TRANSPORT AND SUSTAINABLE RURAL LIVELIHOODS

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Objectives of the paper

Abstract

The British Government's White Paper on International Development has an aim to reduce the number of people suffering from absolute poverty by 2015. The UK's Department for International Development (DFID), in developing strategies to achieve this goal, are currently promoting a sustainable livelihoods approach into their development programme. DFID's work in the transport sector involves the effective maintenance and operation of physical assets, and in encouraging policy to allocate resources efficiently so that the physical assets of the rural poor can be optimised.

Previous attempts by institutions, Governments and Non-Government Organisations (NGO's) to aid development have been through a Top-down approach. A policy of sustainable rural livelihoods focuses not on the needs of the rural poor, but rather, builds on the existing assets of the poor, both at the village level, and individuals.

Key issues

Policies and actions which promote sustainable livelihoods should contribute to:

- Sound policies and pro-poor economic growth
- The development of efficient and well regulated markets
- Access of poor people to land, resources and markets
- Good governance and the realisation of human rights
- The prevention and resolution of conflicts
- The removal of gender discrimination

Key topic areas

- The benefits of the livelihoods framework in understanding communities human, financial, natural, social and physical capital.
- A framework for the analysis of livelihoods and understanding the vulnerability of rural communities.
- The importance of a multi-sectoral approach to sustainable rural livelihoods.
- The importance of transport in the realisation of sustainable rural livelihoods.

1. INTRODUCTION

The British Government's policy on international development underlines a commitment to the elimination of poverty, in line with internationally agreed development targets (DFID, 1997). The strategy adopted by the Department for International Development (DFID) to achieve this aim has three main components:

- Policies and actions which promote sustainable livelihoods
- Better education, health and opportunities for poor people
- Protection and better management of the natural and physical environment

In developing strategies to achieve these goals, DFID and like-minded donors are currently promoting a sustainable livelihoods approach. A policy of sustainable livelihoods focuses not on the needs of the rural poor, but rather, builds on the existing assets of the poor, both at the community level, and as individuals. A sustainable rural livelihoods (SRL) framework can be used in helping the rural poor to improve their lives and strengthen the sustainability of their livelihoods. The holistic framework which has been developed by DFID is intended to:

- Define the scope of and provide the analytic basis for livelihood analysis
- Help those concerned with supporting SRL to understand and manage the complexity of rural livelihoods
- Become a shared point of reference for all concerned with supporting livelihoods, enabling the complementarity of contributions and the trade-offs between outcomes to be assessed
- Provide the basis for the development of a set of concrete intermediate objectives which DFID should pursue with its partners as a means to supporting the development of SRL.

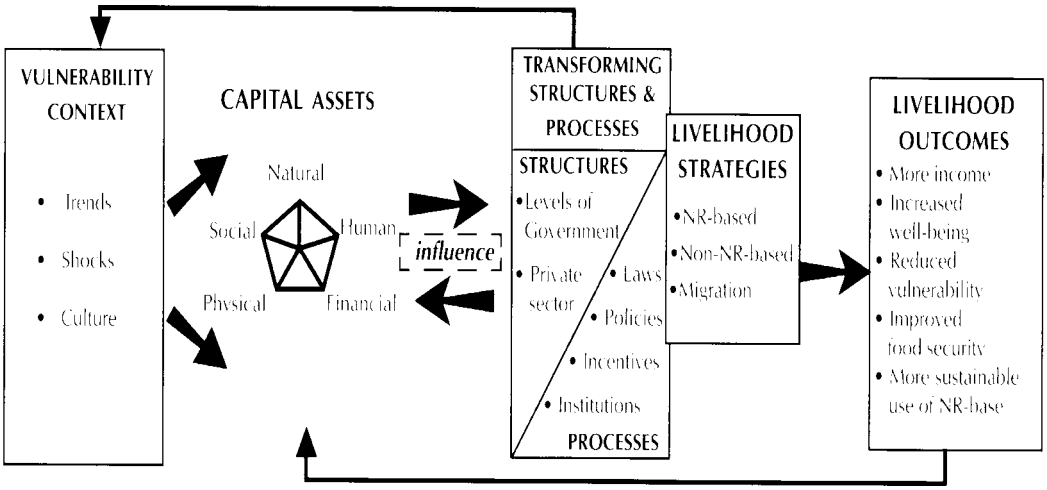
The purpose of this paper is to examine how transport development contributes to the sustainable livelihoods approach, and also how future transport research might adopt and integrate the ideas embedded in SRL. The early part of the paper draws considerably on the work which has been co-ordinated and documented by the DFID Sustainable Livelihoods Support Office, and also the DFID Natural Resource Advisors' Conference (1998) which began the debate in DFID.

2. SUSTAINABLE LIVELIHOODS

'A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.' (DFID, 1999)

Key components of the framework for analysing the livelihoods of individuals and the community are their capital assets, their vulnerability context and the transforming structures (layers of organisations both in the private and government sectors) and processes (laws, policies, incentives) which shape and influence the livelihood strategies which they adopt. The framework for their interaction is illustrated in Figure 1.

Figure 1: The Sustainable Livelihoods Framework



The capital assets are grouped as:

- Natural Capital: The natural resource stocks from which resource flows useful for livelihoods are derived (including land, water, wildlife, biodiversity, environmental resources)
- Social Capital**:** The social resources upon which people draw in pursuit of livelihoods (i.e. networks, membership of groups, relationships of trust, access to wider institutions of society).
- 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 of credit or regular remittances or pensions) and which provide them with different livelihood options.

The vulnerability context is particularly important as it indicates the nature of trends, shocks and culture, and the ability of the poor to withstand their impact. In addition, it is vital to understand the structures and processes which define people's livelihood options. These structures and processes are critical in determining who gains access to the various assets, and in influencing the effective value of each asset.

The livelihood strategies which individuals adopt reflect their choices in building on their assets: gaining more from a livelihood through increased agricultural production (more outputs per unit area with increased capital or labour inputs), or by cultivating more land. Alternatively, there may be opportunities to diversify into off-farm income-earning activities, or to seek a livelihood by moving away temporarily or permanently. These combinations of activities which make up a livelihood strategy are known as a 'livelihood portfolio'. A portfolio will be diversified over time, and between households, communities and generations; hence the composition of livelihood strategies is a dynamic element of sustainable livelihoods, and as such requires a historical analytical approach.

The transport sector is associated largely with improvements in physical capital. However, access to transport and other services such as schools, health clinics and markets is integral and contributory to the development of all the capital assets; hence transport practitioners have a significant role to play in understanding and supporting sustainable livelihoods as part of a multi-sectoral analysis of community life.

In summary, the implementation of a sustainable livelihoods approach requires the active participation of all sectors which have a vested interest in increasing the capital assets of communities. At issue for the transport sector is how it should be perceived within this analytical framework, and what sorts of contribution it can make towards the promotion of sustainable livelihoods.

3. IMPACT OF TRANSPORT ON LIVELIHOOD ASSETS

The main factors which characterise a typical rural transport environment are the low population densities, low levels of economic activity (and hence low incomes), low vehicle ownership levels (of any description, including non-motorised vehicles), inferior provision of roads (both quality and quantity), and near absence of regular transport services. Given these difficult conditions, travel still takes place though at very low levels of participation by comparison with, say urban communities.

3.1 Natural capital

Transport development may bring in its wake the problem of environmental degradation. This is not just an urban problem, associated with the high volumes of traffic (air pollution, noise and severance). Rural road construction can have profound ill-effects on, for example, slope stability, erosion and natural drainage patterns. Of these, erosion is thought to have the major environmental impact. Mitigation measures to control erosion can be included in the designs (e.g. appropriate drainage channels and culverts) as well as in the implementation (e.g. quickly establishing vegetation on exposed slopes). The method of implementation may also contribute to reduced environmental damage; thus labour-based (as opposed to heavy machinery) operations may be better deployed due to the greater precision and sensitivity of application that is possible (McCormick, 1990).

The indirect environmental impacts of rural transport development are much less easy to predict, because they are likely to be of a long-term nature. Changes in land-use may result from the greater accessibility due to improved roads and services. Roads which have been used to 'open up' the tropical rain forests of Brazil, have encouraged the development of settled farming communities, but at the expense of the indigenous peoples' livelihoods, and at the expense of the natural ecology. Nevertheless, roads also improve livelihood outcomes through better access to natural assets and management of forest resources.

3.2 Social capital

'At the heart of the social development approach is an understanding that the behaviour of each of us is determined not just by economic rationalism. Each person's response to the development challenge is also shaped by the society, culture and historical moment in which he or she lives. In analysing society and culture we recognise that the behaviour of individuals is determined by structures and networks of social relationships and obligation - and by shared knowledge and values. It is only by a process of shared respect between

'indigenous' knowledge and values and technical skills can sustainability be achieved', (ODA, 1993).

Travel is evidently an essential component of the livelihoods of most individuals; it is the main means by which local communities and individuals access the outside world, and as such, the means for selling their output (produce and labour) and provisioning their needs. It is also the means of access to other facilities and services (which may be uneconomic to provide locally), and a means to social bonding and development (the social capital of livelihoods analysis). These are the benefits of transport which contribute to livelihood, and which cost benefit analysis has difficulty capturing.

Many surveys have indicated that while transport development has improved the condition of the poor, the very poor are unlikely to be affected. They often do not have a sufficient standard of living to take advantage of transport improvements. In Zambia these were the families who owned little livestock and little land, who could not grow more cotton, and therefore could not take advantage of reduced marginal transport costs (Hine et al, 1998).

A study of rural travel in Tanzania (Dawson and Barwell, 1993) showed that women undertake 75% of all transport tasks. However, women are less likely to be able to take advantage of rural transport improvements (such as better public transport services) as they are less likely to possess their own independent source of income. Women comprise one of the major categories of the socially excluded, their subjugation being a common feature of rural societies in the developing world. Transport improvements need to take into account the needs and social responsibilities of women so as to avoid the benefits of any programme being enjoyed disproportionately by men.

3.3 Human capital

The development of rural transport infrastructure and services improves access to human assets such as health and education, and stimulates improved agricultural production and marketing potential, therefore increasing income generation and surplus capital which can be expended on essential services.

Transport development provides employment, but also raises exposure to traffic and traffic accidents. Road safety issues are particularly important, if for no other reason than that they are a major cost to society (consuming perhaps 1-2% of gross national product in lost output and the commitment of medical and police resources). Furthermore, fatality rates are very much higher in the poorer countries, as compared to the industrialised world.

Traffic accidents directly impinge on livelihoods of individuals, families and communities; in the absence of insurance, free health-care or other government support, households are vulnerable to the loss of earnings (temporary or permanent) when productive family members are incapacitated as a result of a traffic accident. The poor probably suffer disproportionately, since they are less able to meet medical expenses, and have less resources to fall back on in the event of prolonged incapacity. They may also be more at risk on the roads, because they are perhaps more likely to be walking in unprotected conditions vulnerable to traffic.

Labour based techniques for construction and maintenance of roads are a source of employment for rural economies. It is now common practice to contract out routine road maintenance (e.g. clearing verges and drains) to local communities. This can provide a useful

cash supplement to the income of local employees (many of whose regular activities may be outside the cash economy).

3.4 Physical capital

Roads and transport are a key element of a country's infrastructure, and a substantial part of the development budget (typically of the order of 20% of total investment) is spent on their up-keep. With such high expenditures, an important consideration in their provision is the standards to which the transport is constructed. Thus there is evidence of over-design of roads, particularly in the rural context where the measurable benefits (vehicle operating cost savings and time benefits) are small by comparison to the construction costs. Hine (1993), for example, suggests that 'the benefits of adding new vehicle access using simple methods is over one hundred times greater, from the viewpoint of farmers, than upgrading a similar length of earth track to gravel standard' (Hine 1993). The particular study in Ghana looked at the effect of access standards on farm gate prices, and produced the results summarised in Table 1 below and graphically represented in Figure 2. The cost savings derived in the change from headloading along a rough path to vehicle movement along a track (i.e. from cost C1 to cost C2) are significantly greater than those derived from the upgrading the track to a properly engineered gravel pavement (i.e. from cost C2 to cost C3). More recently, Hine has undertaken participatory surveys in rural Ghana which confirm that communities place far higher priority on simple access and transport services rather than highly engineered roads.

	Length of access to be upgraded	
	5 km	20 km
Upgrade from earth to gravel road	0.08	0.29
Upgrade from path to earth road	11.4	70.6

Table 1: Percentage increase in farm-gate price of maize with improved access

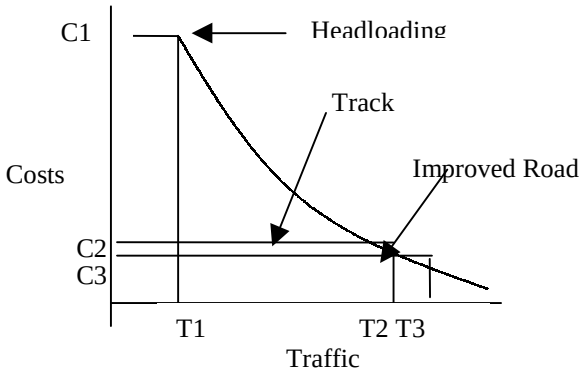


Figure 2: Graph of cost effectiveness of upgrading to a motorable track

3.5 Financial capital

In the past, the main goal of transport investment has been to reduce transport costs, and hence contribute to delivery of a more efficient economy. In the urban context, where congestion is a key problem, the main savings resulting from transport investment (like traffic management, public transport services and road widening) are in the form of reduced travel times, which feed through to improved labour productivity. In the rural context, the main savings are in vehicle operating costs, which feed through to lower farm input and produce prices.

Clearly, improving the efficiency, and hence reducing the costs, of the transport sector is an important contribution to delivering sustainable development; yet this may not be a sufficient condition for yielding tangible benefits for the rural poor. For example, the construction of an

improved all-weather road may be of little value to a rural community if transport operators fail to provide services along the new facility. And, as an example of extending this argument to other sectors and the interaction with transport, health facilities require effective means of access (including both roads and transport services), in order that they can effectively administer health care to the community.

4. TRANSFORMING STRUCTURES AND PROCESSES

In many respects, the transport sector is relatively well organised and ordered, being subject to a long established body of law, regulations, standards and organisational frameworks. Even so, many of these instruments are out of step with current practices and thinking; as a result, evasion is common, and enforcement is weak and often corrupt. Furthermore, the level of resources for implementing and monitoring the laws have not always been sufficient or readily available.

Institutional developments take an enormous amount of time, and continual supervision. They require detailed planning, training and management to effect the changes in attitudes, working habits, and resource use. These elements are often missing or ill-conceived, and as a result many schemes are badly served in implementation. Thus decentralisation of roads and transport planning services (part of the move towards devolution to local responsibility) can only be accomplished where attention has been given to training sufficient cadres, putting in place the local organisational structures and the sustaining resource mechanisms. Clearly, much of this is outside the remit of the transport sector whose contribution to local and regional empowerment is critically dependent on strong local government. (Roads engineers and transport operators have a long tradition of regional based working, though usually with a national headquarters making the important decisions and offering the best choice for career development.)

Education and training are key transforming processes in any sector, not least transport. They offer a real opportunity for beneficiaries to participate in the development process and positively affect their own well-being. Unfortunately, the resources required are not readily available; for example, teaching driver skills and road safety education seems to have a very low priority in most developing countries. There are embryo organisations which are trying to promote these activities, but they are poorly resourced, and lack the appropriate materials.

There is good evidence from many developing countries of strong development in domestic construction capacity, with some local contractors capable of undertaking large road construction projects. Ministries are fostering these and other developments; for example, Ghana's Ministry of Roads and Transport runs regular support courses for both local labour-based and other local contractors. Similarly, the consulting industry is developing rapidly, and there are now a number of highly successful local firms which are capable of undertaking road feasibility and detailed design work, as well as providing supervision services.

The common theme of much of the above, concerns limitations on resources, and inadequate and unsustainable funding. New mechanisms for funding transport development are being conceived, tested and implemented. Many involve private participation with associated risk and profit sharing. Others involve new ways of funding public bodies: car insurance levies to fund road safety programmes; road taxes and tolls to fund road investment programmes;

driver examination fees to cover the cost of the driving test provision. These are largely sustainable mechanisms which closely align the users with the costs which they incur.

5. CONCLUSION

Clearly, transport as a service to the community impacts on the development options of many of their livelihood interests; a proper analysis of transport development requires a holistic understanding of all the development opportunities and priorities at the community level. Thus as noted earlier, poor farmers might not appreciate the benefits of better access without additional extension facilities to help, for example, in taking up cash crop production.

A livelihoods analysis does not provide a definitive answer to the development problem. What the analysis attempts to do is try to account for all the possible outcomes of the project in terms of impacts on stakeholders. Furthermore, the analysis can also suggest what strategies they (the stakeholders) might adopt, and what support (through the transforming structures and processes) might need to be put in place to help them adapt. In this sense, the livelihoods analysis provides a comprehensive check-list which is non-quantitative, but captures in some qualitative and descriptive manner the impacts of transport development which are usually outside the remit of conventional cost-benefit analysis, as traditionally applied to the assessment of transport schemes.

In the Zambia case-study cited earlier (Hine et al, 1998), the 'entry point' to the development process had already been identified, i.e. the feeder roads upgrading was the project to be analysed. In other scenarios, the livelihoods analysis might equally well be used to help identify appropriate entry points for development. While there would be no guarantee that such an analysis would identify transport projects, the chances are that transport development, because of its key supporting role to many other sectors, would feature in many livelihoods programmes.

The livelihoods approach reminds us that transport is a service industry and thus a means to an end; not an end in itself. As such, the development of transport has to be seen in the wider context of individual, household and community development. Hence the impacts of transport need to be addressed beyond the basic level of economics, taking account of social and environmental concerns and aspirations.

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