest families, to drop out of night schools

Source: Moser, 1996

4.6. Crowding out of transport modes used by the poor

Urban transport investments have served mainly to increase the road capacity for automobiles, often at the expense of travel modes used by the poor (World Bank, 1979). There has been little or no focus in urban transport plans to improve quality for non-motorised users e.g. pedestrians and cyclists. Rickshaws and pedicabs – a major source of employment for the urban poor yet these are often repressed, eliminated or neglected by municipal authorities in spite of their economic

importance (Wegelin and Borgman, 1995). This is partly linked to perceptions of modernity. In other words, motorised equals “modern” in the minds of some urban planners and richer, more influential urban dwellers. Non-motorised transport, such as bicycles, are seen as backward and unappealing by especially upwardly mobile groups. There are other constraints, such as unsafe operating conditions, the high price of some means of non-motorised transport relative to income. For example, in Dar es Salaam, a bicycle costs on average, about four times the monthly minimum wage (Rwebangira and Nnuma, 1994).

High tech solutions may save some time but they are problematic for a number of reasons, many of which have been discussed above. Firstly, they cost more and the poor cannot afford this. Secondly, high tech solutions are associated with higher levels of negative externalities for which the poor suffer more and disproportionately in terms of their use, than richer urban dwellers. Also, high tech improvements are capital intensive and save labour, yet pro-poor growth and poverty reduction strategies favour labour-intensive growth. Fourthly, they eliminate low-tech systems and may eliminate jobs held by the poor e.g. rickshaws.

4.7 Conclusions

This chapter has reviewed the literature relating to urban poverty and transport. It is important to consider urban areas due to the rising level of urbanisation, the increasing numbers of urban poor and the linkages between urban and rural livelihood strategies. The poor in urban areas tend to live on the periphery and have to accept a trade-off between living in areas with cheap accommodation and an increase in the amount of time, energy and money spent on transport.

Public transport is important to the poor for reaching job opportunities and services, yet it is not often organised in a way that benefits those in poverty. Expanding the level of mobility that is affordable to the urban poor would expand their potential access to and range of assets. Yet transport planning has not focused on the impacts on the urban poor with most attention being paid to motorised forms which benefit wealthy groups. Due to the negative externalities such as pollution that these produce, such interventions can make things worse for the poor.

There is little information about the following, which should be the subject of future research:

- urban access to services; and
- the ways in which public transport might be planned in order to meet the needs of the urban poor.

The following are considered to be possible pro-poor interventions in urban areas:

- improving targeting of public transport subsidies;
- designing public systems from which the poor benefit and the middle class use;
- eliminating government policies that ban NMTs;
- eliminate government policies that penalise pedestrians and NMTs;
- making public transport safe in urban areas;
- regulating motorised transport.

5. Gender and transport

5.1 Introduction

Transport use and provision are highly gendered. They are influenced by culture, custom and the overall division of household responsibilities between men and women (Jones et al., 1983; Grieco et al., 1989; Rosenbloom and Burns, 1994; Grieco 1995; Turner and Fouracre, 1995; Grieco et al, 1996; Edmonds, 1998; Turner 1998).

Women are almost certainly less mobile than men in the same socio-economic group (Barter, 1999; Dutt et al., no date – cited by Barter 1999) and they are much less likely to have access to and use of transport technology than men. Furthermore, planners and policymakers have overlooked the intra-household division of labour relating to transport. Consequently, women are forced to use transport services that are planned around the needs of men.

This chapter makes the case for gender analysis in discussions of transport and poverty, and an analysis of women's transport burden is then presented. The reasons for women's lack of access to transport technology due to financial and cultural constraints is discussed. The final section addresses the positive and negative impacts of transport interventions on women.

5.2 Gender and poverty

Both the poverty agenda of the 1990s (Lipton and Maxwell, 1992) and early Gender and Development theories tended conflate gender and poverty. However, poverty reduction is not equal to increasing the level of gender equity, nor is increasing gender equality the same as reducing poverty (Baden and Milward, 1995; Jackson, 1996; Kabeer, 1994; OECD/DAC, 1999).

It is important, nevertheless, to consider gender in a paper about poverty and transport for a number of reasons. Firstly, there are linkages between poverty and gender. Women do make up a disproportionate number of the poor. The UNDP (1995) estimate that women are estimated to account for 70 per cent of those living in poverty worldwide. It is also estimated that one-third of the world's households are headed by women and that in urban areas, especially in Latin America, this is as high as fifty per cent (Moser, 1989). Although the economic well-being of these households may vary, in many regions the poorest households include a disproportionate number headed by women (ibid.).

Secondly, gender relations influence macro economic outcomes and hence the growth path: gender equality is good for economic growth and therefore has strategic and indirect implications for poverty reduction (*Poverty Status Report 1998*, cited in OECD/DAC, 1999).

5.3 Gender division of labour and transport needs

Not all women have the same transport behaviour and needs. Institutional processes such as class, wealth and caste have complex effects on women's mobility and different women will have different priorities and needs due to their particular roles. Some women will feel the need for increased access, e.g. to woodlots or water. Other types of women workers lack mobility. For example, female extension workers need to move around their community with a minimum of time and effort, so that they can reach as many members of their community as possible to provide information and assistance. Generally, however, it is possible to say that poor and destitute women have fewer culturally imposed restrictions on their mobility (Matin et al., 1999; Fernando – personal communication), but experience much poorer levels of access to transport technology, than those who are well-off (Banister, 1980).

The institutional process of gender relations, including the gendered division of labour and gender norms, informs the roles, responsibilities and constraints upon women. As Howe and Bryceson (1993: 1716) point out, “the responsibility for transport is based primarily on local consensus regarding the sexual division of labour in the household”. These gender relations determine that women have a triple role in the livelihood strategies of the household (Moser, 1989): *reproductive*, *productive*, and *community-managing* work. It is this culturally constructed, gendered division of labour that determines women's transport activities and needs.

Head-loading, for example, is due to the link with women's role as the household's primary basic needs provider of food, fuel and water. A number of Zambian villagers reported that “[f]irewood and water are women's responsibility. Men can and do, of course, help, but it is not their job. It is a woman's job for they have stronger necks than men”. Furthermore, African women are subject to the institutional process of bride-price which imposes labour obligations on them (Skjonsberg, 1989). Bryceson and Howe (1993) argue that the institutional conditions of colonialism and the cash economy probably reinforced this division of labour.

In summary, women's transport responsibilities and the constraints on how these are fulfilled, in this case their transport opportunities and choices, and their opportunities for how they reallocate any save time, are all impacted upon by the institutional conditions. There is a big variation in the institutional processes, e.g. cultural norms and gender relations, between Africa, Asia and Latin America (Edmonds, 1998). Therefore, one would expect to find diversity of experience between women living in different regions and cultures. For example, issues of honour and shame linked to Purdah mean that women in Asia are on the whole much less mobile than those in Africa (Priyanthi Fernando – personal communication).

Structural conditions also impact on women's transport burden. Proximity to a well or to an abundant source of firewood will mean less time spent on these tasks than for those who live further away. Seasons will also result in variations in women's transport burden. During the rainy season, paths may be unpassable. During the harvest women may be involved in transporting crops (Dawson and Barwell, 1993).

5.4 Women's transport burden

This section first details the transport burden of rural and urban women. The implications of this for economic growth, poverty reduction and gender equality are then discussed.

5.4.1 Rural women

Rural household travel patterns have been largely ignored in African transport studies over the past ten years (Bryceson and Howe, 1993). Furthermore, numerous studies of women's labour time allocation have also overlooked the transport element of women's work, with the result that: "[T]ime spent transporting goods and services is subsumed into a categorisation of tasks based on net output. Thus transport of water becomes 'water collection', travel to fields becomes 'agricultural activity', etc." (ibid.: 1717). More recent village-level surveys in Africa have been undertaken which reveal the predominance of female portering in rural transport (Bryceson and Howe, 1993; Malmberg-Calvo, 1994). However, there still appears to be very little comparable data for Asia or Latin America. Hence the apparent bias towards Africa in the following discussion.

In rural areas women use transport primarily in order to fulfil the "reproductive" tasks of the household. Studies show that fetching water and firewood represent the greatest burden on rural women, closely followed by visiting the grinding mill (see Appendix 2). Agricultural activities also require travelling and transportation, although the amount depends on the extent to which cultivation and marketing of food crops is women's responsibility.

Travel time to and from fields comprises a significant proportion of time and women's fields are often those located furthest from the village (DFID, 1999). Women can spend many hours walking to the market to buy inputs and sell outputs (see Chad Poverty Assessment; and Peru Poverty Assessment, 1999). However, some studies note that agricultural transportation takes up the least amount of household time and an insignificant proportion of its effort (I.T. Transport, 1999, evidence from Ethiopia). As caregivers, women are likely to accompany those in their care if they need to travel, e.g. the sick to medical facilities. In this sense, the problems of disadvantaged groups, e.g. the sick, elderly or very young, also impact disproportionately on women (Barter, 1999).

In terms of women's travel patterns, it appears that travel within the village is much more frequent than that outside the immediate village area, with empirical studies suggesting that as many as 90 per cent of all trips are internal (Dawson and Barwell, 1993). In terms of modal choice, women are mainly involved in headloading and carrying (Doran, 1996), although there is some use of bicycles. For travel outside the vicinity of the village buses are most frequently used. Women may and may not use some form of public transport to access medical facilities.

Women spend an enormous amount of both time and energy on these tasks. The actual time and effort spent on transport will vary between and within geographical

locations, depending on cultural norms and local natural resources. Rural travel and transport surveys carried out in Burkina Faso, Uganda and Zambia⁸ suggest that the time spent by an average household on domestic transport activities ranges from 1,150 to 1,490 hours per annum. These figures equate to a time input for an average adult female ranging from just under 1 hour to just over 2 hours 20 minutes every day. The transport effort for an average household ranges from about 46 to 82 tons per kilometre per annum. This equates to an average adult female carrying a load of 20 kg over a distance of 2.5-6.8 km every day (Malmberg-Calvo, 1994). (See Appendix 2 for details, including further statistics and tables.)

In rural areas, women spend much more time on transport activities than men. Overall, in Africa 65 per cent of the total transport effort and 65 per cent of transport time is borne by women, and women carry about three to five times as much as men in a year (Barwell, 1999; DFID, 1999; Malmberg-Calvo, 1994). Furthermore, women experience a disproportionate share of transport costs and only some of the benefits (Bryceson and Howe, 1993).

Male members of the household can demand transport services while remaining insensitive to the costs incurred by the female members' intensified efforts. As energy costs steepen, African women's transport supply remains inelastic or increases perversely because they are compelled by community sanctions regarding the sexual division of labour (*ibid.*). Moreover, the transport problems for women which relate to their domestic responsibilities are of little importance to men, who tend to relate transport more to access to markets, lack of transport services and overall economic development (Edmonds, 1998). This impacts negatively on the access to and distribution of transport technology within the household (see section 5.5).

5.4.2 Urban women

As noted in Chapter 3, the poor are disadvantaged in terms of their access to public transport and there is a marked difference between the time, money, and effort which low-income men and women expend on travel (Levy, 1991). In terms of modal choice, women are more likely to use public transport or be pedestrians than men, and are less likely to have access to a private car.

Since traditional planning data focuses on the needs of the male "breadwinner", transport infrastructure and services are planned around men's needs with buses running from the periphery to the centre during morning and evening peak periods (Levy, 1991; Moser, 1989). Yet low-income women use public transport for multiple activities, such as school, shopping and health related trips, in addition to work trips. They use services at off-peak times during which there is a less frequent service and therefore experience longer waiting times. The periphery-urban routing does not suit women's needs since their multiple trips mean that they have to visit a number of scattered urban facilities (see Box 5.1).

⁸ Surveys carried out as part of the Rural Travel and Transport Project of the Sub-Saharan Africa Transport Policy Program (SSATP).

Very little is known about urban women's transport needs in Asia (Levy, 1991; Barter, 1999) and most work is about Latin America. This probably reflects the fact that more research done on urban poverty generally in Latin America than in other regions.

Box 5.1: Urban transport use in Brazil

In Belo Horizonte, women going to work made longer trips and had to change more often than men. A study found that the average time women spend on buses getting to work is one hour, compared to three-quarters of an hour for men. On average, women have to take two buses for every one taken by men. The average number of stages in women's trips, including walking to the bus stop and waiting for buses, is five, against men's average of four. Overall, women spend up to 10 more minutes waiting for buses – 34 minutes, against 24 minutes for men.

In the same city, buses from the residential area went first to the industrial district where a high proportion of men were employed. They then went on to the city centre, where passengers had to change on to other buses to continue to other parts of the city. Since most women did not work in the industrial district, it is not surprising that their journeys to work were so much longer than men's.

Women who live in the city's periphery had further to travel to work than men. Because of this, they spent more on public transport. The fare structure also makes multiple stops more costly, making it difficult for women to combine household errands.

Source: Schmink, 1982; cited in Levy, 1991

5.4.3 Implications of transport burden for economic growth, poverty reduction and gender equality

A number of studies argue that one of the factors constraining growth and poverty reduction in Sub-Saharan Africa is gender inequality in access to and control of diverse range of assets (Blackden, 1999). The evidence presented above shows that transport is a drain on both the time and energy⁹ of women. When taken into account with other work responsibilities, transport demands can be seen as a severe constraint on the allocation of the female household labour resource. There is evidence that labour resources released by reducing the transport burden of women would be reallocated to beneficial reproductive or productive activities (Malmberg-Calvo, 1994).

Reproductive tasks

It has been shown that in Tanzania when women use less time for water collection they use their extra hours to cultivate, collect firewood and wild vegetables, travel for grinding and do housework (Hannan Andersson, 1985). A survey in Peru showed

⁹ Headloading is very energy consuming and when interviewed many rural women regard energy saving as their top priority (Doran, 1996).

that the more time women devoted to fuel collection, the less time they had for cooking (Cecelski, 1984). When women spend more time cooking, the nutritional level of the meal tends to be higher because a larger variety of foods or more meals are prepared (Malmberg-Calvo, 1994: 28).

Productive work

There are also important implications for women's involvement in waged work. Analysis of time allocation shows linkages between market and household economies (Hanmer, Pyatt and White, 1997). As Blackden (1996) notes, interactions between "productive" and "reproductive" sectors are revealed in time allocation data.

Women operate in the productive sector only after or in conjunction with discharge of their responsibilities in the reproductive sector. Removing infrastructure constraints would increase women's empowerment and enhance the return to their human capital by increasing their incomes. Women located in a village on a main road in Cameroon were able to spend more time producing food to sell, and made an average income of \$570, more than twice the \$225 earned by women in an isolated village located one and a half hours from the road (Kaur, 2000; Cameroon Poverty Assessment). It is reckoned that reducing the time burdens of women could increase household cash incomes for smallholder coffee and banana growers by 10 per cent, labour productivity by 15 per cent and capital productivity by 44 per cent (Hanmer, Pyatt and White, 1997). Research in Asia shows that lack of access to transport restricts women's capacity to expand their economic activities, thereby leading to a reduction in household income (DFID, 1999).

Gender relations in sub-Saharan Africa go a long way towards explaining the constraints on economic growth especially in the agricultural sector (Hanmer, Pyatt and White, 1997). "There is evidence that reliance on headloading (which is predominantly a female activity) is a significant constraint on small-farm output in Ghana" (Rogers, 1980). "African women are, in general, over worked in the rural areas and...pressure on women's time is an important constraint on raising agricultural production and rural living standards" (ILO, 1988). To achieve a given level of household welfare, women have to work longer hours than men which means that the rate of return on women's labour is lower than the rate of return on men's labour. The Poverty Assessment for Zambia assesses the cost to the household of common gender division of labour and compares this with the alternative of simply allocating labour to tasks in accordance with needs. It concludes that the gender distortion implicit in common practices of time and task allocation can reduce net returns by up to 60 per cent. Furthermore, the sexual division of labour often leaves women with the work that is least likely to generate cash income, e.g. fetching water, producing food crops rather than cash crops.

"Women are responsible for producing 80% of Uganda's food and provide about 70% of total agricultural labour. They are primarily, if not exclusively, confined to the unpaid subsistence sector and carry out agricultural tasks without benefit of technological innovation, inputs or finance...men are not constrained by competing claims on their labour time" (Uganda: 26).

There are very few examples of increased agricultural activity resulting from time savings in water and fuelwood collection. However, one example in Lesotho showed that women who had access to more land increased their time in the fields when they spent less time on water collection (Cairncross, undated).

Leisure time

Another study from Lesotho on reallocations of time savings resulting from improved access to water, found that women spent most of their freed-up time resting and participating in social activities (Feachem et al., 1978). Given their tremendous workload and poor health, it is clear that rural women in sub-Saharan Africa often suffer from malnutrition because of the incompatible relationship between calorie intake and physical workload. Therefore it could be argued that it may not be of great benefit for women to see their rural workload reduced in one area, only to have it increased in another. It could also be argued that even if women spent freed-up resources resting, this would have a positive effect on their health, and that would be a major improvement in itself (Malmberg-Calvo, 1994).

Generational impact

Furthermore, the time burden may have a negative impact on the gender equality and educational achievements of future generations. Females in sub-Saharan Africa experienced the lowest average annual growth in total years of schooling between 1960 and 1990 of all regions (World Bank, 1999). This may be related to intergenerational trade-offs since girls are frequently pulled out of school in order to help with domestic chores which present such a time burden to women (Blackden, 1999). Reducing the time burden on women has been shown to have a positive impact on girls' school attendance.

5.5 Gender relations and gender norms

5.5.1 Access and control of transport resources

Despite the fact that women bear the brunt of the transport burden, it is men who have primary access to and control of transport technologies. Men are more likely to own bicycles and ox-carts, and as the primary wage earner they are more likely to use public transport in order to travel to or from work. Donor agencies are now focusing efforts on "appropriate" technology interventions to directly enhance rural mobility and to indirectly improve agricultural productivity. However, the preliminary evidence suggests that it is men rather than women who are the main beneficiaries of appropriate technology (Bryceson and Howe, 1993; DFID).

Those with greater access to transport, or who own transport means, will be able to determine extent and timing of use (Doran, 1996). As Doran (1996: 46) notes,

"As with other resources, it is important to understand who has access to and control of the means of transport, particularly within the household. Those who have access to transport are entitled to use it, whereas those controlling it determine who has access to it. The person who makes

decisions associated with transport and movement of goods may be different from the one who is given the task and responsibility of carrying out the transport tasks”.

For example, a husband may delegate to his wife and even though she does the carrying, may have little control over the goods, time when do it, whether do it and if there is a reward. The reasons for men’s control and access will now briefly be discussed.

5.5.2 Men have greater purchasing power than women

Men are much more likely to be the primary wage earners they have much greater purchasing power than women and this allows them greater access to new IMTs (Doran, 1996). Since women’s “reproductive” tasks are non-remunerated and, as shown above, do not leave much time for “productive” work, women’s purchasing power is typically very low. Women therefore often lack ways of raising the cash, deposit or security for credit necessary in order to purchase IMTs. Moreover, they may not automatically have control over any money that they do earn.

5.5.3 Cultural constraints

Cultural norms and values

There are strong cultural constraints to the use of IMTs by women in Sub-Saharan Africa as in other regions (Barwell, 1999). Studies have found some examples of women using bicycles and donkey-carts, but these are rare (ibid.). Women’s acquisition of IMTs is circumscribed by notions of cultural impropriety (Fernando Prianthi, personal communication). For example, in Eastern Uganda bicycles are not used by women since this is considered to be “acting like men” (Malmberg-Calvo, 1992) (see Box 5.2).

Box 5.2: The cycle trailer in Ghana: A reasonable but inappropriate technology

The cycle trailer was introduced to Ghana with a view to providing an alternative to headloading. However, the project failed. This was partly to do with the cost of the trailer which was more expensive than a bicycle and well beyond the means of the intended beneficiaries – most of whom could not even afford the bicycle. Furthermore, the advantages of the trailer were only marginal as the use of the flat bicycle carrier was already prevalent. Essentially the trailer was also out of tune with the immediate economic, social and cultural environment of the rural Ghanaian woman. Notwithstanding the prevalence of bicycles in northern Ghana, women do not own any, nor do they ride. Moreover, only a ‘man’s bicycle’, i.e. with a cross-bar, was available. Considering the Islamic dress code observed by Ghanaian women a ‘woman’s’ bicycle would have been a more appropriate choice. It was therefore unrealistic to expect women to patronise the cycle trailer.

Source: Salifu, 1994

There may also be issues of shame and honour at stake. For example, in Ghana concerns about women being exposed to traffic are partially concerns about women being placed in situations where they will be dishonoured. Whilst being shouted at by motorised users or hooted at by motorised traffic is acceptable for a male, it places a female in a situation of shame (Apt et al., 1998) (see Box 5.3). Breaking such codes may impact negatively on the social capital of the household. In Asia, too, social codes relating to women's mobility per se is strongly subscribed and controlled by cultural norms and values.

It may also be that men's possession of IMT is triggered by status consciousness rather than practicality. For example, there are several parts of sub-Saharan Africa where bicycles are used to impress but not for transport. This also may impact on social capital of the owner and the household.

Men's attitudes

Men's attitudes to transport and the value that they place on women's work will determine the amount of access they allow women to transport technology. Since women's "reproductive" work is unvalued economically, men are frequently reluctant to allow women access to transport technologies which would lighten their burden, instead prioritising remunerative tasks.

If men acquire IMT with practical objectives it is normally with commercial intentions and they rarely relinquish usage for domestic purposes (Malmberg-Calvo, 1992). For example, although there are no examples of men using IMT to collect water for domestic consumption, men will transport water for construction purposes. Similarly, a cart may be used to carry firewood for brick-burning but not for household cooking. In a more extreme example, at the end of the dry season prior to ploughing, women headload goods rather than being given access to the household's cart, because it is regarded as more important to conserve the strength of the oxen than the effort of the women.

In specific circumstances men using IMT will take over responsibility for tasks which are traditionally performed by women. They will collect firewood if distances are great, but only when the opportunity cost of time spent by women on this task becomes very high or if the distance is so great that it is physically difficult for women to carry out the work. Evidence suggests that in some circumstances men will use IMTs to perform certain tasks but will not allow women to do the same. UPPAP notes that, "[A] donkey is used to transport goods especially where vehicles cannot transport due to steep terrain... When a woman is sick, it is available for a man to fetch water" (Kapchorwa: UPPAP, 1999; Government of Uganda, 1999).

As the novelty and scarcity of the technology declines, so women are more likely to get direct access, e.g. to oxplough usage. Thus Starkey's (2000) emphasis on the importance of "critical mass" for the adoption of new transport technology is very relevant also to "gendered access".

Women's choices

Finally it should be noted that it is not always men's control over transport technology that imposes a barrier to women's use. Women may choose not to use transport technology for very rational and specific reasons. For example, the market carriers or *kayayoos* in Ghana could make more money if they used technology but this would mean working as a group. In order to understand women's non-use of IMTs, it is necessary to know that in this particular situation women are not looking to form groups but wish to work alone. Migration to the city in order to work as a market

Box 5.3: Gender and technology use in Ghana

Men typically use technology but women do not. Barriers to women/girl *kayayoos* (carriers in the market place) using technology is more socio-cultural than financial. Men work together in teams and therefore split cost of technology. Women operate on more individualistic basis with each woman renting head pan – even though combining into portering teams would permit the financing and use of superior portering technologies. Men and women work in different carrying markets – and there is a customary character to these carrying markets. Male migrants looking to stay in Accra and some form of internal career structure within local male portering. For women it is a short term prospect and expect to return to their rural communities – short term migrant experience does not favour grouping together with others in order to invest in longer term projects – though doesn't explain why don't rent together as they do have other pooling behaviours including savings. Agreement that women are not strong enough to make use of wheeled NMT, traffic conditions make the use dangerous for women. True that dangerous and that need brute strength since no brakes! Untangling practical difficulties and gender stereotype not easy. Also to do with respect and honour. Concerns about women being exposed to traffic are partially concerns about women being placed in situations where they will be dishonoured. Whilst being shouted at by motorised users or hooted at by motorised traffic is acceptable for a male, it places a female in a situation of shame. 'Women's fear' of interactions with traffic: learnt or simple reaction to physical danger

porter is seen as a temporary livelihood strategy by women.

5.5.4 Lack of appropriate technology for women

Some technology is inappropriate for women due to its design features. Examples include the introduction of a "man's style" bicycle. This has a crossbar which can get in the way of some modes of dress that women wear, e.g. in Ghana (Salifu, 1994) (see also Box 5.2). Wheeled NMT can also be too heavy or unwieldy for women (see Box 5.3).

5.6 Engendering transport interventions

IMTs can relieve women's transport burden but as shown above, who owns and controls the IMT can heavily influence the degree to which their problems of

accessibility are alleviated. There are examples of IMTs being successfully introduced and owned by women users if adequate systems of support accompany the intervention – e.g. community development, capacity building, sensitisation. This section will consider a number of cases where new transport technology and/or infrastructure, including IMTs, has been introduced. The evidence indicates that introducing alternative means of transport to undertake a task can change gender responsibilities both positively and negatively (IFRTD, 1999: 40).

5.6.1 Positive Examples

The following details case studies which are positive examples of engendered transport interventions:

- According to the mid-term review of the Lao-Swedish road sector project 1997-2000 project, new business and marketing possibilities had been opened up both for men and women. Women have strengthened their position, and now contribute to family income. In fact the review records that roads mainly benefit women. Since they now spend less time going to market, they have increased time and opportunities for income-generating activities. Women's workload has increased, but women will gain in terms of increased decision-making at household and community levels. Improved health care and female school enrolment are also recorded impacts (SIDA, 2000).
- The non-formal Women's Education Project in Burkina Faso in the 1970s introduced a number of labour-saving appropriate technologies including grinding mills, water wells and donkey carts. The impact of these technologies in terms of time-saving was assessed using "time budgets" of women. The time saving was significant either through the women's use of the cart or even by men prepared to use the cart to transport water, wood and harvested crops which they would formerly not have done without such transport. The time saved tended to be spent on household tasks, but women in the project villages participated in education and income-earning activities in significantly greater numbers than the women in villages not assisted (McSweeney, 1982; cited by Doran, 1996).
- As part of a literacy campaign, bicycles were introduced into the Pudukkottai region of Tamil Nadu in the early 1990s. This resulted in increased mobility, independence and empowerment. Five years after the scheme was implemented it was found that all women who had access to cycles, whether their own or belonging to a male kin member, were using them for a range of tasks, related to all areas of their responsibilities. The most common uses were fetching water from the well or tank, taking paddy to the rice mill, collecting fuel and fodder, going to the hospital in an emergency, and going to school (younger girls). A few used their cycle for productive work, such as selling flowers in the market. Women ride both women's and men's cycles and even riding a man's bicycle in a sari does not bother women any more, the convenience of the mode of transport outweighing all other considerations. There seemed to be increased involvement with social, development and community tasks because women can now confidently and independently cycle from village to village. Women felt themselves to be "more useful members of society". However, many women are still dependent on the cycles of others and they have to adjust their work

according to the needs of the owners. On a more negative note, almost 40 per cent of the women reported that their workloads had actually increased. Tasks that the men would do before, such as marketing, taking children to school or whatever involved travelling distances, have all now shifted to women. Cycles do however help them to complete their jobs faster and more easily. Despite their extra burdens, they report having more time for leisure (Nitya Rao in IFRTD, 1999).

5.6.2 Negative examples

It is necessary also to consider who might be displaced by promoting certain transport services. Access and control of means of transport will have implications for the access and control of resources which require transporting, potentially affecting their source and consumption (Doran, 1996). Essentially, the introduction of an IMT can mean that men will use this technology in order to take over the income-earning tasks of women thus causing women to lose control over their source of income. The following are two recorded examples of the negative impacts of transport interventions on women:

- Women fuelwood carriers of Addis Ababa (Doran, 1996). Women were earning a little money through portering activities, which essentially involved carrying firewood to towns, and selling it for cash. However, as men got access to carts and other forms of IMT, men took over this task. Although this relieved the women of the task, it also resulted in women losing a vital source of income.
- Improving modes of transport could result in women losing control of e.g. income from sale of products (IFRTD 1999). In Santhal Parganas in the south-eastern part of Bihar, the forest economy is primarily a female one, with women responsible for the collection, processing and sale of produce. Transport interventions have been few, and the state has limited itself to road construction and setting up bus routes, neither of which has helped the tribal women very much. Informal interventions such as the introduction of bicycles have not helped either as they are under men's ownership and control. Although men with cycles have taken over taking forest produce to markets, and they do spend the income on household needs, women lose direct control of the income and so they are unable to save for emergencies or utilise any of it for personal expenses. They still have to undertake the collection of the products from the forest where using a bicycle is impossible.

5.6.3 Non-transport solutions

The potential of non-transport interventions is often overlooked. According to Malmberg-Calvo (1994: ii), evidence indicates that:

- Well-designed rural water projects which provide reliable, all-year-round supply of potable water closer to home than the natural source, reduce the time and effort spent per household per day on water collection. The saving can be up to 2 hours per day, depending on the relative locations of the old and new sources and size of the household.

- Similarly, well-designed woodlot schemes can reduce the time and effort spent on firewood collection, although this is a long-term benefit since woodlots take several years to mature and produce cooking fuel.
- The introduction of improved wood-burning stoves can reduce firewood consumption by 30 per cent, with an equivalent reduction in the time and effort spent on collection.
- The provision of grinding mills closer to the home reduces the transport burden related to this activity when households are using a more distant mill. If households switch from traditional pounding to use of the mill, there is an increase in the transport task, but an overall reduction in the burden of the activity, particularly in terms of energy usage.

However, in many cases, projects have had limited success due to poor planning and inappropriate project and technology design.

Opiyo (1995) cites the example of a project to put in place hand-pumps in order to locate water closer to communities. Wells save women considerable time which free up time for family, visiting, resting and to engage in income-generating activities. The prevalence of water-borne diseases was drastically reduced which is something that may not happen if infrastructure had been the solution. Also increase in amount and consumption of clean water. The vast majority of women preferred having the water close by. There was an increase in children collecting water as the water was close enough from them to go. It is interesting to note that in the non-assisted areas men help and use IMTs but in the assisted areas women headload.

The Zambian government has set a national target that all households should be within 400m, i.e. 6 minutes' walk, of a potable water source. Applying this target, the potential average annual time savings per households would be 182 hours for Lusaka Rural, 125 hours for Kaya and 664 hours for Mbale. Households in worst-case village would save 942 hours per year. If similar targets of 30 minutes are set for woodlots, potential annual savings are 610 hours for Kasama, 208 hours for Lusaka Rural, 241 for Mbale, 119 for Kaya and 248 for Dedougou. Households in worst-case village would save 984 hours – equivalent to half a year's work for a person working 8 hours per day 5 days per week.

However, full time savings may not be achieved and may not necessarily accrue to female adults. Factors include:

- improved water must be adequate and reliable;
- improved access may generate increase in consumption and more trips;
- burden on daughters may be lifted but not those on adult women.

5.7 Conclusion

This chapter has reviewed the literature focusing on gender and transport. It has argued that women's transport burden is constructed through the interplay between institutional processes such as gender relations (gender division of labour) and cultural norms, and structural conditions such as geographical location and proximity

to resources. Rural and urban women have different transport needs to men as a result of their different and multiple tasks. They spend an enormous amount of time and energy on transport relating to reproductive tasks for the household which, if reallocated, could enable them to diversify or deepen the asset base of the household. The transport options that women enjoy, e.g. modal choice, are also strongly influenced by these same institutional processes and structural conditions. Furthermore, women do not always capture the benefits of transport inputs such as the introduction of IMTs, and planners should be wary of both the possible positive and negative outcomes of such interventions.

The literature search has revealed that there are a number of areas about which little is known:

- programmes to improve rural transport at the household level;
- women and transport in Asia;
- urban women and their transport needs outside Latin America.

These should be areas for future research.

There is an evident need for gender planning in transport, i.e. planning that takes into account the fact that men and women play different roles and therefore have different needs. When identifying and implementing planning needs it is important to disaggregate households on the basis of gender (Moser, 1989).

Transport policy can be made gender sensitive in the following ways:

- Consultation with women and men about their transport needs in order to reveal: the intra-household division of labour; the multiple and various transport needs of the household; and cultural attitudes and norms.
- Implementation of targeted credit schemes that will allow women to buy IMTs (the problem with this is that women's work is largely unremunerated and does not generate an income, therefore there is a problems regarding how they would pay back a loan of this kind).
- Provision of affordable IMT. Frequently, men appropriate improved means of transport since have capacity to pay for them – even if women are the intended beneficiaries. It may be most effective to focus on affordable improvements to existing means of transport that women are using.
- Provision of appropriate IMT (economically, socially and technically appropriate transport facilities for women).
- Look to other sectors for solutions. There are non-transport solutions that may be more appropriate than transport solutions. These would be particularly useful is available at the household rather than community-based level.
- Information should be made available to women which informs them of their rights to mobility and the options available for achieving greater mobility.

- Development and enforcement of regulations to ensure women's safety especially while walking and using public transport services.

6. Transport policies and the poor

6.1 Introduction

Howe (1999) characterises transport systems of developing countries as a “dichotomy between the modern and traditional operating largely in parallel”. As this dichotomy has rarely been recognised by official studies of the transport sector, government policies are seldom able to recognise and meet the needs of the rural and urban poor.

Policies often reflect goals for transport to be “sophisticated” and “western”, reflecting the training of transport planners. Planning skills and paradigms relevant to industrial countries have been deployed in developing countries, leading to mobility being prioritised over accessibility. This has favoured people who are already mobile, especially vehicle owners and users (World Bank, 1996).

Donor projects can reinforce these tendencies as transport projects, especially large scale national roads network programmes, are an excellent mechanism for disbursing a great deal of money in a short space of time. The *World Bank Annual Report 1999* (World Bank, 2000) reports that transport projects experience fewer delays and implementation problems than other infrastructural projects.

This chapter examines the areas where transport policy can directly help the poor through its effects on transport services and transport infrastructure. It then turns to the role that transport infrastructure can play in job creation for the poor. Finally, it examines the issues entailed in promoting public health and public safety in relation to transport, bearing in mind the needs of the poor.

6.2 Transport sector policies

There are nine key areas where well-designed transport policy can help the poor:¹⁰

1. providing adequate transport to places of employment;
2. eliminating impediments to non-motorised transport;
3. ensuring the informal sector is free to operate transport services;
4. eliminating gender bias in transport provision;
5. ensuring greater accessibility is accompanied by greater mobility in rural transport policy;
6. supplying transport services and means of transport;
7. increasing local participation in policy formulation and supply;
8. implementing progressive or neutral tax policy for transport services; and
9. designing regulations that do not discriminate.

In addition, measures need to be taken to avoid or compensate for the adverse social effects of large infrastructure projects on communities.

¹⁰ 1-4 and 7 are taken from World Bank (1996).

6.2.1 Providing adequate transport to places of employment

We have seen that for poor people, especially those living in urban areas, the cost and availability of transport to work is a major determinant of their ability to participate in labour markets. Subsidised public transport is not always the solution either because the poor cannot afford even the subsidised prices, e.g. the Calcutta metro (World Bank, 1996) or because the services do not reach peripheral areas or neighbourhoods where the poor live, e.g. the Mexico City metro (Harris, 1990). Furthermore, the low fares on public transport mean cost recovery by the sector is low, which results in financial constraints leading to reduced or restricted route coverage – exactly the opposite of what is intended (Wegelin and Borgman, 1993).

One of the arguments for privatisation of transport services, or greater cost recovery by the public sector ones, is that subsidies benefit the middle class disproportionately (World Bank, 1994 and 1996). The World Bank (1996) recommends that subsidies are targeted by route (where poverty and location are coincident, e.g. apartheid planned cities) or that targeting is achieved through employer-based schemes, e.g. Brazil's *vale transporte* scheme, or employer subsidies for the purchase of bicycles in China (Barter, 1999).

However, there may be good reasons to keep general subsidies on public transport. First, targeting by route and through employers may miss large numbers of the poor (e.g. the informal sector is missed in employer-based targeting (World Bank, 1996). Second, it may be undesirable to target public transport services too narrowly because of externalities and sustainability.

A better quality, more efficient service is likely to ensue from the political support and influence that middle class use tends to bring. And getting people out of private vehicles and into public transport may be important measures to reduce pollution and congestion and increase road safety in some of the larger Latin American and Asian cities. The trade-off between the pro-poor gains from eliminating subsidies that go almost entirely to the middle classes and reducing negative externalities and promoting sustainability has to be evaluated in specific contexts.

6.2.2 Eliminating impediments to non-motorised transport

The World Bank (1996) recommends that the security and convenience of walking is addressed through measures such as improved street lighting and better pavements, side-walks and other pedestrian facilities. It argues that even more dramatic improvements can be achieved by shifting from walking to cycling.

Government policy is frequently a barrier to the poor's use of bicycles. Tariffs put bicycles out of the reach of the poor in Uganda, Malawi and Ethiopia (World Bank, 1996) and Bangladesh (Barter, 1999). The bicycle is taxed as a luxury (as it is in France) in many francophone African countries (John Hine – personal communication).

Sometimes government policies work directly against the transport needs of the poor. In Bamako, Mali, and Addis Ababa, Ethiopia, horse carts were banned. In

Jakarta, Indonesia, non-motorised tricycle taxis – becaks – which provided an affordable form of transport and employment for the poor, are banned as a measure “to eradicate poverty” and maintain the status of the capital city (Starkey, 2000). Road design frequently leaves little room on the hard shoulder for other NMVs, including animal traction, to be safely used with motorised vehicles.

Access to NMVs can still be constrained by low income and credit schemes may be needed to enable the poor to buy bicycles or animals and carts (Barwell and Howe, 1984; Barwell, 1999; Starkey, 2000). The need for complementary credit programmes to allow poor people to purchase means of transport to use on newly constructed roads was pointed out in the 1980s (Barwell et al., 1985).

Box 6.1: Eliminating the barrier to NMVs through better road design

In Bamako, Mali a recently constructed road bridge and its access roads have separate pedestrian pavements and cycle lanes (used by bicycles and motor cycles). In some Indian cities there are separate lanes for pedestrians, cycles, rickshaws and motor vehicles..... Attention to poverty reduction criteria ensured that international credit for the Yamuna road bridge over the Ganges in Bangladesh was made conditional on the inclusion of lanes for intermediate forms of transport.

Source: Starkey, 2000:45

6.2.3 Ensuring the informal sector is free to operate transport services

The informal sector is an important provider of transport services where prices charged by state and formal private sector transport operators put these services out of reach of the poor. However, operations of the informal sector can be constrained by government policies which restrict operating licenses (World Bank, 1996) or impose direct bans on the forms of transport used by informal sector operators (see section 6.2.2). Corruption means that transport operators have to bribe police and other officials to obtain licenses to operate in cities (World Bank, 1996). Clandestine tolls force drivers to pay at each control point on national routes which is a problem for formal and informal transport operators (Bonnafous, 1993).

Cleaning up government and reducing the opportunities and incentives for corruption can therefore be beneficial for government and private sector transport services as well as other government services.

6.2.4 Eliminating gender bias in transport provision

Chapter 4 has reviewed the literature which documents women’s transport needs and common gender biases in transport planning. Some policies that would reduce the transport burden of women lie outside the sector. For example, relocating services closer to the home may be preferable to improving transport-based solutions to improve access.

Gender-sensitive transport sector policies include:

- provision of street lighting and other measures to improve women's safety in public and private transport use (World Bank, 1996);
- involving women in transport planning;
- targeting credit schemes to buy means of transport at women;
- targeting information at women transporters (Starkey, 2000).

6.2.5 Ensuring greater accessibility is accompanied by greater mobility in rural transport policy

For the rural poor, access to local facilities and the primary transport network is most important. This access is provided by paths and tracks, unpaved and unclassified roads, and in some countries waterways and coastal routes or air transport which link often remote rural areas to the main transport trunk routes (Barwell and Malmberg-Calvo, 1989; World Bank, 1996; Dixon-Fyle, 1998).

In recent years there has been considerable emphasis by donors on the importance of rural feeder roads (see Box 2.4, Chapter 2). However in many cases the poor lack access to transport services (Chapter 3) and the private sector is incapable of supplying them. Howe (1999) calls for policies for public sector assistance to the (motorised and non-motorised) vehicle sector to remedy weaknesses in the private sector's capacity to supply transport services in some countries. A range of complementary interventions, including support to the private sector to supply transport services or produce means of transport at prices the poor can afford are therefore needed.

In many instances, a transport intervention is not the solution to improved access. Facilities can be bought closer to the home (e.g. development of water supply systems, extension of rural health facilities, installation of grinding mills, creation of wood lots, adoption of fuel efficient stoves, creation of new markets) (Barwell and Malmberg-Calvo, 1989; Starkey, 2000). Where accessibility does seem to call for increased mobility, innovative approaches need to be considered.

Box 6.2: Increasing access in rural areas: non transport solutions

In Kabompo in Zambia a main constraint to development was the farmers inability to sell agricultural produce. Farmers had no means of transporting their maize to the distant marketing depots. The local rural development programme decided on a twin strategy to reduce the transport constraints. It established a network of local marketing depots so that no village was far from a place where farmers could sell maize. The programme also introduced ox carts so farmers could easily transport maize to the nearby depots. The transport constraint for marketing was relieved by a combination of non-transport solutions and IMTs. This allowed agricultural production and economic development in the area to increase.

Source: Starkey, 2000

Roads

Small-scale repairs or construction targeted on particular sections of roads and paths that frequently cause them to become impassable have high returns as can the construction of bridges and fords. Local government, in consultation with communities, is usually best placed to identify and plan these interventions.

This does not imply that localised needs should be met at the expense of the core network. The first priority of spending on rural roads is “to maintain those roads that form a core network, that have been identified by users as functionally important and that are currently in reasonable condition” (World Bank, 1996: 79). However, techniques used and expenditures planned should take local conditions into account. It is not always necessary to pave roads that do not have high volumes of traffic and standards of construction should reflect local conditions, not city or industrial country norms.

Waterways

Water transport is the most important way to access core transport networks and local facilities for many communities. But it is often neglected in transport policies, even when consciously poverty-focused. The district of Kalangala in Uganda consists entirely of islands in Lake Victoria. As reported above, UPPAP (1999) found that people there wanted a regular, safe and affordable water transport system which would improve access to health care, schools, markets, justice and security. However poverty-targeted district budgets for transport only provided for feeder road construction.

There are few examples of government interventions promoting water transport used by the poor. Hilling (1996) finds that ‘[i]n many respects inland water transport has been neglected and does not usually feature prominently in the transport planning strategies of most countries. An exception is the Government of Vietnam which attaches high priority to the development and improvement of waterborne transport in the Mekong delta’ (Palmer, 1998). Donors are equally bad at including water transport in sectoral projects. The World Bank has only included water transport components in two projects to date (www.worldbank.org Rural Water Transport).

All too frequently, water transport used by the poor is adversely affected by government policies. In Thailand, boats used by the poor are viewed as old-fashioned and primitive, and in need of replacement by “modern” crafts. In Bangladesh, little effort is made to maintain waterways, and in Bangkok and many other cities waterways and canals are replaced with roads as water transport is viewed as outmoded and inefficient (Palmer, 1998).

Recent thinking suggests that investment in water transport can be a highly cost-effective way to meet the transport demands of poor people. As Palmer (1998) points out, the technology of water transport is energy-efficient and cost per unit transported is less than on the roads. The transport network already exists naturally and in many cases can be improved at very low cost (www.worldbank.org, Rural Water Transport). The poor also provide water transport services, so investments

and appropriate government policies could help promote their incomes and livelihoods.

Palmer (1998) identifies the following actions that could be the focus of government policies to improve water transport:

- route identification and classification and the provision of navigational aids;
- installation of safety equipment;
- cargo agencies and storage facilities;
- insurance;
- selective dredging and river draining;
- construction of safe moorings and durable landing sites;
- formation of unions and other organisations to lobby for the sector;
- registration.

Railways

There is little analysis of whether railways meet the demands of the poor or have potential to be developed as a pro-poor transport initiative. We found only two studies, of Bangladesh and Tanzania, both commissioned by the *Kreditanstalt für Wiederaufbau*, that bring evidence to bear on this issue.

Both reports find that significant numbers of poor people use railways – in Bangladesh travelling without paying is common, as it is in Tanzania. Both find that poor people travel long distances as well as (predominantly in Tanzania) shorter ones. Both find that the main purpose of travel for passengers who travel third class is to visit family and friends.

The study for Bangladesh, however, concludes that there is no net benefit for poverty reduction in running a railway system in the country. No region is uniquely served by rail; the road and inland waterways are the most important transport systems in Bangladesh, and formal sector transport services are not considered a bottleneck to development. The costs of a poorly-performing parastatal, it is concluded, outweigh the poverty-reducing effects of employment of the poor and provision of passenger services to the poor might have (Chowdhury and Kandler, 1995).¹¹

In contrast it is concluded that the Tanzania Railway Corporation makes many positive contributions to poverty reduction and is probably of net benefit. It uniquely provides services to and within remote regions; transports agricultural cash crops grown by the Tanzanian poor and the poor in neighbouring land-locked countries to markets; facilitates the transmission of market information and opens up new market opportunities. In addition, it enables welfare-enhancing and risk-reducing migration strategies; helps maintain traditional family-based social security systems; and provides employment at wages above the poverty line. Also, railway lines and bridges are used as paths by the poor (Blume et al., 1995).

¹¹ The studies use different methods to assess net benefit to poverty reduction and are not comparable. The Bangladesh was narrower in its scope of defining potential indirect poverty reducing effects, not including for example opportunities for marketing to railway passenger and beneficial effects from maintaining family networks for example.

Blume et al. (1995) point out that first and foremost public policy needs to ensure that railways eliminate losses, operate commercially and increase the efficiency of their operations. They suggest that the following policy options are compatible with this goal:

- implementation of a progressive passenger fare policy: first class passengers should pay more per kilometre than third class passengers; fare increases should be weighted towards the first class tickets; and, longer trips should cost more per kilometre than shorter trips;
- implementation of progressive freight tariffs: e.g. in Tanzania increasing up-country freight tariffs relative to down-country freight tariffs would protect the poor (food crop marketers) and tax the better off consumers (importers of oil derivatives and cement) and enhance efficiency by reducing excess capacity in down-country rolling stock;
- using freight tariff exemption to subsidise key inputs or goods used by the poor e.g. fertiliser, food in drought/ food deficit areas;
- keeping small stations open (where there are no local transport alternatives) even if they are loss making.

6.2.6 Supplying transport services and the means of transport

In many countries or poor regions low availability of transport services and means of transport impose constraints on mobility. Traditional approaches to transport planning which assumed that once the public sector supplied the infrastructure the private sector would supply the means of transport have often been proved wrong.

Where the private sector is weak, public-sector policy should consider ways to finance the risks of supply initiatives (Howe, 1999). Alternatively, public-sector funds or incentives may be needed to research and design low-cost vehicles suitable for local conditions (Starkey, 2000). Infant industry protection for development of commercial production of suitable means of transport should be considered.

6.2.7 Increasing local participation in policy formulation and supply

There is a broad consensus that greater involvement of the poor in transport planning is desirable. What this involvement might mean in practice is, however, open to some dispute. Broad agreement exists around the need to:

- consult with communities about priority needs;
- allocate more expenditure at the local government level to invest in more small scale constructions;
- devolve more decision making power to local government regarding setting transport priorities;
- use more labour intensive techniques;
- use local transport firms to construct local road and other local infrastructure.

There is disagreement about the desirability of community-based management and cost recovery in transport programmes. The World Bank (1996) says that it has had some success in promoting co-financing of rural works by municipal funds and local communities. On the other hand, Derbyshire and Vickers (1999) point to the variety of pitfalls of these approaches can have, including that often in practice there is very

little room for primary stakeholders to negotiate solutions. Solutions to problems of maintenance or upkeep of roads and other infrastructure frequently come in pre-prepared packages, e.g. labour contributions or special maintenance fund contributions, derived by donors, NGOs or governments as measures to enhance ownership and sustainability of programmes.

In practice it may be hard to draw the line between genuine community participation and forced labour. The ILO's *Abolition of Forced Labour Convention, 1957* prohibits the use of any form of forced or compulsory labour for, among other things, "workforce mobilisation for purposes of economic development". Minor communal services, defined as related primarily to maintenance work and, in exceptional cases, the erection of certain buildings, are exempted from this provision.

The conditions for their exemption include:

- the services must be communal, performed in the direct interests of the community, and not relate to the execution of work intended to benefit a wider group;
- the members of the community which have to perform the service or their direct representatives (e.g. the village council) must have the right to be consulted in regard to the need for such services (Ladbury and Gibbons, 2000).

Consultation frequently fails to reach those who will actually be called on to do the work (Derbyshire and Vickers, 1999). Priority needs for the community may be perceived differently by the rich who very likely have a louder voice when it comes to

Box 6.3: Forced labour or community participation? Roads and entitlements

Members of the Kogot women's group in Kenya said that they would be unwilling to maintain roads without reward despite a great problem of isolation because:

- it was the duty of the government
- they were busy on their farms
- the people who use the road come from further on
- it is the responsibility of the elected MP to ensure road construction and maintenance is done by the government

As primary stakeholders who agree to 'solutions' for sustainability are not necessarily the same people who will be called on to provide labour money and materials for ongoing work ownership is not necessarily increased by initiatives that devolve responsibility to communities.

Source: Derbyshire and Vickers, 1999

defining community demands,¹² in practice community participation may exploit the disadvantaged.

¹² WDR 2000 notes the problems of 'elite capture' of community based projects.

Most road and transport infrastructure has benefits that extend beyond the immediate community and the intrinsic public-good qualities of roads mean that they benefit the nation rather than particular groups of individuals. This implies that many “community contributions” to rural roads do amount to a form of forced labour as defined by the ILO conventions. Ultimately what will matter is communities’ capacity to make their objections, if any, heard, and local government or donors’ willingness to hear and respond in a flexible manner. There is a case to be made that roads and other transport infrastructure constitute an entitlement which pro-poor government policy should entrench not remove (see Box 6.3 above).

6.2.8 Implementing progressive or neutral tax policy for transport services

Governments are faced with weighing up trade-offs to arrive at pro-poor transport tax and regulatory policies. On the one hand transport-related taxes and charges (import taxes, fuel taxes and motor vehicle licenses) can be an important source of government revenue and can therefore contribute to government efforts to limit the budget deficit. On the other hand, such taxes and charges can push transport costs so high as to negate other policy efforts geared to promote export trade and the development of domestic markets and impact adversely on the livelihoods of the poor.

The exact solution to this trade-off will depend on country-specific circumstances, which take into account the extent to which transport costs constrain trade, the competitiveness of the transport sector and the need to constrain transport demand arising from pollution and congestion costs. Three general principles can be identified:

- the taxes and charges that affect transport services at minimum should not be regressive and should be progressive in some circumstances;
- those regulations that are imposed should not discriminate unnecessarily against the poor; and
- regulations and policies should be able to be implemented and should not create opportunities for corruption.

Transport tax policies can be regressive, as duties and taxes on small vehicles used for local trips are higher than for larger freight carriers (Bonnafous, 1993). Such policies should be revised. Even in the event that tax and duties are neutral between different types of carrier, a weak private sector can mean that government should provide incentives for rural vehicle operation through reduction of taxes and duties (Howe, 1999). Public transport charges can also be regressive, for example a review of the Tanzania Rail Corporation’s fare policy found that poor passengers in third class had to carry the burden of the fare increases (Blume et al., 1995). Again, there is a case to consider a policy of progressive charges, particularly as in this case it could easily be administered.

We saw above that tariff policies can be regressive as the imported means of transport used by the poor, e.g. bicycles, are taxed at the same or higher rates as those used by the rich, e.g. cars. Such tariff policy is easily reformed. Other reforms may require more complex considerations of the effects on demand for locally produced goods and services. For example Bonnafous (1993) concludes that rather than lower duties on imported vehicles and new tyres as a means to lower transport

costs in West Africa, it is best to lower import duties on spare parts and keep import duties on new tyres to keep the domestic vehicle repair and maintenance sector – much of which is small scale – in business.

6.2.9 *Designing regulations that do not discriminate*

Government regulations often prohibit transport services used and supplied by the poor. Again, in most instances governments need to carefully evaluate the trade-offs involved. Some transport services used and supplied by the poor may be more polluting and less safe (old cars and lorries) than other alternatives. On the other hand, there are cases where such transport services (given an appropriate policy framework) are preferable as they ease congestion and/or are more environmentally friendly (bicycles, animal transport, rickshaws, etc.).

Similarly government should design policies to clean up cities or reduce congestion with the needs of the informal sector and the poor in mind. Measures need to be included to mitigate the adverse effects on informal sector livelihoods – e.g. taxi drivers in Lagos.

Regulatory frameworks usually need to be revised to ensure that both public and private suppliers of transport infrastructure are poverty focused. Standards need to be set which are appropriate for developing countries – for example rural roads are over-designed in many African and Latin American countries – leading to fewer roads being built. And new government regulations may be needed to ensure that services the poor use are not cut as a result of privatisation (WDR, 2000).

Finally, regulatory frameworks need to be designed that minimise opportunities for corruption. PPAs show that the poor frequently cite corruption as a factor which limits their income-earning capacity. Elaborate systems of regulation based on standards appropriate for developed countries that are unable to be implemented in practice lead to what Bonnafous (1993) describes as an “over-regulated de jure and virtually totally liberalised de facto system”. Such systems are open to selective implementation by officials which encourages violations, bribery and corruption.

6.3 *Employment generation through transport projects: labour intensive methods of construction of roads and other transport facilities public works.*

Using labour-intensive methods to build transport infrastructure can increase the job opportunities for the poor (see Chapter 3). While in the main these schemes have been used in rural areas, the experience in South Africa suggests that they may also be effective in urban areas. Use of labour-intensive techniques is frequently justifiable on efficiency grounds, particularly where wages are less than \$4 a day (World Bank 1996). But this needs to be evaluated in specific contexts. Table 6.1 sets out the arguments for and against a high labour content in works in the context of the Sida road project in Laos.

Table 6.1: Arguments for and against labour intensive techniques in road works

Arguments for relatively high labour contents in works	Arguments for relatively high equipment contents in works
Devaluation: increasing equipment spares and fuel costs	Donor fixation: relatively easy access to capital funding
Inflation: increasing interest rates and decreasing labour cost	Population: high seasonal demand for agricultural labour
Competition: competitive labour, capital and commodity market	Privatisation: Need for local contractor sector development
Skill formation: need for basic public works knowledge	Staff reduction: low public managerial and supervisory capacity
Self-determination: drive towards inculcation of ownership	Modernisation: aversion to use old colonial and Chinese influence

Source: Adapted from SIDA/Government of Lao People's Democratic Republic

Issues for policy makers include strengthening the implementation capacity of government, particularly local government. If work is contracted out by government to local firms this may entail strengthening government capacity to monitor and regulate the private sector. It may also mean supporting capacity building for the private sector firms themselves. Measures need to be put in place to ensure transparency and accountability of funds.

Employment on public roads have been successfully used to target employment opportunities to the very poor, for example in India's Maharashtra Employment Guarantee Scheme. A critical issue is whether the wage offered on schemes designed to target the poor is lower than the reservation wage of the non-poor. An assessment of poverty targeted employment programmes in Kenya found that some employees on the Rural Roads Programme were able to use their wages to hire labour on their own farms and build houses. That is, the not so poor, as well as landless, casual labourers and women single parents, worked on the scheme.

It was concluded in this case that the wage rate should be lowered so that more jobs went to the poor (World Bank, 1995). However, others have argued that setting wages too low creates a destitution trap. People will be unable to save or invest and workers will leave projects as poor as when they started (Howe and Bryceson, 1993).

Employment on roads can be an important source of income for poor women. Concern has been raised about the impact that women's employment on road works could have on mother and child health. However, households may develop strategies that successfully minimise these risks. Evaluations in Kenya and Tanzania indicate that there the extended family structure allows women to leave household and child care to grandmothers, older children and other female relatives, and that relatives and friends stand in for them if they cannot attend their job (Howe and Bryceson, 1993).

Nevertheless there are a number of gender issues that should be addressed in labour based works projects, including:

- whether women have an equal opportunity of gaining employment;
- whether there is gender based pay discrimination;
- whether sanitation and reproductive health care facilities are accessible and adequate;
- whether women are recruited for all tasks or only those based on their gender roles, cooking and water provision for male labourers;
- whether adequate child care facilities exist;
- provision for health and safety;
- protection against sexual harassment and violence against women;

6.4 Accidents, public safety and the poor

Road accidents constitute a serious and increasing problem in developing countries. The poor are particularly vulnerable to accidents since they are restricted to walking or using public transport to meet their travel needs. It is these modes that are the most vulnerable to traffic accidents (Jacobs et al., 1999). Studies show that most accidents are due to:

- poor road use by pedestrians;
- poor driver behaviour;
- various external factors, e.g. road design and maintenance, poorly maintained vehicles, etc.

There is considerable potential for improving the safety of these modes and reducing the risk to the poor, for example through education campaigns. The WDR 1993 suggests that a multi-pronged approach to road safety can reduce crashes at a reasonable cost:

“Public investment in improved road infrastructure and highway operation systems, remedial action at known ‘black spots’ with high accident rates, and expanded public transport systems all make a difference. Legislation, financial incentives, and programmes of road safety education can improve driver behaviour, reduce traffic speeds, promote use of seat belts, improve vehicle safety, and reduce drunk driving. The insurance and legal liability systems may also offer powerful incentives for road safety” (WDR 1993: 99).

However, in the case of public transport there is likely to be a trade-off between improved safety and the cost of the service to the poor. For example, with limited financial resources, maintenance procedures are usually inadequate and key safety features such as the condition of lights, tyres and brakes are likely to be defective in one way or another (see Jacobs and Downing, 1982). Improved safety incurs a cost which, unless subsidised by government, will have to be covered by higher user charges. Therefore, livelihood would be improved by the reduction in the likelihood of a severe internal shock, yet there will be a greater drain on financial resources, and some may be unable to afford public transport at all.

Given the limited resources of developing countries and the consequently difficult allocative decisions that have to be taken, it is important to develop a method by which the cost of road accidents and the value of preventing them can be assessed. Jacobs et al. (1999) argue that the first need for cost figures is at the level of national resource planning to ensure that road safety is ranked equitably in terms of investment in its improvement. They note that broad estimates are usually sufficient, but that they should be made on a comparable basis with other sectors competing for scarce funds.

Secondly, it is important that the best use is made of any investment and that the most appropriate safety improvements are introduced in terms of the benefits which they will generate relative to the costs of implementation. It is important to associate specific costs with road accidents and standardise the assessment of projects that assess road safety. This will guarantee a more optimal pattern of expenditure on road safety and the inclusion of low-income members of society in the planning process. If the benefits of safety are ignored, there will inevitably be an under-investment in road safety (Jacobs et al., 1999).

Top priority should be given to understanding the problems of pedestrians and public transport operations and developing and evaluating the following improvements (adapted from Jacobs et al., 1999):

- road safety education in schools;
- road safety information for parents via existing community communication systems e.g. women's groups and health centres;
- footpath and pedestrian crossing facilities;
- traffic calming and speed limits;
- urban safety management;
- driver training to agreed standards;
- improving enforcement of e.g. speed, dangerous overtaking, driver stopping behaviour at crossings, limiting working hours, and drug/alcohol controls;
- training, testing and screening of professional drivers;
- management of safety of bus operations including vehicle maintenance;
- medical care particularly at the scene of the accident.

Jacobs et al. list the following as the key requirements for road safety actions at the national level:

- co-ordinated road safety action plans with realistic targets;
- a road safety management system with responsibilities and accountability clearly identified;
- road accident and injury information systems;
- road safety funding;
- safe planning and design of roads including road safety audit of new schemes;
- improvement of hazardous locations;
- urban safety and traffic calming;
- road safety education of children including school programmes and parent to child advice organised through community information networks;
- driver training, testing and licensing with priority on professional drivers and high risk drivers;
- road safety publicity campaigns;

- traffic legislation;
- traffic law enforcement;
- emergency assistance for road accident victims;
- road accident costing and decision making systems;
- evaluation and research and development.

Jacobs et al. note that the following are of particular importance for developing countries:

- establishment of road safety action plan with funding;
- trained road safety teams;
- a reliable and accurate road accident information system;
- road safety audits, which should be the norm for all road improvement schemes, with vulnerable road users taken into account at the design and construction stages.

However, some road safety projects have experienced difficulties in achieving sustainable improvements and attention needs to be paid to the following (ibid.):

- establishing awareness of the problem;
- ensuring commitment to and ownership of the improvements;
- sufficient institutional strengthening;
- monitoring and evaluation with feedback and modification to action plans;
- sharing of project information for the benefit of all future projects.

Appendix 1:

Terms of Reference

Background

The World Bank, in collaboration with the U.K. Department for International Development, is seeking to engage a consultant in the field of poverty to work on a Study of the Role of Transport in Poverty Alleviation. The Study is part of a wide range of initiatives being taken by the World Bank to (i) improve qualitative and quantitative understanding of the linkages between sector level interventions and the welfare outcomes for poor households, and (ii) assist countries in the development of their strategies for poverty alleviation by providing practical advice on issues, diagnosis, analysis, guidance on public actions, and evaluation. The Study will combine conceptual and empirical/analytical work together with case study approaches and qualitative/participatory information. Applicants should have in-depth familiarity with knowledge of the micro level determinants of poverty and studies of the outcomes of sector level interventions aimed at poverty reduction, including expanding income earning opportunities/access to labor markets, improving delivery of education and health services, and more generally the ways in which access shapes information flows, and social and political inclusion. The main objective of the Study is to provide practical advice, insights, and lessons of international experience, to help countries improve their strategic choice, design, and effectiveness of transport projects/policies, in combination with other interventions, in contributing to poverty alleviation.

Scope of Work and Deliverables

The work will involve examining the *direct* effects of different transport conditions on poor groups (including the very poor), in both rural and urban contexts, in the following areas :

- (1) transport conditions and effective delivery of social services, in particular **education and health** (with respect to inputs as well as users),
- (2) transport conditions and the ability to participate in **income earning opportunities**/ labor markets, and move from subsistence to local trade,
- (3) transport conditions and the dissemination of **information** (e.g., crop prices in regional markets and buyer market power, extension services, seasonal work, unskilled urban job prospects),
- (4) transport conditions and **inclusion/participation** in social and political activities,
- (5) transport conditions and **housing/land/occupancy constraints**, especially in urban areas, and

(6) transport conditions/obstacles that arise from **policy/and policy changes** (e.g., entry prohibitions on transport services and deregulation of public transport), from interventions/constructions (e.g., crowding out of non-motorized transport, including walking and high tariffs on imported bicycles) and from the overall pattern of allocation of government expenditure (e.g., geographically in the transport sector).

The tasks to be undertaken covering each area are separated into two phases : information gathering and basic policy guidance (Phase 1) and in-depth analysis and technical guidance (Phase 2). Specifically,

Phase 1: “ What do we know and what do we actually need to know about transport and poverty to best inform policy and program decisions aimed at poverty alleviation?”

(a) **a comprehensive search of the poverty (and transport) literature**, including not only conventional publications, but also country studies, less formal research, results/findings of participatory community studies, and donor-supported studies and project evaluations, to identify the state of our knowledge with respect to:

- the transport **circumstances**, needs and constraints of poor households and individuals,
- key relationships/ hypothesized linkages between transport and poverty,
- **complementarities** and trade-offs with other sectors and empirical findings;
- **case studies** of the impact of transport changes/interventions,
- **lessons/insights**, of good and bad practice, including the effectiveness of past interventions, which can inform public policy;

This task would also establish **an annotated inventory of case studies and data sets** that could be used to formulate and explore empirical relationships, and which anticipate policy relevance;

(b) **a Practical Guide (“Toolkit”) for government decision-makers in formulating policies for the transport sector that contribute to poverty alleviation.** This Guide should draw on the findings and conclusions established under (a) and address in form, and in substance as far as the information assembled allows, the following elements, with respect to poverty alleviation (examples are illustrative) :

- **identification/”stock-taking” of transport problems facing the poor** (diagnostic indicators, poverty profiles, spatial poverty maps, data needs and feasibility, community participation);
- **key transport sector issues** (e.g., nature of access and “spatial poverty traps”, affordability and subsidies, informal services, non-motorized services, investment priorities, gender and access, public expenditure programs for transport, impact of market structures);
- formulation of **strategic approaches and policies** (national –local government responsibilities , and community participation)
- approaches to the **assessment** of government interventions and inter-sectoral priorities (top-down and bottom-up community guidelines)

- **monitoring and evaluation** of outcomes of interventions, learning-by-doing, community feedback
- **resource material** (concise cases studies and lessons from international experience to provide insights to policy-makers).

Phase 2 "What are the priority gaps in knowledge (with regard to transport and poverty) that need to be addressed to assist countries in improving the effectiveness of their poverty reduction strategies ?

(c) **development of a conceptual structural model** which:

- sets out the " best informed" nature of major linkages (especially between transport and social services/labor markets);
 - is formulated to examine priorities for assessing policies by further empirical examination;
 - addresses the data requirements and how these could be tackled (for example, by incorporating them into a transport module for Living Standards Measurement Surveys); and
 - provides guidance on the improved nomination of leading monitoring and evaluation indicators for outcomes tied to these linkages and associated policy effectiveness;

(d) **empirical work** based on the findings of (a), (b), and (c) above targeted at improving understanding of the complementary role of transport, with interventions in other sectors (e.g., education and health) and the incorporation of the results of this work into improved policy formulation and project design.

Qualifications and Experience

Applicants should have a graduate degree in social science, preferably including economics, with strong micro-economic skills and an in-depth understanding of development economics and the economics of poverty. In addition, applicants should have understanding of the cultural, social, and political factors that affect poverty and substantial experience in the examination of poverty at the household and sector level, desirably including work in developing countries. Experience in project design and appraisal and impact studies involving a poverty focus is also desirable. Knowledge of the transport sector would be helpful but is not required. Good communications, policy analytical, and strategic thinking skills, a track record of working across sectors, and a proven ability to work in small teams are essential. The wide range of skills to be delivered may require a small team.

Terms of Appointment and Timing.

Phase 1

The consultancy for Phase 1 is for a period of 14 weeks. Commencement is desired as soon as possible and completion is expected by July 15, 2000.

A *Statement of Interest and Capability* to undertake the work shall be submitted (as separately advised) which sets out the proposed general approach, team composition and allocation of time inputs.

A short *Inception Report* (in three copies) is to be submitted two weeks after commencement of the consultancy and is to be presented in person to the Study Steering Group (which is composed of representatives from the World Bank, DFID and independent specialists) in London (date to be advised). The Inception Report shall set out an action plan to guide the search, collection and organization of information and a detailed description of the proposed search process. It will also include a draft conceptual framework suitable to comprehend the linkages between transport and poverty.

An *Interim Report* shall be produced that summarizes, in working draft form only, the results of the literature search, including case studies, illustrative material, empirical analyses, and participatory assessments, together with the fully developed conceptual framework. This Interim Report shall be submitted by May 22, 2000, for review, and possible discussion, in London, by the Study Steering Group.

A *Draft Final Report* (in ten copies) shall be submitted for review 12 weeks after commencement of the study, and presented by the Team Leader in person at the World Bank in Washington, D.C., 1 – 2 weeks later. A *Final Report*, acceptable to the World Bank is to be submitted (in twenty copies), two weeks after presentation of the draft report. This report will include a full inventory and bibliography of all relevant source material, supplemented by a fully annotated and collated inventory of the most significant source material.

All reports shall be submitted in acceptable electronic format (for example, Microsoft Word). All supporting material shall also be available in electronic format.

Phase 2

The anticipated duration of Phase 2 is 12 weeks, beginning at the completion of Phase 1 (around July 15, 2000). Reporting requirements can be expected to be similar to those of Phase 1. Confirmation of Phase 2 and detailed requirements will be provided prior to the completion of Phase 1.

Further Information and Supervision

Oversight of the Study will be provided by the Study Steering Group. Supervision, liaison and general guidance for the study will be the responsibility of Colin Gannon, Principal Economist, Transport Division (INFTD) in the Private Sector Development and Infrastructure Central Vice Presidency of World Bank, Washington, D.C., (at Tel. +1 202-458-5784 or Fax. +1 202- 522-3223).

Appendix 2:

Women's transport burden: two case studies

This section presents two case studies of women's time and energy use in relation to their transport burden.

The first case study is based on research by the World Bank and is presented in paper by Christina Malmberg-Calvo (1994) and is also cited extensively by Barwell (1999). The research comprising of five village-level surveys of household travel and transport demands was carried out in Burkina Faso, Uganda and Zambia as part of Rural Travel and Transport Project of the Sub-Saharan Africa Transport Policy Program (SSATP). In the study areas women take full responsibility for domestic travel and transport such as collecting firewood and water, which makes up a major part of total transport task. It concludes that in terms of time and effort women in sub-Saharan Africa contribute at least 65 per cent of the household time spent on travel and transport, and more than 65 per cent of the effort. Across the five study areas it was found that the average adult female spends 1.0 – 2.7 hours per day on transport, the higher figure representing 23 percent of active time. The effort is equivalent to carrying a load of 20 kg over a distance of 1.4 –5.3 km every day. As shown in Table A2.1 women carry about three to five times as much as men in a year. It should also be noted that the more women there are in the household, the less time and effort spent by each woman on transport. Girl children contribute to domestic transport especially at times of peak labour demand.

Table A2.1: Comparison of female-male transport burdens

	Kasama (Zambia I)	Lusaka Rural (Zambia II)	Mbale (Uganda)	Kaya (Burkina Faso I)	Dedougou (Burkina Faso II)
Females	35.7	30.3	39.0	10.3	15.5
Males	7.1	9.8	8.6	3.6	4.4

Source: Barwell 1999: 25; Table 3.1

The second case study is taken from Dawson and Barwell's 1993 publication *Roads are not enough*. They present a number of community level studies which have

recorded women's time use allocation patterns. Although there are variations within and between study areas, the overall remoteness of people from resources and facilities to which they need access is considerable. As Table A2.2 shows, the situation worst in Makete, but it is also severe in Tanga, and although shorter in Ghana the distances are still sufficiently large to constitute a severe burden.

Table A2.2: Average time required by households to reach selected facilities

Survey location	Water	Firewood	Cultivated land	Dispensary	Hospital	Grinding mill	Market
Tanga	31 mins	44 mins	N/A*	1 hr 45 mins	N/A	1 hr 51 mins	2 hrs 37 mins
Makete	23 mins	1 hr 38 mins	1 hr 5 mins	1 hr 36 mins	5 hrs 40 mins	1 hr 42 mins	3 hrs 18 mins
Ghana	25 mins	43 mins	48 mins	1 hr 40 mins	2 hrs 38 mins	28 mins	2 hrs 8 mins
Aurora	5 mins	27 mins	11 mins	25 mins	1 hr 54 mins	21 mins	2 hrs 8 mins

*Average figure not available. However 80 per cent of households have fields within a 30 minute walk.

Source: Dawson and Barwell (1993: 13. Table 1).

There is a strong household division of transport tasks. In Makete, Tanzania, and in Ghana, women shoulder a disproportionately large share of the transport burden. For example, in Makete women are responsible for about 75 per cent of transport undertaken in terms of time taken and about 85 per cent in terms of tonne-kilometre transport effort. Women contribute more labour to every transport task for which data were collected in Makete, devoting about 60 per cent of the transport time required for crop production, nearly 70 per cent of the transport time for crop marketing, and 60 per cent of the transport time for harvesting. A typical able-bodied woman in the Makete area spends 1,650 hours per annum, that is over 30 hours every week or over four hours per day, solely on transport. It should also be noted that women are assisted by their children, particularly girls, in the collect water, firewood, and trips to the grinding mill.

In Ghana, the intra-household share of the transport burden is slightly more equal with men sharing approximately equally the transport tasks associated with crop establishment and internal crop marketing. Women are primarily responsible for all other transport tasks including approximately 90 per cent share of the transport burden associated with external crop marketing which is a major consumer of time and energy. In fact the typical woman devotes almost three times as many hours per annum to transport, and four times as much carrying effort as the average man. Thus in Ghana a typical women devotes 1,000 hours per annum, or 20 hours weekly, on transport. This is equivalent to 80 per cent and 50 per cent respectively, of the time a typical worker would expect to devote to a conventional full-time job, and must be undertaken in addition to the many other domestic duties for which women take principle responsibility.

A typical adult male in Makete and Ghana devotes respectively about 10 hours and seven hours each week to transport. There is also a seasonal burden: during harvesting and marketing seasons women's transport workloads are greater than average. However, in Aurora adult males take greater responsibility for transport tasks, the equivalent of 50 per cent of the time devoted by the household to transport and 75 per cent of the total transport effort.

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Annotated Case Studies and Data Sets

Part 1: Annotated Case Studies

Abubaker, N. (1999) 'Gender issues in rural transport: The case of Yankatsari in the Kano Closed Settled Zone, Nigeria', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Tests theoretical assumptions regarding improving transport infrastructure, through case study of the Yankatsari village, Nigeria. Purdah was an all pervasive element in the survey results. From the findings, the author asserts that the primary issues that need urgent attention are socio-cultural. Gender relations cannot be overemphasised. Also, that while the findings support the view that infrastructure improvements should not be underplayed, emphasis should change and focus on internal organisational changes. The most important stumbling block to improvements in rural transport is attitudinal, in this case on the part of both men and women.

AGRIS (2000) The United Republic of Tanzania, Rufiji District Council, District Roads Development Programme (DRDP), *Final Report: Socio-Economic Impact Study on DRDP Roads Improved During Year 1 of DRDP*. Report submitted to COWI Tanzania Consulting Engineers and Planners Ltd, Dar es Salaam.

Analyses the impact of the District Roads Development Programme (DRDP) which was implemented by the Rufiji District Council with assistance from the Danish Government. A comparative analysis of the socio-economic baseline data of 1998 and 1999 was made and information/data was compiled to generate basic indicators on poverty and welfare, community health situation, and community education of the villages under influence of the improved roads. Findings include:

- Travel time, especially by bus, has been reduced for all the improved roads;
- Fall in operating costs in terms of fuel consumption, vehicle repair and maintenance cost;
- Influx of business communities and other private operators like crop vendors;
- Village traders now have access to vehicle hire services for making direct purchases of essential household items from suppliers at competitive cost. Traders realising a net saving of around 30% to 40% for cargo transportation by the four improved roads to the catchment villages;
- Community awareness for sustainable improvement of the four roads based on self-help has increased; increased participation of women;

- Increase in household income;
- Apart from Bungu-Rungungu road, statistics collected in villages along the remaining three roads reveal an average annual increase in household's expenditure of between 34% and 122%. This is due to increased purchasing power and accessibility to market;
- Quantitative data on schools, dispensaries, medical clinics and health centres shows no significant change in terms of establishment of new facilities in the area under the influence of the improved roads. But there is relative improvement in education and health service delivery in terms of supplies of essential education materials, medical facilities and drugs;
- Service delivery provided by the government service staff including teachers, nurses etc. has improved in the catchment area of the four improved roads. Due to the essential needs like monthly salaries can efficiently be obtained in time;
- Impact indicators for health and education after improvements of the road could not be fully quantified due to scanty data or information available at village level;
- Price for essential households' consumer items like food, kerosene etc has decreased;
- Apart from Ikwiriri-Mkongo road, where a positive impact has been noted, the Traffic Counts of the remaining three roads have not registered any significant change in terms of traffic volume – may be due to the fact season when traffic counts were carried out.

Ahmed, F., S. Carapetis and M. Taylor (1995) 'Rural Transport in Bangladesh: Impact of non-motorised transport on household's activity patterns'. Paper presented at the International Conference of the Eastern Asia Society of Transportation Studies (EASTS), Manila, September 28-29.

Examines the impacts of non-motorised means of transport on rural households in Bangladesh and the suitability of the Household Activity Travel Simulator (HATS) in Developing Countries. Households were also asked how their activities would change if the household was provided with a bicycle. Their travel time would be reduced and they would reallocate this time to increase working time, undertake additional domestic activities or participate in social activities. The study found that NMT have an enormous potential for addressing transport-related problems in Bangladesh. However the impact is not straightforward, with NMT more likely to favour males and wealthier classes. The HATS approach was found to be useful to evaluate transport activities of rural households in developing countries.

Airey, T. (1991) 'The influence of road construction on the health care behaviour of rural households in the Meru district of Kenya', *Transport Reviews*, 1991, Vol. 11, No. 3, pp273-290.

Considers the effects of road improvements on the utilisation of three hospitals in Kenya. More people are now within easy travelling distance of the three hospitals. However, only a small number of the sampled households show any sign of being strongly influenced by such change. In particular, it is the wealthy minority that show the greater sensitivity to the shrinkage of distance brought about by the new road. For the majority, hospital choice seems to be conditioned by a range of factors, notably cost of treatment, religious affiliation and attitudes to the efficacy of each health care system. These influences were in existence before the new road and operate independent of it.

Astrop, A. (1996) 'The Urban Travel Behaviour and Constraints of Low Income Households and Females in Pune, India', paper presented at the Second National Conference on Women's Travel Issues, Baltimore, 1996. www.art.man.ac.uk/planning/

Public transport services have not kept abreast of increasing demand in the rapid urban development of Pune, India. As a consequence, alternative means of transport have become important. For example, manufacturers operate large fleets of buses to get workers in on time. Bicycle use is very important for students from low/middle- income households. Women are more likely to walk or take the bus. In higher income households such constraints do not appear to exist.

Barwell, I and C. Malmberg Calvo (1989) *Makete Integrated Rural Transport Project. The Transport Demands of Rural Households: Findings from a village-level Travel Survey*, Geneva: ILO (Infrastructure and Rural Works Branch, Employment and Development Department).

This study carried out in Makete district represents one of the first serious efforts to obtain detailed information on, and to quantify the nature of rural transport demands at the household level. Its findings provide the basis to define a programme of interventions aimed at improving the access of rural households in Makete district to key economic and social services and facilities. However they also have important implications for the development of rural transport facilities elsewhere, particularly in other parts of Tanzania and in other sub-Saharan African countries.

Key findings as discussed in text:

- Rural households rely predominantly on walking and headloading to meet their movement requirements, not just within and around the community, but also for travel to quite distant places outside the village;
- The scale of household movement demands is substantial in terms of both the time and the physical effort involved, and is approximately equivalent to a full-time job for one member of each household;
- The major household movement demand is to provide access to facilities and services within and around the home village. In terms of time and load-carrying effort internal transport is of substantially greater significance than travel outside the village;
- The magnitude of the transport demand to meet essential household and domestic needs is substantially greater than that in relation to agricultural production and marketing, even in a predominantly agricultural society;
- The major agricultural transport demands of households relate to production and harvesting. These are of substantially greater magnitude than the transport demands for crop marketing;
- The task of transport falls primarily to women, both in terms of time involved and, particularly, of load carrying. Women must meet these transport responsibilities in addition to all the other tasks that they have to carry out in the household.

Blume, A., M. Kraemer, H. Sautter and Universitat Gottingen (1995) *The Contribution of Railway Projects to Poverty Alleviation: The Case of Tanzania*, Frankfurt: KfW.

The contribution of TRC (Tanzanian Railways Corporation) to poverty reduction is both indirect by improving transport services which can be utilised by the poor, and direct consisting of the employment, education and social policies of TRC. Details these effects, the linkages between them and policy recommendations. However, compared to other fields of policymaking (education, health or social security), the impact is more modest. Concludes that the efficiency goal should not be put at risk however and poverty reduction strategies should not compromise this.

Brennan, T. L. (1996) 'An Analysis of Trip Behaviour Patterns of Women in Developing Countries: A Case Study of Puebla, Mexico', paper presented at the Second National Conference on Women's Travel Issues, Baltimore, 1996. [www.art.man.ac.uk/planning/abstract only on web](http://www.art.man.ac.uk/planning/abstract%20only%20on%20web)

Women have different transport needs to men due to different and multiple roles. In Puebla, Mexico, age, work, driver licence and location are significant factors in women's trip patterns. Women in Puebla make trips more often for more reasons, and, depending on public transportation, more than men. Contrary to the literature, women in Puebla spend less time travelling per day than men. Patterns vary between women due to location and socio-economic factors. Indicates that low-income women rarely demonstrate similarities with suburban women in their trip behaviour patterns.

Byrne, H.M. and D.J. Savage (1984) 'Thuchi-Nkubu road evaluation study – Rural passenger travel demand: Preliminary analysis and results', *Overseas Centre Working Paper No.156*. Crowthorne: TRL.

Reports the results of a survey of personal trip making in the Southern part of the Meru District, Kenya. The information was gathered in order to assess the impact of road improvements on the travel patterns of the people living around the road. Concludes that the road improvement is likely to increase opportunities for the individual to travel by local paratransit vehicles.

Chingozho, D. (1999) 'The impact of intermediate means of transport (IMTs) on the allocation of the transport burden: some aspects from the ITDG transport project in Zimbabwe', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Assesses impacts and benefits of improved rural transport, specifically IMTs, on women and on gender relations. Draws its data from areas where IMTs have been introduced as part of the ITDG transport project. Finds that the use of IMTs has created both direct and indirect benefits for women, including shortened travel times, increased efficiency with which loads are carried, and reducing the drudgery of human portage. This has left women with more time to devote to other activities, economic, social and in some cases political.

Chowdhury, N. and J. Kandler (1995) *The Contribution of Railway Projects to Poverty Alleviation: The Case of Bangladesh*, Frankfurt: KfW.

With the current efficiency (value added for customers in relation to opportunity costs of production of transport services) the Bangladesh railway is a burden on the economic development of the country. Since in the case of Bangladesh economic development is a prerequisite for poverty alleviation (as

opposed to only income redistribution) the railway presently has a negative impact on indirect poverty alleviation.

Diriba, B. (1997) 'Efforts of Ethio-Italian Development Co-operation Arsi-Bale Rural Development Project in rural transport infrastructure facilities', Presented at the workshop launched by Ethiopian Roads Authority in conjunction with the World Bank (RTTP) on Rural Roads and Transport Strategy Development.

Notes that despite the potential richness of the project area, natural and economic problems hinder Arsi and Bale agricultural development e.g. bad weather, lack of infrastructure facilities, agricultural inputs, appropriate markets, credit facilities etc. The project included a number of inputs including roads. However, many roads inaccessible during rains. Furthermore, the main failure of the roads is lack of maintenance and ownership. Different organisations were involved in road construction but little/no thought was given to successive maintenance – budget, responsibility etc. Many had deteriorated so badly that they required rehabilitation almost equivalent to construction of new roads. Yet the success of the overall project without a road facility is unthinkable. Opening accessibility to agriculturally potential areas will bring about the development of the sector. It is noted that various development activities were hampered due to lack of appropriate transportation, including:

- Transformation of agriculture from subsistence farming, traditional based, low yield and minimised inputs to production on market oriented, science-based, high yield and reliance on input were difficult because of inaccessibility;
- Development of education was difficult because students were expected to walk from 6-8 hours to go to school and come back. Not much time for studies. Early boycott from school;
- Health facility development not possible. Difficult to provide emergency assistance to pregnant women and children which influenced high infant mortality in project area;
- Since most areas are hardly accessible it was difficult to maintain water wells and also construct new ones. This had become the cause for women and children in rural areas to travel long distances to fetch water – especially in dry seasons;
- Product marketing was difficult and the cost of transportation made trading impossible in every area;
- Availability of consumer goods was also limited thus the rural community had to pay high prices;
- Investment in the rural towns was hindered due to lack of opportunities and poverty of local markets;

- Movement of people from place to place was not possible therefore social contacts, change of ideas etc were hampered.

Dixon-Fyle, K. and I. Frieling (1990) *Paths in Rural Transport: A Study of Makete, Tanzania*, Geneva: International Labour Office, World Employment Programme.

Documents the findings of a survey of footpaths in the Makete District in Tanzania, undertaken by the authors for the Makete Integrated Rural Transport Project. Given that most of rural transport takes place on the paths in and around villages, the survey on which this report is based addresses questions of the problems of access related to the condition of the path network, the interest of footpath users to improve the paths by self-help, the possible technical solutions and the potential impact of improvements in terms of time and effort saving for users.

Elias, R. (1998) *Rural Roads in Sidama: Sidama Development Programme – Briefing Paper*, Sidama Development Corporation.

The guiding principles of the Integrated Rural Development Programme in Sidama, Southern Ethiopia project included participation, gender sensitivity, sustainability, and poverty focus. Improvement of roads has attracted mainly private trucks for both people and goods transport to and from markets; access to health institutions; facilitated other social infrastructure projects e.g. agricultural extension, health post construction, EPI coverage and school construction. Construction of foot bridges and foot paths have directly benefited the poor, especially children and women, who walk for water, grinding mills, firewood collection, crop production and marketing, schooling and other activities.

Ghamire, G. (1999) ‘Gender and transport in Nepal’, in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Gender considerations in rural transport interventions in the Nepalese context are rather new. This is shown by a review of the transport-planning component of the Five year Plans in Nepal from 1956-2002, and field work in rural areas of Nepal. Road construction resulting in increased market access has increased the demand for dairy products. This has actually increased household burdens. Travel and transport-related tasks have also increased, and this is not being shared equally between men and women. It is the women who have taken on the increased burden.

Government of Sweden, Swedish International Development Co-operation Agency and Lao People's Democratic Republic, Ministry of Communication, transport, Post and Construction, *Access for Rural Lao: Mid-term review of the community road components of the Lao-Swedish road sector project 1997-2000.*

Road sector project with the aim of easing poverty in three Lao provinces including community roads and micro-projects, access roads to Road 13 South, and Integrated Rural Accessibility Planning. Studies in Lao PDR show that poorest benefit relatively less, if anything, from a road improvement. The poor are often landless or belong to an ethnic minority. Therefore, concludes that investments in rural roads may have a negative impact on income distribution. However, through increased marketing opportunities women have strengthened their position, and now contribute to family income. There is improved health care and female school enrolment. Negative impacts include an increased problem of STDs as an increased flow of young women from rural areas go to the cities to earn money as prostitutes, with poor knowledge of protection/consequences. Land: with road improvement changing settlement pattern increases environmental conflicts unless preventive measures are initiated. There is little organisation to prevent road deterioration and many roads have deteriorated to a level when maintenance is not enough to restore the road.

Effects for beneficiaries:

- Time travel reduced;
- Traffic generation More consumer goods available in shops;
- More shops Cottage industries producing surplus;
- Access to hospital and schools (via bicycle therefore have time to assist parents).

Alleviation of poverty:

- Increase in rice production and land value;
- Traders;
- Agricultural extension teams and medical teams;
- Irrigation schemes;
- Farmers have new technologies;
- More houses of permanent structure;
- Labour-based road construction provided some income which was spent on subsistence items;
- Increase in households assets, selling of agricultural produce and average households income.

Hine, J.L., J.D.N. Riverson and E.A. Kwakye (1983) 'Accessibility, transport costs and food marketing in the Ashanti Region of Ghana', in *TRRL Supplementary Report 809*. Crowthorne: Transport Research Laboratory.

Details research data collected from farmers in villages in the Ashanti region of Ghana and observes transport costs and their effects on food marketing. Transport charges accounted for only a small proportion of the wide difference of food market prices. Therefore the improvement of road surfaces had negligible effects on producer prices and thus on marketing. However, the replacement of footpaths by vehicle tracks have 100 times stronger effects than upgrading the same length of roads to good quality surface.

Iga, Harriet (1999) 'Impact of bicycle/motorcycle taxi services (boda-boda) on women's travel needs in Uganda: a case study of Mpigi district', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Looks at the emergence of boda-boda bicycle and motorcycle taxi services and the impact on women's travel needs. Findings indicate that the services have promoted trade and created jobs in the rural areas and have bridged the transport gap between the rural and peri-urban areas

IT Ltd (1999) *Final Volume I Main Report and Volume II Annexes [draft]: A Social and Economic Impact Assessment of the Rehabilitation of the Chalinze-Segera-Tanga Road. Tanzania*, Report prepared for Danish Ministry of Foreign Affairs.

In 1998 Danida Copenhagen decided to undertake an economic and social impact assessment study of the Danida assisted Chalinze-Segera-Tanga Road Rehabilitation Project (CSTRRP). The scope of the study goes beyond a consideration of the achievement of the project's original economic and transport objectives to include a social impact assessment. This was designed to focus on the poorer groups living in the road's zone of influence. Major findings include:

Economic impact:

- The project reduced freight costs by approximately 30% and reduced passenger travel costs by a comparable amount;

- Investment in the project was economically worthwhile and has achieved an EIRR of 15.9%;
- Increase in traffic flows;
- Increase in number of road accidents.

Transport impact:

- Commodity flows of agricultural and other goods have more than doubled Mainly inter-regional movement of agricultural produce as well as other freight.

Social impact:

- Reduced travel and transport costs;
- Poverty levels in Coast and Tanga districts appear to have worsened and the road has been neutral in this process;
- Road appears to have assisted households to adapt to this deteriorating situation by encouraging:
 - a) Out migration: greater level of contact, remit more money than off-road counterparts
 - b) Higher sale of crops – positive trend to more commercialisation though there is a risk of a household undermining their nutritional status
 - c) Higher levels of expenditure and more diversified income sources in agriculturally favoured areas
 - d) Better access to hospitals – roadside households use hospitals more often than their off-road counterparts. Off-road households rely on health clinics, which are reported to have less reliable medical supplies
 - e) More travel involving a higher number of walk journeys
 - f) Significant savings in the time of travel – all roadside households spend less time and money in meeting their travel and transport needs than do off-road households
 - g) More roadside businesses and markets
 - h) Increased firewood/charcoal production

Lessons learnt: need to widen the narrow economic appraisal framework of a project approach. The sector approach goes some way to satisfying this requirement. Trunk road planning must build on the evidence of this study to mitigate the negative effects and enhance the positive effects on the rural poor.

- Feeder roads linking it to more agriculturally favourable areas would widen and increase development impact;
- Labour-based road construction offers skill enhancing and training opportunities;
- Importance of participation;

- Importance of slow-moving vehicles and pedestrians using the road suggests that the specific needs of these modes should be incorporated into future designs;
- Level of traffic accidents seems to be higher than expected and is apparently increasing at a faster rate than traffic growth;
- Charcoal and firewood production inevitably follows road improvement. Short term gain but long term environmental cost. Sustainability via wood lots or community-managed forest areas.

I.T. Transport Ltd (1999) *Village Level Travel and Transport Study in Ethiopia, Final Report. Village Level Travel and Transport Study in Ethiopia: Intermediate Means of Transport and Transport Services Case Study. Village Level Travel and Transport Study in Ethiopia: Rural Transport Infrastructure Case Study*, Report prepared for The Federal Democratic Republic of Ethiopia, Ethiopian Roads Authority.

This study forms an integral part of the Roads Sector Development Program Support Project (RSDPSP) currently being implemented by Ethiopian Roads Authority. Findings will be used to develop an understanding of village-level travel and transport problems and then to use this understanding to formulate a pilot rural infrastructure project designed to demonstrate workable solutions to transport problems. Three villages ('weredas') in contrasting areas of the country were chosen. Results include data on domestic transport and women's transport burden. This is contrasted with women's transport burden in other countries and the authors conclude that it is comparatively high in Ethiopia.

Jennings, M. (1992) *Study on the Constraints to Women's Use of Transport in Makete District, Tanzania*, ILO: Geneva.

Identifies constraints to women's use of means of transport in Makete District and makes recommendations on how the economic constraints can be overcome. Due to socio-cultural constraints the study found a wide discrepancy in the capacity of households to invest labour and financial resources in, and benefit from, transport related interventions. Women are unable to benefit from the project interventions for a number of reasons. The study findings suggest that addressing rural transport needs, and especially those of women, can only be resolved within the context of tackling poverty, and enabling women to meet their basic needs.

Kanji, N. (1995) 'Gender, poverty and economic adjustment in Harare, Zimbabwe', *Environment and Urbanization* 1995 7 (1): 37-56.

Details changes in Regular Household Expenditure - shows 21% rise in monthly transport costs between 1991 and 1992 - as a result of Economic Structural Adjustment Programme. Fewer households were able to pay for transport to work and a number of men and women had begun walking to work or had arranged lifts which cost less than the bus service. A number of white-collar workers had managed to get their workplaces to take responsibility for transport costs, either by arranging for company transport or getting the costs paid on a monthly basis. This indicates that lower-paid workers bear the brunt of cuts in public transport subsidies and decontrolling of these prices.

Kaumbutho, P.G. (1999) 'The Nkone River Bridge and its impact on travel and marketing activities of the Kaira Community, Meru District, Kenya', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Assesses the impact of the Nkone River Bridge on transport and access, as it applies differently to the men and women of Karia, and thereby to understand the gender-based dimension of Karia's travel and transport problems. The bridge is a gateway to the area which has great economic potential. It is also a link for products heading for markets and for information. However, the bridge is frequently washed away and the local people are responsible for the maintenance since government money ended. When the bridge is not in use, women and children suffer an increased transport burden. Concludes that the government should fix the bridge, which would result in numerous benefits to the community.

Kinuthia-Njenga, C. and J. Nthenge (1999) 'Rural transport infrastructure provision in Kenya – a practical view through women's eyes: A case of Keruwosa', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Focuses on a women's group in Kenya which has the main objective of improving the living environment through the implementation of infrastructure projects, mainly water and sanitation, and recently road improvements. Through a participatory research process, this study sought to first identify and document the motivational factors behind transport infrastructure improvement projects designed and implemented and second, to highlight the relationships between such improvements and the nature of women's transport patterns in relation to productive and reproductive activities.

Kwakye, E. A. (1997) 'Developing strategies to meet the transport needs of the urban poor in Ghana', *World Transport Policy and Practice*, Vol. 3, No. 1, 1997.

Details the 1993, Government of Ghana first Urban Transport Project (UTP) which aimed to increase and sustain the quality and efficiency of urban transport services and making delivery more equitable. Improved transport, increased mobility and access to employment, markets and other centres, including job opportunities. Problems with public transport detailed and travel characteristics of the urban poor.

Lanjouw, P. (1998) 'Ecuador's Rural Non-Farm Sector as a Route Out of Poverty', *Policy Research Working Paper no. 1904*, Washington, DC: World Bank.

Non-agricultural activities are important for poverty reduction in Ecuador. Raising rural non-farm incomes would lead to a decline in inequality, and so growth in this sector is consistent with pro-poor growth. It is therefore important to find opportunities to increase non-agricultural employment in rural areas. Transport infrastructure is critical for non-agricultural activity, aimed at selling manufactured goods abroad and in urban areas. Access to non-agricultural jobs is constrained by poor road infrastructure. Working on roads is a source of non-agricultural rural employment.

Malmberg-Calvo, C. (1994) 'Case Study on the Role of Women in Rural Transport: Access of Women to Domestic Facilities', *SSATP Working Paper 11*, Washington, DC: World Bank and Economic Commission for Africa.

Reducing the transport burdens of rural women in Sub-Saharan Africa would release time and energy for productive and socially beneficial activities. Investigates the magnitude of the transport burden incurred in order to obtain access to domestic facilities – collection of water and firewood and carrying of crops to the grinding mill. Assesses impact of non-transport interventions e.g. woodlots, more efficient stoves etc, to improve access. Notes that, without supportive measure in other areas, these project-specific interventions alone will only have a minor effect on the daily realities of women. Women's problems related to subordinate position and lack of access to power and resources.

Matin, N., Mahjabeen Chowdhury, Hasina Begum and Delwara Khanam (1999) 'Case Study: Spatial mobility and women's empowerment: implications for developing rural transport in Bangladesh' in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

A paved road is a great help to all transportation needs in a village, and working on road construction can bring in income for men and women where such projects have been instigated. In easier access villages in the study, located in the drier part of the country, women enjoy much more freedom to move about. They can access credit and training and go to the market to trade. Poorer women have to walk if they cannot afford a rickshaw, but still enjoy greater mobility than their counterparts in remote villages. Even in the remoter villages within the dry zone, women have greater mobility. The poorest headload, but the well-off can hire rickshaws. They have to cover some distance to collect firewood but only men use bicycles.

Mukherjee, M. (1999) 'From Dawn to Dusk: transportation of rural women to and from Calcutta Metropolis' in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Many rural women take the train each day from a collection of rural villages outside Calcutta to undertake mostly informal sector work in the city and travel at considerable mental and physical cost to themselves and their families. They experience a double bind with virtually non-existent rural transportation and chaotic, overcrowded, urban public transport.

Musa, S. M. E. (1999) 'The impact of feeder roads in Jebel Si rural Council area on food security, with particular focus on the role of women', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Considers the impact of a feeder roads construction programme which took place in 1996 in Northern Darfur, an arid, Sahelian region bordering the Sahara Desert. Both women and men have increased bargaining power in selling their products at market, and the majority of women report increased sales revenues. Production has increased, as has attendance at the local market. The flow of medicines has improved and the health centres are busier and more effective. In addition, Oxfam has initiated literacy classes and has disseminated information about food processing methods. All the development in the community has not been caused by the single factor of the feeder roads project, but that has proved a significant factor in the mobilisation of the communities.

Mwankusye, J. A. (1999) 'Rural transport interventions in Tanzania: are they reaching rural women?', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Rural women play a dominant role in domestic as well as in the income-earning activities of households. Despite this, they are not integrated into the planning of transport development at all. IMTs are useful to women, however their widespread use is hampered by several factors including the high acquisition price, the poor condition of paths and roads, and cultural factors. Author makes a number of recommendations to promote IMT use among women.

Opiyo, R.O., in co-operation with J. Doran and KWAHO Lake Region Office, Kenya (1995) 'Women's Use of Time. Case Study: Kwaho Water Supply Study in Nyando Division, Kisumu-Kenya', Part of ILO Research Project on *Provision of Social Infrastructure and Women's Use of Time*.

Details women's time use due to project putting in place e.g. handpumps in order to locate water closer to communities. Wells save women considerable time which can then be reallocated i.e. women have more time for family, visiting, resting and to engage in income-generating activities. A problem is lack of start-up credit for these types of activities. The prevalence of water borne diseases was reduced drastically (something that may not happen if infrastructure had been the solution) and there was also an increase in the amount/consumption of clean water. The vast majority preferred having water close by. Increase in children collecting water in assisted areas since the water is located closer. In the non-assisted areas men help and use IMTs, whereas in the assisted areas women do the work by headloading.

Ouedraogo, Aminata (1999) 'Women and rural transport in Rollo, Burkina Faso', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

An isolated and underdeveloped rural area of Burkina Faso is examined, and the potential role for rural transport in the development process is assessed, with emphasis on its capacity to ease the particular burden of women.

Ouedraogo, Amadou (1999) 'Contrasting gender needs and access to rural transport in the Yatenga Province, Burkina Faso: the case of Tuya', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

The difficult condition of life for the people of Tuya are made worse still by the poor transport system and bad access roads, isolating the village for certain times of the year. Women not only have domestic responsibilities but also work on the family farm and on their own farm lots. They travel over great distances every day and are denied access to means of transport due principally to cultural norms, but also due to the poverty of women in comparison to men.

Pagaduan M. and A. Dizon (1999) 'Transport patterns on two barangays in the Philippines', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Study presents a description and gender analysis of the transport patterns in two barangays in the Philippines. Describes different communities, the means of transport used, and the different access to transport services due to gender.

Paul, K. (1999) 'Safety and gender issues in rural transport. A case study of Busia District, Uganda', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Rural road safety issues constitute a neglected area. In the studied district of Uganda, road travel is growing in an unregulated way which has consequences for road safety. The study focuses in particular at the causes of accidents to women, the effects of these upon the women and their community and to what extent these safety issues compromise rural accessibility.

Porter, G. (1999) 'A gender perspective on transport and accessibility in off-road areas: the case of women traders in Gomoa, coastal Ghana', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

In many districts of coastal Ghana women face considerable difficulties in getting their goods to market, particularly from off-paved road locations. Feeder roads and tracks deteriorate rapidly in the rainy season and even settlements just a few miles from a tarred road can become inaccessible. Traders may not visit such villages at these times and so prices are depressed. Surveys suggest that although not all trader problems are related, access to transport figures significantly among the difficulties described by women traders in the villages studied. The study also looks at the potential for IMTs and the implications for women's trading activities.

Rao, N. (1999) 'Cycling into the future: The experience of Women in Pudukkottai, Tamil Nadu', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Evaluates the long-term impact of the introduction of bicycles and bicycle riding skills as part of a literacy campaign in the early 1990s in Pudukkottai region, Tamil Nadu. This case study on gender relations and transport in India shows a strong inequality between men and women, with the latter having little/no access to transport. However, 5 years after the introduction of bicycles they were using them for a range of tasks related to all areas of their responsibilities. Their self esteem and standing in the community has increased. However, it is the men who own the bicycles and they therefore control when and if the women may use them. Furthermore, there is evidence that women's workloads have increased.

Rao, N. (1999) 'Demands of a Forest Economy', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Analyses the transport patterns and links with gender relations in the Santhal Parganas, Bihar. Women spend an enormous amount of time performing domestic tasks, in part due to the distances which they are forced to travel in order to collect firewood and water. The author recommends a combination of non-transport interventions along with innovative

transport and organisational interventions to ease the transport burdens on the tribal populations.

Salifu, M. (1994) 'The Cycle Trailer in Ghana: A reasonable but inappropriate technology', *African Technology Forum* Vol. 7, No. 3: 37-40.

Failure of the cycle trailer as an alternative to head loading for women. Financially the trailer was more expensive than a bicycle – and even that cost a great deal – and need the latter in order to use former. Technological advantages marginal – use of flat bicycle carrier prevalent. Out of tune with the immediate economic, social and cultural environment of the rural Ghanaian woman. Notwithstanding the prevalence of bicycles in northern Ghana, women do not own any, nor do they ride. Unrealistic to expect women to patronise cycle trailer. 'Women's bicycles' would have been a better choice due to Islamic dress code but these were not available.

Samaranayake, D. and K. Kuruppu (1999) 'Case study: Accessing healthcare facilities in Sri Lanka', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Analyses to what extent the transport infrastructure in Meegahamada village in Sri Lanka meets the transportation needs of women in accessing primary and curative healthcare. 1997-8 local NGO with locally elected body constructed a road. One of the main justifications for this expenditure was the community's need for better access to medical facilities. Despite the addition of the road, infrastructure is still poor. Due to the lack of motorised transport and the monopolisation of the family bicycle by the men, women continued to walk the 5 kilometres to the pre-natal clinic. In addition levels of literacy in the village were very low and this may be partly due to the fact that the nearest primary school is three miles away from the village and school attendance is infrequent and of low priority. Girl children are often not sent to school because the footpaths leading to the school from the village are through isolated shrub jungle. It is also felt that girl children do not need and education. The road has not had a significant and immediate impact, it has definitely started a process of change where the women have begun to access services and facilities more regularly and identify their transport needs.

Shrestova, S. and Rekha Barve (1999) 'My Daily Odyssey: transportation in the lives of SEWA Bank's clients by Transportation issues faced by SEWA (Self Employed

Women's Association) women in and around Ahmedabad, India', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Women experience acute access restrictions and transport constraints resulting in daily drudgery. All of the women work in the informal economy in income generating activities and household chores. They carry headloads of up to 40kgs and walking is the main mode of transportation, often in order to avoid transportation costs. Buses and rickshaws are secondary to walking, and buses, the second most important form of transportation to the women, are only used in emergencies (for health reasons) or where the income earned by the woman is sufficient to stand the use of a bus occasionally. On average, fractionally under thirty per cent of the women's income is spent each month on transportation. Despite many of the women suffering physical problems as a result of up to ten hours per day moving around, the highest percentage (more than eighty percent) complained of high public transport costs as a difficulty, before the lack of a vehicle, long waits for public transport or physical strain. The use of public transport for health reasons for a family member was more likely than the women using one themselves for their own health. The women's favoured solution to improve their transport difficulties is that a new vehicle would help them, be this a bicycle or push cart, a rickshaw or a bullock cart – depending on their type of work. Women save money at the expense of time and health and the major deterrent to taking a bus is cost.

Srisakda, L. and S. Chivasant (1992) 'Study of the 'Itaen' rural transport services in northern Thailand', *World Bank Working Paper 6*, Report prepared on behalf of IT Transport Ltd. For World Bank SSATP. Oxford and Geneva: IT Transport and ILO.

Examines the use of 'Itaen' vehicles (simple fabricated steel chassis to which are assembled second-hand suspension and drive-train components and uses a single-cylinder air-cooled diesel engine) in Northern Thailand. Covers 1) the history and development of the Itaen and the extent of its use in different regions, 2) the characteristic of the manufacturing industry and the Itaen's specifications, and 3) vehicle ownership and transport services that it provides. Concludes that a number of factors have contributed to the success of the Itaen including all weather roads; relatively flat terrain; high demand; and high incomes. It is, however, not particularly safe.

Tiefenthaler, J. (1994) 'A multisector model of female labour force participation: Empirical evidence from Cebu Island, Philippines, *Economic Development and Cultural Change* 42 (4): 719-724.

Women and transport cost of going to work: transportation costs of working in the formal sector appear to be higher than transportation costs in the informal and piece sectors.

Turner, J. and Kwakye, E. (1996) 'Transport and survival strategies in a developing economy: case evidence from Accra, Ghana', *Journal of Transport Geography*, vol. 4, No. 3./Paper presented at the 7th World Conference on Transport Research, Sydney, July 1995. www.art.man.ac.uk/transres/jtq96.htm.

Reports on urban poor adapting to their own poverty, and to unreliable public transport services by task sharing among extended family units. It draws on material from interviews conducted in two low-income communities in Accra, Ghana. In typically large households, the practice of fostering children, hiring domestic servants, and doorstep petty trading by elderly women, are three notable strategies for relieving middle age adult from transport stress and under provision, and enabling them to be wage earners. Children are a resource to fetch and carry, and attend school in shifts. From a transport activity or survival network approach, these elements can be viewed as key strategies in the organisation of travel and transport. Conclusion that existing deficiencies in transport services (and infrastructural provision) impact upon the time budget of children, especially girl children, with negative consequences for their access to education.

World Bank (OED) (1996) 'Morocco: Socioeconomic Impact of Rural Roads (Fourth Highway Project Loan 2254-MOR)', *Impact Evaluation Report* No. 15808. Washington, DC: World Bank.

Impact evaluation report carried out by OED focusing on the impact of rural roads on transport infrastructure and services, plus the region's economy and social welfare five to ten years after completion of improvements carried out under the project. All four roads studied were improved from an originally deteriorated gravel or track condition to an asphalt surface. The report discusses the ways in which road users benefited, the positive impact on agriculture, the gains to social services, and both negative and positive impacts on the environment. An extensive data set is detailed in Annexes D to G which include information on which the report findings are based.

World Bank (OED) (1997) 'Brazil: Secondary and Feeder Roads Project and the Second Feeder Roads Project', *Impact Evaluation Report* No. 16738. Washington, DC: World Bank.

Study deals with feeder roads in the State of Bahia. The roads helped expand production of target crops, particularly coffee and cacao, and enabled the diversification of crops and non-agricultural activities. Social impacts included a change in land tenure patterns, improved availability of hospital beds per inhabitant and school attendance, although the extent to which these can be attributed to roads is unclear. The traffic on the roads increased. Environmental impacts from the road were negligible but deforestation occurred due to increased crop production.

World Bank (1998) *El Salvador: The Role of Land Policy in Rural Development*, Washington, DC: World Bank, Land Policy Network.

How does rural infrastructure affect the income potential of rural households? Geographic and location factors do not play any role in determining wages. This is shown by the fact that neither the regional dummies nor the distance to paved roads dummy are statistically significant. Farm location does not seem to play a very important role in determining farm productivity – the variable distance to paved road, which may also capture aspects related to the degree of isolation or regional clustering of farmers is not statistically significant either. Regional location of the households does not play a very important role in affecting their income once proper control of household characteristics is implemented. Thus, a lack of rural infrastructure appears to have played only a modest role in affecting the income potential of rural households.

Yunusa, M.-B. (1999) 'Gender and transport load sharing among households in Kafur Village in Southern Katsina State, Nigeria', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Looks at the particular roles and circumstances of women in terms of their transport needs in the particular circumstances of an isolated rural Hausa-Fulani Muslim community where the women are further isolated by the practice of purdah. The author concludes that enhancing the transport opportunities for women in the area requires a sociological as much as a technological approach.

Yunusa, M.-B., E.M. Shalbu-Imodagabe and Y. A. Ambi, with A. Yusuf and B. Abdulkarim (1999) 'The impact of road rehabilitation on transport and accessibility in rural Soba District of Kaduna State, Nigeria', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

Assesses the impact of a road rehabilitation project in the Soba Local Government areas, Kaduna State, Nigeria upon the inhabitants of one particular village, in the context of the debate about whether in fact better transport infrastructure leads, per se, to accelerated development. There is a literature review in the first part of the paper which critically appraises the current state of the arguments in this respect, followed by a survey of the village of Lungu to see what has actually taken place there.

Zimba, M.L.N. (1999) 'Gender aspects in the provision of rural infrastructure', in *Balancing the Load – Proceedings of the Asia and Africa Regional Seminars on Gender and Rural Transport*. London: International Forum for the Rural Transport and Development.

The study focuses on the use and maintenance of village paths, tracks and footbridges in two villages in Zambia. The author identifies factors affecting the use, provision and maintenance of rural infrastructure in terms of gender; possible policy interventions, and solutions to the marginalisation of rural areas through enhanced provision of rural infrastructure.

Zohir, S. (1990), *Evaluation of poverty alleviation programmes [Bangladesh]: Vol. 4 Rural roads and poverty alleviation*, Preliminary draft from Bangladesh Institute of Development Studies, Dhaka: Bangladesh Institute of Development Studies.

Rural roads (this study focuses exclusively on earthen roads) facilitate economic activities and open up markets to bring in new opportunities for the rural inhabitants. Concludes that rural roads have positive impacts on the overall economic condition of the rural inhabitants and if the distribution of benefits is at all skewed, it may be in favour of the poor households. Transport workers benefited as improvements to rural roads generally enable pushcarts and rickshaws to be operational on the road – and these are run and often owned by poor households. Impacts on expansion of regular markets in rural areas – though no evidence could be obtained on the distribution of benefits resulting from such expansion. There was an adverse effect on agricultural production, in response to induced high wages. However, increased employment and higher wages benefit the target group members. Findings further suggest that rural roads have positive impacts on:

- Ownership of trees, cows and vocational equipment;
- Adoption of HYV;
- Female participation in work force, especially among target group households;
- Seeking jobs outside the village among male members;
- Engagement in non-farm self-employment;
- Better availability of certain types of services (e.g. that of a veterinary officer);
- Participation in Poverty Alleviation Programmes;
- Improvements in economic conditions of households.

Part 2: Data Sets

Central Bureau of Statistics [Kenya] (1991?), Symposium of Producers and Users of Statistics, November 6-8, 1990, Green Hills, Nyeri [proceedings], Nairobi: CSO.

Includes statistics on gender and transport use.

DHS+ and Research, 'Demographic and Health Surveys (DHS)'.

These are nationally representative household surveys with large sample sizes of about 5,000 households. The standard DHS survey consists of a household questionnaire and a women's questionnaire. Questions on access and distance are included in the household survey but these vary country by country. DHS+ and Research also produce smaller Interim Surveys, Baseline/Follow-up Surveys, and Service Provision Assessments.

DHS surveys are available for the following countries:

Bangladesh 1993/94	Indonesia 1991	Paraguay 1990
Bangladesh 1996/97	Indonesia 1994	Peru 1991/92
Benin 1996	Indonesia 1997	Peru 1996
Bolivia 1989	Jordan 1990	Philippines 1993
Bolivia 1994	Jordan 1997	Philippines 1998
Bolivia 1998	Kazakhstan 1995	Rwanda 1992
Brazil (Northeast) 1991	Kenya 1993	Senegal 1992/93
Brazil 1996	Kenya 1998	Senegal 1997
Burkina Faso 1993	Kyrgyz Republic 1997	Tanzania 1992
Burundi 1987	Liberia 1986	Tanzania 1994
Cameroon 1991	Madagascar 1992	Tanzania 1995
Cameroon 1998	Madagascar 1997	Tanzania 1996
Central African Republic 1994/95	Malawi 1992	Togo 1988
Chad 1996/97	Malawi 1996	Togo 1998
Colombia 1995	Mali 1995	Trinidad and Tobago 1987
Comoros 1996	Morocco 1987	Tunisia 1988
Côte d'Ivoire 1994	Morocco 1992	Turkey 1993
Dominican Republic Experimental 1986	Morocco 1995	Uganda 1995
Dominican Republic 1991	Mozambique 1997	Uganda 1995/96

Dominican Republic 1996	Namibia 1992	Uzbekistan 1996
Egypt 1992	Nepal 1996	Vietnam 1997
Egypt 1995	Nicaragua 1998	Yemen 1991/92
Egypt 1996/97	Niger 1992	Yemen 1997
Eritrea 1995	Niger 1998	Zambia 1992
Guatemala 1995	Nigeria 1990	Zambia 1996
Haiti 1994/95	Pakistan 1990/91	Zimbabwe 1994

Fieldwork for the following DHS surveys is in progress in 1999/2000: Bangladesh, Cambodia, Colombia, Egypt, Ethiopia, Gabon, Guinea, Haiti, India, Kazakhstan, Malawi, Mali, Mauritania, Nigeria, Peru, Rwanda, Senegal, South Africa, Turkmenistan, Uganda, Zimbabwe.

International Food Policy Research Institute, ‘Philippines Cash Cropping Project, Southern Bukidnon Province, 1984-1995’

The questionnaire was applied to approximately 450 households and included information about non-food expenditures, health services, and time allocation.

International Food Policy Research Institute, ‘Pakistan Panel Survey, 1986-1991’.

Questionnaire administered over five years to approximately 800 rural households. Topics include time allocation of household members (male and female) and household asset ownership. Community level information details include the availability of public services in a village, rural education, migration and employment.

International Food Policy Research Institute, ‘Egypt Integrated Household Survey, 1997’.

The questionnaire was administered to 2,500 households throughout 1997. Topic include household information, access to facilities, migration, food and non-food expenses, non-farm enterprises, remittances and transfers. Data were also collected on the overall characteristics of the community/villages.

Living Standards Measurement Study

LSMS surveys are distinguished by multi-topic questionnaires designed to study multiple aspects of household welfare and behaviour. Although there is no formal standardised LSMS, the questionnaires used in the Ghana LSMS come as close as any to being a prototype. The Ghana LSMS survey gathered data at individual and household levels using multi-purpose household questionnaires. Community level data were collected using a community questionnaire in rural areas and a price questionnaire was used in both rural and urban areas. In the household questionnaire data was collected on the following: expenses; distance and travel time to school; distance and travel time to work; expenses for transport; ownership, value, sale and purchase of heavy farm machinery including tractors, ploughs, carts, vehicles and draft bullocks; ownership, sales and purchases of assets including vehicles in the preceding twelve months; expenditure on public transport; purchase price, length of ownership and resale value of durable goods owned. The community questionnaire included information on: economy and infrastructure questions including access to a motorable road, public transport; migration for jobs; distance to primary and middle schools; distance and travel to the nearest of each of several types of health workers.

LSMS surveys are available for the following countries (in chronological order – date refers to year of first survey): Cote d'Ivoire (1985/86/87/88), Peru 1985 (1985/86/90/91/94), Ghana (1987/88/89), Mauritania (1988), Bolivia (1989), Jamaica (1988-97 annual), Morocco (1990/91), Tanzania – Kagera Region (1991), Pakistan (1991), Peru 1990/91/94 (1991), Venezuela (1991), Vietnam (1992/93), Nicaragua (1993), Guyana (1992/93), Kyrgyz Republic (1993) Tanzania – national (1993), Russia (1992), South Africa (1993), Kyrgyzstan (1994/96), Romania (1994/95), Ecuador (1994), Bulgaria (1995), Albania (1996), Armenia (1996), Nepal (1996), Papua New Guinea (1996), Panama (1997).

World Health Organization: WHOSIS <http://www.who.int/whosis/>

Data for the World Health Report 2000 includes data on road traffic accidents (Deaths & DALYS); HIV/AIDS and other STD statistics.