

Inclusion of Social Benefits in Transport Planning

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The stated objective of the program to which this note is a contribution is to give guidance on the inclusion of social benefits within transport appraisal as the emphasis on poverty reductions and social benefits increases. The particular context of the program is that of low volume roads where it is asserted that traditional appraisal frameworks are particularly defective.

There is here a presumption that there are benefits, denoted “social benefits” which are:

- Different from “economic benefits” (though it is conceded that there may be some overlap and hence danger of double-counting in their measurement)
- Omitted particularly in the CBA of rural roads
- Particularly relevant in developing country situations
- Somehow particularly related to poverty.

The main thrust of this contribution to the debate is to comment on the categorization of benefits and their relationship not only to the formal techniques of appraisal commonly used but also to the process of appraisal. The approach adopted is historical – examining how formal appraisal has developed, and the directions in which it is presently developing. It also considers the relationship of formal appraisal techniques to the processes of the international financial institutions and the role that they play.

The starting point is the early applications of cost benefit appraisal. This was ostensibly concerned with benefits to users – and often referred to as “user cost-benefit analysis”. The earliest example of this genre was the London-Birmingham Motorway study.¹ It took as benefits the time and cost savings of road users – not just on the appraised road but on other roads in the network. By relating these benefits to the investment costs, usually a budget charge, it always went wider than pure user impacts. Even on the benefits side later applications expanded the benefits to include accident costs and (less frequently) environmental costs, estimated not just for road users but also for third parties such as pedestrians, roadside residents, etc. In that sense even the earliest appraisals included “social benefits”.

That objective of inclusiveness was further developed and stated in the context of the CBA of the Third London airport, under the auspices of the Roskill Committee. In one of

¹ Coburn, T.M, M.E. Beesley and D.J. Reynolds *The London-Birmingham Motorway*. Road Research Technical Paper No. 46. 1960.

the supporting papers to that report² the objectives of a cost benefit appraisal were set out as including:

- All benefits
- Irrespective of to whom they accrue
- As valued by the beneficiaries.

It is interesting to note, however, that in a dissenting minority report Professor Colin Buchanan rejected the findings of the main report, and particularly its cost benefit analysis, on the grounds that it did not take properly into account longer term developmental and environmental considerations.

In this context it is also germane that when the British government developed and published its COBA manual³ it implicitly recognized the potential of longer term system effects by specifically recommending an upper limit to the size and scope of schemes for which the formal appraisal was considered applicable. Appraisal procedures using multi-criterion approaches have been commonly used in countries like the Netherlands to broaden the set of issues taken into consideration. Even in the U.K. the government has recently “softened” the nature of the appraisal process to allow closer attention to be given to broader planning objectives. The danger of this is that it increases the chance of double counting and reduces, rather than increases, the objectivity of the appraisal process.⁴

Despite these caveats, the logic of concentrating on the measurement of reductions in direct transport costs to users is that activities which do not occur without a particular project investment, but do occur with it, cannot have a value to the actor greater than the reduction in transport costs which stimulates them or they would have been undertaken in any case. The “rule of half” treatment of the benefits from generated traffic assumes that generated trips are randomly distributed over the range between the extremes of a trip which was just extra-marginal at the original high costs and one which is just intra-marginal at the new, lower, costs. , Only unpaid for external effects fall outside this logic and need to be added separately.

Given this concept of cost benefit analysis including “all benefits”, and the role of user cost savings giving an estimate of all those benefits, the distinction between “economic” benefits and “social” benefits is not fundamental. But that does not mean that it is practically all-inclusive. What is in practice included in the formal cost benefit appraisal process appears to be limited by three considerations:

- What can be measured
- What can be forecast
- What can be evaluated in money terms.

² *Report of the Commission on the Third London Airport*. HMSO. London. 1971

³ *COBA Manual*. Department of Transport. London

⁴ Glaister S “Observations on the New Approach to the Appraisal of Road Projects” *Journal of Transport Economics and Policy*, Vol 33, No 3. September, 1999.

And it is to the limitations in these dimensions that we need to turn to decide how to improve the process in particular difficult circumstances such as those presented by investments which “open up” new areas of activity.

The measurement issue

The benefit measurement issue has most fundamentally been posed as concerning the extent to which the user benefits measured accurately reflect the total impact on the national income of the country or region affected. The critical determinants of this are the supply and demand elasticities in affected factor and product markets. An early conclusion was that the greater these elasticities, and particularly the more competitive the factor and product markets, the greater the extent to which the measured benefits⁵ would coincide with the full national income increment.⁶ More recent developments in computable general equilibrium modeling have attempted to put some plausible numbers on that type of theoretical construct.⁷ Work undertaken for the Standing Committee on Trunk Road Assessment in the U.K. has suggested that the typical under-estimation of total benefit might be at most of the order of about 30%.⁸

Most of the initial theoretical consideration, and the subsequent CGE work, relates to already industrialized countries with already fairly dense transport networks. In developing countries, and particularly in less developed rural areas where networks are sparse, elasticities might be expected to be much lower.

To confront this problem attempts were made to directly estimate the effect impact in terms of increased agricultural outputs.⁹ This involved estimating the likely products of newly accessible land as well as their likely market value. In practice the approach was rarely implemented effectively, except at a rather preliminary, sketch, level. Moreover, its emphasis on product outputs rather than service outputs (visits to clinics and consequential health improvements, etc) meant that it was likely in any case to understate the magnitude of benefits.

The importance of the expanded access to services has been clearly shown in the World Bank review of the impacts of a rural road development program in Morocco. A detailed impact study covered four roads, located in different geographic and climatic areas of the country, that were improved from a deteriorated gravel or track condition to an asphalt surface. Road closures, which previously ranged from 30 to 90 days per year,

⁵ Assuming the actual transport flows with the scheme had been correctly forecast *ex ante*.

⁶ Gwilliam, K.M. “The Indirect Effects of Highways Investments” *Regional Studies*. Vol 4.,1970.

⁷ Hulten, C.R., E.Bennathan, E. and S.Srinivasan.. *Indirect effects of infrastructure: Effects of Infrastructure on productivity in Manufacturing. Regional Study in India*. World Bank. mimeo December, 2000

⁸ Venables, A.J. “The Assessment: Trade and Location” *Oxford Review of Economic Policy* Vol 14 No 2., 1998.

⁹ Beenhakker, H. *Economic appraisal of rural roads : simplified operational procedures for screening and appraisal*. World Bank Staff Working Paper SWP610, 1983

were basically eliminated. The percentage of bigger, lower-operating-cost trucks on the project roads increased at least five times. Transport rates offered by commercial trucking services dropped, by as much as 50 percent. As a consequence use of agricultural fertilizers increased by 100 percent in one region and the use of extension services by small farms quadrupled. Yields in the affected areas increased, in the case of fruit orchards by more than 30 percent. The production mix changed drastically, as land devoted to more profitable vegetables and fruit plantations increased between 8 and 40 percent. Social impacts were equally notable. High-frequency share-ride taxis at affordable rates replaced the traditional poor bus service. Primary school education enrollments reached 68 percent, compared with 28 percent prior to the improvements. Girls' enrollment in primary education more than trebled. Visits to hospitals and primary health-care centers more than doubled. The environment also benefited from the substitution of butane for fuel wood, reducing the need for women to collect firewood, and freeing some two hours daily for income earning or other activities and from changes in the agricultural output mix that led to the curtailment of extensive goat and sheep herding that damage the soil cover.¹⁰

In principle, however, if all of the *ex post* movements were properly predicted and the difference in the cost of undertaking them with and without the transport improvements could be properly calculated, there is no reason why the estimate of the value of the benefits should be more inaccurate in this case than in the more obvious economic development cases discussed above. The weakness lies not so much in the ability to evaluate but in the ability to forecast activity changes.

The forecasting issue

The problems of forecasting can be seen at two levels. Most immediately, the calculated benefits of a transport investment depend on the traffic levels and performance being correctly forecast both "with project" and "without project". Where substantial traffic flows currently exist, this may not be too much of a problem as the majority of the benefit will accrue to traffic which would have been there in any case. For many rural situations, however, new roads will generate entirely new flows of traffic and the bulk of the benefit will arise to generated traffic. That makes the benefit estimation particularly vulnerable to traffic forecasting error.

Similar forecasting problems surround national product increment approaches. Even in cases like the fairly recent investment in the Jamuna Bridge in Bangladesh, where the real political case for implementation was based on its effect in "opening up" the North West corner of the country to the urban markets of the south, there was so much uncertainty in forecasting development that the project appraisal was based on the much more conservative user benefit approach. The outcome in that case appears to be confirming the inherent conservatism of the appraisal approaches adopted.

¹⁰ *Kingdom of Morocco Impact Evaluation Report: Socioeconomic Influence of Rural Roads*. World Bank Report 15808-MOR. June, 1996.

The monetary evaluation issue

The evaluation of benefits in monetary terms has been common to most formal appraisal processes. It is not, of course, the only possible numeraire. Some attempts have been made to use time units as numeraire, converting all other benefits into these terms. But despite some discussion of its merits in the theoretical literature, it has been found not to be a means of escaping the critical evaluation issues, while being less tractable and easy to understand in practice.

Time savings

Much effort has been devoted to the monetary evaluation of time savings. There is a huge theoretical literature, and a number of major government programmes – notably in the U.K. and the Netherlands – to establish acceptable conventions for systematic application. That effort has concentrated on three main issues.

In *techniques of evaluation* a very early was from reliance on the value of time implications of aggregate modeling calibrations¹¹ to specifically targeted disaggregate modeling. In the eighties, emphasis shifted from revealed preference to stated preference or transfer pricing analysis.¹² And to some extent the wheel has turned full circle in the more recent interest in “meta-analysis” as a means of reconciling different specific study results to obtain a value reflecting all of those studies in a more robust estimate – a sort of averaging. Again the theoretical literature is enormous, and will not be referred to further in this note.

In *fineness of discrimination*, the early distinction between working and non-working time has been progressively refined. For working time, the various quandaries associated with the “briefcase traveler” have led to a distinction between the value to the traveler and to his employer. For non-working time, more recent studies have distinguished values by journey purpose, person type, mode used, etc. The Dutch studies, for example, identified a basic value of time and a set of “modifiers” by which the basic value should be adjusted when applied to specific person types or journey purposes. In practice the possible combinations are so many that the usefulness of such fine distinction is limited by the ability to measure and forecast the characteristics of an affected traveling population in any particular investment or policy appraisal application. However, particularly for poor countries, where the dependence on non-motorized transport (including walking) is much greater than in rich countries the typical absence of adequate treatment of NMT is a particular defect.

In *functional form* it is convenient to assume that the value of time can be expressed as a proportion of income, i.e. that it increases in a linear and homogeneous way with income. It is also convenient to assume that there is no distinction according to the direction of change, the magnitude of the unit of time saved, or the proportion of the total trip time

¹¹ For example, the calibration of a gravity model for trip distribution which has both time and money cost arguments implicitly generates an average value of time.

¹² *The Value of Travel Time Savings* Policy Journals. London 1987

which a given saving represents. All have been found to be relevant in identifying the value of specific time savings to specific users. But, as with the fineness of discrimination, the practical problems of forecasting traveling population characteristics have caused governments to prefer to remain with more simple and convenient assumptions.

Accident cost savings

Accident costs, both to travelers and to non-traveling victims are now routinely included in CBA for road schemes. This is typically done by using standard accident rates for different types of road conformations, traffic volumes, etc, and calculating the expected difference based on the “without-scheme” and forecast “with-scheme” traffic conditions. Errors in forecasting appear to be particularly high here.

Economists have usually placed a value on avoided morbidity on the basis of the amount which a person is estimated to be willing to pay (WTP) to avoid the illness. Where estimates of willingness to pay are not available it is customary to use the avoided medical costs, plus the loss of physical out arising as a consequence of the illness or death. This “cost of illness” approach is usually a lower bound to the willingness to pay.¹³ For premature mortality, economists have tried to measure what people would be willing to pay to reduce the risk of dying, and have grossed up from this to estimate the value of a statistical life.¹⁴

There is credible evidence to suggest that the poor suffer disproportionately from the burden of road accidents in developing countries. While this may be less pronounced in the rural than in the urban context, the adequate inclusion of accident costs in project appraisal may contribute to safer designs. The same considerations may also apply to the treatment of environmental impacts which follows.

Environmental impacts

Recent work on the evaluation of environmental impacts has borrowed much from the accident literature in assuming that the major impacts are those on mortality and morbidity.

Costs to society arising from urban ambient air pollution include damage to buildings and vegetation, lowered visibility, and contribution to greenhouse gas emissions. However, increased mortality and morbidity are generally considered to be the most important, both on account of their human and economic impacts. The approach most commonly used to value these health effects of air pollution is known as the “damage function approach”. This involves, firstly, estimating the impact of a change in level of air pollution on health, and then, secondly, attributing a monetary value to the change in health.

¹³ Cropper, M. L., A. M. Freeman III. (1991). Valuing Environmental Health Effects, in John Braden and Charles Kolstad (eds.) *Measuring the Demand for Environmental Commodities*. Amsterdam: North-Holland, 1991

¹⁴ Jones-Lee, M.W., M. Hammerton and P. R. Phillips. (1985). The Value of Safety: Results of a National Sample Survey, *Economic Journal* 95:49-72

Estimates of the health impact of air pollution are usually obtained either from analysis of time series data (in which changing levels of air pollution over time in a particular location are linked to changing levels of morbidity or mortality) or cross-section studies of the effect of differences in air quality on mortality or morbidity between locations. Both are difficult, and statistically very testing, but there have been studies in developing countries and some generally transferable values are available.¹⁵

To convert the health impacts into monetary terms the same approach is taken as in the case of accident costs, with willingness to pay typically forming one bound of the estimate and direct loss of income as the lower bound.

Non-health impacts of urban air pollution may include physical damage to property due to soiling or corrosion, damage due to the local economy resulting from decisions to locate activities away from less pleasant areas, and the disutility to residents of unpleasant, albeit non health-threatening, conditions. Methods for rapid assessment of the health and non-health environmental costs of fossil fuels have been applied to six cities, and a transferable methodology for assessment proposed.¹⁶

The social dimension in evaluation

At the heart of this whole approach is the assumption that the monetary valuations obtained can be added together irrespective of to whom they accrue. This applies to time accident and environmental impact changes. This raises the crucial questions which have plagued welfare economics over the ages. In its most simple form it presumes that the marginal utility of income is equal for all people. If it is not (and there is no reason to suppose it should) then the basic process of aggregation is flawed and no absolute conclusion can be drawn from the analysis.

Furthermore, when investments are undertaken in the public sector, in facilities that are not directly charged for, projects can significantly alter welfare distribution. That is because the distribution of the costs occurs ultimately through the distribution of the tax burden while the distribution of the benefits focuses on the particular set of users benefiting. If all benefits are valued behaviorally, which in effect means in some kind of increasing function of income, then the rates of return on identical projects will be higher in high income areas than low, and a vicious circle emerges. Richer area will attract investments which make them richer still. For that reason in the U.K. all leisure time savings are valued at an “equity value of time” independent of differences in income. The same reasoning may also justify the imposition of some sort of regional equity in the distribution of investment funds, superimposed on the user cost benefit rate of return criterion.

¹⁵ Ostro, B., J. M. Sanchez, C. Aranda, and G. S. Eskeland. (1996). Air Pollution and Mortality: Results from a Study of Santiago, Chile. *Journal of Exposure Analysis and Environmental Epidemiology* 6(1):97–114.

¹⁶ Lvovsky, K., G. Hughes, D. Maddison, B. Ostro and D. Pearce. *Environmental Costs of Fossil Fuels: A Rapid Assessment Method with Application to Six Cities*. Environment Department Paper 78. World Bank. Washington DC. 2000.

The weakness in respect of distributional impacts is readily recognized by most economists. But there are two typical responses to it. First it is argued that the best way to address the difficulty is through lump sum transfers of income, and not through making adjustments on a partial basis in those markets which seem susceptible to such adjustments. Second, it is argued that in any case, if governments – aware of the issue – do not take any actions to compensate for it through the fiscal instruments that they have at their disposal, then it is inappropriate for sector managers, or even external donors, neither of which has the same perspective as government, to make partial adjustments.

At the end of the day, neither response is totally convincing. Even in democracies – perhaps particularly in democracies – governments represent the interests of their supporters rather better than those of their opponents. And if government is entrenched, or significantly influenced by wealthy supporters, one might expect the interests of the less well endowed to be given less weight than those of the better-off.

Several approaches have been taken to this problem.

1. *Weighting systems*

This approach involves attempting to define a set of weights, typically inversely rather than directly proportional to income, which is considered to better reflect the distribution of income and hence of the marginal utility of income. A number of alternatives have been suggested. Foster suggested scaling values in inverse proportion to the ratio of the beneficiaries income to that of the population average.¹⁷ Eckstein argued that for using marginal effective tax rates as being an indicator of the governments current view of ratios of marginal utility of money, and hence using this as the basis for adjustments in CBA.¹⁸ Wise et al, in the context of the Inquiry into the Third London Airport, suggested using the elasticities of the marginal utility function to estimate the marginal utility of money at different income levels.¹⁹ In the same context Nwaneri²⁰ applied his chosen form to the third London Airport. A similar approach was adopted by Frankena to the issue of public transport subsidies.²¹ The difficulty is clearly to find an objective basis to set the weights. More recently, in assessing World Bank public sector investments in Vietnam, van der Walle has suggested that this is done through a local participatory process.²² Why that should produce a more objective set of weights rather than merely a different, set of biases is not clear, however.

¹⁷ Foster, C.D. “Social Welfare Functions in Cost-Benefit Analysis” in Lawrence, R. (ed) *Operational Research and the Social Sciences*. Tavistock, London. 1966.

¹⁸ Eckstein, O. “A Survey of the Theory of Public Expenditure Criteria” in *Public Finances: Needs, Sources and Utilization*. Princeton University Press. 1961.

¹⁹ Wise, J, C.B. Chapman and D.W.Pearce. *Written Evidence to the Roskill Commission on behalf of the Buckinghamshire County Council*. 1970

²⁰ Nwaneri, V.C. “Equity in Cost-Benefit Analysis-The Third London Airport”. *Journal of Transport Economics and Policy* Vol IV No.3. September, 1970.

²¹ Frankena, M “Income distributional effects of urban transit subsidies” *Journal of Transport Economics and Policy* Vol VII No.3. September, 1973.

²² D.van der Walle “Choosing Pro-Poor Rural Road Investments” World Bank. mimeo. April 2000.

2. *Filtering systems*

In some circumstances it may be possible to identify relatively homogeneous regions or population groups which are well differentiated by their relative poverty. Concentrating transport infrastructure investments in the relatively poorer areas through the imposition of such a screening process is then one way of introducing a poverty dimension in the investment appraisal process. This has been attempted in some of the World Bank road projects in China.²³ It can be combined with a decentralized allocation process for the funds devoted to any particular region.

This approach is not without problems. It is not usually suggested that there should be no investment at all in the richer regions. Hence there remains the need for deciding how precisely the filter will act. What kind of preferential treatment is to be given to poor regions, and who shall decide. But it does provide a channel for government to put some effort into regional redistribution.

3. *Decentralizing systems*

A third method of addressing the particular concerns for the poor, is to attempt to decentralize decision making on resource allocations and project design and selection to local communities. This is the approach used in the PROPAV program of investments in paving low income settlements in Brazil. Similar approaches have also been applied in other Latin American countries such as Peru. In these cases the local communities were free to decide which projects to implement with the given set of resources allocated to them. The typical results of this process is a change in the allocation of resources – towards access rather than technology upgrading projects – and in the implementing technology – towards labor based rather than capital intensive techniques.

Such community based development approaches have the advantage of narrowing the gap between the providers and the beneficiaries of transport improvements. They may therefore be expected to generate more commitment to the maintenance of the facilities provided. In many poor countries this may be the most critical impact. But it still does not get over the issue of the initial criteria according to which resources are allocated to the communities.

4. *Tracking system*

The difficulty with all attempts to superimpose “normative” weights on benefits is to decide how that system of weights is to be constructed. Not only is this a political matter, but it is likely that the weightings which would be considered appropriate would differ from country to country according to income levels, social structures, etc. For example, in a country with a well developed “safety net” of social, medical and educational services it might be considered much less appropriate to weight benefits of road investments to the poor more highly than those to the rich than in a country without such a lower threshold protection.

²³ For example in the recent Henan Rural Roads project

An approach which might have more general application is to ensure that the distribution of the benefits of mutually exclusive actions are described so that the decision makers might then be able to select (or their donors to influence the selection) of projects with preferred distributional characteristics. A method of setting out several dimensions of a project's outcome for decision makers judgment was embodied in Lichfield's "Planning Balance Sheet" approach to plan appraisal.²⁴ This consisted of a matrix with a set of interest groups (which could be defined as income groups) as one dimension, and a set of impacts as the other. Not only did this enable a number of non-commensurate effects (environmental, economic, etc) to be considered simultaneously but for each dimension enabled the distribution of impacts to be seen.

In urban contexts where appraisal is model based this fuller display of information might be achieved by outputting the impacts of alternative investments or plans on the travel time and travel costs of existing trips by zone. If the zoning system is very fine, or the spatial distribution of population by income group very pronounced, such an approach could simply demonstrated the distribution of benefits by zonal average income. One example where this approach was proposed, but in the event not well executed, was in assessing alternative through fare arrangements associated with a metro rail and bus service restructuring development in Fortaleza, Brazil.

5. *Cost efficiency approaches*

In the case of rural feeder roads, where low or zero levels of initial traffic make it difficult to apply the traditional methods of cost benefit appraisal, it has been suggested that cost efficiency approaches should be used to select schemes instead. For example, a recent World Bank paper has suggested that the number of households connected to the existing road network per dollar invested might be a sensible criterion for the allocation of a fixed budget allocated to new network links.²⁵ Of course, there are weaknesses in this approach. It clearly militates against connecting those who are the most isolated, and does not take into account differences by location in the usefulness of being connected to the existing network.²⁶ But its implicit assumption that there is some special "threshold" disadvantage of not having all weather access to a road system may not be unreasonable.

The roles and processes if the international agencies

There appears to be a presumption that the international financial institutions should be seeking a common, standard, approach to evaluation which would allow projects to be treated similarly no matter where they are. I would argue that the appraisal processes

²⁴N. Lichfield "Evaluation methodology of Urban and Regional plans-A Review" *Regional Studies* Volume 4, 1970

²⁵ Gannon, C. and Lebo, J. 1999. "Design and Evaluation of Very Low-Volume Rural Roads in Developing Countries." in *Transportation Research Record*, No.1652.

²⁶ For example if schools, clinics and other facilities are still many, many miles away there may be little benefit in being connected to the network, while if they are relatively near the benefits may be large.

used by the international institutions need to recognize the very nature of the donor institutions themselves.

For example, the World Bank is managed by a Board representing the interests of both borrowing and donor member countries, and has the obligation to engage in activities which are designed to serve the best long term interests of all its members, and not just to engage in such lending as represents the most profitable, or even the most secure, use of the resources available. The implication of this is that it does not engage explicitly in a process of ranking all of the investment opportunities which are open to it. Instead, it has to seek a political balance in directing its resources to assisting member governments to achieve their national objectives, primarily by making the best use of their own national resources to which Bank lending is a supplement. For that reason, much emphasis is placed on the institutional and regulatory environment into which the Bank is lending. Project lending which contributes to improvement of that environment is thus of particular interest.

Judging the degree to which that is being achieved depends on some of the high level priorities which the Board of the Bank have adopted. These include the avoidance of environmentally damaging investments, the widespread distribution of the benefits of projects throughout the national recipient community and the avoidance of uncompensated losses by virtue of spatial or occupational displacement resulting from a project. Strict standards are applied both to the environmental design of projects and to the resettlement and involuntary employment severance provisions which have to have formal environmental clearance before they are submitted for Board approval. Nevertheless, conventional economic evaluation has remained central to the appraisal process as there remains an extremely strong instinct to avoid “white elephants”, particularly those emanating from political glory seeking.

The process through which that is pursued is essentially one of progressive refinement of the understanding of national priorities. At the start of the process has been the identification, jointly by the country and the Bank of a “Country Assistance Strategy” (CAS), now being replaced in the case of the highly indebted poor countries (HIPCs), by the “Poverty Reduction Strategy Paper (PRSP). These documents identify both the borrowing capacity of the country, in both fiscal and administrative senses, and given the definition of such an envelope, the areas of high priority where the Bank is thought able to contribute best to achieving national development objectives. Where the transport sector is identified as a priority for assistance there is usually a transport sector review which includes consideration of the institutional and regulatory impediments to its effective development, and from which individual projects are in principle derived.

Other IFIs appear to require less extensive contextual analysis, but the importance of focusing on poverty reduction at a strategic, program level, as well as at the more tactical, project, level is now widely accepted. The nature of the project appraisal process which is appropriate will vary according to the extent to which individual projects have been developed through a poverty focused general development process.

Conclusions and Recommendations

It is recognized that the benefits to the poor of improving road infrastructure may be particularly difficult to evaluate, particularly for low volume rural roads and feeder paths and tracks programs. First, where initial traffic volumes are very low, there are more than normally difficult problems of traffic estimation. Second, because much of the movement is non-vehicular, there are problems of evaluation of benefits to non-motorized transport (NMT), despite some recent efforts to address this in the context of the Sub-Saharan Africa Transport Program. Third, the infra marginal nature of the impact on basic access to some activities – for example, school and clinic attendance, which become possible with the project and were impossible without– means that they seem to be less convincingly proxied by measured transport benefits than in the case of the more marginal economic activity changes stimulated by improvements in existing networks. Fourth, the costs of detailed appraisal of individual small projects tends to make less sense than that of projects for which the project appraisal costs are a smaller proportion of project costs.

The general conclusions are:

- The distinction between “economic” and “social” benefits is somewhat of a red herring. The aim should be to identify all benefits within the appraisal process.
- Evaluation in monetary terms can encompass improvements in access to social services as well as improvements to serve the economic production process. The critical question is the extent to which these developments can be adequately forecast.
- Inadequacy of treatment of non-motorized transport, both in the analysis of movements and the evaluation of benefits is particularly important in poor rural circumstances.
- The burden of road accidents falls particularly on the poor in most developing countries, and should be given more attention in all project appraisals.
- There is an inevitable tension between formal appraisal approaches and community driven development approaches to project generation and appraisal.

The recommendations for consideration by the group are:

- Any formal appraisal of projects needs to be embedded in a poverty focused development strategy. Attention should therefore be given to identifying at least a minimum treatment of strategic context in the project appraisal process.
- Effects of projects on safety, environment and non-motorized movement need more careful attention than hitherto.
- For programs of small projects the emphasis should be on the appraisal of the program rather than projects, with cost effectiveness of design of specific interventions rather than full cost benefit used to select components.