

## I THE INFRASTRUCTURE CHALLENGE

5. The importance of infrastructure in support of economic growth has long been recognized. The WBG's 1994 World Development Report <sup>2</sup> noted that the provision of infrastructure services to meet the demands of businesses, households and other users was "one of the major challenges of economic development." In many surveys conducted by the WBG, private investors have cited reliable infrastructure services as an important consideration in their investment decisions.

6. The challenge facing developing countries goes beyond lack of infrastructure assets. In many instances, the benefits of past investments in infrastructure have not been fully realized due to policy deficiencies and poor institutional arrangements in the recipient countries. This reinforced the shift in project design that was already underway in most developing regions, from a focus on the physical and economic merits of proposed investments to much greater involvement with the political authorities to promote efficiency, establish sound and consistent sector policies, and supportive institutional arrangements for their execution. This has been a central feature of the support provided by IDA and is important to bear in mind when assessing IDA's role and potential to assist low-income countries.

7. **Infrastructure and Poverty Reduction.** The linkage between infrastructure services and economic growth was recognized in the 1970s and 1980s, but less systematic attention was paid to the linkage between infrastructure and poverty alleviation. During the 1990s a concerted effort was made to examine the linkages between access to infrastructure services and poverty reduction. The WBG explored new ways to design and manage projects that relied more on community participation to ensure that the infrastructure investments it supported would reach the poor. The "Voices of the Poor" survey published in 2000 validated the finding that the linkage was strong. Poor people pointed to the dramatic impacts that access to potable water, sanitation or to a road made to the quality of their lives.

8. In more recent years, the catalytic role of infrastructure in poverty reduction has received renewed recognition in the Millennium Development Goals that single out increasing access to water supply and sanitation service as explicit targets to be achieved by 2015. Although not stated as such, other infrastructure services such as electricity, transport and telecommunications are indispensable for achieving the health, education, gender and income poverty goals spelled out in the Millennium Declaration of the UN General Assembly (UN Millennium Project, 2005).

9. Infrastructure services contribute to poverty reduction and improvements in living standards in several ways. First, these services have strong and direct links to improved health outcomes. Water-related illnesses account for a very substantial burden of disease in the developing world, exacting high costs in terms of death, malnutrition, stunting, and reduced productivity. Improving water and sanitation facilities have been shown to reduce these costs substantially.<sup>3</sup> Electricity permits improved health service delivery in several ways: electrification of health facilities permits safe storage of vaccines and medication and modern energy sources permit

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<sup>2</sup> World Development Report 1994 *Infrastructure for Development*, New York, Oxford University Press, June 1994.

<sup>3</sup> WHO 2004 „Water for Life – Making it Happen“ Geneva, Switzerland.

Galiani, S., P.J. Gertler, E. Schargrodsky. 2005 "Water for Life: the Impact of the Privatization on Water Services on Child Mortality" *Journal of Political Economy* 113:83-120

Listorti, J.A. 1996 "Bridging Environmental Health Gaps" AFTES Working Papers 20-22, Urban Environmental Management, Africa technical Department, World bank, Washington, DC

substantial reductions in morbidity and mortality associated with indoor use of wood fuels for cooking.<sup>4</sup> The mobility provided by accessible transport services has been shown to permit women and children better access to health care services.<sup>5</sup>

10. Second, access to infrastructure services is also often associated with improved educational outcomes. Electricity is strongly associated with improvement in adult literacy as well as primary school completion rates, as it permits reading and studying in the evening and early morning hours.<sup>6</sup> Lack of improved water facilities can work against educational outcomes, especially for girls who do not attend school for lack of adequate sanitary facilities or because of the demands of household chores like collecting water.<sup>7</sup> Access to all-weather roads has been shown to be a strong factor in increasing primary school attendance, particularly in rural areas<sup>8</sup>.

11. **Infrastructure and Economic Growth.** Infrastructure services also contribute to improved productivity of business, households and government services. The time spent obtaining water and fuel or traveling to markets and service centers is often significant. When household connections are available and transport and telecommunications services are accessible, household members, particularly women and children, can engage in more productive activities. The expansion in quantity and improvement in quality of infrastructure services also lowers costs and expands market opportunities for businesses. This contributes to increased investment and productivity which is essential for sustaining economic growth.

## The Access Gap

12. Despite widespread recognition of the importance of infrastructure services for poverty reduction, a very large proportion of the population in low-income countries still lacks access to them. An estimated 1.1 billion people live without safe water, 1.6 billion people live without electricity, 2.4 billion people live without sanitation, and more than 1 billion people are without access to an all-weather road or telephone services. Access to these services varies widely across regions and between urban and rural areas. Access rates are lowest in IDA countries and in rural areas and the gap is most pronounced in Sub-Saharan Africa and Asia. Moreover, these figures underestimate the number of households without adequate services, as they are based on proximity to, or use of, a physical installation but fail to take into account the quality and reliability of the service that users actually obtain. In many low-income countries where infrastructure networks have been installed, the quality of service is very poor. Many utility customers often have no water in the pipe, and when available, it is unsafe to drink. Sanitation facilities are often inadequate, overloaded, in disrepair or unused, and electricity

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<sup>4</sup> Hutton, G., E. Rehfuess, F. Tediosi, and S. Weiss. 2006. "Evaluation of the Costs and Benefits of Household Energy and Health Interventions at Global and Regional Levels." Paper prepared for World Health Organization, Geneva

World Health Organization. 2006b. *Fuel For Life: Household Energy and Health*. World Health Organization, Geneva

Ezzati, M., and D. M. Kammen. 2001a. "Indoor Air Pollution from Biomass Combustion and Acute Respiratory Infections in Kenya: An Exposure-Response Study." *Lancet* 358: 619–24.

<sup>5</sup> Levy, H. 2004 "Rural Roads and Poverty Alleviation in Morocco. Scaling Up Poverty Reduction: A Global Learning process and Conference, Shanghai May 25-27, 2004

Babinard, J., P. Robert 2006 "Maternal Health and Child Mortality Goals: What can the Transport Sector do? Transport Paper TP-12, The World Bank, Washington, DC

<sup>6</sup> Kulkarni, V., Douglas Barnes, and Sandro Parodi. 2007. "Rural Electrification and School Attendance in Nicaragua and Peru." Draft paper, World Bank, Washington DC.

World Bank, "Rural Electrification and Development in the Philippines: Measuring the Social and Economic Benefits", Energy Sector Management Assistance Program, Report 255, 2002

<sup>7</sup> UNDP 2006 "The Human Development Report: Beyond Scarcity – Power Poverty and the Global Water Crisis", New York

<sup>8</sup> Levy, H. 2004, cited above

service may be sporadic and unreliable. Transport services may be lacking and roads are often in poor, unsafe condition.

## **The Investment Gap**

13. The large gaps in access to basic infrastructure services in part reflect inadequate levels of investment. It is estimated that low-income countries as a group currently spend about 3-3.5% of GDP on the maintenance of and investments in their infrastructure. This contrasts starkly with the roughly 6.5-7.5% of GDP that is estimated would be required to adequately maintain these assets, expand access through new investments, and enable economic activity to support projected levels of economic growth over the next decade. This translates roughly to more than US\$100 billion/year<sup>9</sup> for investment and maintenance, of which it is estimated that presently only about half is met.<sup>10</sup>

14. The proximate reason for the investment shortfall discussed above is lack of funding. Since the late 1990s, there was a shift of ODA out of infrastructure. ODA for infrastructure declined from more than US\$8 billion/year during the IDA-11 period to about US\$6 billion/year in the subsequent period<sup>11</sup>. This was driven in part by the expectation that private interest in infrastructure investments in developing countries would increase significantly as a result of initiatives to introduce private participation, competition, and arms-length regulation in many countries as well as growing priority among donors for addressing health and education and other pressing social concerns in the poorer regions of the world. IDA (as well as other IFIs) also saw in these developments an opportunity to shift some support from infrastructure to other sectors, particularly social sectors where investor interest was less.

15. Private financing to developing countries for infrastructure investments, while modest as a proportion of total spending, increased through the 1990s but the surge was relatively short-lived. Moreover, even at its peak, private sector infrastructure investment was concentrated in a few countries, with the five largest recipients receiving more than half of all private infrastructure investment (all middle-income countries). Telecommunications received almost half of private infrastructure investment commitments whereas water and sanitation attracted only 5%.

16. In recent years, private investment for infrastructure has picked up (at \$8 billion in 2005), but is nowhere near the levels needed to make an appreciable difference in closing the investment gap. Although there is more that recipient countries can and should do to mobilize greater amounts of domestic resources for infrastructure development, as a group they face binding fiscal and external creditworthiness constraints. It is not realistic to assume that they will be able to close the investment gap without a significant increase in external assistance.

## **The Institutional and Policy Gap**

17. While increases in ODA are clearly needed to help recipient countries close the infrastructure “investment gap,” such incremental funding is not, by itself, sufficient to sustain services and expand access. More

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<sup>9</sup> Source: *Investing in Infrastructure – What is Needed from 2000 to 2010?* (July 2003) by Marianne Fay and Tito Yeppe. In: World Bank Policy research Working paper No. 3102.

<sup>10</sup> Ibid.

<sup>11</sup> Based on data from OECD-DAC CRS.

efficient and sustainable operation of existing infrastructure and better allocation of capital for new investments are also required for increased spending to cost effectively translate into improved services. Obtaining greater productivity from present spending levels, coupled with policies and institutional arrangements that promote financial, environmental, and social sustainability, are critical complements to scaled-up spending on infrastructure. Formulating, implementing and effectively coordinating policies that provide incentives to invest and operate efficiently and to extend services to the poor requires strong, capable institutions, particularly at the local level. Across the developing world, decentralization of service delivery responsibility has proceeded in tandem with growing political decentralization. As a consequence, local authorities increasingly bear ultimate responsibility for planning, service delivery, oversight and financing of key infrastructure services such as WSS, urban transport, and solid waste disposal.