



Transport's Role in Achieving the Millennium Development Goals
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EXECUTIVE SUMMARY

The key purpose of this paper is to review the evidence that exists between transport and poverty, and hence to sharpen the focus of transport research on poverty reduction. Though there is no single over-riding indicator or relationship which demonstrates the link, the evidence presented endorses the fact that transport plays a very important role across all sectors and has a significant part to play in achieving each and every one of the millennium development goals.

It is clear that poor communities and individuals place a high priority on accessibility to services and opportunities. It is also clear that many of these services (health, education, etc) need the input of an efficient transport system to meet their own goals and targets.

In presenting some very concrete evidence on the role of transport in poverty eradication, it is also apparent that there are gaps or weaknesses in our understanding of the nature (quality and quantity) of the link. Some of these are implied in the analysis that has been presented. For example

- Methodological approaches for identifying needs, measuring impacts and mainstreaming issues such as gender
- Tracing the micro impact of different transport policies
- The social cost of poor transport
- The optimum mix of transport and non-transport interventions.
- Understanding access and mobility issues during natural disaster situations
- Broadening the concept of transport safety
- Understanding the link between transport and governance

Clearly there is a range of issues that could be addressed, all concerned with the poverty impact of transport development. The challenge is to develop an acceptable rationale for prioritising the application of the resources that can be directed at this work.

Earlier work has adopted a market-led approach, but this paper supports the view that consultation has an important role to play in filling in the gaps in our knowledge, and in prioritising the research agenda. Key steps in a consultation process will include identification of key stakeholders such as policy makers, civil society, practitioners and donors; participatory assessments of transport needs at the community level; strengthening and using existing forums. Consultation will take a multi-disciplinary approach and involve actors from developing countries. This will lead to a framework for prioritising research, dissemination, uptake and other interventions.

TRANSPORT'S ROLE IN ACHIEVING THE MILLENNIUM DEVELOPMENT GOALS

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TRANSPORT AND POVERTY

1. INTRODUCTION

1.1 BACKGROUND

DFID's 2000 White Paper on International Development focuses on the need for research to be better targeted if it is to benefit poor people. It says that the UK Government will *'help focus more of the UK and global research effort on the needs of the poor'*.

Specifically, it points out that:

"Most research and development capacity is in developed countries and is oriented to their needs. Research that benefits the poor is an example of a global public good which is under-funded. ... Governments and development agencies must therefore work to create more partnerships and must also invest directly and substantially in research that benefits poor people. ... Efforts must also be made to strengthen the capability of developing countries to produce, adapt and use knowledge, whether produced locally or internationally."

DFID's Engineering Knowledge and Research (KaR) programme supports this process, the outputs of this programme being:

Key engineering knowledge developed, adapted, improved, collated and made accessible to government agencies, the private sector, community organisations and individuals in poorer countries

The capacity of poorer countries strengthened to generate, adapt and apply engineering knowledge to encourage growth and eliminate poverty

Knowledge strategies of other development agencies influenced by long term collaboration

Effective internal networks established for sharing technology

The millennium goals and approaches to development policy (as addressed in the second White Paper) do not make significant reference to, or accord any due importance to the role of transport in the development process (see, for example, Fouracre and Rolt, 2001). Clearly, the role of transport is not insignificant. As a service industry it contributes to the productivity and smooth running of almost every other sector and facet of life.

Several papers have drawn links between transport and poverty in recent years without expressing the integral role of transport in achieving the millennium development goals (MDG's). The achievement of the MDG's explicitly requires action from some sectors (for example, health and education). This paper shows that achieving these goals through single sector interventions is unlikely to be successful and provides clear evidence for the importance of cross-sectoral transport investments in all areas.

Challenging the gender inequality in education and considering the many underlying reasons why girls do not attend school is an example of a single sector intervention that would benefit from addressing transport issues. When the journey to school is identified as the main barrier, it is clear that transport interventions can have a significant impact on achieving the goal. As transport specialists, it is vital that we demonstrate transport's significance in both qualitative and quantitative ways and, in particular, demonstrate the role that transport plays in the process of poverty alleviation. In demonstrating its role and importance for the poor, the need for broadening the scope of transport research and for prioritising research activities should become self-evident.

1.2 OBJECTIVE

In an earlier review of DFID's transport research priorities, Hine (2002) developed a prioritisation model which emphasised the structure of the market for research and the likelihood of being able to apply the research findings. Hine's method was criticised because he approached prioritisation from a purely transport perspective; it was felt that the millennium development goals should form the starting point. To redress this imbalance, this paper addresses the role that transport plays in poverty reduction and aims to:

Review the evidence that exists for this link (between transport and poverty), and hence to sharpen the focus of transport research on poverty reduction.

Provide the basis for further development in the prioritisation of pro-poor transport research through:

Informing on the main gaps and hence directions for knowledge acquisition (on transport development) that is necessary for the achievement of the millennium development goals

Providing a basis for further consultation with key stakeholders, particularly from the south (developing countries)

1.3 ORGANISATION OF THE PAPER

An overview of the role that transport plays in development is provided in Section 2. Section 3 looks at the empirical base for linking transport to poverty and Section 4 presents the evidence for the link between transport and the MDGs. Some of the issues that will have an impact on the future direction of research are discussed in Section 5 and Section 6 summarises the paper as a whole and presents recommendations for further investigations.

2. OVERVIEW OF TRANSPORT AND DEVELOPMENT

Traditionally, investment in transport has been justified on the basis that it supports general economic growth and trade. A review of the macroeconomic evidence for this is contained in both Willoughby (2002) and Dunkerley and Hine (2001). Despite some misgivings about the statistical problems involved in the analysis (in particular the causality relationship) it is generally held that there is a positive and significant impact.

At a microeconomic level, non-urban transport investments are commonly justified on the basis of the savings they produce for vehicle operators, through reduced operating costs and improved productivity. Evidence for the reduction in distribution costs of inputs and outputs of rural markets is equally compelling. Fan, Hazell and Thorat (1999) used Indian data to show that the greatest returns to alternative investments in rural India on agricultural total factor productivity and poverty reduction came from investments in roads and agricultural research and development. Urban transport investments can be more narrowly justified on the basis of reductions in congestion and hence reduced travel time. However, such savings may not often feed through to final consumers because of imperfections in the market, and their pro-poor effects are either misinterpreted or not evident.

Development aid is now highly poverty focussed and the justification for transport investment is shifting from that of pure economic efficiency to equity implications. The transport sector receives a very high proportion of international development assistance. It is the largest sector in the World Bank and EU operations, yet, by its own admission, the World Bank (and presumably other donors) has little idea on how to effect transport developments that benefit the poor. There is a growing body of evidence pointing to the pro-poor benefits of reduced transport costs (Limao and Venables, 1999; Booth et al., 2000) and recognition that the value of improving personal mobility has been underestimated (John Howe, personal communication, 2002; Adams and He, 1995; Heyen-Perschon, 2001). There is also great concern that real income/welfare to the poorest groups may have decreased (e.g. from decreased accessibility due to displacement of non-motorised vehicles, higher pedestrian fatalities, high exposure to air pollution etc - World Bank, Transport and Poverty Reduction: a background note).

At a micro project level, while access is clearly an important community benefit, improved transport may have yielded benefits to the poor by default rather than by design. There is also the question of imposed substantial and disproportionate external costs mentioned above. 'Voices of the Poor' (see Box 1) is a study initiated by the World Bank to give expression to the views of the poor and identify what the poverty really means to those who experience it. The evidence shows that the poor are often excluded from the benefits of transport provision, while they see lack of infrastructure - particularly roads, transportation and water- as a defining characteristic of poverty (Narayan, 2000). Many describe the lack of access as a key dimension of poverty. Sometimes the transport constraint is explicitly acknowledged, though more often it is implicitly assumed in the need to create greater access (e.g. to employment opportunities, educational and health facilities, agricultural development, social inclusion and networking).

The focus on poverty reduction has been accompanied by new approaches for analysing and targeting the needs of the poor. The international development targets and millennium development goals have been derived to concentrate aid efforts, while Poverty Reduction Strategy Papers (PRSPs) embody the poverty aims and mechanisms of countries, and are based on a sustainable livelihoods approach (SLA), rights analysis and poverty audits. These approaches are cross-sectoral, participatory and gender sensitive in nature.

Box 1. Some views on transport from “Voices of the Poor”.

“We think the earth is generous; but what is the incentive to produce more than the family needs if there are no access roads to get one’s produce to a market?”

A poor farmer from Guatemala told researchers,”

“A community without roads does not have a way out.”

A poor man, Juncal, Ecuador

“If we get a road, we would get everything else: community center, employment, post office, water, telephone.”

Young woman in a discussion group, Little Bay, Jamaica

Take the death of this small boy this morning, for example. The boy died of measles. We all know he could have been cured at the hospital. But the parents had no money and so the boy died a slow and painful death, not of measles, but out of poverty.

A man from Ghana, 1995a

Transport development is not, in itself, one of the millennium development goals, more a means to an end. Despite its obvious pervasive influence on the efficiency and effectiveness of all other sectors, its contribution to economic growth and its importance in terms of government and donor spending, the role of transport in poverty reduction is under-emphasised. This may be because much transport development (especially that associated with the provision of transport services) is controlled by the private sector, and it may be due partly to the difficulty that has arisen in the past of unequivocally demonstrating the link between transport development and poverty eradication.

3. EMPIRICAL BASIS FOR LINKING TRANSPORT TO POVERTY

3.1 DEFINING POVERTY

Key features of poverty are its multi-dimensions and its causation (including economic growth, structure and inequality of opportunity, shocks and violent conflicts, governance and social exclusion, and entitlements). The World Development Report (1999) on Poverty defines it as:

“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).

Booth et al (2000) focus more narrowly on the ultimate outcomes that antipoverty action aims to influence:

Income/consumption

Human capabilities

Private and social assets

Time and its use

Attainment of a minimum level of social participation

Security in respect to risks, shocks and violence

Box 2. What constitutes poverty: extract from “Voices of the Poor” (ad.).

There are five main findings.

- First, many factors converge to make poverty a complex, multidimensional phenomenon.
- Second, as expected, poverty is routinely defined as the lack of what is necessary for material well-being – especially food but also housing, land, and other assets. Poverty is the lack of multiple resources leading to physical deprivation.
- Third, poor people’s definitions reveal important psychological aspects of poverty. Poor people are acutely aware of their lack of voice, power, and independence, which subject them to exploitation.
- Fourth, the absence of basic infrastructure – particularly roads, transport, water and health facilities – emerged as critical. While literacy is viewed as important, schooling receives mixed reviews, occasionally highly valued but often notably irrelevant in the lives of poor people.
- Finally, poor people focus on assets rather than income and link their lack of physical, human, social, and environmental assets to their vulnerability and exposure to risk.

3.2 PERCEPTIONS AND REALITIES OF TRANSPORT

The “Voices of the Poor” exercise has produced evidence which endorses the multidimensional definition of poverty (Box 2 being a summary of key findings from this exercise), and identifies the importance of transport in the definitions of the poor themselves. It also provides some of their expectations of transport. Box 3 highlights the fact that transport is as much part of the social fabric as it is a means to greater economic opportunity.

Box 3. “Voices of the poor”: the Role of Transport

In addition to isolating communities from other infrastructure, lack of roads can also deny communities political access. Ugandan government officials who are posted in isolated areas perceive it as a kind of punishment (Uganda 1998). Similarly, the Kenya PPA indicates that district leaders tend to avoid villages that are only accessible through bad or dangerous roads. If they go to remote villages at all, it is only for short visits, so there is no time to witness problems directly and talk things over with stakeholders (Kenya 1996).

In addition, poor roads greatly limit inter-village and rural–urban trade (India 1997a; Ecuador 1996a). In Cameroon for instance, 86 percent of respondents in the South West Province believe that poor transportation infrastructure is a major factor in their inability to increase agricultural productivity and marketing activities (Cameroon, 1995). In Uganda, poor people report that “it is because of poor roads that the produce of the farmers is bought at low prices” (Uganda 1998).

Poor people, however, have rarely been given the opportunity to express their transport problems and needs. Government bureaucracy in most developing countries is rigid and unresponsive to poor peoples’ needs. Participatory research with a tribal community in Orissa, India (conducted by ITDG-South Asia and the Orissa Regional Forum for Rural Transport & Development) disclosed the fact that government officers do not listen to the tribal people or even allow them inside the government offices. Box 4 presents an example of how a poor community in Sri Lanka grasped an opportunity to engage with the bureaucracy and improve their livelihoods by increasing their access.

Box 4. Community gravel road building

During a participatory survey of the transport needs of poor people in two isolated villages in Sri Lanka by ITDG-South Asia the communities explored their constraints and opportunities and decided that their isolation from services and markets was their major problem. They felt that if the gravel road running through their village could be improved and maintained throughout the year, many of their livelihood constraints would be alleviated. Conventional government provision had always proved unsatisfactory so the community took responsibility for their own decisions and took action to make local changes. The local government resources in this case were not financially sufficient to meet the needs but also their existing procedures were not transparent.

Through the participation of local communities and using simple labour-based technology, the local people’s skills were harnessed and developed. The completed stretches of road were designed to cause minimal environmental damage, to be resistant to the weather conditions which can turn paths into muddy trenches, and to be easily maintained through local labour after completion. The only large pieces of equipment they used were a roller, and a two-wheeled tractor hired by the villagers themselves - the rest of the work was done by hand.

In the process, the villagers have improved their lives through better access to markets, health care, education and other economic and social opportunities and by bringing improved services and supplies to the now-accessible villages. This piece of action research included a vital component of “Community Driven Development” concept through local government bodies agreeing to part with some of their management responsibilities. The project also introduced “good governance” by ensuring that the local government body became one of the stakeholders. It has been proved that the labour-based and community managed approach can reduce the high costs of using machinery in rural road construction. In fact the labour-based technologies are easily understood by the community.

4. ROLE OF TRANSPORT IN ACHIEVING THE MILLENNIUM GOALS

4.1 GOAL 1: ERADICATE EXTREME POVERTY AND HUNGER

The goal as articulated at the World Food Summit in 1996 was to reduce by half the number of undernourished people by 2015. It was estimated that 840 million people in the world were hungry, 18% of the population of developing countries and 34% of the population in Africa. There are more hungry people in Asia but 18 of the 23 countries facing the most severe problems are in Africa. Three quarters of the chronically hungry live in rural areas, many come from countries where there is conflict and 60% are women.

Food security has been defined by the UN Food and Agricultural Organisation not only in terms of access to and availability of food, but also in terms of resource distribution to produce food and the purchasing power to buy food where (and when) it is not produced.

Sen's identification of the different ways in which individuals can acquire food can provide an analytical base for understanding the relationship between food security and transport.

1. *3Individuals who produce food for themselves.* These are small farmers whose ability to produce sufficient food will be affected by the demand and supply of factors used in production.
2. *Individuals who sell or barter physical assets.* Many farmers will augment their own production by exchanging either a surplus or some crops or a non-food product as will artisans who produce goods that can be sold. For this group, food security will depend on the variability of prices of food relative to what they are able to exchange.
3. *Individuals who sell their labour.* These are rural landless labourers and urban waged workers. Their food security is determined by the level and location of employment opportunities
4. *Individuals who lack other means and who receive informal gifts from others and formal transfers from governments.*

4.1.1 Support to food production and improved access to markets

Enabling poor farmers to grow more food is widely seen as one of the most effective ways to reduce poverty and hunger. In this context there is evidence to show that road investments and improved access to transport services can be effective in lowering input prices and increasing agricultural production. The contribution that transport makes to final market prices varies with a range of factors such as commodity type, transport efficiency, marketing practises, and travel distance (Box 5). Thus transport investment is likely to be most successful when accompanied by actions on other fronts to obtain cost reductions and encourage economic growth (in both Willoughby, and Dunkerley and Hine, op. cit.). Transport investments can also facilitate improved access to markets for farmers and for small-scale artisans.

Box 5. Importance of transport access in rural areas

Some studies indicate that transport costs alone cannot account for the large differences in market prices in Africa (e.g. Hine, Riverson, and Kwakye, 1983; Rizet and Tshimanga, 1988). Ahmed and Rustagi (1987) found that African farmers received only between 30-50% of final market prices compared to 70-85% received by Asian farmers. Although in Africa most of the difference was due to transport costs other activities played an important part.

Examples of these include:

- Marketing practises, where most farmers had to sell their produce to monopolistic traders, who were able to keep a large surplus, without passing it on to farmers (Hine and Ellis, 2001). Ellis argues that for these reasons, governments must implement policies to facilitate the access to motorised means of transport, which would reduce the monopoly power of agricultural traders (Ellis, 1996).
- Commentators cite trading practices involving an excessive number of stages in the commodity chain. In Sub-Saharan Africa, a key reason for this is the lack of economies of scale for bulking up at production and retail level. For example, scattered production by smallholders requires the involvement of assembly traders, which in turn adds to transport costs and inflated marketing margins. Improved farmer co-operation is one solution to overcome this problem.

Nevertheless, as part of post-harvest needs assessments, numerous farming communities, in particular in remote areas of Africa (e.g. Malawi, Uganda, Ghana), have highlighted insufficient road infrastructure and lack of means of transportation as key constraints in their crop marketing systems (Source: NRI Studies).

Increasing agricultural production may not increase food supply and foster food security for the poor. Landlessness can increase 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. Also farmers may opt to sell their increased production rather than consume it.

Increasing food security also implies releasing the potential of female farmers. In sub-Saharan Africa and the Caribbean, women grow 60-80% of the food and in Asia they do 90% of the work on the rice fields. They also have responsibility for a bulk of the domestic transport tasks. Addressing gender issues in transport provision and reducing the time that women spend on transport tasks (especially in sub-Saharan Africa) could make a significant contribution to greater food production and security.

4.1.2 Access to employment

Even in countries like China and India, where there is sufficient agricultural production, the poor cannot afford to buy sufficient food. Improving livelihoods is therefore a prerequisite for increasing food security. For the landless and the urban poor, access to employment opportunities and income are particularly important.

The study by Shenggen et al. (1999) of rural India examined the simultaneous effects of investments in infrastructure, factories and product markets and showed convincingly that government expenditure on roads had the largest impact on poverty reduction as well as a significant impact on productivity and growth. This win-win situation is not guaranteed since increased productivity can also lower agricultural prices and increase landlessness. In the case of rural India, because the poor are net buyers of food grains and benefit from lower prices, the effect was to reduce poverty. The increased landlessness effect was more than outweighed by the positive effects

on rural livelihoods of increased agricultural wages, non-agricultural employment and agricultural productivity (Shenggen, Hazell and Thorat, 1999).

Other countries have also documented the positive effects of infrastructure in agricultural areas:

- Ecuador (Lanjouw, 1998) - this study supports the conclusion that good road infrastructure is important for increasing non-agricultural employment.
- El Salvador (World Bank, 1998) - rural infrastructure appears to have played only a modest role in enhancing the income-earning potential of rural households(Booth et al).

The transport sector creates employment opportunities by stimulating economic growth and new investments. Improved productivity and output help to 'lower transaction costs, allow economies of scale and specialisation, widen opportunities, expand trade, integrate markets, strengthen effective competition, and eventually increase real income and welfare of society. Without efficient transport, economic growth is not possible, and without growth, poverty reduction cannot be sustained (Gannon and Liu, 2000).

Provision of transport infrastructure and services can facilitate (or constrain) poor people's access to locations where there is greater demand for their services. In Tanzania a study of the railways showed that people are enabled 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).

For the urban poor living in geographically marginalised areas with poorer quality services and infrastructure, transport costs are high and journeys long. They are (often) unable to travel to relatively inaccessible jobs that might pay higher wages than those which are easily reached (Booth et al).

4.1.3 The transport sector as a source of employment

Transport is a major source of employment, particularly in urban areas where public transport comes in myriad forms including small vehicles and non-motorised transport. Official employment figures for Lagos State, for example, suggest that almost 10% of the working age group are in the transport sector. Employment attributable to the rickshaw industry alone in Bangladesh was estimated at 1.25 million people (Gallagher, 1992), more than in the more important handloom textile industry or the entire modern industrial sector.

It is worth noting at this point that employment in transport services is highly gendered. Less than 2% of the transport employees recorded in Lagos State were women. Bicycle taxi operators in Kenya, three-wheeler drivers in Sri Lanka and rickshaw pullers in Bangladesh are all men. Women are more visible where incomes can be earned from human portage, through headloading in Ghana, for example, and are often vulnerable to gendered interventions that introduce transport technologies (mainly to men).

The transport sector also creates opportunities for employment through labour based infrastructure construction projects. Ravallion (1990) argued that in India and Bangladesh public works are among the most cost-effective measures for poverty alleviation. This view has been generalised in many more countries (Keddeman, 1997) including China (Ling and Zhongyi, 1996).

Box 6. Transport as an employment initiative: East Africa and Sri Lanka

- Bicycle taxi's in Kenya - in the 90s, high youth unemployment levels in Kisumu meant that there were many people looking for an enterprise opportunity with low entry barriers. Because of the large untapped demand for an alternative local transport service, the growth of bicycle taxis has been phenomenal. By the year 2000 there were 5000 bicycle taxis operating in Kisumu. Each of the taxis generates Ksh 250 per day (3US\$) for the operator, in a country with an annual income per capita of 300 US\$. Each of the 5000 taxis transports about 10 people per day. This service has now become part of the mass transit system in Kisumu town, and a major new enterprise sector. As a result of the bicycle taxi, a high influx of passengers from the rural areas comes to the paved road. As a result more buses operate on the paved roads providing more direct and in-direct employment opportunities in the transport sector. Thus the bicycle taxi makes that rural-urban linkage quite efficiently.
- Three Wheeled taxis (motorised) in Sri Lanka - generate more than 300,000 direct jobs for the youth in the low-income groups and also a cheaper mode of para-transit system for both rural and urban communities (however, these modes are unaffordable to the poor). The available leasing systems with commercial banks and financial institutions has encouraged the purchase of three wheelers. This transport service has also given in-direct benefits for the small producers lowering their transport costs.

Public works on transport infrastructure have also been used to reduce vulnerability during recessions, natural disasters, and in areas of extreme need. In some countries employment in transport projects and programmes is used to provide a safety net to prevent poor people falling into destitution.

Little is known about the impact of the destruction of transport infrastructure by floods, hurricanes, earthquakes, landmines etc, on peoples' livelihoods, or about the costs of the rehabilitation and relief efforts. The break in distribution of essential food supplies to be sent to the areas affected clearly makes poor people in these areas more vulnerable. While air delivery of food supplies is possible (if not affordable) in almost every part of the world, there are many advantages to delivery by land transport. Constructing infrastructure that meets the environmental demands of an area is one way to minimise the risks of isolation.

4.2 GOAL 2: ACHIEVE UNIVERSAL PRIMARY EDUCATION

In education, a 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, only 21% of girls and 58% boys ever attend school. Where a paved road exists, the school participation rate increases to 48% for girls and 76% for boys. While this research does not establish a causal link between provision

of infrastructure and the decision to go to school, it is possible to draw certain links. Assuming the barrier to attending school is its in-affordability (in terms of time and/or money) then making that barrier smaller by increasing access should mean that more children attend school. Recent work on the socio-economic linkages of access, based on the 1998-99 Pakistan Integrated Household Survey, indicates that whilst there is a significant correlation between motorable access and education (and health) this could be a measure of the relative state of development of the community rather than the direct impact of infrastructure provision.

Attendance at school is also affected by lack of appropriate transport services, especially for girls (Lateef, 1998). It is also affected by the time-poverty of poor households where children take on productive and reproductive tasks such as fetching water and firewood, looking after siblings, and working in the fields and in household enterprises.

Box 7 “Voices of the Poor”: transport impacts on school attendance

Rural children in Cameroon often do not attend school because schools are located beyond walking distance, and teachers avoid working in the more isolated areas (Cameroon 1995). In Thailand, some parents remove their children from school because the combined costs of education and transportation are unaffordable (Thailand 1998). In one of the South African villages studied, the costs associated with transporting children to school are identified as a cause of poverty (South Africa 1998).

The quality of education can also be affected where isolation fails to attract teachers and lack of adequate transport services makes their attendance sporadic.

Box 8: Improving School Attendance through NMT Policy and Action

In rural South Africa, many primary and secondary school students live more than 5 miles away from their school. Few schools operate school buses or offer boarding. As a result, students in remote areas can often not attend school, or can attend only at great difficulty. Given the time it takes to get to and from school, they have little time to complete school assignments and help their families. In an effort to improve school attendance, the South African Minister of Transport, Dullah Omar declared that “The time has come to promote bicycle transport as a strategic solution.” In response, Afribike, a South African based NGO, promoting cycling and bicycles, in partnership with provincial and national transport departments, launched a program—Learners on Bikes – for 10,000 students to buy refurbished bicycles. The program is funded by the National Department of Transport and executed through the National Road Agency in collaboration with Afribike and local communities (Source: Afribike, Gannon et al).

4.3 GOAL 3: PROMOTE GENDER EQUALITY AND EMPOWER WOMEN

The United Nations Development Programme (UNDP, 1995) has estimated that women represent approximately 70% of the 1.3 billion poor people in the developing world . There is growing attention in the transport sector to gender issues. However, much of this attention is concentrated at the micro project level. As a result of past transport research, there is now recognition that women and men have different transport needs and different access to transport technologies and services. Therefore transport sector interventions can have (and have had) significantly differential impacts on women and men. It is accepted that by focusing more investments in infrastructure and services used by and more appropriate to women, the time women

spend on transport activity can be reduced with significant poverty implications (see box 10).

The relationship of transport to gender equality and empowerment of women is less well understood or explored. Gendered access to transport technologies and services is an outcome of unequal gender relations. Matin et al (1998) argue that gender power relations in Bangladeshi society restricts women's mobility and constrains their participation in social and political processes. At the macro policy level, the transport sector has not, as yet, been able to mainstream gender into its investments. Elson, Evers and Turner (1998) look at the transport sector as a gendered structure and highlight the ways in which seemingly "gender neutral" institutions may in fact be gender biased and may unwittingly burden the economy of social reproduction. This could have negative implications for the market economy and ultimately undermine the overall effectiveness of sectoral investments. They argue for including the unpaid economy of social reproduction into the discussions on public finance. They propose that women's time should be factored into evaluations of the costs and benefits of sector expenditure or investment and new forms of revenue generation such as privatisation and cost recovery measures. The invisibility of women's time in such analyses could have negative feedbacks in terms of access to health and education facilities and be reflected in mortality and morbidity indicators and lower school enrolment rates.

Box 9: Kajiado - Southern Kenya

This case study (ITDG East Africa) illustrates how a simple transport intervention can reduce dramatically the time women spend on domestic tasks, especially water collection. When women organise themselves and use the saved time productively, benefits can be seen in all areas of their livelihoods, including; agriculture, girls education, improved shelter and gender equality.

The history of the Kajiado programme in Southern Kenya dates back to 1995 when the District Agricultural Office in Kajiado were encouraged to have discussions with women's groups in the district about working with them to mitigate some of their transport problems.

The aim of the project was to encourage women to make better use of their donkeys for transport. Donkeys were usually used by the Maasai in their transmigration activities for transporting household goods. Once the Maasai settled, the donkeys were used by some families to fetch small quantities of water, but for little else. Today the women use donkeys for fetching substantial quantities of water, for collection of firewood, for transporting building and fencing materials, for transporting harvested grain from the fields. As envisaged, women were able to use the time saved to attend group meetings, to cultivate fields and kitchen gardens and to engage in group activities. It would seem that this freeing of time has considerably strengthened the group. They meet once every week.

There are now 66 agricultural farms in the village ranging from two to ten acres. Each of the 43 members has a kitchen garden in which they grow tomatoes, kale and onions. Members assist each other in their fields and in building their houses. They use "drip irrigation" technology from the additional water collected in their agriculture plots in the arid zones of Kajiado. 13 new houses have been completed. Two members also have water tanks (for water storage) built in their houses. The group has collectively built a pre-school unit and school. They are particularly concerned about the education of the girls in the village. Most children now attend this school.

Elson et al. (1998) also argue for an analysis of the gender balance in decision making, particularly in target ministries and in the policy dialogue with stakeholders. In the transport sector, commercial users are often the first points of contact for policy makers, marginalising the transport needs of women (Turner, 2002 - Literature review: Integrating gender into transport investment programmes, unpublished).

4.4 GOAL 4: REDUCE CHILD MORTALITY

Accidental injuries (including road traffic accidents, drowning, burns and poisonings) are the cause of over 400 000 deaths per year in children under five. This represents almost 15% of deaths due to environmental hazard in this age group. 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 in the Philippines (Wagstaff, 2000) proximity to a public hospital emerged as a significant explanatory variable. The elasticities indicated that a ten per cent increase in distance (from the hospital) is associated with a two per cent increase in all three mortality rates. Downing and Sethi (2002) have noted that 'transport is a vital component of comprehensive vaccination programmes for which repeat attendance is required'.

Applicable to both this goal and goals 5 and 6 is a statistic from WHO that states that more than 40 to 60 per cent of the people in poor countries live more than 8 km from a health care facility. Greater availability of, or access to, transport could go some way to reduce the problems of making use of these and other distant facilities. However, there could be several aspects of health-seeking behaviour that are little understood and which may not include transport as the main or deciding consideration. Also, access to health services may be as much influenced by factors of social accessibility as by physical distance. Gender relations, class, membership in a cultural minority or other disadvantaged group can impede access to health and other services.

Health indicators are also affected by preventive diseases that are the result of lack of clean water and good sanitation. The time that rural people (particularly rural women and children) spend collecting water has been widely documented in the transport discourse, though the impact of transport interventions that reduce this burden has not been analysed in terms of its effect on reducing diarrhoeal and other diseases.

4.5 GOAL 5: IMPROVE MATERNAL HEALTH

Where roads are poor, vehicles are scarce and distances to appropriate health facilities are considerable, it can be difficult for women to use even routine services. Data from demographic and health surveys indicate that at least one-third of rural women in developing countries live more than five kilometres from the nearest health facility, and around 80 percent live more than five kilometres from the nearest hospital. Where walking is the main mode of transportation, such distances can be insurmountable obstacles. Surveys in a range of countries confirm that many women would like to deliver in a health facility but are unable to do so because of distance and lack of transport. In Malawi, for example, 90% of women in one survey wanted to deliver in a health facility but only 25% actually did so.

The overwhelming anecdotal evidence of the negative impact of poor and unaffordable transport services on obstetric complications is borne out by some of the medical literature on the impact of poor transport on women's gynaecological health (Shehu, Ikeh and Kuna, 1997; Samai and Sangeh, 1997). These studies have demonstrated that low-cost interventions such as improving communications between rural communities and ambulances can reduce maternal mortality rates from 20 to 10 percent (Samai & Sengeh, 1997) ie by up to 50 per cent.

Community-based approaches have been successful in identifying and prioritising concerns over transport. For example, in Jordan the cost of transportation was perceived by women to be a barrier to accessing ante-natal health facilities. Another example of the complex interplay of transport and health service interventions comes from Matlab in Bangladesh. The decline in maternal mortality was thought to be due not only to community midwives making appropriate referrals to a hospital with obstetric services, but also to their ability to facilitate transport for their patients (Maine et al, 1996).

4.6 GOAL 6: COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES

In their review, Downing and Sethi (op. cit.) show that "transport costs are a major impediment to seeking sustained treatment in settings ranging from Bangladesh, Zambia, Uganda, South Africa" (Godfrey-Faussett, 1995; Croft, 1998; Westway, 1990). Furthermore, adequate transport facilities also influence the success of tuberculosis and other immunisation and disease control programmes through the safe and timely delivery of vaccines, particularly in maintaining the 'cold chain'. There is little quantified information on this topic but its importance has been articulated by many (Porapakham, 1992, Howard-Grabman, 1993, and Box 10).

Box 10. Transport improves health care performance

In the Upper West region of Ghana, DANIDA invested in a 'model' transport fleet for health service provision for the region (4 wheeled and two wheeled vehicles). A Transaid (UK NGO specialising in transport operations) driver and rider training scheme, a planned preventative maintenance system, sufficient budgets and a comprehensive transport management system complemented these. DANIDA assessed the impact of the provision of transport by measuring increased health service delivery for activities dependant on transport.

Amongst other improvements, they found an increase in vaccination coverage of over 100%, up to 400% more antenatal attendees, and over 100% more outreach clinics. It was claimed that this degree of improvement would normally be expected after 5 - 10 years of project support. In this instance it was achieved in under a year due to the focus on transport.

It is widely believed that HIV/AIDS has been exacerbated by the increased mobility of individuals and transport employees. Rural communities are vulnerable to the spread of HIV from urban areas, where prevalence rates are higher due to high risk practices. Although transport has contributed to the epidemic, it also has a role to play in the societal response to it. Transport responses have focussed on educating/counselling truckers. Examples include the Healthy Highways project in

India (Wilson, 1999), National AIDS Control Organisation (NACO) programme in India and numerous programmes in Africa.

The impact of transport itself on death and injury should also be considered within this context. The most recent study of the global impact of road accidents (Jacobs et al, 2000) estimated that:

There are between 750,000 – 880,000 deaths per year (of which 85% are in developing and transitional countries)

There are between 23 and 34 million people injured per year

The estimated cost of road crashes for the developing world is US\$ 65 billion per year, which is more than the total official development aid (multilateral and bilateral) received from the richer OECD countries.

Information about poor people's involvement in road accidents is sparse but figures from five countries (Jacobs et al, 1999) show that 20 to 56 % of pedestrian casualties came from the poorest socio-economic group.

Women represent between 20 to 30 per cent of pedestrian casualties (Downing, 1993), but an added burden on women is the need to care for victims who are often the main breadwinners for their families.

Though the impact of transport and death and injury is almost always considered in terms of road accidents, there are other less visible impacts such as injury and death caused by poor transport infrastructure (eg slippery paths and tracks, unsafe river crossings) or the physical effort of carrying heavy loads.

4.7 GOAL 7: ENSURE ENVIRONMENTAL SUSTAINABILITY

Transport is closely linked to the environment. The interactions can be grouped as follows-:

1. Resource use associated with vehicles both in terms of non-renewable fuels and construction materials and the associated emissions and waste products
2. Resource use associated with infrastructure including location of resources, the non-renewable nature of the materials of construction, and the effect of infrastructure on the stability of the surrounding environment.
3. Effects of land use planning. This covers the impacts that transport investments might have on the subsequent developments (increased industry, population movements, severance, biodiversity loss, associated pollution etc.)
4. Health effects of environmental pollution. This includes contamination of the water table and air pollution.
5. Transport as a facilitator of resource efficiency eg recycling/re-processing of waste (all types).

There are wide opportunities for transport to complement the goal of environmental sustainability; the potential for minimising its externalities and promoting more sustainable options is great. Clearly such opportunities are subject to an individual country's value systems and their institutional strength and political will.

Environmental transport issues have associated equity concerns. Traditional transport planning techniques have been generating transport systems that propagate an unfair distribution of accessibility and reproduce safety and environmental inequities (Vasconcellos, 2001).

The effects of transport on the environment are markedly different in urban and rural areas. In urban areas it creates congestion, air pollution and noise, and can contribute to uncontrolled urban sprawl. In rural areas the construction of roads affects not just the environment on which the road is built. The construction of the Trans-Amazonian highway paved the way for vast areas of virgin forest to be cleared with many consequent environmental effects.

4.7.1 Sustainable Resource Use - Vehicles

While the poor use the most environmentally sustainable forms of transport it seems that they are also the most vulnerable road users. The least environmentally sustainable forms of transport - cars - are owned and operated by the most affluent sections of society. Tackling the environmental impact of the trend for car-based societies is not well understood or implemented in the developed world.

Non-motorised transport allows a straightforward approach to equity and the environment; it is often the most frequently used mode of transport for the poorest sector of society, and is also the most sustainable. In low income cities, walking is often the predominant mode and is possibly the most environmentally sustainable. In Sao Paulo it is estimated that walking accounts for 35% of all trips (Pucher and Lefevre 1996). Bicycle transport is an efficient and sustainable mode of transport, assuming the resources used in construction are minimal. The popularity of bicycles in comparison to cars varies widely between countries; China has a bicycle-to-car ratio of 250:1 compared to a ratio of 1:1 in Tanzania. Bicycle ownership by population is similarly varied; there are 909 bicycles per 1000 population in Hanoi (Vietnam) compared with 100 per 1000 population in Chiang Mai (Thailand).

Barriers to using non-motorised vehicles include a hostile street environment, negative attitudes towards their use, and excessive regulation (Replogle, 1994) which combine with cultural barriers and gender issues. Walking can also be a significant challenge in many developing (and developed) countries, with the most vulnerable groups being children, the elderly and the handicapped.

Cars, buses, trucks and trains consume (in the main) non-renewable fuel resources and cause a reliance on a resource that is not locally available. In general, trains consume 6 times less energy than one car in carrying one person and consume 8 times less land than a road with a similar capacity.

The Kyoto agreement has far reaching implications for the developing world as their contribution to the global CO₂ burden increases with increased motorised transport. (The developing world's share of total CO₂ emissions is predicted to rise to 26% of the global total over the next two decades; this represents a 46% increase on 1997 levels). To reduce this, working in partnership with manufacturers and policy makers has been shown to have a positive impact in India. The Honda Motor Co. pledged to phase out two stroke motors, and Indian industry is now following suit.

Box 11. Car dependency and culture in Lebanon

During the past 50 years the privately owned car as a means of mass transport has had unparalleled negative effects on cities throughout the world, perhaps nowhere more so than in Beirut. Car dependency in Lebanon drains the national economy of wealth and natural resources, encourages the reduction of the quality and quantity of public social spaces, creates sprawl and far-flung suburbanisation, and destroys culture. Although car sales and usage continue to grow in many parts of the world, many cities and states.....are realising that this cannot continue unabated and are attempting gradually to move away from the private car to mass transit systems. The consensus is growing that public transport is not only an economic and environmental necessity, but also a means of restoring cultural vitality to urban areas.

The transfer from one form of mass transport (private car use)....to another that is highly efficient (light railway) and economical could realise tremendous savings in the national treasury - roughly 20% of GDP (including environmental, efficiency and health savings and import costs). (Ref. Third World Planning Review Vol. 22. Mark Perry).

4.7.2 Sustainable Resource Use - Infrastructure

Responses by engineers to changing levels of availability of resources are continuous. For example, the current shortage of gravel in Zimbabwe has necessitated innovative new techniques and materials for road construction. Developing long-lasting road surfaces requiring low maintenance provides combined economic and environmental benefits.

Whilst roads cannot be constructed or maintained with no input of resources, efficiency and cost often dictate that locally available materials be utilised leading to a 'soft' level of sustainability being achieved. In this sense the technocratic approach to sustainability relies upon new resources being identified and validated, and this is indeed happening in the developed world.

Sustainable road construction in fragile environments is particularly important. These are areas where degradation of the natural environment may never be completely reversed. Loss of biodiversity and severance are also important concerns when planning infrastructure in new areas of development. The emergence of bioengineering has been a positive step to strengthen environmental sustainability, but it needs to be promoted more vigorously.

Finally, careful use of the world's waterways is also crucial to environmental sustainability.

4.7.3 Environmental impacts of transport in land use planning

This is a vast and varying documented area - the consequential environmental effects of infrastructure development are frequently overlooked. This raises the question of the value system we use to judge such changes. Many developed countries shy away from further infrastructure intrusion onto the natural environment, however each country is entitled to place its own value on the decision to do so.

Environmental management of infrastructure should not exert a brake on development, however identifying and minimising negative effects can have significant benefits.

Capacity for environmental planning in the developing world is low in general, although the emphasis placed on it by donors means that awareness of it is quite high. There is debate over where the most effective use of this scarce resource should be focussed - at programme or project level. There are significant benefits and drawbacks to both; the strength of institutions at various levels often dictate the location of environmental planners.

4.7.4 Health effects of environmental pollution

The following box summarises the findings of Downing and Sethi on Health Issues in Transport and the Implications for Policy (unpublished).

Box 12. Some impacts of pollution on health

Within the United Kingdom, high pollution concentrations are estimated to advance the death of between 10,000 and 24,000 people per year (Department of Health, 1998, UK). Many of these deaths have been associated with fine particulate matter (particles less than 10 microns or PM10). In Northern Europe it is estimated that about 40% of particulate matter comes from traffic.

In the city of Chongqing, China, traffic police officers who direct traffic at busy road intersections were reported to have a life expectancy that is 7 years less than those of the general population, and this was credited to exposure to high pollution levels (Chongqing University, 1995).

“Cities on the Move” suggests that over 500,000 people die prematurely in developing countries (equivalent to an economic loss of 2% of GDP) as a result of urban air pollution contributed in large part by transport. It appears that the problem tends to be most concentrated in the large urban populations of the middle income countries of Asia and Latin America (World Bank, 2001)

4.7.5 Transport as a facilitator to resource efficiency

Resource efficiency is key to environmental sustainability, completing a cycle of resources so that what is consumed is reused. In practical terms this implies waste management at both domestic and industrial level. In general, the developing world is much better than the developed at reusing and recycling its resources. The lack of capacity for proper waste management has negative health implications (particularly in urban slums) but it can create job opportunities through implementation. Box 13 shows how a participatory approach to waste services provides complementary social benefits whilst supporting environmental sustainability. Transport's role in this process is as a facilitating service to move the waste from the source to a site where it is disposed of or recycled appropriately.

Transport also has an important role to play in other natural resource based activities. For example, cheap and speedy transport facilities combined with the availability of ice has led to major changes in the fishing industries of Asian countries. Unfortunately, in addition to increased marketing efficiency, it may also have contributed to over-fishing of marine fish stocks

Box 13. Domestic Waste Management in Egypt

The poor in Egypt consistently identify waste management as one of their major environmental priorities. Consultations with the poor revealed that they were willing to pay for improved waste services. Through working with existing community-based organisations low cost waste collection services were developed. There was a significant improvement in waste collection, with benefits for over 100,000 people. Due to popular demand, the improved waste collection services were extended to other districts on a cost recovery basis. (Achieving sustainability - poverty elimination and the environment, DFID)

4.8 GOAL 8: DEVELOP A GLOBAL PARTNERSHIP FOR DEVELOPMENT

The final goal comprises a number of disparate targets concerning trading and financing systems, the management of debt, access to drugs, youth employment strategies, etc.. The role of transport in achieving most of these targets may be very limited, but it clearly has a key role in the problems of land-locked countries (Target 14), as described earlier in Section 4.1. It may also have a role in youth employment strategies, as outlined earlier (see Box 6).

Transport has been at the forefront of many public-private financing initiatives, and can clearly contribute to reducing the burden on public expenditures (see Box 14)

Box 14. Transport and Public Private Partnerships

Transport is an important part of both the private and the public sectors. Most transport services can be provided by the private sector. Private sector participation in transport infrastructure and financing is growing in many developing countries. Nonetheless, public investment in transport will continue to be significant in low-income countries where markets are small, risks are high, and private financial markets are not well established.

Public investment in transport infrastructure accounts for from 2.0 to 2.5 percent of GDP, and it may rise as high as 3.5 percent in countries modernizing outdated or developing new infrastructure. Demand for freight and passenger transport in most developing countries is growing 1.5 to 2.0 times faster than national GDP. Value added by the transport sector typically accounts for 3 to 5 percent of national GDP.

Public transport in its many different forms (size, motive power and organisation) is an important means of transport used by the poor in both rural and urban areas. In many countries bicycles are the main means of access by the poor to private transport (though still out of the reach of the majority), while walking is evidently a primary means of travel. Historically, many subsidies have been given to state transport enterprises for rural areas in order that social services could be provided, especially for remote areas, and for cities where the congested operating environment imposes high transport costs. These subsidies have now largely disappeared (along with many of the state transport companies). In Dar es Salaam, the gradual substitution of share taxis for scheduled buses led to a significant increase in real user costs which were estimated to rise from 9% of an average daily wage in 1978 to 22% in 1998 (Rwebangira and De Langen, 1998). This must have strongly disadvantaged the poor.

Box 15. Increasing the availability of bicycles through changes in import duties in Kenya

The recent reduction in import duty (now zero-rated) on bicycle imports has had some significant impact on bicycle sales and increased access for many poor people. Bicycles give poor people much greater mobility and improved access to markets, services and other resources. This policy has contributed to poverty reduction by providing households with an asset which can be used for domestic and commercial (income generating) activities (in the capacity of boda boda taxis - see Box 6).

4.9 TARGET 14: ADDRESS THE SPECIAL NEEDS OF LANDLOCKED COUNTRIES AND SMALL ISLAND DEVELOPING STATES

Landlocked economies are particularly vulnerable to the effectiveness of their external transport links. A typical landlocked developing country has transport costs that are 50% higher and volumes of trade that are 60% lower than countries with coastal access. However, costs may not be the only problem. Inadequate infrastructure, poor transport organisation and a proliferation of government controls in landlocked and transit developing countries make it difficult to guarantee timely delivery of goods or ensure reliability or flexibility of supply of goods. These problems inflate the prices of imported consumer goods but also of fuel, capital goods and intermediate inputs, thereby increasing the cost of domestic agricultural and industrial production (UNCTAD, 2001). Like landlocked developing countries, small island developing states are also heavily dependent on external markets and international transport. The links between the particular vulnerabilities of these countries and poverty have to be explored.

5 SOME ISSUES IN THE CONDUCT AND APPLICATION OF TRANSPORT RESEARCH

Conventional transport research has tended to focus on the technical and economic aspects of transport development. As poverty reduction and equity concerns take precedence over efficiency, it is important that transport research adopts different analytical and methodological tools. This section reviews some of the current analytical frameworks used to understand poverty reduction and explores their relevance to transport development. It will also outline the key issues preventing or limiting transport investments.

5.1 SUSTAINABLE LIVELIHOODS APPROACH

An important principle of the sustainable livelihood analysis is the notion that (poor) people use a variety of strategies to improve their position in life. To construct a link between sustainable livelihoods and transport, one needs to appreciate how transport activities interlock with these strategies and the opportunities that offer long term structural improvements to society

In the sustainable livelihoods framework, any community, regardless of the level of poverty, will have five categories of livelihood assets at varying levels of endowment: they are natural capital, social capital, human capital, physical capital and financial capital. The integrity of a development intervention depends on how it strengthens existing assets. Transport is more obviously a physical asset. It is also an essential link in the utilisation and/or accumulation of other assets. Evidently, use of natural resources, human capital building services (eg health and basic education) participation in social networks and political processes are all strongly correlated to ease or difficulty in physical access. Transport can also help create opportunities for increasing financial capital through greater market access and employment (Nje nga and Fernando).

The sustainable livelihoods approach provides a framework for linking transport to social impacts and the millennium goals. One of the biggest challenges of adopting this approach to policy reform is developing effective channels of communication to the central policy network (DFID 2001). Promoting dialogue and participation in policy-making by the poor requires:

- High quality participatory approaches which promote research by poor people into their priorities, needs and issues
- Support for the communication process
- Institutions able to respond to the interests and needs defined by poor people

There is some empirical evidence of community participation approaches in road planning (Zambia, Cameroon and Ghana) but there is scope for much more. As with all participatory work, there are risks when community needs are identified that the rich will in fact define demands, or that discussions are merely consultations with facilitators guiding discussions along the lines of a pre-set agenda – something which can often result in wish lists (Booth et al, op. cit.).

Capacity building of the community/civil society groups to negotiate with relevant local authorities could bring better outputs from community participation.

5.2 A RIGHTS BASED APPROACH

Basic human rights are defined in international law and reflected in major international conventions. They include both civil and political rights, and economic, social and cultural rights, including those to shelter, health, education and livelihoods. Basic principles can be extracted from human rights thinking and applied to the wider business of development and institutional change. These principles include social inclusion, participation and the fulfilment of obligations (DFID, 2000). Development agencies should be concerned not only with what rights people are entitled to, but also with whether or not people can effectively claim and defend their entitlements to basic resources and services (cited in Quan).

A rights-based approach is important in that it can help to clarify those relating to transport, and how the sector delivers other human rights to which many governments and donors subscribe. Such an approach also enables an analysis of obligations for the provision of transport, and types of citizen and civil society action to create change, etc.. While access to transport is not universally recognised as a human right, basic levels of shelter, health, education and livelihoods often are. Where services are located far from people's homes, then access to the services depends upon access to adequate transport. Thus, transport could be seen in some contexts as a precondition for securing basic rights.

The rights-based approach tackles analysis from a different perspective to that which has been adopted in the past in development planning (including transport planning). The debate around transport and the link to the MDGs could be seen as a subset of the argument surrounding access to services, knowledge, markets, political processes etc. The politics of access are crucial to the transport debate and within this falls the important question of obligation - whose obligation is it to provide access to services (whether through locating services close to people or bringing people to the services through transport)?

The 'public good' element of transport infrastructure means that there is an argument to be made that 'roads and other transport infrastructure constitute an entitlement which pro-poor government policy should entrench not remove' (Booth et al, op. cit.). Too often in the past it has been assumed that if government provides the infrastructure, the private sector will provide transport services (ibid), but privatisation has frequently led to cutbacks in services in remote rural areas.

5.3 ENABLING POLICY TOOLS TO RESPOND TO MICRO -NEEDS

PRSPs provide an opportunity for governments and donors to address transport issues that affect poverty in the context of wider plans for assistance. They are intended as nationally developed and owned strategies for cross-sectoral efforts to reduce poverty. However, they are fast becoming the dominant framework for the planning of donor assistance to poor countries' (Quan, op. cit.). It is clear that if transport issues are not covered by a PRSP, then they will not receive serious attention in practice. Furthermore, even if raised as an issue, there is no certainty of inclusion in

the PRSP because of ‘policy evaporation’ – the ‘loss’ of an issue (for whatever reason) despite public prioritisation and endorsement. Other cross-cutting issues have been found to lose out, in particular, gender considerations and environmental issues. It is conceivable that transport issues are under-represented because transport delivers other basic needs and is thus less a basic right in itself, and also because it is a cross-cutting issue.

5.4 INSTITUTIONAL ISSUES

Two interrelated challenges can be identified as key barriers to institutional developments and transport sector interventions:

Collaboration between the transport sector and other sectors to ensure effective interventions in health and education and to limit environmental impacts
Building participatory approaches in the transport sector - what is the role of civil society in transport?

In many contexts the private sector has a great deal more lobbying power than civil society. In ethical trade, approaches are being developed which bring together actors all along the value chain in order to promote ‘stakeholder dialogue’. The ‘driver’ for this change is often civil society pressure in the North and the risk that adverse publicity presents, particularly for consumer brands and retailers. The transport private sector may not have such strong ‘drivers’ encouraging change.

Public participation in formal planning processes may need to be strengthened. There is increasing experience in other sectors, from which transport planners can learn. Participation can be promoted by holding workshops and events throughout the country where participants can engage in debate. Examples of such forums are national strategies for sustainable development, land policy reform, and participatory poverty assessments feeding into PRSP's. Government poverty eradication programmes can co-ordinate efforts to tackle poverty by central government, local government, civil society and donors, and use existing data and research to highlight pro-poor policies.

5.5 TECHNICAL ISSUES

Clearly there is a change in the focus of transport research; the requirement is for an understanding of the distributional impacts of transport development with a view to informing poverty policy initiatives. Even so, there must be a continuing need to keep in view both the cost (and efficiency) and the externalities of providing transport interventions to meet poverty driven goals (Box 16). Policy is not only about meeting demand; it is also about how that demand is met with appropriate standards and guidelines, effective operations and maintenance (and associated institutional framework), funding, human resource development, and limiting external impacts (on the environment and safety).

Box 16. The range of transport research issues (Hine op.cit.)

The transport sector covers a range of sub-sectors that have widely different characteristics that are supported by varying bodies of knowledge and ongoing research programmes in both the developed and developing world. Highway engineering is a relatively mature area that has an extensive body of knowledge. In contrast far less is known about rural and village level transport operations. There are clear differences between engineering knowledge and institutional, social and economic knowledge. Technical engineering knowledge can often be specified in very precise terms that does not change over time. Information is built up incrementally and although there are still important gaps in our knowledge and new requirements develop, nevertheless knowledge gaps and the consequent need for research should gradually diminish over time. In comparison, institutional, social and economic planning research areas cannot be so precisely specified. Societies change over time, relative prices change, organisational structures change and planning objectives change; hence there will be a continuing need for research in these areas into the future.

6. SUMMARY AND RECOMMENDATIONS

The key purpose of this paper has been ‘to review the evidence that exists for the link between transport and poverty, and hence to sharpen the focus of transport research on poverty reduction.’ Though there is no single over-riding indicator or relationship which demonstrates the link, the evidence presented endorses the fact that transport plays a very important role across all sectors, and has a significant part to play in achieving each and every one of the MDGs.

6.1 THE TRANSPORT AND POVERTY LINK

It is clear that poor communities and individuals place a high priority on accessibility to services and opportunities. It is also clear that many of these services (health, education, etc) need the input of an effective transport system to meet their own goals and targets.

After describing evidence for the link between transport and the achievement of the MDG's, there is value in looking at the question from a different angle. What will be the implications of achieving the millennium development goals by 2015 - will the enrolment of all children in primary education require significantly changed mobility and access patterns? Can gender equality be achieved if transport continues to be such a highly gendered activity? How will maternal mortality be reduced without increasing access to health centres?

Health provision in isolated areas, involvement in the processes of governance, flows of information and education, economic growth and social cohesion - are these processes sustainable or even feasible if levels of access and mobility are not improved?

6.2 GAPS IN UNDERSTANDING

The paper has presented an overview of the existing evidence of the link between transport and poverty eradication. The technical and economic orientation of much of transport research to date leaves some conceptual and methodological gaps.

The multidimensional and dynamic nature of poverty, implies that there needs to be different types of transport interventions for different categories of the poor. This would need to be determined, and the usefulness of the categorisations, by appropriate research. In particular, research may be needed to identify how transport interventions can support the eradication of chronic poverty or address the needs of those groups that Sen has called “individuals who lack other means and who receive informal gifts from others and formal transfers from governments”.

There are also gaps in our knowledge about

- the micro impact of different policies,
- the relationship between transport and governance
- the optimal mix of transport and non-transport interventions,
- the social costs of poor transport

- safety issues outside of road accidents.
- Transport needs of people in landlocked and small island states,
- the access and mobility aspects of natural disaster situations
- appropriate methodologies for identifying needs, measuring impacts and mainstreaming issues such as gender.

Some other gaps identified from other sources are shown in Boxes 17 and 18. Hine (2002) gives a more comprehensive listing of the views of the transport research community on knowledge gaps but it is evident that considerable consultation will be required if we are to identify these comprehensively and to provide information to help set priorities.

Box 17. Findings of ADB assessment of impact of transport and energy Infrastructure on poverty reduction (RETA, 2001)

Our general conclusion is that very few statements about the impacts of transport or energy interventions on poverty are sufficiently well documented to be taken as proven facts, and that the field is wide open for future research.... it appears that the major gaps in current knowledge about transport impacts on poverty reduction have to do with:

- The impacts of sector policy change;
- The impacts of changes in service provision;
- The impacts of transport modes other than roads;
- The impacts on the urban poor.
-

However, there is also still a large degree of uncertainty and ambiguity in the results in the more well-researched areas. The dominant position of roads in the transport sector suggests that further refinement in the body of knowledge concerning these investments is also warranted.

Box 18. Some pressing transport research needs of the World Bank.

- There remains a heavy agenda of necessary gender-related research- this includes a need for more activity, as opposed to trip-based, research; better estimates of the economic value of women's time; and direct evaluation of the impacts of some gender related projects
- Impacts of transport availability on job market search and employment/residence linkages.
- Simple techniques for estimating the distribution of benefits by income group in transport investment projects
- Incentives (negative concessions and minimum subsidies) for public transport service delivery
- The role of transport services in participation, access to information and social contacts
- The role of transport in urban-rural linkages
- Systematic time and money budget allocation studies

Clearly there is a range of issues that could be addressed, all concerned with the poverty impact of transport development. The challenge is to develop an acceptable rationale for prioritising the application of the resources that can be directed at this work.

6.3 THE ROLE FOR CONSULTATION IN RESEARCH PRIORITISATION

The DFID poverty eradication agenda focuses on economic growth, environmental sustainability and improved health and education.. Transport clearly plays a key role in supporting rural and urban livelihoods, and from a rights perspective is essential if people are to be able to claim the right to basic health, education, etc..

If transport research is to contribute positively to this agenda, it needs to address some of the gaps in knowledge and ensure that there is greater take up of findings. Determining research priorities will therefore need more multidisciplinary inputs, and participation of transport professionals, policy makers and users in developing countries. This is important if knowledge generated is to have ownership among those who have the capacity to translate them into practice.

We propose a consultation process in order that the agenda for knowledge creation will benefit from the experience and perspectives of southern stakeholders (in general) and poor people in particular.

Key stakeholders in this process would include intended beneficiaries (community based organisations and representative associations, trade unions, NGOs, private sector, social and economic researchers, engineers, government departments). The consultation process would provide insights into the areas in which transport and poverty action should be focused, and should also assist in the prioritisation of these themes. Equally, reflections from Southern poverty/transport stakeholders could be obtained on how transport interventions, including research, in the 21st century could evolve in terms of how it is done and by whom.

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