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POVERTY RELEVANCE OF INFRASTRUCTURE PROJECTS AND APPROACHES OF DONORS

REPORT PRESENTED AT THE BERLIN WORKSHOP AS BACKGROUND DOCUMENT

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1. INTRODUCTION

1.1 PURPOSE OF THE REPORT

The report presents an analysis and synthesis of donors' policies and approaches on making economic infrastructure investments pro-poor. It summarises donors' experiences as presented during the first InfraPoor workshop and as reflected in the two questionnaires and in follow-up research.

The report assesses and synthesises donors' approaches and experiences on the following issues:

- Linking economic infrastructure and poverty reduction, covering general and sector-specific policies and approaches as well as how crosscutting issues such as service delivery, decentralisation and governance are addressed. It explores the similarities and differences between donor policies and presents a preliminary synthesis of building blocks for future policy guidance.
- The analytical methods used for poverty impact measurement by the donors as identified in the answers to the first DAC questionnaire. The report presents the elements of a "template", based on these methods, for the ex-ante assessment and monitoring of poverty reduction impact.
- Key sector issues as provided in the answers to the DAC questionnaires, and as documented in the project examples.

Relevant good practice examples as given by the donors are included in the report.

1.2 The need for economic infrastructure for pro-poor growth – findings of the 1st workshop

Infrastructure's main contribution is increasing the productivity of the poor, thus contributing to income growth of the poor. Infrastructure is an essential component of strategies for poverty reduction. However, linkages between infrastructure and poverty reduction are generally not direct and synergistic investments are required to improve the viability, impact and sustainability of infrastructure investments (especially to promote productive activities for economic growth that increase the income of users and beneficiaries of services). Sector-integrated and area-based approaches are required, entailing sector-level and cross-sector dialogue and coordination. Better baseline data and information, and appropriate indicators, are required to assess the impact of infrastructure investments on poverty reduction. Attribution of impact is not easy, but better measurement and identification of linkages are needed. Local ownership and participation, particularly in the design and maintenance of local transport, energy, water and irrigation infrastructure, are essential for targeting the poor and ensuring sustainability. Other key issues that need to be addressed are fiscal space, financial viability and cost recovery.

70% of infrastructure investment in developing countries in the 1990s was financed by national governments, 25% from the private sector. In spite of the recognised importance of infrastructure to poverty reduction and strong commitments of bilateral and multilateral donors to reducing poverty, ODA accounted for 5%. Bilateral ODA commitments to infrastructure declined over the 1990s and multilateral donors did not compensate for the shortfall. Transport is the leading sector, followed by energy and water, with a recent shift to roads, water and sanitation. Most ODA went to Asia (59%) and a fraction to Africa (17%).

2. DONORS' POLICIES AND STRATEGIES

2.1 SIMILARITIES AND DIFFERENCES IN DONORS' POLICIES AND APPROACHES ON INFRASTRUCTURE AND POVERTY REDUCTION

2.1.1 Linking infrastructure and poverty reduction

Most donors support the relevance of infrastructure to poverty reduction. However, the rationale for the relevance of infrastructure and the nature and precision of the links made between infrastructure and poverty reduction vary significantly between donors.

- For some donors the link is through growth (e.g. Australia, France, Japan, Spain, Switzerland). For example, Japan states that infrastructure development contributes to growth (variously economic growth or sustainable growth) and thus to poverty reduction. The provision of economic and social infrastructure fits within the growth pillar of AusAid's poverty strategy. Although infrastructure is not an explicit focus of AusAid's investment decisions, it is deemed fundamental to poverty reduction and sustainable development, providing access to needed resources and markets, and improving both agricultural and urban productivity. For Spain and Switzerland, support for infrastructure fits within a larger strategy of the promotion of the private sector and a market-oriented economy.
- The US's strategy is evolving. At present a few USAID operating units specifically address poverty in their strategic objectives. USAID has a particular focus on post-conflict and post-disaster reconstruction, in which context infrastructure is argued to make a direct contribution to poverty reduction. Moreover, the US clearly acknowledges the importance of infrastructure investment to other objectives such as agricultural development and industrial production.
- Germany makes an explicit link between the expansion of social and economic infrastructure and pro-poor economic growth, and notes that a determining factor of such growth is the efficient and sustainable provision of energy, transport and communication services.
- For the EC, no access to infrastructure is part of the poverty problem, and efficient transport systems are essential to economic and social development and to access to basic social services.
- Some donors, such as Ireland, justify infrastructure in terms of its direct contribution to improved livelihoods, for example by linking infrastructure maintenance with the creation of income-generating and employment opportunities..
- Other donors make more multidimensional, and more evidence-based, connections between infrastructure development and poverty reduction. For example, UK policy recognises the need to link national (and cross-border) infrastructure to the provision of local services for poor people, and argues that more attention to accountability, capacity-building and the framework environment is needed in order for infrastructure to contribute to poverty reduction. Swedish policy also supports the strengthening of the links between infrastructure and poverty reduction, but stresses the importance of infrastructure systems with strong attention to access and affordability of infrastructure services to the poor. Ireland and Switzerland argue that infrastructure investments alone do not directly lead to poverty reduction, and that complementary interventions in social or other productive sectors (agriculture, private sector) are needed to increase the impact on the poor. Ireland, like Australia, focuses on institutional and regulatory reform at national level as a first step to infrastructure investment, as the environment must be appropriate for the investment to succeed.

There is no simple or direct connection between the improvement of economic infrastructure and poverty reduction; other interventions and a broader approach are required to ensure that infrastructure development contributes to pro-poor growth and poverty reduction. The lack of consensus on the chains linking infrastructure to poverty reduction makes it more difficult to argue why infrastructure should be supported.

2.1.2 Defining poverty and poverty reduction

Poverty and poverty reduction are defined by donors in a number of ways. Most donors accept that poverty is multi-dimensional, but, explicitly or implicitly, identify various dimensions. A number of donors mention the World Bank's approach as expressed in the Poverty and Social Impact Analysis tool (PSIA), which identifies income and non-income measures of welfare and poverty. The income dimension of welfare has been the typical focus of poverty and distributional analyses, but non-income dimensions of welfare and poverty – such as human development and social development indicators addressing risk, vulnerability and social capital – are now being given closer attention, most notably through the Millennium Development Goals.

- France, which outlined its approach in a 2000 Briefing Note on the Reduction of Poverty and Inequality, identifies three different forms of poverty (income, quality of life, capacities) and argues for recasting methodological structures around three strategic axes: offer of economic opportunities, support for empowerment, and reinforcement of material safety.
- The EC's definition of poverty rests not just on income but on vulnerability and such factors as food, water, education, health, land, employment, credit, information, political involvement, services and infrastructure. Similarly, Sweden identifies various dimensions as development objectives (health, income, environment, household and macro-level economic development, democracy and governance, security).
- For Sweden, lack of power and choice and lack of material resources form the essence of poverty.
- For Belgium poverty reduction is a matter of redistribution and empowerment, in short a matter of rights. Attention to inequality as well as poverty is included in the country poverty profiles produced by Japan, and equal distribution of outcomes is mentioned as part of JICA's goals.
- A few donors, such as Japan, distinguish between chronic or structural poverty and transient or conjunctural poverty, but this important distinction is relatively little discussed in the donor literature and deserves more attention.
- Conflict resolution and crisis prevention are identified by a number of donors (Austria, Germany, UK) as important elements of poverty reduction.

Clear definitions of poverty are essential in enabling the various impacts of infrastructure on poverty reduction to be measured at appropriate levels and for different groups of the poor.

2.1.3 Links between MDGs and infrastructure

While many donors take the MDGs into account at some level in their development support, there are significant variations in the importance and relevance of MDGs in donors' strategies on infrastructure and poverty reduction. Only a few take the MDGs into account in their sector budget allocations or infrastructure support frameworks.

- Some donors (Austria, Belgium, Ireland, Japan, UK) give considerable importance to the MDGs in their overarching policy frameworks or development priorities. Austria bases its sectors of development assistance on the MDGs. Ireland notes that the MDGs provide a valuable reference point for development cooperation, which should be addressed in all proposals. Belgium considers the MDGs to be an important element of project goals.
- For others (Australia, Germany, Sweden) the MDGs are important but do not provide the main point of reference, either because their approach to poverty is broader than the MDGs and/or because the MDGs do not include indicators relating to infrastructure. Germany's approach, for example, is broader, including democratisation, good governance and crisis/conflict prevention. The main challenge for Germany is to design economic infrastructure projects that contribute to quantitative measurable social (MDG) impact at country level. Sweden too makes a link between the MDGs and PRSPs, which should be strengthened to include infrastructure, thus supporting

links between infrastructure and the MDGs. Australia argues that the MDGs help maintain attention on the importance of global development efforts, but does not use them as benchmarks as their use in individual countries can distort the sectoral allocations of budgets and development assistance.

- Other countries take the MDGs into account, but not within the specific framework of infrastructure support. For example, France takes them into account in country programming, but sector support frameworks do not currently have poverty indicators (work is currently being done on sector indicators).
- For the UK, the question is not merely about the linkages between infrastructure and the MDGs, but how can infrastructure services support other sectors to achieve the MDGs? This is particularly important for transport infrastructure, where the contribution is more indirect. The US too views infrastructure as one of several “precursor interventions” that are necessary to achieve the MDGs.
- For other donors, the MDGs have led to the launch of specific sector initiatives, such as the EU Energy Initiative and the EU Water Initiative and Fund, which is a specific contribution to the MDG goal of access to drinking water and basic sanitation.

Some donors (Germany, Japan, Ireland) have identified more precisely how infrastructure contributes to the MDGs. Germany argues that the contribution of infrastructure to the MDGs can be achieved through target-group-oriented interventions (eg rural roads) or more indirectly through interventions aimed at pro-poor growth (eg railway lines), but the latter type of interventions require adequate pro-poor policies and measures. Japan makes a distinction between network-type and local-type infrastructure, and direct and indirect contributions, and identifies a number of direct and indirect contributions.

Contribution of infrastructure to the MDGs

Transport: link between rural roads and market activities and projects to increase agricultural productivity. Indirect contribution by promoting access to education (MDG-2) and health (MDG-5) and stimulating development of private sector activities and providing employment (MDG-16).

ICTs: indirect contribution to a number of MDGs through supporting improved information, service delivery and private sector activities.

Energy: links with education (MDG-2) and health sector as well as resource protection and environment/climate protection. Strong link to productive sectors.

Water: direct links to health (e.g. to MDG-4 reduction of child mortality), reducing labour in water carrying by women and children (MDG-3) and safe drinking water (MDG-7). Indirect link to education. Contribution to employment (MDG-16).

Irrigation: can have direct and indirect impacts on poverty, eg through addressing distributional issues, such as access to resources (land tenure), regulatory frameworks (land use, environmental regulations etc), promotion of community and private sector development. Can contribute to MDG-1, eradication of extreme hunger and poverty through increased food production.

Germany's MDG Screening Tool enables projects to be connected to MDG indicators and targets - see box in section 3.2.

2.1.4 Links with poverty reduction strategies of partner countries

National poverty reduction strategies are, like the MDGs, important points of reference for many donors, particularly country Poverty Reduction Strategies (PRS) where these exist. However, not all donors base their country or sector strategies on PRS.

- PRS are an important point of reference for the country and sector strategies of donors such as Australia, Germany, the EC, Ireland, Japan, Sweden and the UK. AusAID planning and strategy has focused on being responsive to partner government priorities, within their own poverty reduction frameworks (PRS). For Germany, sector strategies and PRS of partner countries are important points of reference, particularly for energy and transport interventions. For example, the

Ghana PRS is suggesting investments in specific areas under a transport network approach linked with agricultural development, and such area targeting is being followed in a KfW project. For the EC, coherence with the PRS is important for country and focal sector strategies (in ACP region), and EC programming guidelines for the transport sector require an assessment of the extent to which national transport policies and strategies respond to PRSP objectives and actions.

- A few donors (Australia and Sweden) do not take the PRS alone into account when forming investment decisions. They try to integrate their analysis with the PRS, but when there is a divergence, their own country analysis takes precedence. In Sweden's case, the Country Strategy Process (CSP) has a poverty focus, and the PRS is used as an input. However, if the PRS does not align with Sweden's analysis of priorities, then preference is given to the CSP.
- For some countries (France, US) national PRS are not the main reference point. In France's case, projects are supported that fit into national sector policies, although a more integrated approach is being developed. The sector policy approach raises the issue of the connection between national sector policies and the national poverty reduction or pro-poor growth strategy.

The need to reinforce the treatment of infrastructure in PRS is identified by a number of donors as essential to provide a more robust framework for linking infrastructure and poverty reduction in partner countries and to attract ODA. A few initiatives are being taken.

- Ireland notes weaknesses in terms of infrastructure in PRS (e.g. absence of water and sanitation, prioritisation of roads rehabilitation rather than maintenance, mismatch between goals and expenditure). Japan argues that the current PRS process takes insufficient account of economic sectors/growth. Sweden is also concerned with strengthening infrastructure in national PRS.
- To overcome these weaknesses, a number of initiatives are being taken. EC and EU bilateral support to the Sub-Saharan Africa Transport Policy Program is helping a number of African countries to align their transport strategies with national poverty reduction strategies (see box below). Another approach is being taken by the EU Energy Initiative which brings together national governments, the private sector and civil society to integrate the importance of energy into national development strategies to achieve poverty alleviation. At country level, Japan has insisted on incorporating sustainable growth in PRS Consultative Group meetings and other occasions. For example in Vietnam a component on large-scale infrastructure has been added to the CPRGS.
- Recent UK experiences suggest that strategic links between infrastructure development and poverty reduction are better made at district level, where it is argued to be easier to achieve integrated and more sustainable approaches. Ireland's approach is similar, with support to area-based programmes within the framework of country strategies, which are linked to national poverty reduction strategies.
- The UK also argues, on the basis of a recent assessment in Nepal of the contribution of infrastructure services to the PRS, that, as infrastructure is an entry point in many areas (agricultural growth, social inclusion, reduction in maternal mortality, etc), infrastructure investments must not be viewed in isolation from other sector and cross-sector policies. This complete view is needed to achieve PRS objectives, as well as the MDGs.

Anchoring transport strategies in poverty reduction in sub-Saharan African countries

The Sub-Saharan Africa Transport Policy Program (SSATP) is a multi-donor funded programme, supported by the EC, a number of EU bilateral donors and the World Bank. In 2003 it launched a participatory process by which national stakeholders (public, private and civil society) review the links between their national transport and poverty reduction strategies and formulate an action plan to adapt policies and strategies so that the contribution of the transport sector to poverty reduction is improved. The Poverty Reduction-Transport Strategy Review Process (PRTSR) was piloted by three countries in 2003, and is being implemented by a further 13 countries in 2004. More countries will become involved in 2005.

2.1.5 Strategies to ensure that infrastructure contributes to poverty reduction

Donor strategies vary, in their balance between sector and territorial approaches and in the extent to which there is explicit account of poverty reduction.

- Some (e.g. France) take an essentially **sector approach**, whereby projects are supported if they fit into national sector policies (which may or more not be poverty-focused), although a more integrated approach to sector programme support is being developed by AFD. Japan's approach is sector-focused, but with regional variations to respond to regional priorities in terms of economic growth.
- Most donor strategies **combine geographical and sector approaches**. Some (e.g. EC, Germany) support "focal sectors" or areas of intervention within the framework of country strategies, while others (e.g. Austria) target specific sectors within selected poor areas of key regions.
- Other donors take a primarily **country approach**, elaborating demand-led, multi-sector approaches, often targeting decentralised levels through area-based or district-based programmes with a poverty reduction focus (Belgium, Ireland, UK).
- Some donors (e.g. Switzerland) support infrastructure projects with a primarily **geographical focus**, investing in national and regional infrastructure projects but without a specific strategy to enhance the poverty reduction impact. Switzerland makes contributions, for example, to infrastructure funds in Africa.

Many donors base their infrastructure strategies not only on country or sector priorities, but additionally on other principles or approaches.

- Some donors prioritise particular types of **territory**. France's main focus is on urban infrastructure, although its spatial targeting includes rural centres, poor peri-urban areas, small towns and disadvantaged areas in general. Germany, on the other hand, considers that the development of social and economic infrastructure in rural regions is of particular importance because of the overall proportion of people, and proportion of the poor, living in rural areas especially in countries where agriculture has high share of GDP. A similar argument is expressed by the UK in the context of its country strategy for Nepal, where rural districts are targeted "as the poorest live mostly in remote rural areas".
- Other donors do not prioritise particular types of territory, but rather target support at areas with **high levels of poverty**. Japan's regional approach aims to ensure that project benefits reach impoverished regions and populations.
- A number of donors focus support on areas of intervention that address **key "constraining" or "enabling" factors** in the provision of sustainable and affordable infrastructure services. Germany, for instance, supports microfinance, pro-poor economic frameworks, democratisation, crisis prevention and environmental protection. Ireland emphasises sustainable financing and the use of pro-poor subsidies, and provides active support for outsourcing to the private sector. France supports the provision of basic services through improvements in, among others, service delivery, the capacity of public service providers, private sector involvement (market liberalisation), greater competition and sustainable management. Market liberalisation is also a strong approach of the USA. Cost-recovery is an important element for a number of donors (France, Germany in the water sector). Decentralisation is a key element in the support provided by a number of donors (e.g. the UK, France and Ireland).
- In some cases, for example in a number of country programmes supported by the UK, there is no *a priori* targeting of specific sectors and areas of intervention; rather infrastructure support is embedded in an **integrated sustainable livelihood approach** at district level, and is thus shaped according to local needs and the specific local situation with a strong poverty focus.

2.1.7 Prioritisation of infrastructure and support to infrastructure sectors

In contradiction to the stated importance of infrastructure to poverty reduction, bilateral and multilateral ODA commitments for infrastructure overall have declined, both in absolute terms and as a percentage of total commitments.¹ Between 1996 and 2002, bilateral ODA commitments for infrastructure nearly halved (from US\$ 15 billion to US\$ 8 billion). Transport has remained the leading sector and has increased its share. Allocations for energy and ICT have decreased, while those for water and sanitation have increased. Asia is the most important recipient region of bilateral ODA commitments for infrastructure. Africa receives the least.

This global picture hides considerable variation in trends between sectors and donors:

- Investments in transport by the EC, Japan, Belgium, the Netherlands, Sweden, Switzerland and the UK have remained relatively steady over time, but have been reduced – in some cases sharply – by France, Germany, Norway and the US.
- Investments in ICT have been relatively small, and have declined over time, in particular by Canada, Germany, France, Italy, Japan and the US.
- Investments in the energy sector have varied over time, declining in general with the exception of the EC, which changed from grants in 2001-2 and disbursed 2/3 of its total in two years in loans, and the Netherlands. No particular trend towards renewables is discernable.
- Water is a steady or growing sector for most donors. Large supply projects are the preference of a number of donors (Austria, the EC, France, Germany, Japan, the US), although many others support a wider range of system types and uses (Canada, Netherlands, Norway, Spain, Switzerland, the UK).
- Investments in irrigation have been low and somewhat sporadic or erratic over time. Two donors have pulled out of this sector (Switzerland, US).

Most donors have **focal sectors**, based generally on policy objectives and considerations of comparative advantage. In a table overleaf the priority allocated by donors to particular infrastructure sectors within their infrastructure portfolios, both in terms of stated strategy and actual investments, is summarised, based on responses of donors to the DAC questionnaires and reporting on ODA commitments. Annex 1 contains tables presenting donor sectoral investment priorities, covering investments to the five sectors and to rural and urban development.

- Transport has very high priority in the sector investments of the EC and Japan. Japan contributes 64% of the total investment in the transport sector, the great majority to Asia. The EC committed 5 billion Euro to the transport sector in the ACP, TACIS, ALA, MEDA and CARDS regions in the period 1995-2001, over 75% allocated to ACP countries. 65% of EC investment in infrastructure is allocated to transport, 88% to roads. Other donors placing strategic and/or investment priority on transport include Austria (road and rail), France (all modes), Ireland (rural roads), Germany (labour-based road construction and maintenance, railways, water), Spain, Switzerland and UK (mainly roads).
- The ICT sector is generally allocated low priority by most donors, except for Canada (although much reduced since 1992). Donors that have invested in this sector, but all to a declining extent, include France, Italy, Spain and Sweden. Norway has allocated little investment to the ICT sector, but has a specific strategy on ICT in development. Greece indicates support for ICT projects.
- The energy sector forms a significant proportion of infrastructure investment by Italy (in South America) and by Norway (Sub-Saharan Africa and SE Asia), but both showing a decline over time. Many other donors give some strategic or investment priority to the energy sector: Australia, Austria, Canada, the EC, France, Germany (renewable energies), Japan (electric power

¹ Hesselbarth, S. Donor Practices and the Development of Bilateral Donor's Infrastructure Portfolio. Contribution to 1st DAC InfraPoor workshop, March 29 2004, Paris.

generation), Spain, Switzerland (electricity generation and transmission), UK and US. Most support is for power generation and transmission, little is for household energy. With the launch of the EU Energy Initiative in 2002, and the UK's strategy *Energy for the Poor: Underpinning the MDGs*, the contribution of energy to poverty reduction has been given a new strategic importance by a number of donors.

- Water and sanitation is given high priority in the investment portfolios of a number of donors: Austria, Belgium, France, Germany, Italy, Netherlands, Sweden, Switzerland and the US. The sector is additionally given high strategic priority by the UK, Ireland and the EC, particularly since the launch of the EU Water Initiative and Fund in 2002 as a contribution to achieving the MDGs.
- Irrigation is given low or no investment priority, although France, Greece and Japan indicate that they allocate it some strategic priority, for example – in the case of France – within the context of its rural development and agro-industry strategy.

Figure 1: Donor priorities in infrastructure sectors

Donor	Transport	ICT	Energy	Water and sanitation	Irrigation
Australia	2		2	2	
Austria	H	L	3 H	3 H	L
Belgium	H	S	S	3 H	L
Canada	S	H	H	S	L
EC	3 VH	1 L	3 S	3 S	1 L
France	H	S	H	2 H	2 L
Germany	2 H	L	2 H	3 H	L
Greece	2	2		2	2
Ireland	3			3	
Italy	L	L	VH	H	L
Japan	3 VH	1 L	3 H	2 S	2 L
Norway	S	2 L	VH	2 L	N
Netherlands	H	L	S	H	L
Spain	3 H	S	3 H	2 S	L
Sweden	2 S	1 S	2 H	1 H	N
Switzerland	H	L	2 S	2 H	L
UK	2 H	L	3 H	3 S	L
US	2 L	1 L	3 H	3 H	1 L

Note:

Strategic priority: 3 high priority, 2 some priority, 1 low priority

Investment priority: VH = very high, H = high, S = some, L = low, N = none

2.2 CROSS-CUTTING ISSUES

An integrated approach to infrastructure investments that includes cross-cutting issues is found by donor evaluations to have the most profound impact on poverty reduction. For example, institutional strengthening, private sector involvement where possible, education and health (for example hygiene education in the case of water projects), are all factors that must be considered and woven into the strategy. Lessons learned from Japan's *Thematic Evaluation of JICA's Cooperation on Water and Poverty in Africa*, were that an integrated approach addressing cross-sectoral issues such as health, education, and income generation, underscored by community participation, is necessary to achieve poverty reduction. A KfW discussion paper on *Transport Infrastructure* also argues that an adequate stock of complementary resources, such as capital or adequately trained workers, and a minimum of legal certainty and economic and political stability must exist for infrastructure improvements to stimulate economic growth.

2.2.1 Sustained service delivery to the poor, including targeting and affordability

Targeting the poor

A distinction is noted by some donors (Germany, Japan, UK) between local infrastructure and network-type infrastructure concerning targeting of the poor. Local infrastructure interventions can be more easily targeted at particular zones and population groups than interventions supporting network-type infrastructure.

A number of donors (Germany, Ireland, UK, US) target the poor on a geographical basis, using income/poverty indicators and other indices to identify areas with high concentrations of poverty and poor people. The UK targets its support primarily by a variable balance of geography, Human Development Index (HDI) ranking and the extent to which an area is affected by conflict. In the sector of water and sanitation, the US targets on the basis of geography with some attention to income levels, while Germany uses national or sub-national statistics on income and health status. In the field of energy, Japan uses nationwide poverty assessments.

There are a number of difficulties with this approach. Japan points out that targeting is difficult because of lack of data, such as household income, and Germany also notes that the poor are often “invisible” in statistics and that profound country knowledge is needed to successfully identify and target the poorest groups. In this instance, NGOs can be a voice of the “unheard”. The UK notes that the extent to which the poor can be successfully targeted depends on the nature of infrastructure and on the skills, capacity and will of local NGOs and social mobilisers.

For many donors the purpose is to target the poorest population groups and areas. Japan, however, targets its support on the segment of the poor that has a high potential to utilise the economic opportunities created through infrastructure improvement. For example, in irrigation, Japan targets support at groups or associations of farmers who are highly motivated to participate in project implementation and maintenance activities. This raises an important issue concerning geographical targeting, for it is clear that this alone does not ensure that the poorest people in an area will benefit from infrastructure improvement. The 1998 study of Irish Aid Road Projects, which supported labour-based construction of rural roads in poor districts in a number of African countries, showed that the benefits accrued mainly to traders, vehicle owners, business people and some farmers, while the main direct benefit to the poor was in terms of short-term wage labour. Poorer members of the community do not have the resources to grasp the longer-term economic opportunities created by improved access, although roads do provide greater access to social services and thereby contribute to improvements in the quality of people’s life.

In response to the need for more refined targeting, some donors combine geographical targeting with other measures to ensure that infrastructure improvements benefit the poor. To ensure that aid is focused on poverty alleviation, Austria selects projects based on the following criteria: selecting the poorest countries as priority; selecting particularly needy regions, provinces and districts within the partner countries and supporting the decentralisation process; orienting sectoral policy approaches towards activities from which the poor benefit directly; and selecting especially disadvantaged target groups. Ireland combines geographical targeting (of districts or areas that are predominantly poor) with such measures as wage targeting, attention to the distribution of employment, setting of quotas (e.g. of women in labour-based works), technical design standards, etc (see example of Irish project in Uganda in box below). Germany notes that the poor can also be targeted through special low cost products. UK experience, for example in Guyana, shows that the careful use of incentives, cross-subsidies and output-based measurement rather than inputs can ensure effective targeting of the poor.

Such approaches are relevant to network-type infrastructure. In water and sanitation, Switzerland's approach to targeting the poor is to focus on productive aspects of water and wastewater reuse (small-scale gardening, family irrigation, animal husbandry, urban agriculture) as well as adapted service levels, education about the possibilities of making savings, provision of temporary lifeline subsidies and clear tariff and subsidy policy from the government.

Poverty targeting in Kibaale District Area Based Programme, Uganda (IrishAid)

The objective was to improve the economic and social well-being of the rural population through sustainable improvement in access. The poverty targeting involved geographical criteria, wage targeting, attention to the distribution of employment, taking into account seasonality in timing of works, use of quotas for women in labour-based works, and spot improvement rather than full rehabilitation to extend the road network to the maximum number of people. While it took time to align the District Council's technical approach with the greater goal of maximising poverty reduction impacts, the outcomes were impressive, both technically and in terms of poverty reduction.

Japan points out that poor people's perspectives are diverse and this should be kept in mind in project design. Close attention is needed to the living conditions and needs of the people. France's evaluation of urban markets shows the need for attention to social and gender inequalities from the feasibility study onwards. Ireland also notes that the involvement of communities from the very beginning (at the feasibility stage, with the appointment of community representatives on committees or working groups) and the use of participatory approaches are effective ways of ensuring good targeting so that the needs of the poor are met in the design of interventions. This is particularly important where there are significant obstacles to reaching the poor, for example where the distribution of land and water rights make it difficult for the benefits of irrigation to reach those without such rights. Germany argues that detailed target group analysis and the explicit integration of project strategies in PRSPs are required to achieve effective targeting.

Addressing affordability and sustainability

The greatest challenge in ensuring sustained infrastructure services for the poor is striking the right balance between affordability and sustainability, in other words setting user contributions and charges at levels that are affordable by the poor while ensuring that sufficient revenue is generated to cover costs, particularly for maintenance. All donors insist on the need to achieve this balance. Getting the balance right is also an issue for in-kind contributions, for example of labour, which must be sufficient to achieve ownership but not so high as to disadvantage the poorest.

There is widespread recognition by donors that subsidies are required to ensure that services reach the poorest and remotest. As the US argues, "smart subsidies" can and should be employed to extend the reach of private sector finance and expand service delivery for the poor. However, as the UK points out, these need to be carefully managed so as not to be captured by the not-so-poor. Japan argues that subsidies should be supplied directly to the poor population in order to expand access without interfering with efficiency and sustainability of public utility services. However, targeting is not easy, although Japan suggests that the same criteria as social welfare programmes could be used. The US suggests that subsidies should be established and managed separately from the delivery of the service, eg through vouchers, tax credits, transfer payments, etc.

Appropriate use of the revenue raised from service provision is also required. For Australia two of the essential elements of providing sustainable services for the poor are cost recovery and good governance. The UK points out the important role of NGOs and user groups, with robust capacity building helping to ensure appropriate levels of affordability and good management of the revenue generated.

A number of donors place emphasis on improving the ability and willingness of users to pay for services as an essential component of sustainable infrastructure interventions. While subsidies are recognised as

necessary by a number of donors (for access and connection rather than consumption), improving the capacity of beneficiaries to pay is important, through incentives and additional support to increase their income. As Germany observes, the poor already pay a great deal, for example for energy or water, and the issue may be less how much is paid, than how the fee or charge is paid (eg a monthly bill cannot be afforded). Germany argues for the use of direct subsidies that favour the poor, covering connection fees and access to services and avoiding general consumption-oriented subsidies.

The use of complementary interventions to improve the viability and sustainability of infrastructure projects is the approach of a number of donors. France, for example, combines rural road improvements with support to commercial production and through a linked network approach, in the framework of its rural development and agro-industry strategy. GTZ's support to infrastructure development in the Tangail District of Bangladesh combined rural road maintenance with enhancing the attractiveness of central market places and creation of sustainable employment especially for destitute women. In the ICT sector, Grameen's Village Phone network relies on access to microcredit (to purchase a mobile phone) and the mobile network is built on the fibre optic cable network that had previously been installed alongside the railways, with the support of Norway.

Accessibility and affordability can be achieved, even in the ICT sector where investment costs can be high. The UK points to the success of Senegal's Telecentres, which are being set up by the country's telecommunications utility, Sonatel. These provide telephone, fax, email, internet and sometimes TV equipment, and there are also larger facilities providing photocopying, word-processing and printing. Sonatel installs equipment free of charge in the house of the village chief, who is then responsible for managing it. Between 1993 and 1996, the number of centres rose from 541 to 2934, and the resultant jobs from 1100 to 6000.

In the energy sector, access to decentralised systems/renewable energy/energy efficiency utilities (biogas digester, solar home systems, small hydropower in a community grid, improved stoves, etc) can only reach the poor if there are subsidies to cover the high connection costs. Tariffs should cover operation and maintenance costs which the poor should be able to cover as they spend traditionally much more on basic household energy than better off households do. Another subsidy option is temporary lifeline subsidies, as used by the Swiss in the Power Project in Tajikistan. In this example, the government agreed to finance a lifeline level of power consumption to each household for 10 years, making consumption affordable without jeopardising the financial viability of the utility. In terms of increasing the ability of users to pay for energy, Japan suggests that an effective approach can be to link energy provision with measures that support and encourage poor households to pay, through income-generating activities, education to appreciate the benefits and electrification of social facilities.

Tariff reform in the Guyana Water Sector Programme (GUYWASP)

Policy, legal and regulatory reforms of the water sector in Guyana are underway, as part of the PRS and with multi-donor support including that of DFID. A phased approach is enabling key issues, such as tariff reform, to be addressed in a systematic and targeted way. The process of harmonising tariffs from the two previous utilities is examining cross-subsidies through rising block tariffs and subsidised connection charges to ensure that a minimum service level is provided for the poor. One complexity is taking account of different types of service provision in the hinterland, with the possibility of separate tariffs for those communities, which will have discrete systems.

For water, cross-subsidies via block tariffs (the more water is used the higher the tariff) and water vouchers (where everyone pays the same tariff but the poor get water vouchers from the government, which can be cashed by the water company) are ways of ensuring that the poor can access water services, but, as Japan points out, any subsidies should be very selective and should operate to spread access as widely as possible and minimise waste. For domestic water supply, standpipe charging can be the solution. Ireland's preference is to subsidise the connection not the volume of water consumed, with the exception of ensuring a minimum amount to satisfy daily needs through the use of graduated tariffs. Cost recovery can be

improved through incentives to beneficiaries and improved level of sanitary awareness since this increases their sense of value of clean water. Involving the community in decisions on the choice of technology and on who should receive subsidised or free services (e.g. HIV sufferers, child-headed households) is the approach of Ireland, to ensure that maintenance costs are affordable and that the most needy are reached by improved water and sanitation services. As Ireland notes, the use of subsidies for sanitation is more complicated, and needs to be accompanied by a strong programme of hygiene education.

In the transport sector, a number of donors (Ireland, Germany, US) aim to optimise the use of local labour so as to improve the ability of poor households and local communities to pay, while at national level well-managed road funds – with fuel taxes set at appropriate rates – are an essential element of raising sufficient revenue. In general, affordability and sustainability can be improved by keeping costs as low as possible, through the appropriate design of infrastructure (avoiding unnecessarily high technical standards) so as to reduce costs and spread benefits more widely, and paying labourers at existing market rates.

2.2.2 Decentralisation, use of local resources and private sector participation

Decentralisation

For network-type infrastructure, the division of responsibilities between central and local governments in planning, construction, operation and maintenance is the main issue highlighted by many donors, exacerbated by lack of capacity at local government level, which is a major problem for all types of infrastructure. Japan highlights the gap between administrative and fiscal decentralisation, incomplete administrative decentralisation and legal system deficiencies as particular problems for infrastructure development, while the UK points to the lack of systems, incentives and willingness to make financial transfers to decentralised levels. Australia insists on the importance of good governance as a factor in effective decentralisation. As Ireland notes, local government typically has responsibility for providing water services and rural roads but often the finances and experienced engineers do not transfer to local level. In some cases the gap between central and local government is exacerbated by the failure of central Ministries to coordinate their national plans, for example between transport and agriculture. Development Cooperation Ireland is increasingly working with central government departments – Ministries responsible for infrastructure, National Planning and Finance (including those responsible for the PRSP) - to address the issues affecting local government. Dialogue on SWAPs and investment in Local Government Reform Programmes are important opportunities.

The limited technical capacity to build and maintain infrastructure at decentralised levels requires reliance on higher levels of sub-national government expertise and resources, according to the UK. The US notes a general problem of identifying sources of local funding and local authorities with decision-making power. Clear divisions of responsibility and links to district planning are essential, as well as a focus on economic growth not just service delivery, according to the UK's experience. Local capacity building at district level is vital. Switzerland's experience also highlights the need for support and coaching at local level. Innovative approaches include the C3 programme in Zambia and Uganda, where local/community infrastructure is planned, built and maintained through community-municipal partnerships.

C3 programme in Zambia and Uganda: community-municipal partnerships

The DFID-supported C3 programme enables local and community infrastructure to be planned, built and maintained through community-municipal partnerships. In Zambia this has successfully linked compounds to the main urban infrastructure networks. The C3 funds are held by the local government and run as a challenge fund to which community groups (often residents committees) can submit proposals. A number of transparency and accountability measures have supported improvements in the local governance of infrastructure investments.

Linking sectoral policies to territorial development and mediation between local actors and the state are highlighted as important lessons of France's experience in the water and irrigation sectors. Overcoming the

lack of capacity of local authorities requires that water and sanitation programmes are accompanied by clear regulations and policies, capacity-building for local officials and staff, and development of consumer organisations for project implementation and service quality, according to Switzerland.

Regulatory frameworks for water and irrigation are also highlighted by Germany, which notes that a key issue is how to establish and operate in a financially sustainable manner autonomous water supply agencies, and water associations for irrigation, which reflect the interests of the poor. For Japan, three problems concerning decentralisation and the provision of water, sanitation and irrigation services for the poor are: water rights, the scale of water supply entities and coverage of water associations, and privatisation. The US suggests that working with local communities and their representatives and maximising their involvement in decision-making and implementation are ways of overcoming some of the problems of lack of institutional capacity at national and sub-national levels to mobilise local expertise and funds.

Australia's support for decentralisation of water and sanitation programmes to local level

In the Gangtok and Shillong areas of India, AusAid has supported institutional capacity building and the development of a planning framework for the provision of water and sanitation services, to enable local government organisations to take over responsibility for the planning, implementation and maintenance of water and sanitation facilities and services. Community mobilisation is encouraged through participation in demonstration projects, and models are being developed for how local communities and urban institutions can work together to provide access for poor communities.

In the energy sector, a critical issue for Germany is how to establish and operate in a financially sustainable manner an autonomous electricity distribution agency that reflects the interests of the poor with appropriate choice of technology. For Japan, important issues concerning decentralisation and the energy sector are: decisions on and regulation of cross subsidies; elaboration of long-term plans and regulation; decisions on distribution centre locations; and tariff collection. For the US, key issues relate to lack of clarity between central and local government authorities on how to resolve issues of contract agreement, interpretation of contract clauses, etc. The US approach is to foster communication among the parties at meetings and to discuss roles and responsibilities of the various parties in the resolution of these issues.

In the transport sector, a critical issue highlighted by Japan is that decentralised administrations have little experience of planning, implementation and maintenance and maintenance budget allocations are far too small. Here too the division of roles between central and local governments is an important factor; the US experience in Afghanistan suggests that a form of matrix management may be appropriate. As Germany points out, a key issue for decentralisation of road infrastructure works is how to establish and operate in a financially sustainable manner a road construction and maintenance system at local government level, which involves NGOs and local communities in maintenance.

Use of local resources

Many donors pay attention to the use of local resources in infrastructure development, recognising that this is an essential element of sustainability. Efforts include the use of local labour and locally-made products, and raising and structuring local investment finance.

- **Local finance**

Given the critical insufficiency of financial resources for developing, rehabilitating and maintaining social and economic infrastructure not only at national and regional levels, but particularly at decentralised levels, most donors identify the raising of local finance as a major priority. As Switzerland notes, local funds must be guaranteed or a solution found within the central budget to make local authorities able to take independent decisions on infrastructure investments. Sweden's approach is to support public-private partnerships and the development of local capital markets in order to finance infrastructure investments,

while that of Australia is to strengthen local resource management through public expenditure review mechanisms. Innovative community-level financing initiatives are also being developed, with donor support. Some examples of good practice are presented in the boxes below.

Sweden's initiatives to raise local finance for infrastructure investments

In Uganda, Sida provided a guarantee for a series of promissory notes issued by MTN Uganda on the local capital market, the funds raised being used for the expansion of MTN Uganda's telephone network, with a special focus on rural areas. With the aid of the guarantee, MTN can find buyers and issue securities with a longer duration than would otherwise be possible on the Ugandan capital market. The emphasis of Sida's support is on the elimination of commercial risk. The guarantee does not cover interest payments, and is constructed in a way that Sida is also absolved from political risk, for example government intervention.

A new initiative is GuarantCo, a Private Infrastructure Development Group (PIDG) investment facility that promotes local currency provision of capital to viable infrastructure projects in low and lower middle income countries. GuarantCo's aim is to address weaknesses in local financial markets, such as transfer, convertibility and devaluation risks and the absence of long-term bank funding, and to act as a patient "market facilitator", helping to develop local infrastructure finance markets through a mix of financing and technical cooperation interventions. Currently in the process of being established, it aims to become operational in 2005, managed by a Swedish insurance entity.

Community Led Infrastructure Financing Facility

On the basis of extensive research of the "finance gap" for housing and infrastructure initiatives for the urban poor, DFID developed a proposal to establish an international finance facility to assist community-led urban development, which led to the establishment in December 2002 of the Community Led Infrastructure Financing Facility (CLIFF), supported by a number of donors including Sweden. Piloted in India, it provides bridging loans, guarantees, knowledge grants and technical assistance to communities to initiate medium-scale urban rehabilitation, including water and sanitation projects. This facilitates the scaling up of community-based projects, which is when the financing gap is most critical. The fund assists in the development of risk management and mitigation strategies for local groups taking on significant risk commitments. CLIFF draws on a combination of loans from financial institutions such as Citibank, grants from donors, guarantees and bridge funds.

Australia's support for economic reform in the Solomon Islands

As part of Australia's Regional Assistance Mission to the Solomon Islands (RAMSI) 17 advisers and in-line personnel have worked with the Government to regain control over income and expenditure. The support has enabled the Government to develop a credible 2004 budget, prepare quarterly budget reviews and a 2004 supplementary budget, improve revenue collection through better compliance and negotiate a deal with holders of government bonds. Work also focuses on strengthening accountability mechanisms including the Auditor General.

Local finance for transport infrastructure is a major issue in the context of decentralisation, which, as Japan points out, creates a greater problem of counterpart funds, especially for lower class roads and for maintenance. One specific issue is the scope of coverage of the road fund. While options exist to raise local resources (e.g. through local tax revenue, local vehicle or registration taxes and voluntary labour), action at national level is also required, including improvement of tax collection efficiency and review of criteria for allocating funding by central government. An overall review of the national tax system may be needed. At local level, community financing and management is also an option.

Road Funds

Many donors have supported the establishment of Roads Funds, which are managed by a Committee composed of Government, private sector and user representatives. Resources are raised through levies on users, in particular fuel tax but also vehicle license fees, toll charges and fines, and the revenue raised is dedicated to road management, in particular maintenance. Road Funds have had some success in stabilising road financing, improving works programming efficiency and encouraging the domestic contracting industry. Amongst a number of challenges are extending the resource base and adapting priorities, particularly to address the needs of roads outside the trunk road network.

- Local labour

Local labour can be used to reduce and spread the costs of infrastructure works and to promote local employment, skills and income generation, thus increasing the capacity of local people to pay for services. The use of labour-based methods of roads rehabilitation and maintenance and small-scale local contracting are supported by a number of donors (France, Ireland, Germany, Sweden), particularly in the context of rural roads. In addition to the employment effect, labour-based methods contribute to job creation, savings in foreign exchange, training of unskilled workers, strengthening the ownership of the roads constructed and knowledge transfer to the local population about maintaining the infrastructure investment. According to KfW, labour-based methods have been concentrated so far on rural road construction and maintenance and urban infrastructure projects. There is considerable potential for extending their use to other infrastructure works (e.g. irrigation), where appropriate. However, careful attention to wage rates is required (Germany's experience is that NGOs often overpay, destroying existing market rates) and to ensuring that the employment opportunities are fairly distributed and remunerated (e.g. between women and men) and reach those most in need. Ireland's use of labour-based methods in its Kibaale District Area-Based Programme in Uganda (previously mentioned under targeting the poor) is a successful example, showing that impressive technical results can go hand-in-hand with poverty reduction.

Labour-based methods in infrastructure works

The provision of paid employment (not food for work) in labour-intensive roads works in the Lesotho Highlands Development project, supported by Ireland, is regarded as one of the most effective poverty reduction strategies, providing direct benefits in income for the poor.

Labour-based construction and maintenance methods were applied to a road sector project in Laos, supported by Sweden. Equal opportunities were given to women and men and the offered wage was slightly above that for agricultural labour, with the main bulk of the work carried out in the dry season.

- Local products

Few donors refer specifically to the use of local products, although the few good practices in this area indicate important benefits of optimising the use of local products. An energy project supported by Germany in Tibet is a good example of decentralisation and use of local resources.

Rehabilitation of Small-Scale Hydropower Plants, Tibet (BMZ/GTZ)

The aim of this project was development of the employment and income situation of the local Tibetan population through rural electrification. A private sector operator concept was adopted, and the efficiency of the water board was enhanced. Sustainable service delivery was ensured through use of a local engineer in the rehabilitation, as well as exclusive use of locally manufactured turbines, generators, switches and control devices. Decentralisation involved handing administration of power plants to local villages and operation to local leaseholders. Sustainable financing is ensured through billing according to consumption in a manner comprehensible to all stakeholders and consumers and through promoting the productive use of electricity, for example by establishing financing schemes for the purchase of electrically-powered machines and providing technical upgrading in areas such as welding, wood processes and spinning. More than 95% of householders within the area are now connected to the power grid.

Maintenance issues

Insufficient finances and provision for maintenance is identified as a critical problem by most donors. This applies in all regions and all sectors. Prioritisation of maintenance is required, in policy and spending. Cost recovery must be improved, through appropriate tariffs, incentives and more efficient collection of charges.

Major problems identified in the road sector include the failure to realise the expected maintenance funding, insufficient maintenance capacity of executing agencies and poorly coordinated maintenance systems. Road funds and road management institutions are a solution, but are not yet fully functioning.

Japan also identifies the lack of budget for maintenance works by central and local governments as significant problems in the energy and irrigation sectors. In the energy sector, the most serious problem identified by Japan is the inability to provide stable power supply due to accidents resulting from insufficient budget for maintenance. Improvement of the financial structure of power companies and enhancement of institutional setting for operation and maintenance are two policies for improving this situation.

In addition to some of the solutions identified in sections above (local financing, use of local labour and products), the setting of appropriate standards can help to lower maintenance costs. In the roads sector, this might mean single carriageway gravel roads and spot improvement rather than full rehabilitation.

SmallTown and Multi-Village Water Supply Initiatives, Senegal (Belgium)

An effective system for the management and maintenance of wells by the beneficiary communities was designed and tested successfully. Well-user associations are created and organised, and receive technical and accounting training to ensure sustainability. Activities also include raising local people's awareness of water quality, and the communities are encouraged to implement health care and water purification actions.

Involvement of the private sector

While many donors accept that public provision is justifiable or even necessary, under some circumstances and given certain conditions, all are concerned to develop the private sector and involve them in infrastructure operations. The private sector is not homogeneous, and, as the UK points out, it covers a wide range of players; this should be born in mind when considering private sector development. Belgium promotes the involvement of the private sector, especially small and medium sized enterprises and micro-firms. The involvement of cooperatives and non-profit associations are supported by a number of donors as part of private sector development in infrastructure.

Donor strategies involve direct involvement of the private sector in infrastructure interventions, for example through outsourcing of road maintenance to small-scale private contractors or community cooperatives or associations, and support to the creation of an enabling environment for private sector growth. Many donors insist on the importance of the latter. Australia focuses on the larger goal of improved governance to create an enabling environment for growth. France's strategy for infrastructure and urban development stresses the involvement of international private groups and local private sector actors, combined with market liberalisation, and points out the need for new regulatory tools, durable models of the regional management of local services and methods of associating local actors and NGOs. In the energy sector, Germany notes that private sector involvement requires adequate frame conditions, which are country specific.

Japan's experience shows that the business environment must be commercially viable for the private sector, which means – for example - not setting tariffs at a lower level than the unit cost of production. Providing services to users with a low ability to pay can be achieved through cross-subsidies. Another approach is to guarantee monopolistic profit making in the early stage of an infrastructure operation.

Ireland actively supports outsourcing to the private sector, particularly in construction and public works contracting, but emphasizes that the role of private sector can and must be extended beyond this. However, private sector success in delivering services has been mixed. From Ireland's experiences, the most successful examples exhibit the following characteristics: involvement of the community in the design and management of the contract, often through NGOs; business administration as well as technical training for contractors; access to finance at affordable rates; contracts that maximise incentives for efficiency and that provide for proper regulation of contractors; transparent award and management of contracts; long term certainty of contract opportunities to encourage innovation (and investment); and a supportive environment from government, for example in the payment of outstanding bills and revising tariffs when

justified. France's evaluation of urban markets shows the need for a participatory approach with business owners.

Australia considers that there is a higher potential for private sector participation in the energy sector than in other sectors. Germany's project to rehabilitate Small-Scale Hydropower Plants in Tibet (see box above) is a good example of supporting private sector involvement, while others are presented in the box below.

Encouraging local private sector involvement in the energy sector

A German-supported project to construct biogas plants in Nepal provides funds to Nepalese firms to manufacture the plants, and enables farmers to be the owners and operators of the plants, thus building local capacity and contributing to the sustainability of the overall programme and its financing.

In South Africa, another German-supported government project to provide solar energy systems to 1.5 million poor households over a ten-year period involves a private concessionary in the distribution and operation of the systems. A subsidy is provided for the initial investment.

In Bangladesh, the US supports a rural electrification programme using the model of member-owned cooperatives, similar to the rural electric cooperatives that exist in the US. Organisational and operational structures are designed to secure accountability to stakeholders, and a village advisory service to communicate with local customers.

2.2.3 Governance and participation of the poor

Governance

A number of problems of governance and accountability are highlighted by donors. For the UK, equity and social inclusion are major problems as are corruption, vested interests, loss of power and lack of incentives. Political interests, and political nature of changes, can be a major obstacle, and the UK argues that a change of approach and attitude is needed, not just new legal and regulatory frameworks. For Japan the main governance problems are lack of financial and human resources, lack of appropriate institutional settings and lack of capacity for providing efficient services in operation and maintenance.

The lack of accountability between expenditure and quality/quantity of work completed is seen as the main problem by Ireland, which also argues that the private sector fails to perform because of a lack of capacity to regulate them in an accountable manner. As the US points out, in post-conflict countries (eg Afghanistan, Iraq) typical problems are lack of training and institutional capacity to manage complicated operations.

Institutional and regulatory reforms, as well as capacity building, are amongst the strategies followed by donors to improve governance and accountability. For Japan, accountability is addressed through supporting institutional reform and capacity building of executing and maintenance agencies, and the US similarly has programmes addressing corruption and regulatory reform at sector level. As Australia notes, good governance is open, accountable, equitable and responsive and a key theme of their strategy is to develop enabling environments for good governance at central, provincial and local government levels. Sweden's strategy is to focus on the reform of public enterprises, encouraging private sector participation. France notes a close link between governance and sustainability, and argues that institutional aspects are of major importance to both, including the supervision and management of facilities and local authority management. The UK is addressing low accountability through strengthened decentralisation, public auditing and donor harmonisation, and by integrating infrastructure as a key component of wider and longer-term reform. The building of strong community-based organisations that are able to hold service providers to account is also part of the solution.

At project level, Switzerland's approach is to undertake careful project appraisal to detect corruption and to establish clear formalisation of rules, unambiguous contract procedures and milestones to be met (to avoid reopening arguments during project implementation). Anti-corruption clauses are in all project agreements, and capacity-building support is provided for tendering.

In the transport sector, Germany identifies a number of governance problems: too little focus on maintenance; lack of commercial orientation; overstaffing; inefficient organisation of processes; and lack of long-range rational planning. A recent regional transport study in the Pacific carried out by Australia identified a larger range of governance issues: government involvement in commercial activity; poor infrastructure decisions; pricing of services that do not recover costs; lack of focus on users; government-supported monopoly positions; inappropriate institutional arrangements; inadequate capitalisation; lack of management expertise. Improved accountability is being addressed by Germany through capacity building, support of sector reform processes, conditionality and use of positive examples from neighbouring countries.

In the energy sector, Germany also identifies a number of governance problems, including too little focus on maintenance, a lack of commercial orientation, overstaffing, inefficient organisation of processes and corruption. It argues that good fair regulation agencies are needed, but are hard to establish. Accountability is being addressed by Germany through capacity building, support of sector reform processes, conditionality, PPP models, concessions for private operators, and involving the local private sector in service delivery.

In the water sector, the governance issues identified by Germany are: decentralisation, autonomy of local administrations, commercialisation with subsidies, legislation and law, overlapping responsibilities and lack of management expertise. Offering good practice from other countries is useful. In irrigation, accountability is being addressed through community and private ownership, drawing on existing cultural and management approaches (see KfW Bolivia project).

Participation of the poor

Although difficult and time-consuming for donors and beneficiaries alike, involving the poor in infrastructure operations is seen by most donors as an essential factor in the sustainable delivery of appropriate services for the poor. Ireland argues strongly that the benefits of participation far outweigh the disadvantages, which are avoidable through allowing flexibility and adequate time for planning. The main problem from Ireland's point of view is that donors intervene with a fixed amount of finance, for a limited duration and tied to a specific sector. The UK notes that the participation is time-consuming (including for the communities themselves), and there are especial risks of placing an excessive burden on women. Local participation can also be captured by elites and misinterpreted, and consultation fatigue is a problem, especially if the benefits are not received by those who contribute. Japan too highlights the problem of ensuring that the poorest are heard and benefit (avoiding elite capture). The US notes the difficulty of identifying local "champions" or decision-makers that truly represent poor groups, and of obtaining sovereign agreement to work with (and channel funds to) sub-sovereign groups that have little or no formal standing in country's governance and regulatory structure. The US identifies the lack of experience of local groups and communities with the management of donor interventions as a problem, and notes that there is often insufficient accountability and capacity to manage the often intricate requirements of donor programmes.

While participation of the poor in local infrastructure is widely accepted as necessary, there are some differences of view about the appropriateness of their participation in large-scale or network-type infrastructure. Australia argues that community participation is easier in small-scale than large-scale projects. Japan suggests that participation of the poor may not be appropriate in such cases, although Germany argues that even in large energy projects, the poor can be involved in the planning process and that participation is absolutely necessary where there are potentially negative impacts for the local population, eg in the case of large dams or where land has to be appropriated for road construction.

The solutions suggested by the UK include clear targeting, setting strong objectives, mainstreaming social inclusion and undertaking strong livelihoods analyses. Good communications, appropriate targeting and

ensuring that involvement is proportional to results and benefits are also necessary elements of an effective approach. Japan argues that coordination and cooperation among executing agencies and various sections of government are required to adopt an effective participatory process.

Ireland's strategy for enabling the poor to participate includes: concentrating on areas which are predominantly poor; targeting employment towards poor people; setting minimum acceptable wages; using participatory approaches that allow community involvement from the earliest point (feasibility) onwards; and appointment of community representatives on relevant committees responsible for the works. To ensure participation of the poor Switzerland encourages the involvement of stakeholders from the beginning, assessment of the ability and willingness to pay of customers, transparent information and consultation and customer-service orientation of companies. Australia builds community involvement in project design, including it in the logframe.

In the transport sector, Germany argues that a participatory approach in maintenance is essential in rural and poor areas, but that duties must be balanced by rights (and benefits). Many donors aim to involve the poor in labour-based works. In ICT, the involvement of local people and communities in telecentres and tele-kiosks is supported by a number of donors. In Mali, Germany supports community telecentres, which involve local community committees from the beginning. In the energy sector, Germany also argues that participation is necessary, and suggests that demonstration projects and multi-stakeholders steering committees enhance participation at local level (see box above on small-scale hydropower plants project in Tibet).

In the water sector, Japan's experience shows the need for adapted approaches, taking into account existing capacity at local government and community levels. When the capacity of residents and local government is insufficient, participation and ownership by the community must be created, through capacity building of NGOs and local government paying attention to equity of beneficiaries (women and men). When community-based organisations and a Government support system are already established, an integrated approach is appropriate addressing issues such as primary education, health, sanitation and income generation, which can enhance the community's willing towards community development.

Serious problems in the water and irrigation sectors are identified by Japan as the non-functioning of water associations and subsequent non-collection of water charges, which result in lack of maintenance. To address these problems, Japan suggests: ensuring ownership by beneficiaries and adoption of participatory planning method; compulsory participation in the water association; calculation of appropriate water charges and improvement of the collection rate; and the provision of incentives to water associations and their members. To establish properly functioning water associations a long process of consultation is required to reach agreement on key issues such as territorial coverage, operating rules, election of officers, user charges, etc. Report card systems are used by KfW in some projects. In Peru, Switzerland, in partnership with CARE, uses community contracting approaches to give the main responsibility for the contraction of the water infrastructure to the population.

2.3 KEY ISSUES OF RELEVANCE TO FUTURE POLICY GUIDANCE

Key issues emerging from the analysis of donor policies and strategies include:

- Improving the coherence of the respective sector strategy with the national poverty reduction strategy is essential. This also involves linking sectoral policies to territorial development, and mediation between donors and government and local actors and the state.
- The PRS should form the basis of assessment and investment decisions, but the contribution of infrastructure to other sector and cross-sector goals and strategies need to be strengthened in PRS.
- Strengthening – in analysis and in actual practice – of the impact “chain” between infrastructure and poverty reduction, in particularly through synergistic and complementary interventions, is a priority.

- Detailed target group analysis and the explicit integration of project strategies in PRSPs are required to achieve effective targeting.
- Geographical targeting combined with other measures (e.g. adapted technical design standards, low cost products, ensuring access to employment or income generating opportunities by the poor, subsidies and tariffs for access to services for the poorest people) may be the most appropriate approach.
- NGOs and community representatives can be the voices of the poor, and the involvement of representatives of the intended beneficiaries from the feasibility stage onwards is an essential element.
- Good governance, setting user charges and community contributions at affordable levels and improving the ability, willingness and capacity of users to pay for services are essential elements of ensuring sustained service provision for the poor. Tariffs and subsidies should be carefully targeted and set at levels that are affordable by the poor, support the widest possible access to services and encourage economical use of the services provided. Getting the balance right between the needs of the poor and cost-recovery for sustainability is the greatest challenge.
- The limited technical capacity to build and maintain infrastructure at decentralised levels requires reliance on higher levels of sub-national government expertise and resources. Clear divisions of responsibility and links to district planning are essential, as well as a focus on economic growth not just service delivery. Local capacity building at district level is vital.
- Make better use of local labour and local products. This is important not just for sustainability, but also for increasing skills, production capacity and upgrading production techniques etc.

Some key questions emerging from the review of donor policies and approaches are:

- If interventions are not directly addressed at the poorest, but rather at those who can make the most of the economic opportunities brought about through infrastructure improvement, how can it be ensured that the economic growth is "pro-poor" and that the indirect social and economic benefits reach the poorest groups?
- Does decentralisation lead to a higher voice of the poor and to more accountability or to a higher voice of local elites and to more patronage? If there is a risk of the latter, how to avoid elite capture and ensure the true representation of the needs and interests of the poorest and most disadvantaged people in infrastructure decisions?
- How to involve the poor in decisions on large-scale or network-type infrastructure interventions? Are there any good practices?
- How to ensure a fair share of contributions and benefits by different groups in a community (e.g. women and men, the less-poor and the very-poor)?

3 ANALYTICAL METHODS FOR POVERTY IMPACT MEASUREMENT

Donor approaches to the measurement of poverty impact of infrastructure interventions are embryonic and vary significantly between donors, sectors and projects. The log frame as a tool for planning, monitoring and evaluation is used by many donors, but this may or may not incorporate explicit attention to poverty reduction and may or may not be used as basis for a standardised approach to evaluation. While poverty reduction is addressed in a number of methods for ex-ante assessment and ex-post evaluation, there is a missing gap during implementation, with little explicit reference to poverty reduction in monitoring. Sweden notes the problem of this missing “middle link”, although it applies to other donors as well.

3.1 ASSESSING POVERTY REDUCTION: MEASUREMENT OF IMPACT, INDICATORS AND METHODS

A first consideration is what is being measured. Differences of approach amongst donors reflect the different links that are made between infrastructure and poverty reduction or development. Some countries such as Ireland, Sweden, and the UK, focus strongly on the impact of investments on the livelihoods of the poor. Other donors focus more on the productive and economic impacts such as the US, Switzerland, Germany, and Australia, and others focus on a combination of both (Japan, EU). However, approaches can vary between projects and sectors, reflecting the diversity of approaches by donors to investing in infrastructure.

Aspects that are measured

Donors measure poverty impact in various ways, many of which are focused on assessing the potential or actual impact on the poor, while others concern the key factors contributing to poverty reduction and sustainability.

- For Germany, impact is defined as how the project outputs directly benefit the target group as viewed from their perceptions, and how they contribute to a change in the overall poverty situation. Ex-ante poverty assessment measures target groups and priority areas within sector and country level programmes.
- Poverty assessments undertaken by Switzerland are used to consider project impacts on vulnerable groups. Economic impact on the poor (economic improvements in livelihood) is most commonly assessed in monitoring. In future, Switzerland will more systematically tie in poverty assessments to assess potential impacts on the most vulnerable groups, gender sensitive aspects and include accompanying measures.
- Sweden measures the social impact of infrastructure investment (capacity-building, gender, health, environment) as well as economic benefits. Poverty-related sector studies are undertaken before intervention, and Sweden note the importance of strong field staff to undertake such studies and assessments at country level. Both direct and indirect targeting are used. Direct targeting measures the improvement of quantity or quality of services used by the poor. Indirect is when increasing economic performance and supporting economic development benefits the poor.
- Japan measures demographic, economic and social indicators of poverty to form a poverty assessment, which is used *inter alia* to establish investment priorities (country profiles – see box below). The impact of infrastructure investment is measured in terms of economic development (including employment, income generation, influence on productivity) and social (education, health, community benefits) and the connection to poverty reduction.

Japan's country poverty profiles

- Country Profiles produced by JBIC are structured into three sections: (1) Poverty (includes poverty line data, profile of poverty, depth and severity, trends of incidence and inequality, regional disparities); (2) Government policy and action for poverty reduction; (3) Partnerships for poverty reduction.
- JICA's Country Profiles are structured into sections on poverty, demographic, economic and social indicators, followed by a brief discussion on poverty related to the indicators.

Broader approaches are taken by the UK and Ireland to measurement, which aim not only to assess poverty impact but also to guide the design of interventions to strengthen poverty reduction and sustainability:

- Measurement by the UK focuses on ways to build capacity, increase governance, and maximise linkages with other sectors to benefit the poor. Poverty assessment also includes the "politics of poverty", including mobilisation of the non-poor to support projects for their own benefit (e.g. reduced crime, higher economic growth). Poverty and social impact analysis (see box on PSIA below) is undertaken during and after a project, to assess impact and influence future design.
- Ireland's approach to measurement is geared to long-term social and economic impact (rather than physical outputs), and focuses, for example, on institutional and financial capacity for maintenance. Economic and social well-being is also measured.

Poverty and Social Impact Analysis (PSIA), developed by World Bank with other donors

- Analyses likely impact of reforms on well being of different stakeholders, particularly poor.
- Purpose is to integrate poverty approach to macroeconomic and structural policies and to build country ownership of projects.
- Sets out what structural policies affect poor ex-ante and uses existing poverty information to inform policy design. PSIA advocates monitoring during implementation and evaluating ex-post the impact of reforms.
- PSIA draws on existing social and economic tools, which is an essential interdisciplinary approach.
- Groups must be disaggregated (gender, ethnic, age, spatial, livelihood).

Indicators

Both quantitative and qualitative indicators are used by donors, although some, like Ireland, are explicitly shifting towards a greater use of qualitative indicators, and to a greater use of participatory approaches, including for the identification of appropriate indicators. As noted by Germany and France, there is a shift too from an input orientation to an output orientation.

Germany uses indicators that are both SMART (specific, measurable, attainable, relevant, time-bound) and SPICED (subjective, participatory, interpreted, cross-checked and compared, empowering, diverse and disaggregated). The Human Development Index (HDI) is used as a key indicator by a number of donors, for example by the US in its evaluation of the economic and social impact of the rural electrification programme in Bangladesh.

In the transport sector, the EU groups indicators according to benefits/costs (e.g. accessibility and mobility for transport) and sustainability (institutional and management, environment, socio-cultural, operational and regulatory, financial and economic). The UK uses a range of indicators: input, intermediate, output and outcomes, as well as analysis of the links between them. Monitoring covers both intermediate and final outcomes, impacts and inputs.

The approach used by Germany to monitoring and evaluation of the intended impact on poverty reduction requires that indicators reflecting this are identified at the beginning of a project and used throughout. However, impact monitoring is not overly focused on selecting quantitative indicators, as this limits impact

monitoring. Stakeholders are responsible for selecting and reviewing indicators. In the water sector, impact assessments have focused analysis around one of three topics to gauge impact on the poor: (1) information on the poverty situation of the target group, (2) adjusting project design towards the needs of poor, (3) and participation of the poor in project development, implementation and monitoring (see examples in box below).

Examples of monitoring systems developed for German-support projects

- **FOSIS Impact Monitoring System, Chile**
 - Internal monitoring system on a national fund to fight poverty.
 - System aims to guide project steering, emphasize learning, and stakeholder participation is built into the system by using internal impact indicators.
 - It assesses impact of both the advisory project and its own programs, using traditional SMART indicators and SPICED.
- **Qualitative Impact Monitoring (QUIM) of Poverty Alleviation Projects in Malawi**
 - Monitoring system that provides qualitative data on poverty alleviation policies of the national government through a decentralised analysis and data collecting system, using Rapid Rural Appraisal and Participatory Rural Appraisal
 - It emphasizes a dynamic participatory process of all stakeholders, more so than a focus on indicators alone in order to guide national policy.
- **Poverty Impact Monitoring Unit (PIMU) in Sri Lanka**
 - Monitors impact individual donor projects have on poverty alleviation by orienting projects towards impact, rather than measuring impact itself.
 - PIMU focuses on individual project results, serving as a catalyst to analyse the project's impact on poverty.
 - PIMU stresses *process monitoring* (vs. *project monitoring*) and relies on more qualitative indicators as this best captures project experience and results.

Methods

As highlighted by the good practices of German-support projects above, participatory and process monitoring is increasingly used by some donors to assess poverty impact. As Ireland notes, it is important to include communities in the process. While the Project Planning Matrix has dominated monitoring in the past, more recent approaches emphasise the importance of process, qualitative indicators, communication and participation between stakeholders to improve project results. The communication approach focuses on the subjective views of impact amongst stakeholders. The UK's monitoring methodology encompasses qualitative and quantitative methods. The process is important, including incentives to produce better data locally for policy makers and managers to make use of. An example of a poverty impact monitoring system of a project in Nepal supported by the UK and Germany is outlined in the box below.

Monitoring of Rural Community Infrastructure Works (RCIW), Nepal

The goal of this programme is to improve food security through social mobilisation. The programme improves roads and increases food production. It is a district level project incorporating decentralised planning, and is supported by the UK and Germany. The monitoring system has six main components:

1. Information from community-kept Project Books
2. Findings from self-evaluation exercises done by user groups and partner organizations
3. Audits carried out by independent organizations
4. Findings from special studies, such as Impact Assessments
5. Field visits (including food security monitoring) by RCIW staff
6. Periodic donor level reports from UK Ministry of Local Development to WFP

RCIW monitors the impact of conflict on project activities, including factors such as food availability, access to income, and coping strategies among the target group population. Impact is assessed through: a) household profiling, which serves to establish 'baseline' information about target groups; and b) food security and vulnerability monitoring (being designed now by WFP). Project resources will be used to implement and if necessary expand the vulnerability monitoring to provide more information on the impact of the conflict. Vulnerability Assessment is used for targeting new interventions, and for monitoring impacts on target populations' vulnerability and food insecurity.

3.2 LINKS BETWEEN ASSESSMENTS AND PRSs AND MDGs

Many donors acknowledge, on the basis of their evaluation experience, that a more specific poverty reduction orientation must be incorporated from the beginning and throughout the intervention cycle. A principle orientation at the ex-ante assessment phase is national priorities, especially as expressed in country PRSs; many donors use the PRS as an ex-ante tool to assess the poverty situation and make investment decisions.

Some countries are taking innovative approaches to more precisely integrate poverty reduction goals into the evaluation process. Germany for example, has developed a Millennium Development Goal (MDG) Screening Tool, which connects project goals and outcomes to the MDG indicators and targets poverty (see box below).

Germany's Millennium Development Goal (MDG) Screening Tool

The MDG Screening Tool enables a clear causal linkage to be made between the MDG indicators and targets and a project and its benefits, and contains information on external conditions and assumptions. Any project can be entered into this framework, including infrastructure projects. There are five steps to using the tool: i) select relevant links, ii) delineate functional chain of effects, iii) specify conditions and risks, iv) identify relevant indicators and v) identify relevant project examples. The advantages to the tool are the clear focus on the MDGs and the linkages between cause and effect as well as external conditions and assumptions. The disadvantages are the linear approach which may oversimplify complex processes or create links that do not actually exist.

3.3 EVALUATION PURPOSE AND SCOPE

Another trend, emphasised by some donors such as Ireland, is for joint evaluations, with other donors or under SWAPs, together with national government. Similarly, some donors (EU, Switzerland) express a preference for sector- or country-wide evaluations, as it is difficult to assess poverty impact of single projects.

Evaluation can serve several purposes. The evaluation can measure the direct project impact on the targeted region or group (such as Ireland's *Kibaale District Area Based Programme* in Uganda), or can also measure the long-term impacts on a sectoral or thematic programme, within a country or across several countries. Commonly, an evaluation of investments in one sector, such as energy or transport, across several countries will be undertaken to compare long-term impacts of the project and their contribution to poverty reduction. (However, not all infrastructure evaluations are based on poverty reduction goals, but evaluations can be based on other variables, such as environmental impact.). Examples of this type of cluster evaluation are:

- Building for Development: An Evaluation of Four Infrastructure Projects in Tonga and Samoa (Australia) which found infrastructure investment brings strong economic and social benefits.
- Thematic Evaluation of Rural Electrification Projects (Sweden) which found infrastructure investments to have a stronger impact on social development, and minimal on economic.
- Thematic Evaluation of JICA's Cooperation of Water and Poverty in Africa (Japan) found water investments had a positive social impact.

Evaluations can also be at country level, evaluating the impact of several different interventions in one country. Both types of evaluation, for direct short-term impact and the long-term impact, are common across donors. For example, Sweden, who has one of the best examples of a standardised methodology, structures evaluations depending on which type of poverty intervention has been undertaken, thereby linking the ex-ante assessment with the ex-post evaluation:

- Direct targeting of particular groups of the poor will yield a direct evaluation that asks: has the target group benefited? Economic and political costs are assessed. Sustainability is often an issue.

- For sector wide interventions where the poor will benefit (education, rural development, small-scale enterprise) the evaluation question asks: has the intervention had a pro-poor profile?
- Structural approaches aimed at under-pinning pro-poor policies (democracy, good governance, macro-economic stability, increased accountability, transparency) necessitate a risk analysis to determine if the original goals benefited the poor.

Feeding the lessons learned back into the wider strategy and implementation process is emphasised by some donors:

- Japan aims to evaluate all of its projects since the year 2000. They have established an ex-post evaluation committee to provide feedback biannually, on lessons learned and suggestions, as this is given importance in the evaluation process.
- Switzerland constantly feeds results back into the cycle in its Results-based Management System (RBM) used to generate periodic feedback to improve implementation and results as well as design of other projects. Internal reporting, external mid-term monitoring, and end of project evaluation (both internal and external) are all components.
- The UK aims for quick feedback in monitoring to take remedial action when necessary.
- Sweden created its Management Response department in 1999 to follow-up on projects to implement recommendations of the evaluation, suggest further dissemination and apply the lessons learned.

3.4 ELEMENTS OF A TEMPLATE FOR THE ASSESSMENT OF POVERTY REDUCTION IMPACT OF INFRASTRUCTURE INTERVENTIONS

On the basis of the approaches and experiences presented by donors as part of the InfraPoor survey, some preliminary elements of a “template” for the assessment of the poverty reduction impact of infrastructure investments can be suggested. Some aspects, such as appropriate indicators and methods for assessing impact, require further investigation.

A number of donors argue for harmonisation, and in some cases standardisation, of approaches to poverty impact measurement of infrastructure investments. Germany argues this in *Urban Poverty-Definitions and Concepts in International Cooperation* (2003), and Ireland, in their review of aid in *Water and Sanitation Sector in Sub-Saharan Africa*, voices the need for one coherent sector policy, which would mean a standard ex-ante poverty assessment approach as a basis for establishing a sector policy. Japan is internally trying to standardise its methodology. While some donors have recognised the need for the standardisation within their own practices, larger-scale standardisation is needed between all donors, especially in the context of SWAPs and to measure impact on poverty reduction at national or sub-national levels across programmes and sectors.

Some of the elements of a template for the assessment of the poverty reduction impact of infrastructure interventions are:

- Systematic use of country poverty reduction strategies or other pro-poor growth strategies (or targets such as the MDGs) to orient ex-ante assessments of infrastructure investments and their monitoring and evaluation is required. This involves making links with the poverty reduction strategy itself (goals, targets, sector priorities, cross-cutting issues) and with the process and mechanisms of its implementation and monitoring.
- As infrastructure needs may not be adequately taken into account in PRS, links may need to be made at the ex-ante assessment phase with sector-specific strategies (e.g. rural development and agriculture, priority social sectors) or with decentralised strategies (e.g. provincial or district development plans) to identify the needs of these areas and to assess the potential contributions of infrastructure investments.
- The use of country poverty profiles, produced not only by donors but also by governments or civil society, could be used more systematically during ex-ante assessment (and monitoring and

evaluation) to complement the PRS and strengthen the baseline information and data, especially on particularly vulnerable groups and on crosscutting issues such as employment, gender, environment, good governance or the potentials of private and civil society involvement.

- Ex-ante assessment should include attention to the “framework conditions” that ensure a sustainable contribution of infrastructure to poverty reduction, including governance issues, institutional and financial capacity for management and maintenance (stakeholders and beneficiaries), linkages with other sectors and programmes, and mobilisation of the non-poor.
- Ex-ante assessment, monitoring and evaluation must disaggregate the contributions and benefits of infrastructure interventions by gender, ethnicity, age, spatial, livelihood and should pay particular attention to the most vulnerable groups.
- Quantitative and qualitative indicators should be elaborated in consultation with stakeholders, including beneficiaries, and must be SMART (specific, measurable, attainable, relevant, time-bound) and SPICED (subjective, participatory, interpreted, cross-checked and compared, empowering, diverse and disaggregated). Social and economic, as well as direct and indirect, indicators should be elaborated, as well as indicators to measure sustainability, drawing as much as possible on pre-existing indicators for which data and information are available (e.g. HDI, PRS):

	Direct	Indirect
Social		
Economic		
Sustainability		

- Interventions should give incentives to the improvement of data and information collection and analysis, serving both the intervention itself and improving the knowledge-base in the sector and country.
- Joint evaluations – at national or sub-national (or cross-national) levels – should be encouraged, involving donors, governments and other stakeholders at national and regional levels.
- Participatory approaches should be pursued as fully as possible and as appropriate, both for local infrastructure and network-type infrastructure. The precise methods to ensure participation may vary depending on the scale of the infrastructure operations being assessed, but the involvement of all key stakeholders, including representatives of beneficiary groups and those who can influence future policy and strategy, is essential, to ensure the validity of the assessment and evaluation findings and to influence subsequent decisions.
- Building in communication, learning and feedback mechanisms throughout the process is important, which can be achieved by making links to the dialogue and monitoring mechanisms established for country PRS, regional programmes, SWAPs, etc.

4 KEY SECTOR ISSUES FOR MAKING INFRASTRUCTURE PRO-POOR

4.1 TRANSPORT

Transport may be the most important sector for pro-poor growth, and considerably more investment is needed in the sector, particularly roads, although water and rail transport can also play an important role in pro-poor growth. While some direct impacts on poverty reduction can be achieved, particularly through prioritising employment in the sector and providing easier and cheaper access to services that benefit the poor, there is no direct link between transport and economic development or pro-poor growth. Although the links between transport and pro-poor growth are indirect, transport infrastructure is an essential component of pro-poor growth strategies. The challenge is not only to identify the nature of the links (and the conditions required for the links to function), but also to show in practice how transport investments can cost-effectively contribute to sustained pro-poor growth and poverty reduction.

Transport can have negative consequences, such as increased accidents, transmission of diseases (HIV/AIDS) and resettlement and environment damage, and these effects mean a high risk of poverty for the people affected. Moreover, the specific needs of particularly disadvantaged people – women, disabled people, the elderly - for affordable, safe and secure transport must also be taken into account.

Benefits of transport:

- Increased mobility and access to employment
- Facilitating the establishment of businesses that employ the poor, and increasing their productivity (very high impact)
- Increased agricultural productivity and better sales opportunities for agricultural products
- Lower transport costs
- Increased access to cheaper and better goods
- Improved access to education and health services
- Saving time and effort, thus increasing time and effort to channel to other activities (income-generating, education, etc).
- Supporting local and community development, as well as regional trade and integration.

Main issues for making transport investments pro-poor:

- Integrated transport strategies, clear linked to poverty reduction strategies and to the strategies of key social and economic sectors for pro-poor growth and poverty reduction, are required, translated into realistic investment plans at national and local levels.
- The roles of central and local government in planning, construction, operation and maintenance need to be clarified, and effective systems of coordination established. Local government requires support – financial and technical – from higher levels, and this must be organised and provided.
- Maintenance must be given considerably more priority by donors and governments (national and local) in policy and spending priorities.
- The important start made on establishing Road Funds needs to be continued, and reinforced, especially securing enough resources for road maintenance and improving the management of the funds. Raising local tax revenue, improvement of tax collection efficiency and review of the criteria for allocating funding by central government are needed. The scope of coverage of the road fund is an issues to be addressed, to ensure that pro-poor growth priorities are addressed adequately.
- Efforts should be put into identifying how to establish and operate in a financially sustainable manner a road construction and maintenance system at local government level, making use of NGOs and local communities for maintenance. Good practice examples that can be shared with other countries would be very useful.

- A network-approach is essential. Ireland has concentrated its development finance on infrastructure at district level, but it found it necessary to rehabilitate trunk roads to ensure that the rural roads would provide effective access to the wider transport network. While Irish investment in roads continues to overwhelmingly fund tertiary and secondary roads, connection to an adequate trunk/primary route is a precondition for investment. A stronger network approach should also be taken by those donors, such as the EC, which fund primarily trunk roads.
- Transport interventions should be linked to complementary projects to improve viability and sustainability, such as improvement of local market facilities, support to commercial and agricultural production, community development, etc.
- Appropriate technology choice and design standards should be given more attention, to bring down costs and increase opportunities for the use of local labour, products and resources.
- The impact of transport interventions on the mobility of the poor must be assessed and monitored. This requires through ex-ante poverty analyses and monitoring, including the elaboration of appropriate indicators. In Ethiopia, documentation on all new EC road rehabilitation projects describes how it is expected that access by the poor to basic services, markets and areas of economic activity will be improved.
- Appropriate transport services (including non-motorised) are needed as well as appropriate transport infrastructure – a stronger focus on services is needed.
- Targeted subsidies aimed at lowering the price of transport for poor people may be a way of addressing the mobility needs of the poor. Typically, rural roads need subsidisation because of the low volume of traffic.
- Private sector involvement, particularly the outsourcing of maintenance, should be further promoted and supported. This can involve small and micro-enterprises, community and farmers' associations, etc. However, improved regulation of the private sector is needed, requiring increased capacity and greater transparency and accountability in public authorities and responsible agencies.
- Participatory approaches are essential in poor urban and rural areas. The poor should be involved not only in labour-based works, but in prioritising, planning and maintaining local infrastructure projects. Community representatives should be involved in relevant committees and in decision-making.

4.2 ICTs

The importance of ICTs to pro-poor growth is often underestimated. The EC recognises the risk of a “digital rift” between developed and poor countries and sees wide challenges in ensuring that poor countries catch up, while Norway places considerable importance on ICT development that benefits poor people. France also notes that the digital divide is getting even deeper, and that what infrastructure there is tends to be out-of-date and concentrated in towns. This makes rural areas “information deserts”. Moreover, as the internet becomes indispensable for education, research, negotiation and trade, poor countries, particularly in Africa, will be excluded. The UK notes that sub-Saharan Africa contains 10% of the world’s population but only 0.2% of its phone lines.

ICTs cover services, equipment and software and include telephony, the internet, television and distance learning. Weak infrastructures and unaffordable pricing of services and equipment are two key obstacles, while appropriate policy and regulation are also major challenges. Private sector involvement is necessary and possible, as some examples show (e.g. Grameen Phone).

Benefits of ICTs:

- Increasing the productivity and efficiency of businesses.
- Facilitating access to market information and therefore to better goods and services.
- Improving the quality and delivery of education.
- Accelerating administrative processes, reducing bureaucracy and improving fiscal monitoring.

- Facilitating participation and empowering women (e.g. Grameen Village Phone operators).
- Improving health care (patient information etc).
- Improving district and urban planning, and improving sector planning (e.g. health, agriculture/weather forecasting).

Main issues for making ICT investments pro-poor:

- If combined with microfinance (e.g. Grameen phone), ICTs can provide direct impacts on the poor
- Private operators can often install and operate ICT infrastructure profitably in towns, so the chief target for service delivery to the poor is rural populations. Subsidies are inevitable given the high capital and operating costs of ICT networks, and should be provided to private companies to provide ICT services. Services to remoter areas can be provided by regulating provision, providing incentives to existing operators to extend their networks (e.g. France proposes subsidies negotiated by “negative auction”) or building community telecentres linked by satellite. In Laos, KfW has started a franchising scheme, to provide licenses to local entrepreneurs to run small teleshops.
- To keep prices down, healthy competition amongst providers is needed, with an independent regulator enforcing clear rules. However, Grameen Phone successfully operates a sequential approach; the first operator in a village is given an initial monopoly and only at a later stage is competition carefully introduced.
- A top-down and bottom-up approach can be very effective. Grameen Phone is a decentralised system, in that each operator makes her own decisions to invest. However, it relies on the centralised provision of network infrastructure.
- The link with microcredit is crucial in providing village operators with the credit to purchase a mobile phone.
- Better public access, e.g. through payphones, better internet connectivity and better electricity supply are all required.
- Operational and management capacities, and improved budgeting, can be supported through special training schemes. Community telecentres can be managed by local people, who need training and support and who should be involved from the beginning. User ownership is a key issue identified by the EC.
- Infrastructure installed should be upgradeable.
- Performance indicators should be more closely linked to the use of infrastructure, e.g. lines connected than its mere construction.

4.3 ENERGY

The provision of energy, particularly renewable energy sources such as solar electrification and hydropower, can have many positive impacts on the poor and their communities. Renewable energy sources offer innovative solutions in remote poor areas that are not connected to the central power grid. Electrified households are found to have higher Human Development Indices (HDIs) than non-electrified, and electricity has major social, economic and demographic impacts. (US)

Economic benefits of energy:

- Increase household income.
- Contribute to greater savings and asset-building in households, as well as access to credit in households.
- Improve the sustainability of commercial systems, through the introduction of renewable energy sources.

- Increase SME productivity as illustrated by the rural electrification projects in Botswana, Ghana and Lesotho, financed by Sweden. This in turn can increase the demand for goods and thus improve income.
- Reduce heating/cooling costs (modern energy system coupled with efficient building design) and thus school fees, enabling greater access to poor families.
- On a macro level, energy investments can lead to savings of foreign exchange previously spent on energy imports.

Social benefits of energy:

- Improved schooling rates of children and adults through reduced schooling fees, electrification of schools to offer night classes, etc. (see UK Gansu Basic Education Project in China for example)
- Positive socio-economic impact on women because of a decreased burden of chores.
- Improved security in communities.
- Health benefits such as a reduction in respiratory disease due to decreased use of traditional fuel sources.
- Environmental impacts such as cleaner air.

Main issues for making energy investments pro-poor:

- While electricity is not necessary for human survival, energy is (for example for household cooking and heating), and therefore innovative solutions must be found when electrification projects are too expensive, such as hydropower in Tibet. Subsidies to cover the high connection costs are required, particularly for renewable energies, which have high up-front and investment costs. Tariffs should cover operation and maintenance costs.
- Educating customers is often required, to raise awareness of the values and potentials of energy and to explain tariffs and methods of payment.
- An enabling environment must be in place for investments to have an impact. Energy sector reform must accompany investments, in order to improve governance and accountability.
- Long term development plans must be clearly established and issues such as the location of distribution centres clearly decided.
- Both private electrification and public (school, hospitals, public areas) should be taken into account in projects for maximum benefits on the poor.
- Energy has strong links to other productive sectors, and it is necessary to take the cross-sectoral linkages into account to ensure sustainability. For example, the Swedish-financed Energy for Rural Transformation Program in Uganda worked with the key potential users of electricity such as ICTs, SMEs, health, education and water. This spread the benefits of electrification to those who were not directly connected. Energy services are often a pre-condition for good quality health, education and water supply.
- A cooperative method to ensure sustainability can be useful, for example the Japanese Rural Electrification Program in Bangladesh where training programs, performance contests among different cooperatives, internal check system, member support, and group responsibility were all features of the established cooperatives.
- Participation is essential. Pilot projects can increase participation. Involvement of beneficiaries is especially important if the project will have a negative impact on the community, such as in the case of large dams where people will be displaced. In large scale projects where energy generation for greater grids or distribution systems is concerned, participation of the poor is often not necessary, although their needs and interests should be taken into account.
- The development of local financing mechanisms to fund needed investments in the future through community funds, for example, is needed. This is more of a key issue than the need to generate counterpart funding.

- Much greater focus on maintenance is needed, including maintenance capacity and finance.
- Greater transparency of regulatory agencies is needed, as are improved sector framework conditions so as to attract foreign investors (political and economic stability).

4.4 WATER AND SANITATION

Water has important linkages to the health and education sectors, especially sanitation which is often neglected in donor portfolios. The approach to water supply should be a holistic one, addressing health, education, governance, and gender issues. Water supply should be integrated into a programme of institutional strengthening, and environmental sanitation with community awareness, such as in the Vietnam Provincial Water supply and Sanitation project funded by Australia. Water and sanitation investments should not be made exclusively by households, but also by public facilities to improve livelihood and health. Additionally, it is important to establish linkages between the sector policy and territorial development, as well as mediate between the needs of local actors and the state.

Benefits of water investments include:

- Freeing up of household income as households spend less on coping strategies for poor water supply.
- Reduction in time spent in water collection, enabling more time to be spent on income-generating activities for example, or other tasks.
- Improvement in public health through a reduction in water-borne diseases.
- Development of strong social dynamics in community, through well-functioning water associations.

Main issues for making water and sanitation investments pro-poor:

- Water is a finite resource and an economic good, which must be charged for. Access to water is also basic human right. Because water is perceived as a public good and tariffs are usually set too low, tariff setting becomes an intense political issue.
- Different values of water should apply for different uses (irrigation, sewerage, domestic consumption), where water for survival and public health purposes will have a higher rate than water for recreational use. Where water is scarce, low value uses should be discouraged, through a “demand management” system where price measures limit the volume of water consumed. The price measures, which must be decided upon by the community, can take the form of pollution charges, water market auctions, and incentives such as leakage control, restrictions, quotas, and licenses.
- A proper assessment of the poverty situation in the area, including the ability and willingness of customers to pay is needed from the project appraisal phase to set appropriate tariffs and determine where subsidies are needed.
- Subsidies are needed for the very poor to ensure connection, but should be implemented carefully. It is preferable to subsidize connection not volume, with the exception of ensuring a minimum amount to satisfy daily needs. Temporary lifeline subsidies can thus be set to ensure a basic level of supply. Other subsidy options are through vouchers, tax credits, or transfer payments. The community should be involved in deciding who to target for subsidies.
- NGOs can also play a role in communicating the needs of the poor, acting as an agent ensuring information flow in both directions (especially in urban areas). NGOs can also be the principle implementers of small scale projects in poor areas.
- Community awareness and hygiene education are essential to encourage participation and ownership. Education is also needed to ensure the economic use of water to reduce waste and to raise awareness about water quality and purifying techniques. Women must be involved as they are often the traditional water managers in the household.

- The formation of community committees can help to support implementation, monitor work, spread education about health and hygiene, and enforce collection efforts. Community participation can begin with pilot projects, in order to get the community on board to support the project.
- Decentralization is a key issue. It can help to safeguard the financial and management autonomy of the enterprise, but capacity-building is important. Most local entities do not have sufficient savings or reserves for investment measures, and there is often a poor legal and regulatory framework. One solution to this problem is to assign management and operation functions to local communities, bolstered by capacity-building measures, and the regulatory functions remain with the state.
- Private sector participation may be a viable option, when public management and skills are poor, and can help to deliver better services and enforce collections (when performance based targets are set as an incentive), closing the gap between revenue and expenditures, and ensuring more fiscal responsibility and accountability. Appropriate regulation is crucial, consisting of clear, transparent rules and procedures, and unambiguous contracts.
- The inclusion of the private sector can be through public private partnerships (PPP) where civil society and small local private operators play an active role. Additionally, the community should be involved in the design of private sector involvement. The appropriate role of the public sector can be in regulating, hygiene education, social marketing, and sanitation promotion, while the private focuses on service delivery.
- Public service provision is preferable when the regulatory framework needed for a balanced partnership is absent, when there is reliable service provision with clear objectives and targets, and the customers are already satisfied.
- A critical mass of trained staff is necessary, including training in tender procedures to safeguard against corruption. The capacity of local companies involved in operation and maintenance must also be built. In addition, community groups must also be trained in water management.
- A certain amount of counterpart funding is necessary to ensure the ownership of the project by the PEA/users. A reduction of requested counterpart funds has to be handled with care to ensure ownership of the project.
- The technology used should be adapted to local circumstances and be cost effective. Technical issues largely determine the costs of the water project and are thus of central importance. Additionally, the technology deployed must be within the community's capacity to operate and maintain or sustainability is at risk. Additionally, viable private sector supply chains for goods (parts, equipment) and professional services (like audits) are also needed.
- Where water supply or quality cannot be assured, the establishment of water kiosks, under private operators and also metered to safeguard against free riders and wastage, is a solution.

4.5 IRRIGATION

In many developing countries, irrigation is the main use of water, with 70% of engineered supply absorbed by agricultural production. Irrigation investments address distributional issues such as access to resources and tenure, regulatory frameworks (including environmental regulations), promotion of the community and private sector development.

Benefits of irrigation:

- Reduction in poverty levels. Japan found a strong link between the existence of irrigation and the severity of poverty. Japan's Irrigation Infrastructure Development in Sri Lanka found there were lower schooling rates in rainwater irrigated areas (as opposed to the areas that benefited from the project), and higher under 5 mortality rates. Additionally, the irrigated areas had better housing conditions.
- Improve farmer's incomes through increased productivity.

Main issues for making irrigation investments pro-poor:

- Integrated water resource management and water allocation issues need to be addressed. Irrigation issues cannot be addressed separately from water and sewerage, and also involve issues of land use, cultivation methods, cropping, and animal husbandry. Additionally, irrigation projects may involve an electrification component (energy needed to pump water) as well as feeder roads. A focus on irrigation alone will result in project failure. Many community development programmes (livestock development, small enterprises, food projects) will have a water component that must be considered as well. Moreover, agricultural projects can involve land use changes that affect water resources.
- Irrigation projects must address the risks of environmental degradation, such as soil degradation or water-related hazards such as mosquito breeding grounds. Drainage is important for salinity control and the prevention of water-logging should be considered in project design.
- Water associations are needed to collect water fees, manage resources, and ensure sustainability. These associations must draw on existing cultural norms to be effective. Participation should be compulsory and an incentive structure created. Territorial coverage, the operating rules, the election of officers, and user charges must be agreed upon.
- Irrigation should be targeted at farmers who are highly motivated to participate and to implement maintenance. They can be organized into water user groups who play a key role in the sustainability of the system. The financing and capacity-building of these groups needs to be addressed.
- Measures to reduce consumption through an appropriate tariff system or incentive structure are necessary to ensure sustainability. In areas of water scarcity, a reduction in irrigation water volume will be needed, and therefore may require eliminating the cultivation of crops of low economic or social value. The challenge is to raise crop production while consuming less water, to safeguard supply and sustainability of the system.

5. KEY ISSUES RELEVANT FOR GUIDING PRINCIPLES

5.1 Challenges

The clear overall challenge is to increase the amount of ODA allocated to infrastructure investments targeted at pro-poor growth, overcome the weaknesses of past infrastructure projects and clearly demonstrate – in analysis and practice - the contribution of infrastructure to national poverty reduction strategies and the Millennium Development Goals.

Other challenges for future donor policy and support are:

- Addressing the discrepancies and disconnects between:
 - Policy commitments on poverty reduction and investment priorities, both how much and how allocated;
 - Overarching goals of poverty reduction and actual sector strategies;
 - Policy, intervention design and operational implementation, including assessment and monitoring.
- Reaching common agreement on:
 - Impact chains linking infrastructure to poverty reduction, including the complementary and reinforcing measures needed to strengthen the chain links.
 - Targeting to achieve pro-poor growth and poverty reduction (geographic, sector, poor, not-so-poor, etc)
 - Measurement of impact of infrastructure on poverty reduction.
- Actual application of policies and methods, to provide convincing demonstrations of the contribution of infrastructure to poverty reduction and of effective approaches. More good practice examples that show the actual links between infrastructure and structural poverty reduction are needed.

5.2 Some preliminary elements of the “building blocks” of policy guidance

A number of elements for consideration as the “building blocks” for the formulation of guiding principles for improving the contribution of infrastructure to poverty reduction emerge from the review of donor policies and approaches:

1. Shared agreement on how to measure poverty reduction and pro-poor growth, as well as the contribution of infrastructure to these goals, is needed, as a basis for improved coordination and coherence between donors, and between donors and partner countries. This would also assist in efforts to link infrastructure to the MDGs.
2. A more explicit and rational approach to sector and area-based prioritisation of infrastructure investments, taking into account overall goals of pro-poor growth and poverty reduction as well as more synergistic use of comparative advantage, would contribute to more effective use of ODA.
3. Strategic synergies should be developed at a number of levels:
 - a. By taking a network approach, linking local and national systems (as well as regional where relevant), particularly in the transport sector;
 - b. By linking infrastructure strategies with PRS strategies (and implementation and monitoring) and with other sector strategies, especially productive and social sectors that are essential to pro-poor growth and poverty reduction;
 - c. By linking infrastructure interventions with complementary initiatives, such as energy and ICTs with credit, transport with market development, water with hygiene, and all with community development and capacity-building.

- d. By linking institutional, regulatory and financial reform with infrastructure investments.
4. More precise targeting of the poor and of pro-poor growth is required. This involves:
 - a. Setting clear objectives for investments and interventions (structural poverty reduction, pro-poor growth?)
 - b. Undertaking detailed target group analysis, both of the poor (the main beneficiaries) and the non-poor (key actors in pro-poor growth)
 - c. Pro-poor intervention design, including – as necessary – smart subsidies and tariffs, increasing the capacity of the poor to contribute and pay for services, setting appropriate technical standards, making optimal use of local labour and products, etc.
5. As well as smart subsidies and tariffs, improving the sources and management of revenue is essential. Cost recovery and good governance are key words. Dedicated funds, such as roads and water funds, and user involvement in oversight and management need further development.
6. Sustainability can be improved, in particular through:
 - a. Complementary interventions, such as supporting the productive use of the services provided (e.g. energy, water)
 - b. User involvement and ownership at local and national levels, in water associations, energy cooperatives, road boards, consumer councils, etc
 - c. Much stronger attention to maintenance in policy, capacity-building and spending
 - d. Good governance including better organisation of processes, better regulation, more transparency and accountability.
 - e. Optimising the use of local finance, labour and products.
7. Clearer division of roles and responsibilities at central and decentralised levels, and allocation of resources (financial, human, technical) to match. This means capacity-building at local levels, and may mean transfer of resources from central to local levels. The latter is a challenge to the status quo and will require robust policies and strong commitment, especially at central level.
8. Addressing rights (to land and resources) and inequalities between people and groups is essential to tackle poverty effectively. Communities are by no means homogeneous and “elite capture” is a major problem, requiring careful analysis, thorough knowledge of the country and local situations and careful engagement with community associations and leaders. Ensuring that representatives are truly representative of different needs and interests is vital.
9. Private sector involvement, although supported strongly already by donors, is extremely important, and merits further attention, particularly to establish appropriate frame conditions with partner governments and private sector representatives. Transparent and effective regulation of the private sector is also required, a task for the public sector and stakeholder bodies.
10. Participation of the poor is essential, but is time-consuming for all and this should be planned for. The poor should participate at community and local levels, especially in the design and maintenance of infrastructure services, but should also be properly represented in decision-making on national and large-scale infrastructure projects, to ensure pro-poor design including any mitigating measures to compensate for negative consequences on poor populations.

ANNEX 1: DONOR INVESTMENTS IN INFRASTRUCTURE SECTORS

Source: data compiled by Hesselbarth (SHDC) from OECD/DAC, CRS and DAC databases, for 1st InfraPoor workshop, Paris March 2004

Transport

	Infrastructure	Country share of all infrastructure	Transport	Country share of all transport	Transport / infrastructure for each country
Austria	991	1%	285	1%	29%
Belgium	566	0%	161	0%	28%
Canada	1.667	1%	306	1%	18%
EC	7.366	5%	4.756	9%	65%
France	9.880	7%	2.353	4%	24%
Germany	17.084	12%	6.472	12%	38%
Italy	3.599	2%	461	1%	13%
Japan	81.950	56%	35.106	64%	43%
Netherlands	4.153	3%	1.004	2%	24%
Norway	1.798	1%	333	1%	19%
Spain	3.244	2%	969	2%	30%
Sweden	2.563	2%	511	1%	20%
Switzerland	881	1%	272	0%	31%
UK	5.577	4%	1.281	2%	23%
US	5.763	4%	491	1%	9%
Total/average:	147.082		54.761		37%

ICT

	Infrastructure	Country share of all infrastructure	ICT	Country share of all ICT	ICT / infrastructure for each country
Austria	991	1%	98	1%	10%
Belgium	566	0%	93	1%	16%
Canada	1.667	1%	404	5%	24%
EC	7.366	5%	219	2%	3%
France	9.880	7%	1.215	14%	12%
Germany	17.084	12%	636	7%	4%
Italy	3.599	2%	401	5%	11%
Japan	81.950	56%	3.995	45%	5%
Netherlands	4.153	3%	201	2%	5%
Norway	1.798	1%	139	2%	8%
Spain	3.244	2%	442	5%	14%
Sweden	2.563	2%	356	4%	14%
Switzerland	881	1%	50	1%	6%
UK	5.577	4%	218	2%	4%
US	5.763	4%	351	4%	6%
Total/average:	147.082		8.818		6%

Energy

	Infrastructure	Country share of all infrastructure	Energy	Country share of all energy	Energy / infrastructure for each country
Austria	991	1%	258	1%	26%
Belgium	566	0%	106	0%	19%
Canada	1.667	1%	452	1%	27%
EC	7.366	5%	817	2%	11%
France	9.880	7%	2.377	6%	24%
Germany	17.084	12%	4.529	11%	27%
Italy	3.599	2%	1.545	4%	43%
Japan	81.950	56%	23.419	58%	29%
Netherlands	4.153	3%	497	1%	12%
Norway	1.798	1%	804	2%	45%
Spain	3.244	2%	1.146	3%	35%
Sweden	2.563	2%	821	2%	32%
Switzerland	881	1%	95	0%	11%
UK	5.577	4%	1.818	5%	33%
US	5.763	4%	1.514	4%	26%
Total/average:	147.082		40.198		27%

Drinking water

	Infrastructure	Country share of all infrastructure	Drinking water	Country share of all drinking water	Drinking water / infrastructure for each country
Austria	991	1%	290	1%	29%
Belgium	566	0%	143	1%	25%
Canada	1.667	1%	319	1%	19%
EC	7.366	5%	742	3%	10%
France	9.880	7%	2.587	9%	26%
Germany	17.084	12%	4.344	15%	25%
Italy	3.599	2%	843	3%	23%
Japan	81.950	56%	13.082	46%	16%
Netherlands	4.153	3%	1.136	4%	27%
Norway	1.798	1%	270	1%	15%
Spain	3.244	2%	445	2%	14%
Sweden	2.563	2%	585	2%	23%
Switzerland	881	1%	288	1%	33%
UK	5.577	4%	971	3%	17%
US	5.763	4%	2.123	8%	37%
Total/average:	147.082		28.168		19%

Irrigation

	Infrastructure	Country share of all infrastructure	Irrigation	Country share of all irrigation	Irrigation / infrastructure for each country
Austria	991	1%	9	0%	1%
Belgium	566	0%	11	0%	2%
Canada	1.667	1%	17	0%	1%
EC	7.366	5%	98	2%	1%
France	9.880	7%	314	5%	3%
Germany	17.084	12%	496	8%	3%
Italy	3.599	2%	98	2%	3%
Japan	81.950	56%	4.246	71%	5%
Netherlands	4.153	3%	277	5%	7%
Norway	1.798	1%	3	0%	0%
Spain	3.244	2%	57	1%	2%
Sweden	2.563	2%	10	0%	0%
Switzerland	881	1%	14	0%	2%
UK	5.577	4%	109	2%	2%
US	5.763	4%	188	3%	3%
Total/average:	147.082		5.947		4%

Rural development

	Infrastructure	Country share of all infrastructure	Rural development	Country share of all rural dev	Rural dev / infrastructure for each country
Austria	991	1%	48	1%	5%
Belgium	566	0%	50	1%	9%
Canada	1.667	1%	116	2%	7%
EC	7.366	5%	632	9%	9%
France	9.880	7%	544	8%	6%
Germany	17.084	12%	392	6%	2%
Italy	3.599	2%	206	3%	6%
Japan	81.950	56%	2.207	32%	3%
Netherlands	4.153	3%	893	13%	22%
Norway	1.798	1%	228	3%	13%
Spain	3.244	2%	79	1%	2%
Sweden	2.563	2%	213	3%	8%
Switzerland	881	1%	113	2%	13%
UK	5.577	4%	756	11%	14%
US	5.763	4%	414	6%	7%
Total/average:	147.082		6.891		5%

Urban development

	Infrastructure	Country share of all infrastructure	Urban develop- ment	Country share of all urban dev	Urban dev / infrastructure for each country
Austria	991	1%	2	0%	0%
Belgium	566	0%	2	0%	0%
Canada	1.667	1%	54	2%	3%
EC	7.366	5%	102	4%	1%
France	9.880	7%	490	18%	5%
Germany	17.084	12%	215	8%	1%
Italy	3.599	2%	46	2%	1%
Japan	81.950	56%	267	10%	0%
Netherlands	4.153	3%	145	5%	3%
Norway	1.798	1%	20	1%	1%
Spain	3.244	2%	105	4%	3%
Sweden	2.563	2%	68	3%	3%
Switzerland	881	1%	49	2%	6%
UK	5.577	4%	424	16%	8%
US	5.763	4%	682	26%	12%
Total/average:	147.082		2.671		2%