PIARC Technical Committee C20 on Appropriate Development

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Sub-theme: Appropriate rural planning for rural road development and management

Title: Framework for the inclusion of social benefits in transport planning

Key words: social benefits, HDM-4, prioritisation, indicators

Abstract

Over the last 20 years, many road investments in developing countries have been planned and prioritised on the basis of economic appraisal models, such as the HDM series of Highway Development and Management models, as well as prioritisation indices. The road appraisal models are mainly used to evaluate primary and secondary roads, and have an economic framework in which separately identified non-economic (or social) benefits play no part. In contrast, prioritisation indices/ranking procedures are more often used to plan rural access or feeder roads. These are less economic in orientation and often include a social benefit component. Sometimes, national norms have been set and roads have been planned on the basis of minimum levels of accessibility. In this case social benefits are not explicitly identified, but minimum access norms represent an implicit valuation of social access.

Although many prioritisation indices have been developed in different countries they have not been widely discussed nor have they been subject to much independent scrutiny. The absence of standard methods for quantifying benefits from low volume roads and for prioritising investments is demonstrated by the diversity in the procedures currently used and is well recognised by DFID, the World Bank, PIARC and many other organisations. In Zimbabwe, socio-economic benefits are quantified in terms of 'pseudo-VOC savings'. In Zambia, prioritisation is done by using multi-criteria analysis of specified factors. In Nepal, this is currently done on an ad hoc basis. The objective of this paper is to identify a suitable method of defining or incorporating social benefits into road appraisal criteria. For this purpose, social benefits include better access and mobility for the poor and better access for the wider population to socio-economic facilities like health centres, schools, government offices, extension services and markets.

Social benefits are most likely to be highly significant in the following circumstances:

- Where there is a desire to weight conventional traffic benefits to different classes of existing users (e.g. provide higher weightings to the poor).
- Where investment can provide a very significant improvement in vehicle access as in situations where there is no access, or the access is at risk of being cut.
- Where existing traffic volumes are very low relative to the population or where the population is very remote.

This project aims to provide a rational basis for quantifying and qualifying benefits from access roads and a universal method of project prioritisation applicable to all roads. This paper proposes a framework for social benefits in a ‘way forward’ document that defines a common understanding of the term ‘social benefits’, drawing on consensus between transport professionals and reviewing the methodologies used to evaluate social benefits.

1 Background

The road sector consumes a considerable part of the overall infrastructure investments made by developing countries and, with an increased focus on poverty reduction, there is an increasing emphasis on those for low volume roads. But traditional appraisal frameworks do not cater well for the economic justification of these roads and poverty reduction and other social benefit issues tend to be ignored. The inclusion of social benefits within appraisal techniques has the potential to focus investments on the poor and hence the majority of the population.

Developing countries and donors are also increasingly asking for guidance on incorporating social benefits within transport appraisal as the emphasis on poverty reduction and social considerations increase. The non-existence of widely accepted methods for quantifying benefits from low volume roads and for prioritising investments is demonstrated by the diversity in the procedures currently used and is well recognised by DFID, the World Bank, PIARC and many other organisations. The ISOHDM technical committee also receives numerous requests from users of the Highway Development and Management Tool (HDM-4) for advice on how to incorporate social benefits in their analysis.

The identification and measurement of social benefits in transport planning is not a new issue. It has been the subject of methodological concern for over 40 years in the field of transport studies. Nonetheless it remains a vexed area, not least because of renewed donor interest in poverty alleviation as well as new inter-disciplinary efforts to combine quantitative and qualitative project appraisal and monitoring measures.

This DFID funded Knowledge and Research project, that has just begun its phase of implementation, is being undertaken by a consortium of partners comprising TRL, IT Transport and the University of Birmingham, and aims to provide a rational basis for assessing and measuring benefits and costs from access roads. There are circumstances under which quantification, let alone monetisation, of socio-economic benefits is not possible, and for this reason there is a need to review assessment procedures for low volume roads, and ways in which these may be standardised for road project prioritisation and appraisal more generally. The framework will take a broad approach to the measurement of social benefits and costs that will not be restricted to quantification, but rather will incorporate appropriate methods for diverse cultural, climatic and geographic contexts.

This report summarises the strategy for implementing an experimental survey methodology for evaluating social benefits in up to three case study areas. The final stage of the project will entail translating social benefit appraisal findings from the project's survey phase into social benefit/cost estimates in project feasibility studies, including the compilation of a software toolkit for social benefit analysis and the publication of an Overseas Road Note summarising the project's findings.

2 Social Costs and Benefits in the Transport Sector

The aim of the project is to advance a universal framework for the identification and treatment of social benefits in road transport project appraisal. This framework is aimed at facilitating the formulation and implementation of appropriate strategies, with respect to the provision and maintenance of sustainable transport systems that serve poor communities.

It is widely recognised that there are circumstances under which socio-economic

benefits are not possible, and hence the qualification of social benefits for low volume roads need also be investigated. However, economic appraisal models, such as the Highway Development and Management Model (HDM-4) base their prioritisation for investment on economic criteria, yet developing country governments and donors are increasingly asking for guidance on incorporating social benefits within transport appraisal. Once a common framework for resource allocation and prioritisation of road maintenance and rehabilitation programmes is sought for low volume roads, national road agencies, governments and donors throughout the developing world will be able to allocate funds to rural communities on the basis of socio-economic measures that do not solely account for traffic density. These criteria might include the potential for productive growth, rates of morbidity and mortality, food security, non-agricultural income generation, and degrees of well-being. However, they will certainly not exclude rural communities on the basis of existing traffickability.

The identification of social benefits related to road investment and transport improvements more generally is highly contentious. There is a well-established specialist transport literature on the topic of assessing benefits arising from rural road investment dating back more than 40 years. On the other hand, recent development debates and the inexorable increase in poverty in developing countries over the last two decades have spawned new more inter-disciplinary approaches to spatial patterns of poverty and the mobility of the poor. It is in light of old and new thinking that there are a number of factors that make the further refinement of social benefit analysis pressing but problematic in scope:

- ***Roads versus transport improvements more generally:*** Expenditures on major trunk roads often dwarf that on rural roads and therefore analytical techniques to facilitate rural road budgetary allocations is needed. However, the idea that transport improvement for rural dwellers necessarily means roads has been roundly challenged over the past decade. Research and investment into modes of transport, rather than just road infrastructure, as well as other local means of transport like waterways should not be overlooked. Thus the consensus was that the proposed project methodology should give rural roads prominence in view of future utility considerations but not to the exclusion of considering other transport improvements.

- ***Rural versus urban transport.*** For decades it has generally been assumed that the poor are concentrated in the rural areas and that development efforts should therefore be focused there. Now however urban growth rates have escalated and even an agrarian continent like Africa is projected to be primarily urban in a few more decades. Furthermore mounting evidence indicates that urban poverty is widely prevalent, especially in the unplanned squatter settlements of large cities. The current poverty focus of donors and the awareness that poverty is spatially differentiated in rural and urban areas further compels any methodology involved in identifying social benefits to encompass urban areas as well.

- ***Costs as well as benefits need to be identified.*** The identification of costs are just as important as benefits, indeed many social costs are even more vague and intangible than the social benefits.

- ***Individual benefits and costs will appear at different times and accrue at different rates.*** There is a need to define a time limit in which identification and assessment takes place, otherwise analysis could be ambiguous vis-à-vis its temporal context, or unending in its timeframe.

- ***Experience/Perception of benefits are highly differentiated.*** Social benefits of roads will be experienced differently by gender, age, economic strata and social groupings. Furthermore, within any one socio-economic category there will be individual variation of experience and perception of benefits. This poses several challenges to the collection of representative data.

- ***Economic and social benefits are often inextricably linked making the separate identification, let alone measurement, difficult.*** This is an analytical fact, which translates into the problem of how to achieve precise measurement and avoid double-counting.

3 The Social Benefits Framework

At the macro and meso levels, there is a need to assess the way in which social benefits are currently accounted for by national government and district authorities, and what measures are used to weight them in strategic planning across sectors. The PRSP Sourcebook contains performance indicators across sectors, yet only 27 countries have, as yet, subscribed to the poverty reduction strategy program. Nevertheless, there are lessons to be learned from the way in which these countries have incorporated social 'consequences' into their strategy documents and how they devised appropriate values of assessment to social costs and benefits.

Economic benefits and costs are usually quantifiable insofar as they are directly involved in or indirectly linked to market transactions. The existence of commodity exchange in inter-personal relations facilitates quantitative measurement through the direct exchange of money for commodities and services, or the possibility of indirectly estimating the monetary value of otherwise unpriced goods and services (as, for example, with time and life costs).

Social benefits tend to be far more intangible as they so often entail subjective inter-personal relations of variable and incalculable value to individuals. Previously, such nebulous benefits would have been ignored, but current development theory has given pride of place to 'social capital' considerations. It is appreciated that interpersonal relations are important not only psychologically but also materially. Furthermore, the financially poor are often seen to have important social capital assets upon which self-reliant development efforts can be supported. Human capital benefits and costs realised through improved transport to health and educational facilities is also receiving increased attention.

Thus, there is need to have a methodology which incorporates an assessment of social costs and benefits as perceived by national and local governments ***and*** target populations. As mentioned above, the perception of social costs and benefits can be extremely wide-ranging, necessitating a highly flexible methodology to encompass this wide range. We have therefore opted for an open-ended multi-criteria analysis as our experimental survey methodology.

The framework to be tested in the field that will be used in conjunction with the HDM-4 model, will capture a more definitive index of social benefit indicators, based on a checklist that draws on the World Bank's poverty dimensions commonly used in the PRSP:

- **Economic opportunity (financial capital)**: Economic growth is the mechanism by which opportunities are created for new investment and employment. Transport contributes to economic growth by mobilizing human and physical

resources. As well as contributing to growth, transport also provides access to employment opportunities.

- **Capability (human capital)**: Transport can contribute to developing human capital and quality of life. Transport can play a big part in improving this attribute of poverty by providing access to education, health-care facilities etc. This constitutes access to the opportunities and means to improve human capital.

- **Empowerment (social capital)**: The dimension of poverty that reflects the need (and inability on the part of the poor) for participation and inclusion in all the political and social processes and networks. Transport is a mechanism for supporting effective participation.

- **Security (physical capital)**: Reflects the vulnerability of the poor to the uncertainties of life (particularly the vulnerability of the poor to sudden shocks), and the ways in which they cope. Transport should contribute to greater security by removing any sense of vulnerability through isolation. Transport is also a source of vulnerability in that it provides a location and environment for harassment.

Under the umbrella of the poverty dimensions (opportunity, capability, empowerment and security), a series of 'headline indicators' will be devised, and beneath these, 'local indicators' identified. Using the case study research as a platform, performance indices will be developed, such that the ranking and subsequent scoring of social cost/benefit indicators apply appropriate benchmarks of influence for the context in which they are applied. Hence, performance will be measured on a more tangible scale than simple levels of satisfaction, and will reflect the requirements of communities impacted by transport.

It is not the intention of this research to produce a list of all possible social costs and benefits to be used for budget allocations and work planning, but rather in equipping HDM-4 and other road management models with the process through which social costs and benefits can be accounted for at national, regional and local government levels, and assessed by local communities. This process of enquiry constitutes the framework in which social costs and benefits can be considered for transport, and has three principle applications:

1. Strategic planning
2. Work programming
3. Project analysis

There appears to be increasing acceptance that for rural roads where social benefits are likely to be a significant, if not dominant, consideration, appraisal ought to be based on a cost-effective rather than cost-benefit criterion. Acceptance of this as a principle gives much greater flexibility to the definition of benefits or effectiveness. This on-going research, culminating in a software toolkit for use with HDM-4, and Overseas Road Note, will be conducting field research in the remaining months of 2003, and the outputs will be made available in June 2004.