Infrastructure and the Millennium Development Goals

(session on Complementarity of Infrastructure for Achieving the MDGs, Berlin 27 Oct)

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I. Introduction

1. In September 2000, for the first time in history, the political leaders of all the world’s nations put their names to a set of dated targets for reduction of income-poverty and improvement of people’s health, education and environmental conditions. Since then most developing-country governments have been giving serious attention to how these Millennium Development Goals (MDGs) should be interpreted, adapted and applied to the realities of the situations they face. Many have mounted new or expanded initiatives to try to accelerate progress in the fields highlighted by the goals.

2. The Millennium Summit Conference at which the goals were adopted assigned to the UN overall responsibility for monitoring progress towards their achievement (the specific target date for most is 2015). In his report¹ to the 2004 meeting of the General Assembly, Secretary-General Kofi Annan characterized current prospects in the following terms:

“… the data available so far suggest that the developing countries fall into three broad groups … The first is a group of countries, comprising most of Asia and Northern Africa, that is largely on track to meet the target of halving extreme poverty by 2015 and to achieve many of the social targets of the Goals. The second group of countries, mainly in West Asia and Latin America and the Caribbean, has been making good progress towards some individual goals, such as achieving universal primary education, but has been less successful in reducing poverty. The third group, largely comprising countries in sub-Saharan Africa but also least developed countries in other regions, are far from making adequate progress on most of the goals. …

“… a major breakthrough is needed if the 2015 targets are to be met. Developing countries must fulfil their commitments, as set out in the Millennium Declaration …, to reallocate and mobilize more domestic resources, reform institutions to suit national priorities, and adopt effective, nationally owned economic and social policies that can provide a spur to economic growth. … Developed countries must also fulfil their responsibilities by increasing and improving development assistance, concluding a new development-oriented trade round, embracing wider and deeper debt relief and fostering technology transfer. Indeed, if the vision behind the Millennium Declaration is to be realized, the Goals must be seen as a global deal that is built on mutual commitments and mutual accountability.”

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3. Economic infrastructure – essentially, transport, energy, ICT, water, sanitation and irrigation – is specifically identified in the MDGs only in respect of water and sanitation, telephones, personal computers and internet users (see Annex 1). But there is no doubt that attainment of almost all the goals depends in significant part, and in some cases critically, on improvements in economic infrastructure services. Secretary-General Annan concludes the relevant section of the report just quoted by referring explicitly to “focused investments in economic and social infrastructure” as one of the five key areas in need of a “quantum leap in scale and ambition” if human poverty is to be overcome. The others are nationally owned strategies and policies, stronger institutions, wider participatory processes, and more resources, domestic and external.

4. To clarify the nature and significance of the linkages between each main type of economic infrastructure and the various MDGs, Table 1 attempts to summarize the relevant conclusions from empirical research of the last thirty years: detailed ex-post evaluations of individual cases, national and international econometric analyses, and statements of professional opinion based on practical experience in developing countries (the main references known are listed in Annex 2, linked by the italic letter in the top right corner of each box of the table). Besides trying to capture in words the key contribution from each type of infrastructure to each MDG, the table gives a rating of whether the contribution might be large (+++), moderate (++) or small (+). This represents a summary judgment, based on the references listed, thinking in terms of how much difference to a village’s initial level of attainment of the MDG could be made by a significant upgrade of the service available in each infrastructure field – mobility, energy, communications, water, etc. Based on the research results reviewed, large was thought of as more than 20%, moderate as 10-20%, and small as 5-10%.

5. The table relates predominantly to rural areas, where the vast majority of very poor people are to be found, especially in Asia and sub-Saharan Africa. With rising urbanization, the share of poor people in urban populations has, however, been increasing in many countries – sometimes simultaneously with a decline in the (still generally higher) rural poverty rates. Many of the linkages noted in the table would be likely to apply equally in urban areas, but the relative significance, for instance, of some might be different. Sufficient research may now be available to warrant preparation of a comparable table focused specifically on urban areas. It is also important to note, in connection with both the contributions described and the significance attributed to them, that the research findings indicate that they have occurred in some of the cases studied and should be able to be repeated, not that they necessarily would occur as an automatic result of infrastructure improvements. Key elements, for instance in responsiveness of the private sector, or the health or education services, to the opportunities opened by the infrastructure improvements, may be missing.

6. The key contribution required from the infrastructure sectors is to facilitate pro-poor growth. While it was a valuable accomplishment, in creating the MDGs, to raise human resource aspects of poverty (basic education and health) to the same plane as income dimensions, it is important to recognize that the income-related goal, MDG 1, is of much broader nature than the social ones and better reflects the core of the problems poor people face. On a national basis, increasing incomes are also essential to sustain the improved education and health services. As the table shows, the significance of the
## Table 1: **Main Ways that Infrastructure Services assist Progress towards the MDGs**

<table>
<thead>
<tr>
<th>Infrastructure Services</th>
<th>MDG 1: Reduce Income Poverty and Hunger</th>
<th>MDG 2: Full Primary Education Coverage</th>
<th>MDG 3: Gender Equality in Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport – Local (Village to Township or Main Road)</td>
<td>+++ Improvements to low-volume local roads and associated networks of village tracks/paths can significantly reduce poor farmers’ transaction costs and expand their production possibilities (incl. non-farm)</td>
<td>++ Village roads significantly affect school enrolment and attendance</td>
<td>++ Girls’ attendance significantly increased by safer roads</td>
</tr>
<tr>
<td>Transport – Trunk (Beyond the Township)</td>
<td>+++ Availability of competitive transport services on adequately maintained trunk network is critical to the effective participation of an area in national and international markets</td>
<td>+ Quality of link to regional center significantly affects quality of teacher who can be attracted and his/her attendance</td>
<td>+ Helps secure better quality of teacher</td>
</tr>
<tr>
<td>Modern Energy</td>
<td>+++ Rural electrification often correlates with sharp increase in regional incomes and growth of non-farm activity. Reliability of modern energy supply strongly affects investment in, and competitiveness of, local enterprises</td>
<td>+ Availability of modern energy increases enrollment and attendance rates, and home electrification raises time devoted to study</td>
<td>++ Modern energy helps families release girls for school: less time collecting fuel-wood and water, and schools improved</td>
</tr>
<tr>
<td>Telecoms</td>
<td>++ ICT significantly improves the efficiency of most service-sector activities (incl. government) and can in particular reach poorer people with information of direct use for improving their economic situation</td>
<td>+ ICT helps expand and improve teacher training, and can make classes more interesting</td>
<td>+ ICT can make school more worthwhile attending by strengthening students’ exam performance</td>
</tr>
<tr>
<td>Household Water</td>
<td>++ Convenient, good water can substantially reduce morbidity and mortality, time spent fetching water, and enterprise interruptions, and improve nutrition, with significant effects on poor people’s productivity</td>
<td>++ Good home water supply increases school attendance (especially by children with literate mothers) and increases learning capacity</td>
<td>+ More convenient home water supply facilitates release of girls for school and reduces absences due to sickness</td>
</tr>
<tr>
<td>Sanitation</td>
<td>+ Adequate sanitation sharply reduces illness and expenditure on medical treatment (itself a significant factor in poverty)</td>
<td>+ Good sanitation/ water helps attract good teacher</td>
<td>++ Good school sanitation and water facilities increase girls’ attendance</td>
</tr>
<tr>
<td>Water Management Structures</td>
<td>+++ Irrigation and flood control structures can greatly increase incomes and nutrition levels of the poor if they are managed to maximize benefits to the community as a whole, and especially if they support production of labour-intensive crops</td>
<td>+ Less drudgery for women in obtaining water for household needs</td>
<td></td>
</tr>
<tr>
<td>Public Markets</td>
<td>+ Reduce transaction costs for small producers and help ensure competitive prices for consumers</td>
<td>+ Make centre at which schools, etc. benefit from same good access</td>
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<tr>
<td>+ (D) Increases use of primary healthcare facilities and facilitates access to better water</td>
<td>+ (E) Positively affects antenatal care and share of deliveries professionally attended</td>
<td>+ (F) Care needed to maximize compatibility of engineering design with local environment</td>
<td>+ Work on local roads/transport can generate much youth employment</td>
</tr>
<tr>
<td>++ (J) Vaccines/drugs supply, visits by more skilled health personnel and emergency evacuations</td>
<td>+ (K) Increases in-hospital deliveries and often critical when emergency obstetrics required</td>
<td>+ (L) Impt. for drug supply &amp; higher-level diagnostics. Care needed to avoid stimulating AIDS spread</td>
<td>- Great care needed in fragile ecological environments to minimize risks and compensate people who suffer</td>
</tr>
<tr>
<td>++ (R) Sharply reduces indoor smoke pollution &amp; impurities in water/food consumed, the two major mortality factors</td>
<td>+ (S) Reduced stress of household chores, and electricity improves medical services (hours, equipment, refrigeration)</td>
<td>+ (T) Improved medical services, incl. from attraction of more qualified personnel</td>
<td>++ Reduces pressure on land resources (by moving water and reducing fuel-wood need), but care needed to avoid ill-effects of large dams</td>
</tr>
<tr>
<td>+ Can promote better health practices and ensure timely availability of life-critical diagnostic info. and drugs</td>
<td>+ (X) Reduce drug stock-outs and make efficient referrals to higher medical institutions</td>
<td>+ (Y) Record-keeping and retrieval services of importance for environmental protection</td>
<td>++ Small quantities of electricity essential for use of modern ICT</td>
</tr>
<tr>
<td>+++ (BB) Good home water supply greatly reduces child mortality, especially if mother is literate</td>
<td>+ Water improves general maternal health and deliveries</td>
<td>+ Clean water important for disease treatment, and for formula milk (HIV mothers)</td>
<td>+++ Crucial for meeting the household water target under this goal</td>
</tr>
<tr>
<td>+ (EE) Improved san’t’n. decreases child mortality &amp; improves nutrition</td>
<td>+ Improved san’t’n reduces maternal illness</td>
<td>+ Effective water disposal reduces malaria mosquito breeding</td>
<td>+ Water improvement much needed in least developed countries</td>
</tr>
<tr>
<td>+ (HH) More ample supplies of water for household use</td>
<td>- - Care needed to avoid adverse health consequences of man-made changes in water regimes</td>
<td>++ Sound planning, design and op. of water-related structures are key in protecting environmental resources and accommodating growing populations</td>
<td>+ Sanitation high priority in least developed countries</td>
</tr>
<tr>
<td>+ Help ensure clean food supplies</td>
<td></td>
<td></td>
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</table>
contribution of the infrastructure sectors is generally greater to MDG1 than to most of the other goals. This reflects economic infrastructure’s role in raising the productivity of the poor by improving their access to markets, local and foreign, reducing the risks of private investments which will provide them employment, and providing them with better information about market opportunities and ways to improve livelihoods.

7. Productivity and incomes also benefit from infrastructure’s contribution to the health and education objectives. Reduced sickness, due to improved water and sanitation, for example, can have significant effects even in the short term. Strengthening of poor people’s human resources will have much greater effects in the medium and longer term. Infrastructure’s contributions to the health and education objectives are partly direct (e.g., better water supply, ICT applications) and partly mediated through health and education services, by facilitating their operation and improving access to them. Direct contributions appear particularly important in connection with the reduction of child mortality (MDG 4). Education and health services also make a direct contribution to improving the impact of infrastructure investments, particularly in water supply and sanitation.

8. The MDGs thus present a major challenge to all the infrastructure sectors: to help make economic growth more effectively pro-poor and to enable improvements in the prioritized aspects of human resource development.

9. The purpose of this paper is to lay the foundation for Task Team discussions to achieve greater consensus about how aid to infrastructure can best help the infrastructure sectors respond to this challenge. It seeks to identify areas where consensus seems to exist, and equally those where more work and discussion may be most fruitful. It focuses mainly on issues identified in the relevant part (reproduced in Annex 3) of a questionnaire survey which was sent to DAC donors earlier this year by the DAC Poverty Reduction Network’s Task Team on Infrastructure for Poverty Reduction. It is based on the responses submitted and related documents, and review of selected projects either highlighted therein or supported by the multilateral agencies (which had not been requested to respond directly to the survey). While the projects discussed can only be a tiny fraction of the wide array of efforts undertaken by the different agencies, and important examples have no doubt been missed, it is hoped that the few that could be presented cover reasonably well the range of experience to date.

10. The questionnaire responses suggest that the donor agencies are at one in attaching very high priority to economic growth in the developing countries, including for those at the lower end of the income distribution (Pro-Poor Growth or MDG 1). Recognizing the importance of infrastructure services for supporting growth, there is also a common concern to identify ways in which the infrastructure sectors could better be helped to promote pro-poor growth. Interest is also rising in the contributions that infrastructure services make to education, health and environmental objectives, and increasing thought is being given to how those contributions could be strengthened.

2 Responses were received from 9 countries: Australia, France, Germany, Ireland, Japan, Sweden, Switzerland, United Kingdom and United States. Broader advisory notes on the topics covered in the questionnaire were submitted by the World Bank, in the form of a survey of relevant literature, and by ILO/ASIST, reflecting that programme’s experience in countries of the Asia Pacific Region.
11. These points of broad consensus seem more important to daily practice than seemingly wide divergences in formal attitudes to the MDGs as a whole, ranging from agencies selectively using them to guide and monitor their own work to a few, at the other extreme, which see them as valuable only more generally, for raising the profile of the development problem. While the large majority of agencies deny any significant conflict between “MDGs” and “Infrastructure” in their internal discussions, one or two which have given most attention to the MDGs express concern that the overall balance of their agency’s work in some countries has been diverted too heavily to direct support for health and education, at the expense of infrastructure activities. They also stress the increasing need for clear demonstration of the contributions infrastructure improvements are making, and need to make, to achievement of the social MDGs, if infrastructure is to compete effectively for agency budget allocations in the coming years.

12. Following this general introduction, the paper takes up the main issues raised in the questionnaire survey and responses: Balance between national and local interventions (Section II), Regional integration and cooperation, mainly international (Section III), Private sector role in infrastructure (Section IV), Links with social infrastructure and other services (Section V), Spreading the benefits of infrastructure improvement (Section VI), and Financing Requirements (Section VII). Each section summarizes the balance of views expressed in the questionnaire responses, elaborates where necessary, and presents (in marked boxes) brief synopses of a few projects, some with outcomes already to show and others only recently approved, which have adopted particularly interesting approaches.

I. Balance between national and local interventions

13. Making growth more pro-poor often depends on extension of a minimal level of modern infrastructures and infrastructure services to places, whether rural or urban, previously excluded – and hence severely handicapped in the extent to which their residents could participate in the modern economy. Local infrastructure projects are thus an obvious important need. But growth of employment in a country, and provision of better services, also depend critically on expanding trunk infrastructure in line with growth of demand. Moreover, the key issue facing the national agencies responsible for regulating and managing infrastructure and the services based on it is less a matter of individual project execution, more one of securing a more pro-poor pattern of service provision generally.

14. In responding to the questionnaire, all the donor agencies emphasize that they are open to financing trunk as well as local infrastructure, and that they work closely with other donors active in the same sector in a country to try to maximize the combined value of their interventions. Most stress that they are able to finance only relatively small parts of a country’s total programme within any infrastructure sector, and that this may constrain their involvement in major improvements of trunk networks. On the other hand, in connection with whatever they finance, all seek to make a contribution at the national level – whether by selecting local projects that should become replicable models, by providing simultaneous assistance for strengthening sector planning or management, by participating actively in dialogue on reform of government policies in the sector, or other measures. The cases described in Boxes 1
and 2 below both illustrate, in different ways, how aid agency concerns with broader national policies have increased over time.

15. More than half of the agencies emphasize that they now try to select their interventions in light of a diagnosis of poverty, identifying its location and dimensions and priority steps towards its reduction. In some cases this is a country analysis prepared by the aid agency itself, in other cases it is the recipient country’s own PRSP, while in yet other cases both may be available. Many of the agencies also stress the importance in project selection of agency-wide priorities, adopted in response to the needs of most of the countries with which the agency is working, and developed into areas of agency comparative advantage: examples would be areas such as the strengthening of local governments, the enabling environment for good governance more generally, political economy of implementing difficult reforms, introduction of Integrated Water Resource Management (IWRM), or poverty-relevant applications of new technologies (e.g., in ICT and energy). A major preoccupation which appears to be shared by virtually all the donors in the infrastructure field is to improve on past performance in regard to project sustainability, especially local capacities for efficient operation and maintenance, and reliable financial flows from users to keep these capacities in place and cover their costs.

Box 1: Area Based Programmes in Africa

The large majority of Ireland’s aid for infrastructure development in Africa has been provided in the context of Area Based Programmes (ABP), particularly in Ethiopia, Tanzania and Uganda. The approach from the start was to identify particularly poor Districts in each country and then to support local government authorities there in organizing a process whereby communities would identify their own needs in an informed way. Their proposals would be reviewed in workshops assembling representatives of all stakeholders and of all concerned government ministries, and submitted for District Council approval. The projects financed mainly with Irish aid were mostly school buildings, roads, health centres, water and sanitation facilities, government offices, technical assistance and training, and small agricultural extension activities. Various evaluations have found significantly positive results, especially in terms of the infrastructure improvements achieved and increased delivery of social services.

The roads work was mostly rehabilitation of gravel and earth District roads, some community tracks and paths, and occasionally gravel Trunk roads. Great emphasis was given to spot improvements, low-cost interventions and, in all cases, the use of labour-intensive techniques, with particular attention to facilitating and encouraging the participation of women. Setting wages at levels which would attract the needy but not the better off was seen as an important way of benefiting the poor. In some cases the wages earned in this way enabled families to make investments (e.g., in bicycles) which much increased the direct benefits they could draw from the roads.

Direct Irish financing of ABPs is falling now, with increasing proportions of funding being channeled to SWAps and General Budget Support. Ireland is giving more attention to policy, legal, financing and institutional frameworks for infrastructure more generally in the countries. But this work is benefiting from the ABP experience, and a technical assistance relationship is often maintained with the Districts of earlier focus.
16. Selecting the right focus for an intervention in a particular country at a particular time is nonetheless seldom easy. Many aid agencies, using various terminologies, have drawn distinctions between projects directly targeted to poor people, those which serve wider populations but including many of the poor (sometimes termed indirect poverty, or inclusive, projects), and those with broader – often mainly policy-level – objectives that are expected to strengthen the environment for pro-poor growth. Each has its strengths and weaknesses. Ultimate poverty reduction impact will depend in all cases on a hard-to-predict chain of subsequent decisions and actions by government and others, sometimes not even directly related to the project itself. A delicate judgment has often to be made as to which type of project will prove best suited to the likely

Box 2: **Coordinated Transport Development in Northern Vietnam**

A leading region in the spectacular reduction of poverty in Vietnam over the last 10 years has been the Red River Delta, spanning the area from west of Hanoi to the country’s northeast coast. While the proportion of the overall national population living in poverty was halved between 1993 and 2002, poverty in the Red River Delta fell by nearly two thirds, to 22%. Hunger has fallen even more dramatically, to 5%. Recent comprehensive evaluation studies show that major transport investments, especially in trunk and feeder roads and in upgrading of Haiphong port, financed mainly by Japan, were key contributors to these accomplishments, especially in the second half of the period. The shift to non-farm activity (it almost doubled from 36% of household heads in 1998 to 60% in 2002) became the main driving force for poverty reduction.

While the core transport investments were the modernization and expansion of Haiphong Port and major improvements of the Hanoi-Haiphong highway, their effect on the region was greatly increased by the liberalization policies in agriculture and foreign trade that were pursued by the government, and by key complementary actions by the local authorities. Improvements of local roads, financed from national sources as well as by Japan and other donors, enabled farmers to convert to production of high-value fresh products for urban markets and also attracted supporting financial services into the rural areas. Agricultural extension services played an effective role. Fishery production in the provinces along the highway more than quintupled between 1995 and 2001.

In a national context that still offers only rather weak infrastructural support for industrial activity compared with competing countries, creation of a few industrial estates with above-normal facilities was very important for the attraction of export-oriented foreign direct investment in the Red River Delta region. Already by 2003 50,000 jobs had been created, and domestic private manufacturing activity, generally in smaller firms, has been increasing even more rapidly. These developments have also been significantly assisted by expansion of vocational training programmes by local public and private institutions.

Further extending its activities in the transport sector, Japan also financed in the later 1990s a comprehensive national transport study which identified 27 core corridors and established a development strategy for each. These projects are being taken up in appropriate order, with financial assistance from Japan and other donors.
political and economic circumstances in the country. One of the agencies responding to
the questionnaire describes, for instance, its important shift in emphasis in Nepal, away
from inclusive project category (for enlarging the trunk network of importance for long-
term development) to highly targeted support for sustained employment of the poorest
people in remote areas on rural road construction, and assistance to them in developing
follow-on economic activities. Another agency refers to the high priority it has given to
trunk road rehabilitation and maintenance in Papua New Guinea to assure continued
stability and conducive environment for growth, with increasing emphasis in new
projects to potential contributions to some of the health and education MDGs.

17. Table 2 attempts to classify all the projects presented (in the boxes) in this paper
according to the Targeted/Inclusive/System Reform breakdown introduced above and
the main MDG contributions they should be making. The projects are listed in the same
order as they are presented in this paper. Targeting appears to have become generally

<table>
<thead>
<tr>
<th>Targeted</th>
<th>Inclusive</th>
<th>System Reform</th>
<th>MDG Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tight</td>
<td>Mod.</td>
<td>Loose</td>
<td>Primary</td>
</tr>
<tr>
<td>Africa – Area Based Prog.</td>
<td>3</td>
<td>PPG E. &amp; H.</td>
<td></td>
</tr>
<tr>
<td>Vietnam – Red Riv. Delta</td>
<td>1</td>
<td>PPG</td>
<td></td>
</tr>
<tr>
<td>Africa – Railway Concess.</td>
<td>+ 2</td>
<td>PPG LLC, Env.</td>
<td></td>
</tr>
<tr>
<td>Pacific Is. – Regional Trpt.</td>
<td>1</td>
<td>PPG SIC</td>
<td></td>
</tr>
<tr>
<td>Zambia – Rlwy. Mgt.</td>
<td>1</td>
<td>PPG LLC</td>
<td></td>
</tr>
<tr>
<td>Ghana – Urban Water</td>
<td>1</td>
<td>+ Water PPG</td>
<td></td>
</tr>
<tr>
<td>Haiti – Urban Water</td>
<td>1</td>
<td>Water PPG</td>
<td></td>
</tr>
<tr>
<td>Cambodia – Rural Water</td>
<td>1</td>
<td>Water PPG</td>
<td></td>
</tr>
<tr>
<td>Tajikistan - Power</td>
<td>1</td>
<td>E. &amp; H. PPG, Env.</td>
<td></td>
</tr>
<tr>
<td>Bolivia – Energy/ICT</td>
<td>1</td>
<td>+ PPG ICT, E&amp;H</td>
<td></td>
</tr>
<tr>
<td>Bangladesh – Sanitation</td>
<td>1</td>
<td>+ San. PPG</td>
<td></td>
</tr>
<tr>
<td>Bangladesh – Rural Roads</td>
<td>1</td>
<td>PPG E. &amp; H.</td>
<td></td>
</tr>
<tr>
<td>Vietnam – No. Mountains</td>
<td>1</td>
<td>PPG All Other</td>
<td></td>
</tr>
<tr>
<td>Nigeria - Irrigation</td>
<td>1</td>
<td>PPG</td>
<td></td>
</tr>
</tbody>
</table>

Notes: PPG = Pro-Poor Growth (MDG 1) E. & H. = Education and Health
LLC = Landlocked Countries SIC = Small Island Countries
ICT = Information and Communication Technologies Env. = Environment (MDG 7)
+ indicates the presence in the project of a major supplementary dimension

more refined and elaborate over time, and we have tried to use the modern stricter
standards; some might consider that more of the projects should be shifted to the left-
hand columns. Using our classification, 7 of the projects are ‘Targeted’; 6, mostly but
not all larger, are ‘Inclusive’; and 4 fall in the ‘System Reform’ category. The
relevance of most of these last four projects to the MDGs rests partly on their
importance for reducing the isolation of land- and sea-locked countries. Their delivery
of the broader pro-poor growth dividend expected of them will depend on supportive
government macroeconomic policies – as have been so valuable for the Vietnam project
discussed in Box 2. All 17 projects are expected to have positive effect on pro-poor
growth (MDG 1), but sometimes secondary to another MDG.

18. Many reviewers of PRSPs have found them normally rather weak on pro-poor
growth policies (as contrasted with public expenditure allocations), and especially on
strategies for sectors such as agriculture and infrastructure as compared with the human
resource sectors (health and education). Some donors have also suggested that project
design, and assessment of likely outcomes of alternative approaches, would likely
benefit substantially from preparation of sectoral (in addition to national) poverty
analyses. Sida, for example, in its main policy document on poverty reduction\textsuperscript{3},
suggests that “poverty-related sector studies (preferably elaborated by the recipient
country) should be used in all major Sida interventions.” A useful way of moving this
concept forward, with significant potential benefit to the infrastructure sector, might be
for the Task Team to propose, and help arrange, at least one or two joint efforts between
a DAC donor and an interested aid-recipient country to prepare pilot studies of this type
for use by all. Box 3 gives a first draft of the main questions that would need to be
covered to provide the basis for developing an infrastructure strategy oriented to
promotion of pro-poor growth.

19. An area where there seems to be need for more effective joint action by the
donors, in collaboration with partner aid-recipient countries, is the raising of revenues
from infrastructure users. As noted in para. 15, this appears to be a preoccupation
shared by virtually all the donors. It corresponds to the broader concern about domestic
revenue mobilization for implementation of the MDGs that was expressed, as noted in
para. 3, in the UN Secretary-General’s recent report to the General Assembly. There is
no doubt that poor recovery of costs from existing users of infrastructure services is a
major obstacle to pro-poor directions in infrastructure development. Some new
techniques, such as establishment of Road Funds under independent boards and
involvement of infrastructure (e.g., electricity) users in bill collections, are beginning to
show positive results in this sensitive but critical area. An approach suggested by one
donor is that all the donors involved in a particular sector in a given country should
reach joint agreement with the host country on the charging principles it will apply in
the sector and systematically support the application of such principles.

II. Regional Integration and Cooperation

20. This issue is important to economic efficiency, competitiveness and growth in
most developing countries, and often of critical importance for land-locked and sea-
locked countries, highlighted as such in MDG 8, and many of them among the least
developed countries with high shares of population in the group focused in MDG 1.

21. The questionnaire that was sent to the DAC member countries referred to
international trade and cooperation issues but directed respondents’ attention mainly to
choices of investment for meeting within-country needs. Hence the answers to the
survey do not permit objective assessment of the range of opinion and experience in this
area. Several of the agencies referred, however, to the importance they attached to the
role of international trade in furthering countries’ development, and one or two
mentioned trade-related infrastructure reforms as among the activities they had assisted
which would do the most for accelerating pro-poor growth.

22. Trade facilitation, and regional cooperation in areas such as energy grids and
ICT networks, are receiving growing attention from the multilateral development banks
and bodies such as ASEAN and ECOWAS. Continued bilateral support is important.

Box 3: Assessment of Performance and Potentials for Poverty Reduction through Infrastructure

The assessment should seek to answer, for each of the main infrastructure sectors in a country (i.e., the various transport modes, the modern energy sectors, ICT, water and sanitation, and irrigation and flood control), the following 14 principal questions:

1. How do the country's regions (and sections of large cities) differ in respect of quantity and quality of infrastructure services now available, relative to population and the needs voiced by customers?

2. How have the quantity and quality of services in the various regions and city-sections changed over the last two years? What changes have occurred in the number of customers and in the services offered?

3. What have been the expenditures in each of the regions and sections over these two years on (a) system maintenance and (b) system upgrade/expansion?

4. What expenditures were considered or planned for these two years but not in the end undertaken? What were their expected rates of return? Why were they dropped?

5. What is the relationship, for the various regions and consumer classes (distinguishing, in the residential classification, poorer households) over the last fiscal year, between user charges collected (tariffs and user taxes) and economic costs of service, and what factors account for the differences?

6. Have appropriate technical standards been set for the different segments of market demand, and does the government/regulator have satisfactory means for verifying that costs claimed by operators (whether public or private) and contractors for meeting these standards are as low as they could reasonably be?

7. Does the country have in place an effective system at the national level for planning and budgeting expenditures in the sector, and what criteria are used to allocate resources among projects and regions?

8. What, if any, influence do poorer residents (women as well as men) of a locality have on public expenditure planning and project choice/design at the local level, and through what means is it exercised? How is local planning linked with national planning and budgeting? How fully has it been possible to implement approved District plans?

9. Have the people, and government services, in the different regions, increased economic activity on the basis of recent infrastructure service improvements? Is there an effective system for coordinating initiatives of other government departments with infrastructure improvements?

10. What potential expansions of economic activity which would be especially relevant to small farmers or could generate large employment for poor people (e.g., particular crops or manufactured products, or agro-processing) are considered by their promoters (such as private sector, mayors or ministries) to be particularly constrained by infrastructure deficiencies?

11. What, if any, scope is there for additional efficient use of labour-intensive techniques in infrastructure construction, consumer connections or maintenance, and how should it be managed?

12. Are adequate standards effectively applied in handling environmental, social and resettlement aspects of all works undertaken?

13. Do the authorities and operators responsible for infrastructure communicate effectively with the public about their progress and plans, best use of their services, and the difficulties they face in providing them?

14. Does civil society generate regular independent assessments of the infrastructure sector’s performance, do they give adequate attention to its contribution to pro-poor growth, and what effects, if any, do they have?
Box 4: **Trunk Transport Links for Landlocked Countries**

The distances separating the landlocked countries from sea-ports are often long, so that railways, if efficiently run, may be able to do more than highways to reduce the transport disadvantages that these countries suffer in international trade. Since the late 1980s growing numbers of developing countries have had positive experiences with concessioning of their railways to competitively selected private-sector operators as a means to bring about major improvements in efficiency. This trend has begun to benefit some of the landlocked countries.

Chad, Central African Republic and Congo are all partly served by the Cameroon Railways which were concessioned to a private company, Camrail, in 1999 and provided in 2002 with financial support from France, the European Investment Bank and IDA. That support helped cover the costs of an initial emergency investment programme, procurement of railway equipment and longer-term rehabilitation of the railway infrastructure.

This year a project has been agreed to support the concession that the respective governments had signed with a private operator for the Dakar-Bamako railway, a main lifeline for Mali (of particular importance currently due to the unstable situation in Côte d’Ivoire), and to carry out periodic maintenance on major related roads within Mali. France, the West African Development Bank (BOAD) and the African Development Bank are the major financial supporters in addition to IDA. For the railways, this financing covers mainly rehabilitation of the most deteriorated sections of the track and assistance to the excess railways staff (nearly half of the total) who had to be released before the concessionaire took over (severance pay, and assistance in adjusting to the new situation, preparing for other work, and finding jobs). On the road side, it covers periodic maintenance of some 700 kms. of trunk road, as well as assistance in the development of two important new institutions that are being established – a Road Fund under a public/private Board, and a national Road Agency – and support for HIV/AIDS prevention in connection with the projects, as well as driver training and road safety activities.

An important dimension of both Cameroon and Mali projects is that, in addition to sharply improving quality of service to railway users, they are expected to convert the railways from a serious drain on the hard-pressed government finances into significant contributors to revenues.

Box 5: **Pacific Regional Transport Study 2004**

This study, sponsored by Australia and addressing the island nations of the South Pacific, identified regional characteristics that make transport planning and investment in the region difficult. Air transport and shipping are both regional and national issues, but investment choices are strongly affected by prior national political decisions: direct government involvement in commercial activities, poor decision-making in infrastructure investment and maintenance, service provider charges insufficient to cover recurrent costs, monopoly positions protected by legislation, institutional structures that are highly centralized and resist change and devolution, and lack of expertise in both central government ministries and at provincial level.
The major theme of the report is that government should avoid entering areas of the economy that are better operated by the private sector. The principal role of government is to administer the regulatory systems and manage supporting infrastructure, acting in the interests of the community as a whole. Approaches suggested to address the problems identified include regional strategies, country strategies, commercialization of shipping and aviation services, donor coordination, and institutional strengthening.

IV. Private Sector Role in Infrastructure

23. While it has fluctuated and grown more slowly in most of the developing countries than was overoptimistically hoped in the middle 1990s, increased private sector involvement has nonetheless had important effects: especially notable in provision of telecommunications in most countries, while many have benefited too from concessioning of railways and some port infrastructures, and some from similar operations in electricity and water. Local small-scale private-sector involvement in water and sanitation, and to some extent in electricity and telecommunications, is also becoming more important. Developing capacities for fair regulation, promoting competition wherever possible and establishing different technical standards for services to different areas in a country, are key issues.

24. The questionnaire responses suggest a high degree of unanimity among the aid agencies on the importance of the private sector as the driving force for economic growth, and of infrastructure as a key part of the enabling environment, or investment climate, for private-sector initiative. A few of the agencies also attach very high priority to the development of greater private-sector role within the infrastructure sectors themselves, and consequently directly link their strategies for development of infrastructure and of the private sector. These agencies stress, on the one hand, the contribution they believe the private sector can make to improving the efficiency of the infrastructure sectors and, on the other hand, the great need for the supplements that private capital can make to overstretched public resources for achieving an adequate pace of infrastructure development.

25. The agencies report a wide range of techniques to promote the role of the private sector within infrastructure. More traditional ones include encouragement to public agencies to contract out competitively construction and maintenance work, assistance in the formation of new small companies or cooperatives for such work, and training of contractors; such activities often remain important in connection with rural roads and water supply. Attention has greatly increased in recent years to the potential role of the private sector in operation of infrastructure facilities, both large and small. Some agencies have an explicit policy to promote Public-Private Partnerships (in a wide variety of alternative forms) and Concessions, wherever full-scale privatization is not yet possible – while recognizing at the same time that building of the necessary host-country consensus is not a short-term process and the pace cannot be forced. To facilitate such initiatives they are taking an active part in the development of new guarantee systems and financial instruments to help increase the flow of international private capital into developing-country infrastructure. Reflecting the expanding role of the private sector (domestic as well as foreign) in infrastructure operations, almost all
the agencies provide some, and sometimes substantial, support to countries in the long, hard task of building capacities for effective independent regulation of infrastructure services.

26. While it is understandable that the main attention in connection with the role of the private sector would go to energy, ICT and water activities (and, in selected cases, railway and port operations), it is perhaps surprising that the questionnaire responses seem to make no reference to private-sector issues in road transport. Given the limited relevance of toll-road solutions in many developing-country situations, is enough attention being devoted to multi-year performance-based contracting of road maintenance and operation as a means to attract more private-sector participation? Remembering the high prices that many studies have found for road transport in Africa, as compared with Asia, is enough work being done on ways to improve the efficiency and competitiveness of the African road transport sector and its suppliers?

Box 6: Management Contracts as an Interim Step

Hiring a private-sector management team – sometimes including in its contract a provision for remuneration linked to attainment of specified targets for enterprise performance – is often seen as a first step towards fuller privatization of a state-owned enterprise.

The poor performance of Zambia Railways has long been a major concern of the local business community and the international donors. Freight traffic carried fell from 6.2 million tons in 1975 to 4.5 in 1989 and only 1.4 in 1997. The government had several times indicated readiness in principle to privatize the undertaking but had not taken effective action. In a bold move, Sweden offered at this point to finance a management contract in support of the railways board and government policy work toward privatization. Agreement between the two governments was signed in March 1998. The foreign management team succeeded in beginning to reverse the railways’ fortunes. Gross overstaffing was substantially reduced, releasing resources to enable more equipment to be kept in operation, and traffic began to recover. Financial management improved, and some debts were paid off. But it was also clear that more was needed, and in March 2000 the government finally decided in favour of privatization. Specific plans were prepared, and appraised by IDA, which approved a credit, mainly to cover the costs of the substantial further staff retrenchment needed and help with urgent rehabilitation of equipment and track. Eventually, in February 2003, government signed a 20-year concession agreement with a private consortium. However, implementation has yet to start.

Ghana’s parastatal responsible for urban water supply throughout the country, the Ghana Water Company, presents, in some respects, a contrasting case. Its poor performance has also long been recognized, and it suffers from some of the same problems, including substantial excess staff and inadequate cash flow for essential investment. But in this case government had firmly decided in the mid-1990s to seek a private partner who would run the facilities on a lease basis and bring in foreign private capital. Government was working on the development of a supportive environment, notably including creation in 1997, and subsequent strengthening, of an independent utility regulatory commission. But by 2003 it was clear that the international
environment for attracting private capital into municipal water operations had changed so much that it was unrealistic to envisage a lease arrangement at this time.

Work is now underway to recruit an international management team for a five-year contract. IDA has approved a credit to cover substantial expansion and rehabilitation, staff severance costs, and remuneration of the private management, and the Nordic Development Fund is expected also to provide some financing. A notable feature of the project is the sustained and serious attention that government has given, with IDA’s help, to public communications and consultation about the project, to try to prevent misunderstandings, incorporate suggestions and maintain consensus throughout the country. Also noteworthy is planned inclusion in the management contract of performance criteria relating to increases in the volume of sales qualifying for the lifeline tariff, thus giving the operator incentive to extend service to as many new connections as possible. This reflects the central immediate purpose of the project and the reform: to expand services as rapidly as possible to the 40% of urban residents, very predominantly the poor, not yet having piped water supply.

Box 7: Community and Private Enterprises for Water Supply

France attaches a special importance to the water and sanitation objectives included under MDG 7, considering the availability of these services a basic human right. It has devoted 15% of its total foreign aid in recent years to this purpose.

One illustrative small project reviewed by its aid evaluation office in 2002 addressed slum-dwellers in Port au Prince, Haiti, who had had to buy their water from tanker trucks or travel several kilometres for their supplies. Popularly elected Comités d’Io were organized and trained in seven parts of the city, accounting for some 200,000 people or 10% of the overall population, and standpipes and networks linking with the municipal water company’s distribution system were built. The Comités purchased water at a bulk rate equivalent to $0.26/cu. m. and sold it to consumers at $0.72/cu. m., the municipal company’s full average cost. The margin covered the operating and maintenance costs of standpipes and local networks, with any profit assigned to support other local public services. The project demonstrated that the slum-dwellers, previously considered too poor for service from the municipal company, were on the contrary prepared to pay economic costs. The evaluation identified significant health and time-savings benefits for those served, as well as increased community ability to organize in a similar way for other purposes.

An illustrative project in rural water supply, also executed by NGOs, was that with the Ministry of Rural Development in Cambodia, aiming at the organization of local non-profit user associations, and of small local private companies to manage the services under contract with the associations, in several different provinces. The objectives were generally fulfilled within the two-year period foreseen. It proved much easier to convince the users to form associations, contribute to capital costs and pay monthly maintenance charges, in areas that had previously lacked public supply points. In areas where the need was rather for renewal of systems that had broken down, this proved much harder because the systems had normally been installed without local involvement or acceptance of any responsibility.
Box 8: **Private Sector in Rural Power and ICT**

As an alternative to the traditional national utility which had generally shown such weak performance in extending services to poor consumers, especially in rural areas, developing countries have been increasingly experimenting with various ways of promoting private-sector initiative in provision of rural power and telecommunication services. Many of them apply, in one form or another, the concept of Output-Based Aid, envisaging the provision of public subsidies, in accordance with pre-agreed formulae, when the services contracted have been satisfactorily delivered.

The Pamir Power Project addresses the needs of the 250,000 people of mountainous Gorno-Badakshan, the poorest oblast of Tajikistan, which is itself the poorest of the Soviet Union’s successor states, with per capita income, in PPP terms, approximately equivalent to that of Kenya. The oblast had been virtually fully electrified, with power generated by diesel engines. With the break-up of the Soviet Union, liquid fuel deliveries could no longer be afforded, and service deteriorated drastically, dependent on gradual development of small local hydroelectric sites. The Aga Khan Foundation assisted substantially with this work throughout the 1990s. In 2000 it reached agreement with IFC to propose the granting of a 25-year concession for power supply in the oblast to a private company that they would jointly create, with majority Aga Khan ownership. While IDA and IFC both provided loan funds to help cover the costs of the required hydroelectric expansion and transmission/distribution rehabilitation, the contribution which ultimately closed the financing plan was a $5 million grant from the Swiss government, as Output-Based Aid, to help cover the subsidy that the Tajikistan government considered essential, mainly for residential lifeline consumption (200 kWh/month in winter and 50 kWh/month in summer), for the first ten years. The project is expected to have significantly positive effects on education and health services and on the environment (water supplies and forestry protection), and potential effects on productivity and enterprise, thus contributing to most of the MDGs.

In 2003 IDA and the Nordic Development Fund committed support for the first phase of a programme in Bolivia entitled ‘Decentralized Infrastructure for Rural Transformation’, aiming at the accelerated delivery of infrastructure services through private-sector led mechanisms as a catalyst for the development of rural areas. Within the framework of almost totally privatized utility services that had been created in the 1990s, the programme aims at bringing services (and assistance in their use for productive purposes) to the smaller towns, villages and dispersed settlements, often inhabited mainly by indigenous people, which had been largely neglected at earlier stages. The first phase focuses mainly on rapidly increasing use of solar home systems, using photovoltaic technology (and productive applications mainly in support of agriculture) and cellular telephones (and ICT services relevant to daily productive activities) in four poorer mountainous regions of the country having a total population of some 500,000. Concessions for five-year provision of service to identified areas within the targeted regions would be opened to competitive bidding, with award to the supplier requiring the lowest subsidy. This Output-Based Aid would be disbursed largely upon completion of satisfactory initial service installation (household power systems and necessary networks of repeater stations for cellular telephony) but partly also several years later, provided that satisfactory local servicing and marketing arrangements were being maintained. To lay the foundation for subsequent phases of the programme, much work is also envisaged on improvement of regulatory
arrangements and financing mechanisms, as well as further ways to promote productive use of the services. Already in its first phase useful contributions are expected to the quality of education and health services and to increased household income generation.

V. Links with Social Infrastructure and Other Services

27. The explicit incorporation into the MDGs of education and health targets highlights the importance of good coordination between economic and social infrastructure and the services each supports, which is nonetheless a difficult objective because of the vertical, ‘silo’ nature of most government administrations and the limited administrative capacities of most local governments.

28. The questionnaire responses suggest that the majority of donor agencies recognize the key importance of good complementarity among economic infrastructures and between them and social infrastructures, and the frequent need in more backward regions for deliberate public initiatives to bring this about. Among the linkages, they attribute particular importance to those with markets and agricultural services in the case of roads, and those with health and education services in the case of energy and water/sanitation.

29. As regards measures to improve this type of coordination, the donor agencies point from their experience to steps that sometimes need to be taken in project design, such as providing support for improvement of markets along with that of roads, or ensuring inclusion of health and education establishments in electrification and water/sanitation programmes. Area Based Programmes have also tried to stimulate appropriate complementary actions among the different public services. But more generic solutions are required, less dependent on ad hoc donor initiatives. Strengthening local governments, with emphasis on regular participatory planning at the community level, is seen as the most important step. The resultant plans need to be fed up to the next higher level of government, for incorporation in District-wide plans. Such efforts have to interact with the processes for preparing and monitoring the Medium-Term Expenditure Framework (MTEF) for the national budget, and the PRSP.

30. Donors believe that they have also been able to help by such means as raising coordination issues at key stages in MTEF and PRSP preparation processes and by encouraging Ministerial staff to broaden their view – Health and Education Ministries to give more consideration to road access in siting their facilities, and infrastructure authorities to recognize the important role they can play in improving social services that are of widespread popular interest. As suggested by a few of the questionnaire responses, some of the coordination problems – connected, for instance, with water/sanitation, agriculture and village transport – are almost certainly attributable in part to the excessive male dominance that has often characterized donor and recipient government administrations alike.

31. Donors can sometimes make important direct contributions through multi-sectoral involvements at the local level (eg., the above-mentioned Area Based Projects, or Swedish Sida’s involvement in the Niassa province of Northern Mozambique), but the role that they are more commonly called upon to play is to promote relevant
improvements in government planning, management and capacity building, whether in the framework of larger-scale infrastructure projects and/or through dialogue with other government departments.

**Box 9: Sanitation Diffusion in Bangladesh**

The UK has been supporting for several years the work of Water Aid Bangladesh and its partner local NGOs on community-based water supply, sanitation and hygiene education. It believes that they have come up with a much more promising approach than applied in the past to sanitation. The new approach has already attracted high interest in Bangladesh and from neighbouring countries, and is likely to be relevant further afield too.

The essence of the new approach, called Community-led Total Sanitation, is to address the problem at the level of the whole community rather than that of households, as in the past. The aim is to transform individual hygiene and sanitation behaviours throughout the community and thereby yield clean living environments and health benefits for all.

A project which is just now starting, called Advancing Sustainable Environmental Health (ASEH), planned to affect 2 million people in difficult rural and urban contexts in Bangladesh, has been adjusted in light of promising results from pilot applications of the new approach. Much more attention has to be given to sanitation and water facilities in public spaces – religious and educational establishments, markets and workplaces, railway stations and bus depots. The project will seek to mobilize public opinion and resources to ensure that the issue of facilities beyond the household level is addressed. In primary schools, for instance, they often already exist but are left locked or are so ill-maintained as to turn away potential users. For secondary schools, attention has to be given to arrangements facilitating menstrual hygiene. Public establishments have to accept a responsibility to provide, and keep clean, adequate facilities, and public opinion has to be sufficiently vocal to ensure fulfillment of this responsibility.

**Box 10: Targeted Programmes for Combined Service Improvements**

Many countries have been experimenting in recent years with programmes to channel resources into public infrastructure of particular interest to the poor and to do it in such a way as to secure a better balance than in the past among different types of infrastructure and other public services, improving the return on all the expenditures. These initiatives have often been closely related to broader national policies for decentralization of responsibilities towards lower levels of government and strengthening the capacities of those levels.

Germany joined with the Asian Development Bank in 2002 to support the upgrading of 1,000 kms. of main rural roads serving poorer areas within the generally poor southwestern part of Bangladesh, strengthening at the same time the management capacities of the Union Councils (lowest level of elected government) in the area. To reinforce benefits to the poor, much attention is given to the use of labour-intensive techniques in road construction and maintenance, and in particular to increasing the employment of poor women in these works. GTZ has also led training and broader promotion efforts with local NGOs to help interested women who have participated in
the road work to find longer-term employment, including through establishment of small independent businesses. Besides road improvements, the project also supports the upgrading of linked local markets, a combination that has already proved in several cases to accelerate growth in use of the roads as well as the markets. Proximity of education and health facilities is taken into account in selection of roads, and the improvements are expected to increase use of them too.

The capacity-building components of the project, mainly handled by GTZ, focus on developing the abilities of the government department responsible for the main rural road network to promote and assist local, Union-level participation in road planning and management, and improving Unions’ capacities for coordinating development more broadly. Some training is being provided to members of all 900 Union Councils in the project area, but 32 (two from each District) are to pilot major innovations: formation of Union Development Coordination Committees, introduction of “citizens’ forums” as a means to foster participation in public decisions, and experiments with retention of market license fees at the local level to enable Unions to play a more effective part in managing, and increasingly financing, maintenance of local roads, markets and similar facilities.

The Northern Mountains project in Vietnam, assisted by IDA and the UK (and prepared with the aid of substantial funding from Japan), is able to carry similar broad objectives somewhat further because of the country’s higher general levels of educational attainment and stronger traditions in government promotion of local development. It deals with a lower, more local level of infrastructure, and addresses a region that has been seriously lagging the rest of the country and now has a poverty rate almost twice the national average. National policy has been to devolve increasing development responsibilities to the Communes (population usually of 1,000-5,000 in rural areas), with great emphasis on broad local participation in decision-making. Within the Northern Mountains region the project focuses on 370 Communes, selected for high poverty and greatest difficulties in achieving development. These Communes have a population of some 1 million (about 8% of the regional total), the large majority belonging to ethnic minority groups. The project offers support for a very broad range of activities – construction and upgrading of roads, bridges, paths and markets, irrigation and household water supply, schools and health centres, and also operational activities such as expanded agricultural extension, training and research work, community health awareness campaigns, or upgrading of the qualifications of teachers and health staff – with criteria prioritizing activities, of whichever type, benefiting the poorest and most remote villages within each of the communes covered.

Partly because of the particular need to help the ethnic minorities find their own way towards improvement of their situation, great emphasis has been given to identifying and organizing appropriate participatory mechanisms. The planning process starts in each commune with a Community Assessment, primarily by local people, identifying the problems they perceive and ways to overcome them. This was piloted in combination with the Village Development Planning that had been developed (with support from GTZ) in one of the participating provinces with a view to general application and integration into the province’s annual planning process. With the aid of budget envelopes, costing guidelines and eligibility criteria provided by the province, the Commune Development Board selects projects for the year ahead. Ceilings are set to allowable unit costs for the main types of project (e.g., per hectare irrigated,
kilometre of road improved), but more elaborate economic calculations are not required. Execution of most projects is managed by the relevant line departments at the next higher, District level of government, but expenditures and contracts have to be countersigned by the Commune. Moreover, up to 15% of the budget envelope for each commune is reserved for small-group poor-oriented projects of the type that could only be identified with the deep local knowledge of the Commune Development Board; these will be implemented directly by the Board. The project includes a large technical assistance component, mostly financed by the UK, to help build capacities at all levels of government for the new system, including Commune- and District-level capacities for long-term operation and maintenance of services and appropriate structures for monitoring and evaluation, with main emphasis on participatory assessments.

Due to the complexities of the project, the pace of execution built up more slowly than expected over the first two years. A recent comprehensive review concluded that it was highly desirable, and probably feasible, to maintain all planned elements, but there is some thinking that an eventual lesson will be to focus on a shorter list of constraints, and solutions more closely interlinked with one another.

VI. Spreading the Benefits of Infrastructure Improvements

32. Although the questionnaire included no specific questions on this topic, a number of donor agencies, in the course of their answers, underlined the need they felt for better information about the impacts of projects on different groups, while others referred to ways they had used or were promoting to widen numbers reached. One donor put much stress on the need for adapting regulatory standards for utility services to the different segments of the market, so that less expensive, lower-quality services could be spread more rapidly; this was considered an important improvement to the situation still prevailing in many countries of a single set of technical standards officially accepted, with all other providers operating in semi-legal fashion without effective means for the public authorities to ensure that even basic safety standards are adhered to. At the individual project level several donors instanced initiatives they had encouraged to facilitate use of newly available infrastructure – such as phasing of connection charges over several years, subsidizing monthly consumption of low-income consumers on a declining basis over the course of a transition period during which incomes were expected to increase, and providing microcredit to finance simple transport equipment (e.g., donkey carts) or selected appliances.

33. One aspect of the participatory planning much favoured by some donor agencies and reflected in some of the illustrative boxes included in this paper is the contribution it can make to developing a project design which takes account of, and to the extent possible reconciles, the interests of all potential users in an area. This has been found important, for instance, in connection with development of village transport infrastructure, especially to take adequate account of the needs of women and children as well as men.

Box 11: Allowing for the Interests of All Members of the Community
Irrigation projects sometimes raise, in an acute form, problems of conflict among different groups — not only among the irrigators, but also between them and others — about use of lands and water. Growing population pressures are tending to increase such conflicts over access to natural resources more generally. It is important to take account, in project design, of the interests of all affected groups.

Throughout the 1990s IDA supported a project promoting the expansion of surface and groundwater irrigation in areas alongside Nigeria’s rivers (so-called Fadama areas). Crop production increased strongly. However, in some areas, conflicts arose between the farmers and pastoralists, who found their traditional routes to water and pasture blocked. The conflict was particularly severe in four states where confrontations resulted in physical injury and destruction of property. Consequent insecurity reduced the incentives for long-term private investments. Nonetheless the government pressed IDA for a follow-on project to further develop these high-potential areas.

Benefiting from the work of Nigerian NGOs, and of a small UK-supported project, on the conflicts and ways to minimize them, IDA and the government developed a completely different design for the follow-on project that has recently started. Instead of being handled as a top-down operation in which the executing agencies consulted rapidly with the farmer beneficiaries shortly before starting work in an area, the new project requires, as a first stage in any interested area, local initiative to form a Fadama Community Association, including representatives of all types of user of the area, which then prepares a Local Development Plan. Plans will thus be developed with direct participation of fishers and pastoralists and, in addition, hunters and gatherers of edible and non-edible fadama resources who have tended often to be forgotten because of the largely subsistence nature of their activities. Recognition of all these groups as rightful users in addition to the farmers, and their inclusion in the decision-making process, are expected to reduce potential conflicts and spread the benefits of project investment more widely among them. The Community Associations also provide an appropriate framework for working out effective conflict resolution mechanisms to deal with problems that do nonetheless arise.

34. Important remarks are included in the questionnaire responses by some of the donors on the balance of aid activity among the different infrastructure sectors. In particular, several deplore what they see as insufficient action, and innovation, on the sanitation side, and one calls for a major alliance between countries’ public sector and international and domestic private sectors to build demand for sanitation services. Others express worries about inadequate scale of investment in roads, in some cases trunk roads but especially rural roads.

35. Few if any aid projects attempt to target specifically those living on less than $1/day (the definition of extreme poverty adopted for purposes of monitoring progress on MDG 1), but there have been many recent efforts to focus projects on areas with above-average poverty rates as defined by national standards. Local NGOs (and, in some countries, local governments) often play a specially valuable role in helping to identify, for targeted projects, the most needy and the ways they can best be helped. However it is generally recognized that most infrastructure projects aimed at poverty reduction and the MDGs are much vaguer on the population to be served, and their characteristics, than they should be. This restricts the convincingness with which such
projects can be shown to fulfil their poverty-reduction objectives, and greatly reduces the possibility of learning much-needed lessons about the significance of improvements in infrastructure services for reducing poverty. Better analysis is also needed of the economic value that should be attributed, in different local circumstances, to improvements in access, for instance to specific education, health or government services.

36. Some donors have suggested that it would be helpful to develop agreed standard methods for baseline infrastructure surveys and for measurement of infrastructure projects’ poverty-reduction impact and contribution to achievement of the MDGs. Others appear to consider this unreasonably ambitious, recommending that effort rather be concentrated on fuller disaggregation of the data, whatever survey and analytical methods are used.

VII. Financing Requirements

37. Pro-poor growth, as well as the prioritization of certain education and health objectives in the MDGs, imply somewhat higher requirements for infrastructure investment than would be needed for simple economic growth, without regard to its distribution; more effort has to be put into expanding access and increasing inclusiveness. How significant this increment would be is particularly hard to say because of the broader context of uneconomically low past investment and maintenance of infrastructure that is characteristic of most of the poorer developing countries, implying a large backlog of potentially high-return projects.

38. Although the Task Team questionnaire included no direct questions about the scale of investment requirements, the responses revealed some interesting differences in perspective among the donors. Reference was made to recently published World Bank estimates⁴ that developing countries as a group need to spend on investment, operation and maintenance of economic infrastructure as much as 7% of GDP (about twice what the Bank believes they spent in the past), with requirements being generally higher – up to about 9% of GDP – in lower-income countries, and correspondingly lower in middle-income developing countries. By contrast, one of the responses to the questionnaire emphasizes – though without citing numbers – generally lower requirements for the build-up of economic infrastructure in countries at early stages of development than in those where growth is proceeding apace. It suggests that resources need first to be concentrated on schools, health centres and other mainly local infrastructure (especially water for human consumption and irrigation) until human resources, and institutions, have reached the level at which major investment can be worthwhile.

39. The World Bank estimates have no direct relationship to the MDGs. Their aim is simpler, to make a baseline projection of demand for economic infrastructure, realistically incorporating past experience. Growth of infrastructure stocks (in physical quantities) of more than 100 countries from 1960 to 2000 has been regressed on variables such as per capita GDP, sectoral composition of GDP, population and urbanization, adjusting specification of the various equations to reach the best fit. Physical stocks of infrastructure are projected into the future by inserting official UN

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and World Bank forecasts of these economic variables into the equations. The projected increases in the stocks are then priced at standard “best practice” system-wide average costs for a unit of each type of infrastructure, in order to derive investment needs. Although the low-income countries certainly include some in the “pre-growth” condition described in the last paragraph, the overall results\(^5\) show larger predicted increase in stocks of almost all types of economic infrastructure in the low-income countries than in the middle-income developing countries. Growth of telephones, and especially mobile telephones, is particularly fast in both, but greater in the low-income countries, and this sector adds very substantially to financing requirements, accounting for some 40% of the total.

40. An estimate focusing specifically on what would be required to help attain full delivery on the MDGs by 2015 is that developed for African countries by the Millennium Project group working under Professor Jeffrey Sachs\(^6\). It does not appear to include telecommunications but may well allow more adequately than most such figuring for cooking fuels, soil conservation and minor irrigation, in addition to drinking water and sanitation, electricity and roads. Taking Ghana, Tanzania and Uganda as the basis of its work, it estimates that expenditure on investment and maintenance of infrastructure so defined would need to be some $45 per person per year. Converted to GDP terms, this would amount to some 13% of GDP annually from 2005 to 2015. The group also estimates that achievement of such an expenditure level would require a multiplication of financial assistance for infrastructure from outside – but to a figure that in absolute terms could not be considered so daunting, perhaps $25 per head of population per year.

41. If amounts of this sort ought to be considered affordable from the viewpoint of the donor countries, worries nonetheless often arise about the capacities of the developing countries to absorb them effectively. A World Bank study prepared in 2003\(^7\) tried to address this issue with respect to aid-flows in support of the MDGs generally, drawing mainly on detailed staff assessments covering 18 countries considered to have relatively strong economic management. It concluded that the degree of achievement of the MDGs by 2015 could be significantly increased by a combination of increased aid flows and recipient-country policy/institutional reforms. The key reforms were in the areas of strengthening the investment climate for private-sector activity, public-sector governance, and service-delivery capacities. Aid flows could be successfully doubled or more to the big Asian countries with large numbers of extreme poor and current aid flows that are quite low on a per capita basis. Among the African countries, the brightest prospects for increasing aid flows were identified in a few, such as Ethiopia and Madagascar, with current aid at around $20 per capita but growing capacities which might permit doubling of these amounts over the coming decade. The Millennium Project group, for its part, is much more optimistic, foreseeing no insuperable difficulties, in the country cases it had studied, in achieving effective use of aid flows increased in quite short order by about 140%, from existing level of about $35 per capita to some $85, including the amount mentioned in the last paragraph for infrastructure.

42. The main route to resolving such large differences of opinion about countries’ capacities must surely be at the country level. Jan Vandemoortele, head of UNDP’s Poverty Group in New York, concludes a recent review of experience with costing the MDGs by putting the accent firmly on the individual country level:

“This three practical steps are required to align the national poverty reduction strategy with the MDGs. First, set tailored targets for 2015 and beyond [i.e., establish national versions of the MDGs, customized to reflect national circumstances and priorities]. Second, express them in intermediate targets and actionable propositions for the short- and medium-term so as to generate a stronger political momentum because they will have to be achieved by the current leadership – which is not the case for 2015-targets. Third, estimate the cost of the intermediate targets so they can drive the macro-economic and sectoral policy frameworks as well as the national budget.”

43. Infrastructure, as a ‘derived demand,’ in service to all other sectors, is not generally going to have the independent long-run targets of the type used in the MDGs. What the infrastructure sectors can and should have is a thorough understanding of the inefficiencies and inequities in their current service provision, the obstacles they are posing to the development of other sectors, and the gaps in coordination between their activities and other services. These are among the points which would be clarified by an assessment of the type suggested in Box 3. Such an assessment would in turn help lay the basis for establishing short-run targets and costed plans for pro-poor development of the infrastructure sectors.

44. Table 1 might also be able to help in this planning exercise by stimulating enquiry by the various infrastructure sectors into what would be necessary for them to achieve as significant contributions to pro-poor growth and the other MDGs as some other countries have been able to make. An infrastructure sector could also use the individual boxes of the table to verify whether its plans were consistent with the country’s interim, medium-term targets for the MDGs and the programmes being undertaken by education, health and other bodies to achieve them.

45. To enable these planning processes to go ahead in a bold and imaginative spirit, it is, however, very important for the aid community to indicate that it would have the wherewithal to help finance implementation of good results. There is no doubt that most developing countries could invest more, were it available, in high-return infrastructure projects. Whether the “more” is 50, 100 or 200% is certainly an important question, but still somewhat theoretical as long as they do not have secure prospects of obtaining the aid to do 30%.

Annex 1

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### The Millennium Development Goals, Targets and Indicators

<table>
<thead>
<tr>
<th>Goal 1: Eradicate extreme poverty and hunger</th>
<th>Indicator 1: Population below $1 purchasing power parity (PPP) per day</th>
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<tbody>
<tr>
<td>Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day</td>
<td>Indicator 2: Poverty gap ratio</td>
</tr>
<tr>
<td>Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger</td>
<td>Indicator 3: Share of poorest quintile in national consumption</td>
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<tr>
<td>Goal 2: Achieve universal primary education</td>
<td>Indicator 4: Prevalence of underweight children under five years of age</td>
</tr>
<tr>
<td>Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling</td>
<td>Indicator 5: Proportion of people below minimum level of dietary energy consumption</td>
</tr>
<tr>
<td>Goal 3: Promote gender equality and empower women</td>
<td>Indicator 6: Net enrolment ratio in primary education</td>
</tr>
<tr>
<td>Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education no later than 2015</td>
<td>Indicator 7: Proportion of pupils starting grade 1 who reach grade 5</td>
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<tr>
<td>Goal 4: Reduce child mortality</td>
<td>Indicator 8: Literacy rate of 15-24-year-olds</td>
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<tr>
<td>Target 5: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate</td>
<td>Indicator 9: Ratio of girls to boys in primary, secondary and tertiary education</td>
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<td>Goal 5: Improve maternal health</td>
<td>Indicator 10: Ratio of literate women to men, 15-24-year-olds</td>
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<td>Target 6: Reduce by three quarters, between 1990 and 2015, the Maternal mortality ratio</td>
<td>Indicator 11: Share of women in wage employment in the non-agricultural sector</td>
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<tr>
<td>Goal 6: Combat HIV/AIDS, malaria and other diseases</td>
<td>Indicator 12: Proportion of seats held by women in national parliaments</td>
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<tr>
<td>Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS</td>
<td>Indicator 13: Under-five mortality rate</td>
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<td>Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases</td>
<td>Indicator 14: Infant mortality rate</td>
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<td>Goal 7: Ensure environmental sustainability</td>
<td>Indicator 15: Proportion of 1-year-old children immunized against measles</td>
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<td>Indicator 16: Maternal mortality ratio</td>
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<td>Indicator 17: Proportion of births attended by skilled health personnel</td>
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<td>Indicator 18: HIV/AIDS prevalence, both sexes</td>
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<td>Indicator 19: Condom use as a percentage of the contraceptive prevalence rate</td>
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<td>Indicator 20: Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14</td>
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<td>Indicator 21: Prevalence of, and deaths associated with, malaria</td>
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<td>Indicator 22: Population in malaria-risk areas using effective malaria prevention and treatment</td>
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<td>Indicator 27: Energy use per $1 gross domestic product (GDP) (purchasing power parity (PPP))</td>
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<td>Indicator 28: Carbon dioxide emissions and consumption of</td>
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<td>Goal 8: Develop a global partnership for development</td>
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<td>Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation</td>
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<td>Indicator 29: Proportion of population using solid fuels</td>
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<td>Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum-dwellers</td>
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<tr>
<td>Indicator 30: Proportion of population with sustainable access to safe drinking water and basic sanitation</td>
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<td>Indicator 31: Proportion of population with access to improved sanitation, urban and rural</td>
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<td>Indicator 32: Proportion of households with access to secure tenure</td>
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<td>Goal 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system (includes a commitment to good governance, development and poverty reduction – both nationally and internationally)</td>
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<tr>
<td>Target 13: Address the special needs of the least developed countries (includes tariff- and quota-free access for least developed country exports; enhanced programme of debt relief for heavily indebted poor countries and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction)</td>
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<tr>
<td>Target 14: Address the special needs of landlocked countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island developing States and the outcome of the twenty-second special session of the General Assembly)</td>
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<td>Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term</td>
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<td>Indicator 33: Net ODA to all developing and least developed Countries</td>
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<td>Indicator 34: Proportion of bilateral, sector-allocable ODA of OECD/DAC donors allocated to basic social services (basic Education, primary health care, nutrition, safe water and sanitation)</td>
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<td>Indicator 35: Proportion of bilateral official development assistance of OECD/DAC donors that is untied</td>
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<td>Indicator 36: ODA received in landlocked developing countries as a proportion of their gross national incomes</td>
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<td>Indicator 37: ODA received in small island developing States as a proportion of their gross national incomes</td>
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<td>Indicator 38: Proportion of total developed country imports (by value and excluding arms) from developing countries and least developed countries, admitted free of duty</td>
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<td>Indicator 39: Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries</td>
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<td>Indicator 40: Agricultural support estimate for OECD countries as a percentage of their gross domestic product</td>
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<td>Indicator 41: Proportion of ODA provided to help build trade capacity</td>
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| Indicator 42: Total number of countries that have reached their HIPC decision points and number that have reached their
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<th>HIPC completion points</th>
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<td>Indicator 43: Debt relief committed under HIPC Initiative</td>
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<td>Indicator 44: Debt service as a percentage of exports of goods and services</td>
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<td><strong>Target 16:</strong> In cooperation with developing countries, develop and implement strategies for decent and productive work for youth</td>
<td>Indicator 45: Unemployment rate of young people aged 15-24 years</td>
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<tr>
<td><strong>Target 17:</strong> In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries</td>
<td>Indicator 46: Population with access to affordable essential drugs on a sustainable basis</td>
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</tbody>
</table>
| **Target 18:** In cooperation with the private sector, make available the benefits of new technologies, especially information and communications | Indicator 47: Telephone lines and cellular subscribers  
Indicator 48: Personal computers and Internet users |
**Bibliographical References for the Table “Main Ways that Infrastructure Services assist Progress towards the MDGs”**

**General:**


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(article re Bhutan)

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DAC Network on Poverty Reduction – Task Team on Infrastructure for Poverty Reduction: Questions included in the Second Questionnaire (2004) on the first main theme: **Complementarity of Infrastructure for Achieving the MDGs**

**Sub-theme 1: Infrastructure to promote sector productivity and competitiveness, to stimulate trade and regional integration and cooperation, including the link between national network and locally isolated infrastructure**

Large scale economic infrastructure with national network contributes to the economic development in general while small scale infrastructure has more localized impact.

- How do your aid policy/development assistance strategy ensure that infrastructure project/program addresses all necessary levels of infrastructure?

- Do you balance in your aid program and/or project national and local level infrastructure development and needs? Do your infrastructure aid policy or strategy focus on one or the other or does it try to balance them?

- How is your infrastructure aid policy or strategy linked with the private sector development strategy or any other strategy supporting economic growth, and what are the specific elements of infrastructure policy or strategy which reflect that linkage?

**Sub-theme 2: Complementarities between social and economic infrastructure including area based comprehensive approaches**

Given that infrastructure projects by themselves may not directly lead to poverty reduction nor to economic growth in targeted areas, complementary interventions in the social sector or other productive sectors (agriculture, private sector) can greatly increase impact of infrastructure project on the poor thus contribute to achieve MDGs. This is also pointed out in the Livelihoods approach.

- What infrastructure linkages to other activities/sectors do you consider most important to increase the impact of infrastructure and thus its contribution to both economic growth and the achievement of MDGs?

- In your experience, what are the problems and/or issues observed regarding the linkages between economic and social infrastructure?

- How does your aid policy or strategy address those problems and/or issues and what are your examples of projects/programs addressing them?

- Is there, in your agency’s internal policy or strategy discussion, dichotomy between the focus on infrastructure investment and the focus on achieving MDGs and how do you mitigate them in your projects/programs?