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1. Background

The adoption of the Millennium Development Goals has posed a challenge to those involved with infrastructure to indicate how it can support their achievement. Donor commitments to infrastructure decreased in the 1990s but there is now a renewed interest in the role that infrastructure can play in contributing to the achievement of the MDGs¹. While the development of infrastructure rarely leads directly to poverty reduction, in combination with other (sub) sectoral initiatives by public, private and civil society organizations, infrastructure can play a critical role to the achievement of the MDGs and national poverty reduction strategies.

The connections between infrastructure and the MDGs are numerous, a few examples include developments in irrigation, energy and transport can stimulate increased agricultural production thereby contributing to food security (MDG 1); extension of water supplies to rural and urban slum areas can generate positive health outcomes and increase school attendance through reduced illness and reduced water collection burden (of girls) (MDG 2 & 3); better, safe and affordable transport services can stimulate greater use of health services especially by women, while ensuring the regularity of supplies essential to the health service (MDG 4 & 5); the transport sector in particular has a potential negative effect on the spread of HIV/AIDS and infectious unless appropriate interventions are positively planned while safe water supplies can reduce malaria (MDG 6); community environmental planning and management schemes for water and sanitation and community paths and tracks can help achieve MDG 7 on the environment; donor harmonization and regional partnerships such as on transport corridors facilitating landlocked countries, or water resource management, are important to achieving MDG 8.

The need to assess progress against the MDGs has focused attention on impact assessment in relation to poverty reduction and the contribution that infrastructure investments can make to the realization of national Poverty Reduction Strategies. For example, a meeting of African Transport Ministers (April 2005) will consider a paper on the Role of Transport in Achieving the Millennium Development Goals (MDGs) which sets out the rationale for, and targets and indicators for how transport will contribute to the achievement of the MDGs.

Typically in the past impact assessment² has been undertaken through monitoring and evaluation mechanisms, and sometimes ex-post evaluations. However, there is an increasing recognition that attribution and ultimate impacts are very difficult to track at the project level and the problem is confounded in the case of a policy or regulation. As impact takes time to realize, there is an increasing focus on ex-ante impact assessment with the objective of enhancing policy choices and the design of investments by *anticipating* likely impacts on different groups thereby maximizing positive impacts (and minimizing negative ones) through improved design.

¹ See for example the World Bank Infrastructure Action Plan 2003.

² In development terms impact is defined as *the result of all changes, positive or negative, attributable to an intervention*, DAC Committee.

Purpose This paper on “impact orientation and target setting for InfraPoor” is intended to feed in to the InfraPoor guiding principles for the bilateral donor community to enhance the contribution of infrastructure to poverty reduction and the achievement of the MDGs. In addition, within the DAC POVNET, a working group on impact assessment has been formed and a strategic concept paper on improved ex-ante impact assessment is being commissioned with a view to preparing recommendations by fall 2005³. The InfraPoor work will provide inputs to this working group.

The recommendations of this report will be discussed by InfraPoor at its workshop in March 2005 in Tokyo; its purpose is to promote consensus around a recommended methodology for:

- a. Identification of process and impact indicators and target setting as part of project and programme design in infrastructure sectors
- b. Ex-ante poverty impact assessment in particular, but also taking into account the more general aspects of best practice for process monitoring and review, and ex-post impact assessment.

It should be noted that the objective of ex-ante impact assessment is to identify key issues that *will influence the design of the investment in terms of its poverty impacts*. It is not intended that ex-ante impact assessment replaces monitoring and evaluation systems or that it substitutes for baseline data. Ex ante impact assessment identifies issues that will affect the design of an investment and that will need to be reflected in baseline data and monitored over time.

Following an inception phase, it was agreed that the paper will address the following areas:

1. A review of impact assessment methodologies and processes currently used by donor agencies as a basis for identifying best practice
2. Overview of existing approaches to impact assessment based on selected literature on infrastructure and its contribution to the achievement of the MDGs and poverty reduction
3. Identification of key principles to guide impact assessment
4. Choosing indicators and identification of impact channels through which investments are likely to have an impact (positive or negative)
5. Identification of key issues/questions to be addressed when designing programmes.

It was also agreed that the work will provide guidance on indicators for three levels of support – project, sector and policy.

An inception report was subsequently commented upon and approved by the Infrapoor group at its meeting on 28.2.2005.

³ See terms of reference of the DAC POVNET - Joint Donor Working Group on Poverty Impact Assessment. The working group is led by Germany. Participating donors are GER, USA, FIN, IRL, UK, CH, FRA.

2. Appraisal of Donor Projects

The request for donors to submit examples of impact assessment of projects for this review has been partly successful representing transport, energy, irrigation sectors, and a sector review by the ADB. Though the sample is virtually entirely Asia-based⁴ and does not include water and sanitation, following discussions with DCI and KfW/GTZ it was agreed that despite these limitations and the small sample size a further trawl for additional projects was unlikely to substantially change the outcome and that the sample constituted a reasonable basis to move forward to the next stage. It should be noted here that because of its widely spread population across large tracks of land with relatively few ocean navigable rivers and several land locked countries, Africa will require greater investment in infrastructure (as a proportion of income) than any other major developing region⁵, and thus the findings of this review will have even greater application to Sub-Saharan Africa.

The findings of the appraisal of donor projects raise critical challenges for the donor community if they are to impact on poverty reduction. The findings are summarized as follows:

1. **The project goal** is a clear determinant of the extent to which poverty reduction (PR) is addressed and in turn, is a focus of the assessment. If poverty reduction is included at the goal level then the indicators tend to reflect this, whereas if the goal is economic development/growth, indicators on PR are less likely.
2. **Pro-poor growth with poverty reduction “added on”** In general, economic growth is the objective of donor infrastructure investments⁶ while little or no reference is made to contributions to poverty reduction. To the extent that projects are designed to address pro-poor concerns, the approach appears to be that of having an explicit economic growth objective and “adding on” some poverty reducing measures such as temporary employment through labour intensive construction methods or constructing auxiliary small scale infrastructure required to facilitate construction to a permanent standard that may be used by the poor (water points, sanitation).
3. **Methodology** Donors are investing in impact assessment but this is largely confined to economic rates of return. Studies that classify themselves as socio-economic assessments primarily adopt an economic perspective⁷. Impact

⁴ The projects reviewed were those presented at the DAC PovNet Task Force on Infrastructure for Poverty Reduction meeting in Paris (March 2003) and others provided by Mr Bauer / ADB/ Mr Ojima.

⁵ African Union, ECA, *Transport and the Millennium Development Goals in Africa*, February 2005 suggests that compared with low income countries in Asia, African countries will need to invest twice its GDP in infrastructure in addition to sustaining higher recurrent charges for operation and maintenance costs

⁶ Projects reviewed were mainly in the road and energy sectors; it is expected that if more water and sanitation projects were available to the sample, stronger links with poverty reduction would be evident.

⁷ Some also follow a target group approach (GTZ/KfW) but give little information on poverty reduction impact for the country or the region.

assessments are carried out as part of monitoring, or represent end of project/ex-post evaluations. Donors are not carrying out ex-ante assessments⁸.

4. **Attribution:** Most projects recognize the difficulty of attributing impact to their specific investment and consequently findings are confined to the project and its goals; exceptions are assessment of regional impact of roads, national impact of rural electrification on health status, industrial output, food self-sufficiency. One electricity project perceived electrification as a stimulus to development but states that complementary measures would be needed to maximize poverty reduction.
5. **Linkages with other development policies and initiatives** are necessary to maximize benefits from infrastructure e.g. an assessment of a major road/port project found that while employment opportunities resulted from the investment, vocational training needed to be expanded/adapted so that these opportunities could be maximized⁹; to benefit from increased access to markets for high value crops, changes in agricultural extension services were required, as was the need for access to credit for farmers. Similarly, an irrigation project assessment drew attention to the need for complementary access to water, market facilities and systematic cropping systems. None of the projects had actually made such inter-sectoral linkages.
6. **Adverse social impacts** may receive a passing mention in the project description, but there is no evidence in the impact assessments of how (sometimes very serious) negative impacts are addressed e.g. resettlement, loss of livelihoods.
7. **Economic measurement of poverty** While it was not clear for all projects what measures were being used, there is a tendency to measure the incidence, depth and severity of poverty trends by income and expenditure indicators rather than adopting a multi-dimensional approach to poverty (as per DAC guidelines).
8. **Impact on assets** Assisting poor people to build their assets is a key strategy in reducing vulnerability. However, in the impact assessments reviewed the focus tends to be on quantitative data in relation to employment and other types of *activities* in which people are engaged rather than how this increases assets, e.g. sustainable micro businesses, increased agricultural production and marketing (subsistence/cash crops).
9. **Differentiation of impact for different groups** is not a variable in donor impact assessment. There is no analysis of who are the winners and losers of a project; beneficiaries are described as aggregated groups and are not differentiated by income/asset ownership, location, ethnicity/caste, gender, age etc.

⁸ New impact assessment tools are emerging, such as the Poverty and Social Impact Assessment by the World Bank and the ADB, and are discussed in section 3.

⁹ If such a project were to have an impact on poverty, specific training would need to be targeted at unskilled workers; focusing training on up-skilling those already in employment is unlikely to have much poverty reduction impact, though would of course increase income for those who already have jobs.

10. **Gender¹⁰ or HIV/AIDS are not variables** Given that improved transport is widely recognized as a channel for sexually transmitted diseases, this is not reflected in impact assessments. Similarly gender issues are not addressed e.g household income or expenditure may have increased but the analysis doesn't show how this affects intra-household dynamics: if there is increased agricultural production, who is providing the labour (hired labour, women, children, men?). If there is increased household expenditure, who has control of this? What is the increased income spent on – consumerables, leisure, investment in assets, investment in education etc?
11. **Processes for participation** and the identification of the diverse range of stakeholders that are likely to be affected by the investment were not evident either in terms of the methodology for assessing impact, nor in setting the indicators (participatory monitoring).

Conclusion

This analysis indicates that poverty reduction is not on the agenda of infrastructure investments and is not reflected at goal or objective level. The overarching message is that there is a serious challenge to donors and their partners to inform the design of their investments with an analysis of potential poverty reduction impacts, and to move away from “add-on” pro-poor measures towards an approach that explicitly supports national goals and objectives for poverty reduction, and sets out a strategy to ensure that the investment will have positive benefits for the poor.

3. Overview of Existing Approaches to Impact Assessment

In this section, a brief overview is provided of on-going initiatives related to impact assessment in infrastructure that have been identified by the Infrapoor group and based on the experience of the consultant. It is not intended to be an exhaustive review of ex-ante poverty reduction impact assessment approaches and methodologies – these will be covered by the DAC-POVNET Joint Donor Working Group on Poverty Impact Assessment. Neither does it reiterate well-established approaches to economic impact assessment as these are well understood within the donor community. Rather, it confines itself to giving a flavour of current thinking in relation to impact assessment and the

¹⁰ In terms of supporting the achievement of the MDGs, it is worth noting that as a contribution for the 49th Session of the United Nations Commission on the Status of Women (New York, 28/02-11/05 2005), the DAC Secretariat undertook an analysis of bilateral aid in support of gender equality (25 Feb 2005). It found that while aid for transport, communications and energy infrastructure accounted for a third of bilateral aid, there was little reporting on gender equality. Nevertheless, it stated that well-designed infrastructure projects can bring significant positive benefits for women and girls by improving access to markets, schools and health services or by increasing women's safety.

indicators that are being used to measure poverty reduction as an indication of the extent to which donor consensus and harmonisation of impact assessment approaches in infrastructure might be possible¹¹.

In reviewing various initiatives, there is a definite trend emerging in relation to two main issues:

- The need to harmonise national statistics frameworks e.g. MDGs, Human Development Report, PRSP monitoring¹² etc.
- In all of the initiatives listed below there is a recognition of the need to move beyond economic measurement to conducting poverty, social, gender and environment assessments, and to mainstream approaches that address the issues of access for all, road safety, labour standards and health and safety, HIV/AIDS and communicable diseases, and to incorporate users' perception of the infrastructure. This presents an opportunity for donors and partners to agree methodologies.

i. The African Union and the Economic Commission for Africa in collaboration with the Africa Development Bank, the World Bank and the European Union, has just issued an important working document which, in five chapters, sets out the linkages between transport and each of the seven MDGs, has proposed targets and indicators for the realization of each of the MDGs¹³. The paper will be considered by a meeting of African Transport Ministers in April and it is expected that proposals regarding the sector's contributions to the MDGs will be submitted for consideration at the African Heads of State Conference in June 2005 and, if agreement is reached, at the UN General Assembly in September. The paper anticipates that most countries will develop transport-related objectives and targets in the specification of national MDGs. The paper focuses on outcome indicators for the transport sector and these are set out in Table 1.

Broad Indicators	Specific Indicators	Reform Indicators	User Opinion Indicators
<ul style="list-style-type: none"> • Rural access to all-season roads • Rural road condition survey: passability standard • Rural public 	<ul style="list-style-type: none"> • HIV/AIDS infection of sector staff & affected communities • Unskilled labour days paid for construction/maintenance 	<ul style="list-style-type: none"> • Contributing to education/health facilities planning • Facilitation of trade flows and transit • Participatory planning for 	<ul style="list-style-type: none"> • Citizen Report Cards • DHS questions on access to health

¹¹ A detailed assessment of all models/approaches in use is beyond the terms of reference for this paper.

¹² One such examples is the DAC PARIS21 initiative whereby for the period 2004-2006, there will be a focus on encouraging -- through regional programmes, advocacy efforts, and information exchange and reporting activities -- all low-income countries to design National Strategies for the Development of Statistics (NSDS) by 2006 and to have nationally owned and produced data for all MDG indicators by 2010: <http://www.paris21.org/pages/designing-nsds/presentation-events/>

¹³ This document: African Union, ECA, *Transport and the Millennium Development Goals in Africa*, February 2005 is important for understanding the links between transport and the MDGs as they apply in the African context. African Union, ECA, *Transport and the Millennium Development Goals in Africa*, February 2005;

<ul style="list-style-type: none"> transport fares • Main road condition survey: surface quality • Unit costs of road freight transport 	<ul style="list-style-type: none"> • Time from arrival of container in harbour to release through port gate • Transport-related fatalities from obstetric complications • Road accident fatalities • Urban Poor travel indicators and affordability 	<ul style="list-style-type: none"> community priorities • Implementation of environmental standards • Linking road & land-use planning for cities • Systems for assuring due process in expenditure choices and contracting • Roads Fund and Roads Board development • Types of operation newly contracted out/concessioned 	
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World Bank Group There are a number of relatively recent initiatives being led by the World Bank in conjunction with other donors that focus on impact assessment and identification of infrastructure indicators. This section seeks to extract some of the key issues emerging from a selected number of different approaches.

Infrastructure specific initiatives:

- ii. *Transport Results Measurement* The central Transport Unit of the World Bank is taking stock of the measures and indicators which the World Bank accesses and applies for the key transport sub-sectors and for the sector as a whole. Initial assessments of data available at the international level, such as through the International Road Federation, confirms significant gaps in relation to both the priority needs of World Bank client countries and the expectations of development agencies. The TRM is designed to address the problem of limited and poor quality data available in the Transport sector. The central challenge that it seeks to address is the issue of ***national ownership*** of data in promoting sustainable data systems - data collection, analysis and reporting. It sees the issue of ownership as the basis for a sustainable effort in establishing key sets or sub-sets of the indicators based on stakeholder interest.

Under the TRM, the *Sustainable Access to Rural Transport Indicator*¹⁴ has now been established for some 40 countries. ‘Sustainable access to rural transport’ measures the number of rural people who live within 2 km (typically equivalent to a walk of 20 minutes) of an all-season road as a proportion of the total rural population. An “all-season road” is a road that is motorable all year round by the prevailing means of rural transport (often a pick-up or a truck which does not have four-wheel-drive). A possible urban transport indicator being considered is 20 minutes from public transport.

¹⁴ http://siteresources.worldbank.org/INTTRM/Resources/040317_Final_Template_IDA_rural_access.pdf

iii. *The Transport and Social Responsibility Thematic Group* has adopted two main goals, to strengthen understanding of social issues related to the transport sector, and to develop guidance for optimizing the social benefits of the sector's policies and investments. The approach is to provide a social analysis for the transport sector in the context of poverty reduction and guidelines for social analysis in the transport sector have been developed and are linked to all stages of the project cycle. In addition to social analysis, the group is also promoting three key areas of focus: inclusive access, employment issues, and mitigating the spread of HIV/AIDS and other diseases, as set out in Table 2.

Table 2. Some Key Social Aspects of Transport projects

<i>Key Social Aspects</i>	<i>Issues</i>
Inclusive access	<ul style="list-style-type: none"> • Access for all including disabled, aged • Gender mainstreaming in transport • Rural access indicator
Employment issues (decent employment)	<ul style="list-style-type: none"> • Non-discriminatory labour based policies • Social clauses to provide a framework for health & safety, fair wages & working conditions¹⁵
Mitigating the spread of HIV/AIDS & other diseases	<ul style="list-style-type: none"> • Inhibit disease transmission (transport as a vector of STDs)

iv *Transport core measures: Roads*

Core measures have been identified for a number of transport sub-sectors. Since road transport constitutes the largest part of World Bank spending on infrastructure, here I quote the core measures set out for roads:

(i) road network; (ii) road administration; (iii) finance; (iv) road usage; (v) road motor vehicle fuel consumption; (vi) road user charges, taxes, fares & prices; (vi) environment and social issues. While (i) – (vi) are well-established economic/efficiency measures, issues related to environment and social issues are of note:

<i>Environment</i> ¹⁶	Social
<ul style="list-style-type: none"> • Whether environmental impact assessment (EIA) is mainstreamed - in law? • Communicable disease control: on-going assessment of risks of communicable diseases/measures to reduce it; • Road safety: high level commission, fatalities/injuries 	<ul style="list-style-type: none"> • Whether Social Impact Assessment is mainstreamed – by law? • Social impact • Gender assessment • Access for all • Planning data disaggregated • <i>Employment standards</i>: ILO 4 core labour standards, health and safety

¹⁵ A DFID funded research project found that unless infrastructure projects explicitly take account of decent working conditions, projects can undermine rather than enhance livelihoods. See Ladbury, S, Cotton, A. & Jennings, M. *Implementing Labour Standards in Construction*, A Sourcebook, (2003) with guidance for good practice is available www.lboro.ac.uk/wedc/publications/ilsic.htm

¹⁶ See www.sitesresources.worldbank.org.INTTRM/resources/031208rd_tr_coremeasure

v. *REDI (Recent Economic Developments in Infrastructure)*, lead by the Vice Presidency on Infrastructure, provides diagnostics of infrastructure sectors in order to identify investment opportunities and policy-based operations for a given country. The diagnostics will be standardized across countries to allow benchmarking and comparison. The REDI will be modular to allow different levels of detail and analysis. Key indicators include:

access, affordability, quality (technical and user perception), efficiency (cost, economic) fiscal cost, financial autonomy and institutional development (the latter includes social, environment, gender assessments, road safety plans, access for all, labour standards, health and safety, communicable diseases).

The World Bank, - together with some other donors is currently considering additional diagnostic work in the following countries: Kenya, Senegal, China, Argentina, Colombia, Armenia, Morocco, India.

vi. *SSATP (Sub-Saharan Transport Policy Program)* Under SSATP the poverty reduction-transport review process (PRTSR) involves stakeholders (public, private, civil society) in appraising how national PRSs and transport sector policies can be mutually reinforcing to attain overall poverty reduction; local ownership of the process and involvement of a range of stakeholders is key. As part of this process two initiatives on transport impacts on poverty reduction are underway: the first includes the production and dissemination of country case studies indicating direct and indirect transport interventions' impacts on poverty reduction.

The second entails the identification of a "willing" partner country to pilot a comprehensive pro-poor transport sector strategy development process, building on the participatory lessons of the PRTSR review process. The SSATP launched an initiative on transport performance indicators in early 2004 that is on-going - the focus to date has been on identifying data collection processes nationally and the institutional framework for data management. In 2005 will see the proposal of an improved "indicator set" and a draft document including new data definitions and collection methodologies.

Initiatives beyond the infrastructure sector

vii. *Poverty and Social Impact Assessment (PSIA)* is the analysis of the intended and unintended consequences of policy interventions—before, during implementation, and after—on the well-being of different social groups and with a particular focus on the poor and vulnerable. It is an approach designed to help policy makers understand the impact of policy reforms and public actions on social and poverty outcomes. The PSIA methodology has identified five possible transmission channels through which policy reforms are likely to have impact (positive or negative) including: employment, prices, access to goods and services, assets, and transfers and taxes. With some modification, these channels offer an

interesting framework for the InfraPoor discussion. However, a DFID review of six pilot PSIA's found that while PSIA's can contribute to the policy process, it urged caution in expecting PSIA's to be able to identify all possible poverty impacts ex- ante, during project implementation and ex-post.

The PSIA website has recently included a section on utility reforms (Feb 2005)¹⁷ which is based on a comprehensive summary overview of the literature on the impacts of utilities reform, comprising 46 country studies and 13 cross-country studies with a fully referenced bibliography. Adapting the PSIA transmission channels mentioned above, it indicates five channels of impact (employment and wages, service price, quality of service access to service, asset ownership, fiscal flows) and indicates likely impacts for different types of reform e.g. public sector reform, private sector participation, regulatory reform, sector restructuring, market liberalization. It draws attention to the difficulty in generalizing about the magnitude and direction of impacts of any specific type of reform, without reference to specific country and sector conditions, as well as the detailed design of the reforms themselves.

viii. *Social Assessment* is a process that allows for a deepening of understanding of the potential social impacts of a proposed reform on different groups, and uses participation to determine the needs and priorities of stakeholder perspectives, including beneficiary perspectives, into *the design* of a reform/programme. Social assessment is a type of social analysis that is undertaken as part of project design thereby helping to make the project responsive to social development concerns and facilitates the formulation of specific social outcomes. It assists in identifying and reaching the vulnerable and the poor and ensures that the project objectives are acceptable to the intended beneficiaries. Development initiatives informed by social assessment are deemed to alleviate poverty, enhance inclusion and build ownership while minimizing and compensating for adverse social impacts on the vulnerable and the poor. *Social appraisal* is the due diligence that the Bank undertakes to understand key social issues and evaluate tradeoffs. *Social assessment* is the process used by the Borrowers to assess the likely impacts of projects on key stakeholders.

The WB *Social Analysis Sourcebook* presents a conceptual framework for social analysis and describes how its principles can be incorporated into project design, implementation, and monitoring and evaluation. It highlights five "entry-points", or dimensions of enquiry, for social scientists working to incorporate social dimensions into investments: (i) Social diversity and gender; (ii) Institutions, rules and behaviour; (iii) Stakeholders; (iv) Participation; and (v) Social risks (including,

¹⁷ Vivien Foster, Erwin R. Tiongson and Caterina Ruggeri Laderchi, **Utility Reforms**, World Bank (undated – Feb 2005?)
[http://lnweb18.worldbank.org/ESSD/sdvext.nsf/81ByDocName/PSIAandUtilityReformsbyVivienFosterErwinRTiongson/\\$FILE/Utility.pdf](http://lnweb18.worldbank.org/ESSD/sdvext.nsf/81ByDocName/PSIAandUtilityReformsbyVivienFosterErwinRTiongson/$FILE/Utility.pdf)

but not limited to, social safeguards).
<http://www.worldbank.org/wbi/sourcebook/sba108.htm>

ix. *World Bank Poverty Reduction Sourcebook* is a useful resource that has chapters on all the infrastructure sub-sectors; it sets out the arguments for the links between individual sectors and poverty reduction, and provides guidance on indicator setting for monitoring and evaluation. http://poverty.worldbank.org/files/4408_chap22.pdf

Other initiatives

- xi.** **TRL Overseas Roads Note 22 Inclusion of Social Benefits in Transport Planning** is a DFID funded research project undertaken by TRL which compares Cost-Benefit Analysis with the need to address social benefits. It recommended that social indicators for transport planning include: access to education, access and use of health services, greater access to income and marketing opportunities, improved transport and mobility services, enhanced social networks and improved social capital. The ORN 22 is accompanied by *TRL Social Benefits Software Tool* (2004) – which is a comprehensive appraisal system of quantitative and qualitative benefits and monetized and non-monetized benefits within a single analytical framework.

Uganda Water and Sanitation Indicators

The Government of Uganda (GoU) set a target that every Ugandan should have access to safe water and sanitation by the year 2015. Water and sanitation interventions are deemed to be of direct relevance to two of the five pillars of the Ugandan Poverty Eradication Action Plan:

- Pillar 3 – Actions which directly increase ability of the poor to raise their incomes
- Pillar 4 – Actions which directly improve the quality of life of the poor.

The programmes and activities pertaining to these pillars include provision of water and sanitation services for domestic, industrial and commercial use, and provision of water resources for rural electrification, and plan for modernisation of agriculture. Uganda determined that the most appropriate indicator for measuring access and usage at present is: % of population within 1.5 km (for rural) and 0.5km (for Urban) of an improved water source with a supply of at least 20 l per capita per day.

Uganda concluded that it is difficult to demonstrate causality between water and sanitation service improvements and poverty reduction, and thus does not attempt to do so but defined key indicators as follows: access; use; functionality, equity: reduction in time & distance; regularity, quantity of supply, equity of resource distribution, income, health, education, gender, social inclusion

Source: Ministry of Water, Lands and the Environment, *Water and Sanitation in Uganda, Measuring Performance for Improved Service Delivery* (2004).


Conclusion

There are clear trends emerging from this review of on-going initiatives related to impact assessment: that national ownership of data processes are key and that there is a move towards ex-ante indicators based on poverty, social and environmental assessment as well as economic (employment and wages, assets, productive resources), technical, efficiency, and financial indicators.

4. Towards a methodology for impact assessment in infrastructure

Emerging out of the analysis in section 2 and 3 and aimed at guiding impact assessment at different intervention levels, this section begins by presenting a framework for impact assessment in infrastructure to be considered by the Infrapoor discussion, defines key principles that should underpin investment, discusses different levels of indicators, and proposes impact channels to guide ex ante indicators; it concludes with some examples of ex ante indicators.

Framework for Impact Assessment in Infrastructure

	Levels of impact assessment >	<i>National policy</i>	<i>Sector Programmes</i>	<i>Projects</i>
IMPACT ASSESSMENT at National-Sectoral-Sub-national/local levels	Core elements: Analysis & assessment using poverty, social, environmental impact assessment to determine ex-ante indicators	Underpinned by: <ol style="list-style-type: none"> 1. Principles 2. Identification of Impact channels <ol style="list-style-type: none"> a. Equity in resource distribution b. Economic impacts c. Social impacts d. Governance impacts 3. Indicators 		
	Design of investment informed by ex-ante indicators			
	Tracking indicators during Implementation			
	Evaluation Ex-post			
Supported by:				
<ul style="list-style-type: none"> ✓ National Government Frameworks: PRSs, MDGs, MTEF, National Development Plans, HIPC, ✓ Aid modalities: budget support, SWAPs, projects ✓ Implemented by/with partners ✓ Supported by institutional arrangements & donor harmonization 				

Key Principles

Seven simple principles have emerged that should underpin InfraPoor discussion on Impact Assessment:

Principle 1 underscores the importance of placing poverty reduction *goals* for infrastructure investments centrally along side those of economic growth and efficiency.

Principle 2 necessitates the *participation of all stakeholders* in key processes [see Box 1.]

Principle 3 maintains that a *multi-dimensional definition of poverty* should be adopted (DAC PovRed Guidelines (2001, p. 39)

Principle 4 necessitates that investments are designed in combination with other sector initiatives maximize poverty reduction impacts and build assets for poor people

Principle 5 asserts that *key adverse impacts* that undermine PR should be identified, addressed and tracked e.g. loss of livelihoods, loss of assets - land, housing; resettlement

Principle 6 maintains that *local ownership* is essential in the identification of indicators e.g. who is the information for: identify the various stakeholders who require information, and identify what is their particular interest?

Principle 7 holds that *HIV/AIDS, gender and sustainable environment* are inextricably linked to infrastructure impacts and as such should be key cross-cutting issues that are supported by relevant analytical work e.g. poverty and social impact assessment, and environmental assessment.

Box 1. Stakeholder participation

A key principle is the need to identify and engage the participation of *all* stakeholders (stakeholder analysis)

- Identify stakeholders: typically stakeholders comprise customers (actual and potential), owners, service providers especially small scale providers who serve the poor, workers, communities affected by the investment, government.
- Assess the distributional benefits of the infrastructure on different stakeholder groups - the equity aspect of the investment.
- Identify and assess negative impacts on the different stakeholders; in balancing trade-offs, impact on poverty reduction should be a key variable e.g. loss of assets such as land or livelihoods

Choosing Indicators

In choosing indicators to measure impact, crucial questions are:

- Measuring the impact *of what* (project, programme, policy, regulation)
- Measuring impact *on what/on whom?*
- *When* to do impact assessment – ex-ante, during, after?
- *How* to measure?

When planning projects or programmes, a logical chain of results are planned and monitored

over the life of the development intervention as follows: inputs > outputs > outcomes > impacts.

More recently, greater attention is also being paid to the *processes* the underlie progress. Table 3 takes these five different areas of results and provides examples of indicators that relate to poverty reduction and the MDGs .

Table 3. Choosing Levels of Indicators

Indicators	Examples from Transport Sector	Examples from Uganda Watsan ¹⁸
Input	Comprises funding of, or investment in human, equipment & material resources for projects. E.g. funding of social assessment, investing in social mitigation measures for retrenched workers, funding resettlement action plan	Financial, physical, human and natural resources available
Process	Tracks changes in the quality and quantity of unit costs, access and coverage of the activities & services e.g. number & frequency of public buses serving poor urban neighborhoods, participation indicators such as: community meetings, various HIV/AIDS mitigation measures, private sector and other stakeholder consultations, accountability activities, etc.	Community water plans agreed, committees formed, contracts let, hygiene courses held
Outputs	Activities and services produced with the inputs e.g. Kilometers of rural roads built & maintained with labor-intensive methods; number of people provided HIV/AIDS education & counseling services; number of people employed, disaggregated by gender/other social grouping	Pit latrines constructed, increased numbers of water points provided, increased cost recovery
Outcome	Changes in behavior, skills & capacity as a result of the interventions e.g. Increased marketing of agricultural produce, increased safety for women, increased access to employment opportunities	Increased health outcomes/reduction in water borne diseases
Impact	Assesses changes in behavior over the medium & long run. Do these indicators show a measurable impact on social conditions and institutions? Are targeted social groups really able to improve their incomes and livelihoods as a direct result of the interventions? E.g. Increased number of service options, greater affordability and availability of access, especially for the poor, reduced incidence of malnutrition, increased enrolment in schools.	Average time to collect water reduced, poverty reduced, living conditions improved

Of these five levels of indicators, process, outcome and impact indicators have most relevance to poverty reduction.

¹⁸ Ministry of Water, Lands and the Environment, *Water and Sanitation in Uganda, Measuring Performance for Improved Service Delivery* (2004)

Impact Channels

Current international thinking and best practice promotes the identification of likely impact channels before designing a project. From an analysis of the projects supplied by donors, there are a number of similarities in the evaluation/ex post impact channels identified by different donors, the main ones being employment and wages, business development especially micro enterprises, and access to social/administrative services. To provide a framework to donors and partners in identifying indicators, Table 2 builds on these channels, and combined with the appraisal of evolving approaches to impact assessment (sections 2 & 3 above) identifies four fundamental transmission channels through which impact can be anticipated and tracked. It is envisaged that these four offer a framework for analysis that will be adapted depending on the level of investment (policy, sector, project) and the individual country context.

The four channels identified for the InfraPoor discussion are :

1. **Equity of resource distribution: access and affordability:** The central issue to be considered is how the investment will address issues of access and affordability to both service & connections, by low income/vulnerable households. Here it will be important to distinguish strategies to ensure access for poor areas and for the poorest households such as female/child/grandparent headed households, access for elderly and disabled.
2. **Economic impacts** relate to three distinct arenas that affect people's livelihoods:
 - a. **Impact on sustainable assets** to reduce vulnerability (e.g. more land under irrigation; loss of land to construction; profitable small scale enterprises as a result of improved transport connections);
 - b. **Employment and wages** impacts can be anticipated at two levels:
 - (i) permanent jobs created as a result of the investment that can be filled by poor/less skilled people: this will require complementary activities from other sectors to up-skill poor people – too often the jobs created benefit people already in the workforce and while this increases the incomes for these workers, it is not reducing poverty levels.
 - (ii) temporary jobs created through use of low technology and labour intensive methods.A caveat for both is that the jobs should be “decent” and comply with ILO labour standards and national labour and health and safety regulations.
 - c. **Impact on productive resources** such as intra household labour demands; increased use of newly created marketing opportunities; changes in household income and expenditure patterns and purchasing power.
3. **Social impacts** may relate to four areas:

- a. **health impacts** (e.g. increased use of health services in non-emergencies; viability of cold chain resulting from improved transport or electricity; impact on HIV/AIDS);
- b. **education impacts** (e.g. use of transport by poor children living in isolated areas; reduced water collection burden especially by girls; improved retention of education/ health personnel in remote areas because of improved transport);
- c. **social capital** (e.g. enhanced social networks amongst people which sustain them in difficult times),
- d. **increased use of political/administration systems and information.**

4. Governance impacts relate to three key areas:

- a. **greater transparency in procurement** e.g. contracts have incentives to reach poor areas/households; tendering bids having a positive weighting for pro-poor initiatives; transparent employment recruitment criteria and teams and conditions; cost of projects posted in public places;
- b. **responsive institutional structure** e.g. policy makers and providers are responsive to and respectful of poor people; redress procedures in place; recognition of cultural constraints to women's mobility;
- c. **participation by civil society** and representatives of vulnerable people in decision making.

Identification of indicators related to these impact channels will depend on the individual country context and it will be necessary to carry out an ex ante assessment that identifies likely poverty, social, economic and environment impacts that can be tracked over time. To illustrate how these impact channels may be adapted to strengthen poverty reduction impacts through various infrastructure investments and at different levels, Tables 4 provides a sample of economic indicators related to water policy, while Table 5 provide examples of access and affordability indicators related to the transport sector. Annex 1 provided more detailed examples of indicators for the water sector at each of three levels - policy, sector and project level and indicates their likely use as ex ante, implementation and evaluation indicators.

5. Conclusion

The DAC POVNET Task Team on Infrastructure is in the final stages of developing guiding principles for the bilateral donor community to enhance the contribution of infrastructure to poverty reduction and the achievement of the MDGs. This paper on impact assessment and guiding tools has been prepared for consideration at its workshop in Tokoyo 22-24th March 2005 and will contribute to the final draft of the guiding principles.

A review of donor infrastructure projects for this paper found that donors are carrying out ex-post/ evaluations which focus on economic rates of return; few are undertaking ex ante assessments and there is little participation by stakeholders in the process – except as

provides of information. Economic growth is the main goal/objective of infrastructure projects while there is little or no reference made to poverty reduction. To the extent to which pro-poor issues are addressed at all, poverty reduction measures are “add on” initiatives rather than be a key part of the design of the investment e.g. labour based methods of construction. Despite the functional and enabling role of infrastructure to the achievement of poverty reduction (rather than having a direct impact) complementary initiatives are not being planned and activated with other sector initiatives; adverse social impacts such as resettlement or loss of land are not explicitly addressed in the evaluations.

A review of a number of on-going initiatives related to impact assessment in infrastructure has identified clear trends in terms of the need for national ownership of data processes, and that there is a move towards identifying impact channels and ex-ante indicators based on poverty, social and environmental assessment as well as economic (employment and wages, assets, productive resources), technical, efficiency, and financial indicators.

In moving towards a methodology for impact assessment, it is proposed that Infrapoor consider a number of key principles that would underpin impact assessment, and agree broad impact channels.

The principles relate to the following:

- poverty reduction reflected at the goal level in infrastructure investments
- active participation of all stakeholders in key processes
- a multi-dimensional definition of poverty to be adopted of (not just economic)
- investments designed in combination with other sector initiatives to maximize poverty reduction impacts
- adverse social impacts to be addressed
- HIV/AIDS, gender and the environment as cross-cutting issues
- local ownership and involvement to be central in identifying indicators.

To assist donors and partners in identification of indicators four broad impact channels have been identified for the InfraPoor discussion:

1. Equity of resource distribution addressing issues of access and affordability
2. Economic impacts related to three distinct arenas that affect people’s livelihoods:
 - a. Impact on sustainable assets to reduce vulnerability
 - b. Employment and wages both permanent and temporary
 - c. Impact on productive resources
3. Social impacts related to four areas:
 - (i) health,
 - (ii) education,
 - (iii) social capital,
 - (iv) increased use of political/administration systems & information.
4. Governance impacts related to three key areas:
 - (i) greater transparency in procurement
 - (ii) responsive institutional structure

- (iii) participation by civil society and representatives of vulnerable people in decision making.

The identification of specific indicators for each of these impact channels requires that an ex ante assessment will need to be undertaken that examines likely poverty, social, economic and environmental issues, and tracks them over the life of the project and in ex post evaluations.

Table 4. Sample indicators for Economic Impact of Water Policy

	Indicators		Indicator level
	Key issues for the Impact Channel	Policy	
Poverty Impact Channels¹⁹			
Economic impact	<p>Impact on productive resources</p> <p>a) time savings can be allocated to productive purposes</p> <p>b) does improved water result in changes in household purchasing power & income (incl rural/urban divisions) e.g. water for cattle for nomads, multi-annual cropping or increased land for cash /subsistence crops resulting from irrigation, tea shops</p> <p>c) improved water reduces health expenditure</p> <p>Impact on Employment and wages</p> <p>Impact on Assets</p>	<p><i>Ex ante to be tracked during implementation & ex post</i></p> <p>a1) does the policy favour supplies closer to low income residential areas?</p> <p>a2) does the policy target the population who travel furthest/take account of seasonal variations?</p> <p>a3) does the policy address regional/ district differences in access?</p> <p>a4) does the policy include a “people per water point” density level to ensure reduced queuing/time?</p> <p><i>Ex ante to be tracked during implementation & ex post</i></p> <p>b1) does the policy prioritise the competing sectors on a cost effectiveness basis</p> <p>b2) does the policy support growth in livelihood activities e.g. food security through greater quantity & variety of crops resulting from irrigation?</p> <p>b3) is the policy supported by an inter-sectoral approach e.g. agricultural extension support, micro credit</p> <p>b4) does the policy support extension & maintenance in informal (urban) settlements?</p> <p><i>Ex ante to be tracked during implementation & ex post</i></p> <p>c1) does the policy integrate water, environmental sanitation & hygiene education?</p> <p>c2) does the policy prioritise access to “safe” water supply/school sanitation?</p> <p>c3) is there policy cohesion with other key sectors e.g. health, HIV/AIDS, urban development</p> <p><i>Ex ante to be tracked during implementation & ex post</i></p> <p>d 1) Will the technology lead to maximization of employment e.g. use of small scale contractors, use of labour intensive methods</p> <p>d2) Is compliance with national labour laws a criteria for contractor registration?</p> <p>e1) In irrigation investments, will there be a pro-poor bias?</p>	<p>Outcome</p> <p>Outcome</p> <p>Outcome</p> <p>Outcome</p> <p>Output</p> <p>Impact</p> <p>Process</p> <p>Process</p> <p>Process</p> <p>Process</p> <p>Output</p> <p>Process</p> <p>Process</p> <p>Output</p> <p>Process</p> <p>Process/impact</p>
Social Impacts			
Governance			

¹⁹ The impact channels have been adapted for the water sector and thus include an additional channel on quality of service

Table 5. Sample indicators for Access and Affordability Impacts of Transport Policy

Poverty Impact Channels	Key issues for the Impact Channel	Sector	Indicator level
	<p>Overarching issues for consideration</p> <ul style="list-style-type: none"> Is transport the answer or should other infrastructure services be relocated to distant services (water supply, irrigation, energy) - accessibility planning? Do sector plans explicitly recognise the transport needs of poor people & poor areas? 		
Access & Affordability	<p>a) Will the transport investment result in increased access and opportunities for the poor/poor areas?</p> <p>b) What will be the impact on different stakeholders?</p> <p>c) need for existence and affordability of transport services</p>	<p><i>Ex ante indicators that should be tracked during implementation & ex post</i></p> <p>a1) How does the sector prioritise investments e.g. network approaches, basic access/asset management to maximize coverage of rural roads/optimize condition of primary network</p> <p>a2) Has the sector set a target for access e.g. access to all-season road by rural population (living within 2 kms/20 minutes walk)</p> <p>a 3) Does the investment provide for complementary facilities e.g. linking feeder roads to national roads/in catchment of railway stations/ rivers, non-transport interventions?</p> <p>a 4) Are there complementary sub-sectoral programmes to extend benefits to the poor e.g. development of transport services through building capacity of small scale providers, cross subsidies to extend services to low-income urban areas, support to non-motorised transport, access to credits</p> <p>a 5) Are there complementary inter-sectoral programmes to raise PR impact e.g. agricultural extension, health/education investments?</p> <p><i>Ex ante</i></p> <p>b 1) Has there been an appraisal of stakeholder interests and the likely winners and losers e.g. transport owners/ providers, merchants who will have reduced travel costs, rural farmers who will have means to access new markets or who might lose land, loss of environmental resources of the poor (logging/poaching)?</p> <p><i>Implementation and ex-post</i></p> <p>b 2) What is the access of the poor/women as a proportion of all users?</p> <p>b3) Attendance at health centres for non emergency treatment?</p> <p><i>Ex post</i></p> <p>c) number of trips outside village per annum/ per cent of income spent on transport</p>	<p>Output</p> <p>Outcome</p> <p>Output</p> <p>Process</p> <p>Process</p> <p>Process</p> <p>Process</p> <p>Outcome</p> <p>Outcome</p> <p>Outcome</p>

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