Scaling up Infrastructure:
Building on Strengths, Learning from Mistakes
Infrastructure is complex, controversial, and often risky. There is potential for white elephants, environmental damage, loss of livelihood, and corruption. We know that because we’ve seen it, and we’ve been on the wrong side of the equation at times, making some mistakes along the way.

From 1998 to 2002, the Bank vastly cut its infrastructure lending from $9 billion to about $5 billion, which—at less than 30 percent of Bank lending—was an all-time low.

Why the decrease? The Bank was listening to critics, including civil society opposition to big infrastructure projects. We expected the private sector to take the government’s place as the primary financier of infrastructure, and shifted our assistance to sectors, such as health and education, that on the surface seemed to be more directly linked to the Bank’s poverty reduction objectives. And, in some sectors, like water supply, our track record of results was poor.

Since then, however, private-sector investment has not filled the gap. In developing countries, total infrastructure investment would need to be equivalent to 5.5 percent of GDP, while actual expenditures are only about 3.5 percent. And private-sector investment in infrastructure briefly peaked at about $110 billion a year in the late 1990s before declining to about $60 billion a year later.

In our shift, we forgot about the synergies between poverty alleviation, growth, and infrastructure:

- Infrastructure is the backbone of a functioning economy, facilitating economic growth, without which sustainable poverty reduction is impossible. Without decent roads, farmers cannot deliver their products to consumers. Without reliable electricity, manufacturers cannot compete in today’s markets.

- The 2.7 billion people who live on less than $2 a day need access to clean water, sanitation, energy, transport, information, and communication. Children cannot get to school because they spend their time fetching water. Rural clinics cannot store vaccines and use modern diagnostic tools because they lack electricity.

We therefore embrace the complexity and risk of infrastructure investments, in order to make a difference for these people, including the 1.6 billion who lack access to electricity, and the 1.1 billion who lack access to clean water.

The past criticism of the Bank’s projects and our own evaluations of program effectiveness helped us to learn from our mistakes and improve the quality of what we do. Today, we are again scaling up our engagement in infrastructure to make greater impact where it matters most.
**INFRASTRUCTURE LESSON #1**

**Balance growth with access.**

We need to balance infrastructure investments that promote economic growth with those that target enhanced access for the poor.

**In the past.** In the early decades of Bank activity, investment mostly focused on large-scale infrastructure managed by central government agencies, and aimed at facilitating economic growth. Poverty reduction was secondary, pursued via “trickle-down” benefits. During the 1980s, the Bank adopted the “basic needs” approach as a counterpoint to previous “trickle down.” It aimed at bringing a standard package of infrastructure services to the poor, but was still centrally driven and lacked community involvement.

**The result was.** Each phase had its weaknesses: during the early years, the “trickle down” approach took too long to show results. More recently, the lack of participatory mechanisms and unsustainable, poorly targeted subsidies undermined the success of the “basic needs” approach.

**We learned.** It is a false choice to pursue an infrastructure strategy that favors either growth or access, and we need to balance both.

**Our approach has changed.** The Bank’s infrastructure strategy is combining support for infrastructure investments that promote economic growth with a more careful delivery of services to the poor, tailored to their needs and ensuring affordability.

**Box 1.1**

**Balancing growth with access: The case of Vietnam’s infrastructure**

**Background.** is a good example where the Bank’s infrastructure strategy is balancing growth and access. Several recent Bank-financed projects have promoted economic growth by eliminating infrastructure bottlenecks. These include two projects that have enhanced the national road and electricity networks, and one that is improving transportation and flood protection in the Mekong Delta. Other Bank projects are promoting access directly—such as rural electricity, rural transport, urban water supply and sanitation, and urban upgrading—by using participatory approaches, connection subsidies, and innovative low-cost solutions.

**Results.** Vietnam’s total investments in infrastructure have been close to 10 percent of GDP in recent years, which is a very high level by international standards. As a result, Vietnam’s road network has more than doubled in length since 1990, and its quality has improved substantially. Access to clean water grew from 26 percent of the population to 49 percent between 1993 and 2002, and during the same time, access to hygienic latrines grew from 10 percent to 25 percent of the population. More generally, per capita growth has averaged 5.9 percent, and poverty (measured at the $1 a day threshold) has fallen from 51 percent of the population to just 8 percent.

**Box 1.2**

**Providing access to water: Moving from centrally driven to community driven approaches in India**

**Background.** Until the mid-1990s, Bank-financed rural water supply projects in India relied on large government agencies to design and implement water supply schemes. The Maharashtra Rural Water Supply and Environmental Sanitation Project (approved in 1991) was emblematic of this centrally driven, engineering-dominated approach. In the interest of serving the “basic needs” of the poor, the project provided perverse incentives to higher-level government agencies to build costly water supply systems without much consideration given to community preferences and affordability. Village- and district-level authorities were unwilling to take over the operation and maintenance of the schemes, arguing that their technical skills and financial resources were not up to the task. Because of the disconnect between service providers and beneficiaries, many of the schemes fell into disrepair after a few years. In 1995, the Bank began working with the Indian authorities to develop a sustainable approach to the delivery of improved water supply and sanitation to the rural population. The new approach represented a paradigm shift, with government agencies changing from providers to facilitators and rural communities gaining control over financial resources and driving project implementation.

**Results.** The Uttar Pradesh Rural Water Supply and Sanitation Project (approved in 1996) is a good example of the new community-driven approach. The project empowers village communities to make design choices and procure materials, services, and civil works. They are supported by NGOs that assist with community mobilization and private firms that provide technical design, inspection, and monitoring services. Investments in water supply and sanitation are complemented by programs promoting health awareness, women’s development, and non-formal education. The project has achieved full cost recovery for operation and maintenance, and partial cost recovery for capital costs—major improvements over past practice in the Indian water sector. Recent evaluations of sustainability have shown that 92 percent of the water supply schemes and 100 percent of the latrines financed by the project are fully functional and in use by the beneficiaries.
The case of Bolivia's water sector in the 1990s is a good example of flawed partnerships between the public and private sectors. Bolivia's Major Cities Water and Sewerage Rehabilitation project covered 60 percent of the country's urban population, located in the three main cities. In Santa Cruz, a participatory consumer cooperative helped results surpass expectations. The Bank required the national government to privatize the water and sewage utilities in La Paz and Cochabamba before receiving the project loan. This privatization provoked social unrest and a political impasse that resulted in the cancellation of each concession.

Results in La Paz. Privatization focused on low-income neighborhoods and achieved positive results initially. Average tariffs were increased by 35 percent prior to the transaction. Post-transaction tariffs included a cross-subsidy from existing consumers to pay for new connections, which helped extend service to new users in the poor area of El Alto. But in 2000, the national regulator refused the increase, and instead increased the price for new connections. By 2004, the price for a new connection stood at $450 for water and sewerage, six months' wages for poor Bolivians. In early 2005, faced with public protests over the high connection prices, the government cancelled the concession.

Results in Cochabamba. In Cochabamba, the municipality challenged the national government's transformation of the utility into a state corporation, and the privatization transaction was declared void. Municipal efforts to privatize the utility produced a tender for which no bids were received. Finally, in late 1999, an unsolicited bidder, Aguas del Tunari, was awarded the concession: tariffs were increased by 35 percent, but without subsequent improvements in service quality. The tariff increase triggered riots and the rapid cancellation of the concession.
INFRASTRUCTURE LESSON #3

From the outset, design projects that safeguard people and nature.
Assess social and environmental impacts carefully, and integrate such assessments into project design. With the knowledge that most infrastructure projects create winners and losers, ensure that project benefits are channeled to potential losers.

In the past. Projects were designed first, and the mitigation of their environmental and social impacts was handled as an afterthought.

The result was. At appraisal, there were often no feasible plans for environmental rehabilitation and the resettlement and compensation of displaced communities. Implementation was delayed, projects were restructured, and in some cases cancelled. The Bank’s reputation was damaged in the eyes of its clients as well as other stakeholders.

We learned. Environmental and social dimensions should be integrated into project preparation, appraisal, and supervision. This is best done through early engagement on safeguard issues in the identification and design stage.

Our approach has changed. Since the mid-1990s, the Bank has been conducting environmental and social analyses and consulting with affected people early in the project cycle. Strengthened internal oversight through a central quality-assurance and compliance unit has improved consistency and effectiveness in the application of safeguard policies. The Bank also established transparent accountability mechanisms, including recourse to an independent Inspection Panel for affected parties. We have also become more adept at engaging civil society, most importantly at the local level, to take their views into account as we help governments design sustainable projects. That said, we have also become more decisive in supporting difficult but high-reward projects, taking risks once we conclude that the design is sound and that proper arrangements are in place to make sure that results are achieved.

Box 3.1
Failing to safeguard people and nature: Narmada Dam in India
Background. Perhaps no project has damaged the Bank’s reputation like the Sardar Sarovar Project (Narmada) in India, where neither the Environmental Assessment nor the Resettlement Plan was prepared prior to appraisal—as required by Bank policies. The Bank’s first resettlement specialist went to the field after the project was appraised. He found that the three participating state governments did not know how many of people that would be affected, how many were tribal peoples, or where they wanted to relocate. There were no feasible plans or institutional capacity for the resettlement of 100,000 people from the submergence area and 140,000 people affected by the canal system. However, in 1985, despite this specialist’s severe misgivings, the Bank agreed to finance the dam’s construction (approving an IBRD loan of $200 million and an IDA credit of SDR 99.7 million).

Results. Neither the Bank nor its partners sufficiently consulted with the affected people: what were their concerns and priorities? The Indian state governments resettled some of the displaced, but the process was flawed: land was poor and compensation rates were inadequate. Unsurprisingly, several Indian NGOs led protests. In 1992, the Bank commissioned an independent review (Morse Commission), which concluded that the Bank did not comply with its Operational Manual Statements on Environment, Resettlement, and Tribal Peoples. Moreover, it concluded, appropriate resettlement and rehabilitation was not possible under prevailing circumstances. The Commission recommended that the Bank step back from the project. In 1993, India requested cancellation of the $165 million undisbursed loan balance, and subsequently completed the dams with its own funds in collaboration with the three relevant state governments.

Box 3.2
Bringing benefits to people and nature: The Bolivia – Brazil gas pipeline
Background. The Bolivia-Brazil Gas Pipeline Project (approved in 1997 and closed in 2001) incorporated strong measures to address potential negative environmental and social impacts in the design, preparation, and implementation stages. The project worked closely with community-based organizations and consulted the public on draft regulations and the project’s environmental assessment. Resettlement was treated not as a problem but as an opportunity. Affected Indigenous People negotiated a share of project benefits in exchange for their acceptance of the pipeline passing through their lands. Their priorities were more secure land rights (land titling) and funds they could manage for their own development. The involvement of Indigenous People in vegetation recovery in Bolivia was also important. They actively participated in sowing and harvesting native plants for their subsequent reintroduction into their natural habitat. Moreover, the project supported the conservation of biodiversity. A trust fund of $1 million was established to protect Bolivia’s Kaa-Iya National Park, which is co-managed by an indigenous NGO in collaboration with Bolivia’s National Protected Areas Agency.

Other examples of innovative solutions included the use of semi-domesticated birds for pest control, since the application of chemical insecticides was forbidden in the early stages of construction.

Results. The project received the Environmental Award of the International Association of Impact Assessment in 2001. In only four years, the project constructed the largest gas pipeline in Latin America, through 3,150 kilometers of diverse terrain—and initial results suggest that both people and nature were respected in the process.
INFRASTRUCTURE LESSON #4

Confront corruption decisively.
Infrastructure is particularly vulnerable to corruption, which degrades quality, increases costs, keeps honest investors away, and undermines public trust. We should fight it at all levels—in the projects we finance, in the sectors we engage, and in the countries we support.

In the past. For most of the Bank’s history, corruption was not addressed explicitly. The Bank was not proactive, and the Bank’s procurement and financial management policies did not have explicit anti-corruption features. No analytic work was carried out on the incidence and impact of corruption in infrastructure.

The result was. We had little knowledge about the scope and nature of corruption, either at the level of individual projects, or more generally in the infrastructure sectors. We knew that corruption was hurting project results, but we were unable to mount a proactive response. In the second half of the 1990s with the launch of the anti-corruption strategy, the Bank’s approach radically changed.

We learned. Shareholders and clients welcomed the Bank’s determination to fight corruption head on. Strengthened financial management and procurement systems helped to prevent some of the abuses at the project level, and the promotion of improved governance and the rule of law raised the awareness of decisionmakers and the general public.

However, we also learned that more needs to be done both at the project and sector levels, and that we still don’t know enough about the relationship between corruption and institutional arrangements in infrastructure.

Our approach has changed. We are employing new tools to fight corruption in Bank-financed projects, including public debarment, investigations by the Department of Institutional Integrity, and in a pilot stage, voluntary disclosure. We are also cooperating with a range of public and private partners, for example, in the context of the Extractive Industries Transparency Initiative. Work is underway in about 20 countries aimed at improving government accountability for the use of resource revenues. At the same time, we are integrating improved revenue management and governance into the design of all Bank-financed extractive-industry projects.

And we are launching a systematic effort to deepen our knowledge of the corruption-infrastructure interface, with the goal of developing and implementing an effective anti-corruption program in the infrastructure sector.

Box 4.1

Losing control during implementation: The case of Sulawesi in Indonesia

Background. The Indonesia Second Sulawesi Urban Development Project illustrates the ill-effects of corruption when project design and supervision arrangements fail to include adequate fiduciary controls in a country with major governance weaknesses. During negotiations in 1996, the Bank agreed to a major expansion of project scope (from 20 to 41 participating local governments, with more than 150 implementing agencies), in spite of the already very complex—multi-sectoral and multi-provincial—project design and weak provincial oversight capacities. This expansion made supervision an almost impossible challenge, even before the Asian crisis and the political implosion of the country in 1998.

A very ambitious decentralization legislation (passed in 1999) unfortunately lacked clear implementing regulations, and added to an already chaotic situation.

Results. The Bank, the central government, and the four provincial governments lost control of the project. Local project officials took advantage of this, and diverted funds for their personal benefit. A fiduciary review and a subsequent forensic audit conducted in 2002 found widespread deficiencies in contract documentation and clear patterns of fraud and corruption. The Bank declared many contract packages as misprocurement, initiated debarment sanctions against more than 100 firms and individuals, and cancelled the remaining loan amount.

Box 4.2

Designing projects to guard against corruption: Bangladesh Rural Electrification

Background. In Bangladesh, a Bank-financed project (approved in FY02) is supporting the work of the Rural Electrification Board (REB) and its rural electric cooperatives to expand electricity services in rural areas. The cooperatives have protected themselves from the corrupt practices commonly seen in other power sector utilities through a number of innovative arrangements:

■ The Board of each cooperative is elected by consumers. This Board and REB management approve the salary structure for the cooperative, which is usually market-based. Every year the management of each cooperative negotiates a set of performance targets with REB. If the targets are met, management receives a bonus. Not meeting the PTA targets results in penalties.

■ Since meter reading is a common source of corruption, meter readers are hired on contracts of only one year. With good performance record the contract may be extended, but never can it exceed three years. A good performance record as a meter reader can lead to a linesman or other job, and this job expectation is a strong incentive to maintain a good track record.

■ The cooperatives use independent consultants to survey rural areas to identify potential consumers, design the electricity distribution network, and estimate the revenue to be generated by each proposed line. The list of lines to be constructed each year is disclosed to the public on the notice board, reducing the risk of corruption and favoritism in investment decisions.

Results. By expanding electricity service to 0.6 million new consumers per year, REB’s cooperatives reached 45,000 villages with 6.5 million consumers at the end of 2005. The cooperatives maintained low system losses (13% on average) and high collection performance (97%). Rural electrification increased agricultural productivity, raised education levels, and improved the quality of health services.

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In the past. Historically, Bank infrastructure project teams comprised an engineer, an economist, and a financial analyst. As the Bank’s agenda expanded, more and more staff with specialized skills were added to the core team, including financial management, environment, poverty, gender, participation, and communication specialists, all of which were key to improving quality, sustainability, and impact. However, as project preparation and appraisal became more complex, some of the basics were crowded out.

The result was. Many infrastructure projects with unsatisfactory outcomes failed because of shortcomings in technical design, economic and financial analyses, and implementation arrangements. And, with the move away from infrastructure, we lost many of the very technical sector experts that we needed to get this right.

We learned. It is vital to ensure that technical design is appropriate, demand estimates and financial projections are reliable, and implementation arrangements are prepared suitably. This requires a well-balanced team and constant diligence from management.

Our approach has changed. We strengthened accountability through real-time assessment of project quality at entry, quality of supervision, and country and sector portfolio performance. We are reskilling our teams through recruitment and training, always aware that further scale up will depend on having the right skills to get the job done.

Box 5.1
NEGLECTING THE BASICS: ALGERIA URBAN WATER SUPPLY AND SEWERAGE

Background. The Algeria Urban Water Supply and Sewerage Rehabilitation Project (approved in 1994 and closed in 2003) illustrates the consequences of inadequate appraisal of technical design, financial sustainability, and implementation capacity. The implementing agencies were largely weak and poorly coordinated. Inefficient procurement and contract management led to long delays. Engineering studies significantly underestimated the cost of network rehabilitation. Moreover, low and financially unsustainable water tariffs were a long-standing issue in Algeria at the time of project appraisal, and the Bank’s assessment of the likelihood of future tariff increases was overly optimistic.

Results. The government failed to increase water tariffs, resulting in the deterioration of the utilities’ financial situation. The project failed to achieve any of its objectives: it did not complete the intended rehabilitation of water networks in the cities of Oran and Algiers, the utilities did not become self-financing entities, nor were there improvements in leakage control and the reduction of unaccounted-for-water. Furthermore, the physical rehabilitation of the wastewater treatment plants had to be dropped because no institutional arrangements for their management were put in place.

Box 5.2
GETTING IT RIGHT: THE CASE OF ROMANIA’S RAILWAYS

Background. The Romania Railway Rehabilitation Project (approved in 1996 and closed in 2003) aimed to increase the capacity and reliability of the Romanian railways system. Project design adapted lessons from successful railway rehabilitation and restructuring programs in other countries. The Bank helped establish an Integrated Railway Information System, providing technical assistance in implementation, and organizing training for railway management and staff. The Bank helped to identify necessary legal and institutional improvements, especially at the interface between daily operations and management.

Results. Financial targets developed during appraisal and agreed during negotiations proved to be realistic; the Bank helped apply a costing model that improved efficiency. Moreover, Bank supervision during implementation also helped resolve differences between contractors and the railway company. By the time the project was completed, the Romanian railways achieved compatibility with European Union standards. Ultimately, the Railway achieved significant productivity and efficiency gains, which reduced the Railway’s net deficit from $214 to $44 million between 1995 and 2002.
The World Bank’s infrastructure team is integrating what we’ve learned over the years. Continuing to invite scrutiny, we are opening our doors, confident that criticism will continue to improve us. We especially value input from the people who live closest to the projects themselves—without their insight and participation we cannot succeed.

The above lessons are all mutually reinforcing, and balance is the common theme that unites them. We are learning to balance growth and access; to balance public and private sector engagement; to balance newer pro-environment and anti-corruption systems with more traditional project requirements; and to balance the complexity of our agenda with the need to keep projects simple and focused.

With this sense of balance, borne of a more intense collaboration with critics, partners, and beneficiaries, we are scaling up our activities to have more impact. The Bank’s infrastructure lending could reach $10 billion annually within a couple of years, up from $7.4 billion last year and about $5 billion just a few years ago.

By linking our lending to country performance and learning from past mistakes, we have already improved the quality of our projects—for example, while half of all water projects failed in the 1990s, more than three out of four have succeeded lately.

We recognize that there is still a lot to learn, and self-examination will remain an important part of what we do.

Moving forward, we believe these lessons will help us negotiate the challenges ahead and produce tangible results. We do not fear the risk, and remain hopeful of bringing great benefits to the poor in developing countries.