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FAST TRACK BRIEF

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The IEG report "Water and Development An Evaluation of World Bank Support, 1997-2007," was discussed by CODE on December16, 2009

Water and Development: World Bank Support, 1997-2007

- **Almost a third of all Bank projects approved since 1997 have been water related. Water lending grew 55 percent in commitment terms during the period evaluated, and project performance has improved steadily, led by a significant performance improvement in the Africa region.**
- **Water has been integrated into many other sectors. The Bank has contributed to improving access to clean water, especially in urban areas, and has developed a business plan for investments in hydropower and dams, especially for Africa. The Bank is also starting to take the aquatic environment more into account during project design, and it has balanced investments in infrastructure with investments in improving the institutions that manage and allocate water.**
- **The Bank's strategy for the water sector has been broadly appropriate, but its application has underemphasized some of the most difficult challenges—such as ground water conservation, environmental restoration, and coastal zone management—in favor of less challenging activities like infrastructure development and equipment purchase. The Bank's approach to water will face heightened challenges in the coming decades due to climate change, the migration to coastal zones, and the declining quality of the water resources available to most major cities and industry. This will require some shifts in emphasis.**
- **The Bank and its partners need to put more emphasis on vital and challenging areas such as groundwater conservation, pollution reduction, and effective demand management. New ways need to be found to help the most water-stressed countries make water sustainability a cornerstone of their development. The development community needs to help countries shift more attention to sanitation. More strategic development planning and more effective disaster risk reduction is needed for low-lying coastal areas. Approaches to financing and cost recovery need to be strengthened. Finally, data collection and use need to be enhanced in a number of areas.**

Only 3 percent of the world's water supply is freshwater, and two-thirds of that is locked in glacier ice or buried in underground aquifers, leaving only 1 percent readily available for human use. Water is not only limited, it is unevenly distributed. In more arid regions, water shortages are always a threat. Add to this situation the scientific consensus that climate change will worsen these water-related challenges in the coming years. These changes are already disrupting rainfall patterns, feeding ever more powerful windstorms, and creating droughts of unprecedented severity and frequency. About 700 million people in 43 countries are under water stress.

Development patterns, increasing population pressure, and the demand for better livelihoods in many parts of the globe all contribute to a steadily deepening global water crisis. Development redirects, consumes, and pollutes water. It also causes changes in the state of natural water reservoirs, directly by draining aquifers and indirectly by melting glaciers and the polar ice caps. Maintaining a sustainable relationship between water and development requires that current needs be balanced against the needs of future generations.

The development community has transformed and broadened its approach to water since the 1980s. As stresses on the quality and availability of water have increased, donors have begun to move toward more comprehensive approaches that seek to integrate water into development in other sectors.

This evaluation examines the full scope of the World Bank's lending and grant support for water activities. More than 30 background papers prepared for the evaluation have analyzed Bank lending by thematic area and by activity type. IDA and IBRD (the Bank) have supported countries in many water-related sectors.

The evaluation, by definition, is retrospective, but it identifies changes that will be necessary going forward, including those related to strengthening country-level institutions and increasing financial sustainability.

Water and the World Bank

The Bank's 1993 Water Resources Management Policy Paper moved the institution away from its previous focus on infrastructure development. The paper also shifted the Bank from a sector-based investment planning process to a multisectoral approach to planning, embracing the concept of Integrated Water Resource Management. IWRM promotes the coordinated development and management of water, land, and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Under IWRM, each water activity in a project or program is considered carefully in light of other competing uses, and social, economic, and environmental consequences.

In 2003, the Bank adopted a new water resources strategy that looked at water management and the connections between resource use and service delivery. It also reintroduced infrastructure investments as an important aspect of Bank support in the sector. The two strategy papers are complementary, and together with the Bank's mandate to reduce poverty, they have helped inform issues of supply, and improve the performance of utilities and user associations. The 2003 strategy committed the institution to face the most pressing challenges that were constraining the achievement of goals set in 1993.

The Water Portfolio

A large part of what the Bank finances has something to do with water: 31 percent of all Bank projects approved since 1997 are water-related. Between 1997 and 2007 the Bank approved or completed 1,864 projects with at least one water activity. Together, these projects represented Bank financing of about $118.46 billion, of which $54.3 billion was directed to water. The average loan was for $67 million (exclusive of grants and nonlending activities). Water-related lending increased by 55 percent over the evaluation period.

Many of the Bank's water activities are integrated into projects doing other things, such as water supply in an urban services project or drafting of water policy within a larger environmental policy framework. The largest categories of projects deal with wastewater treatment and irrigation. The largest amounts of money have gone to projects with irrigation and hydropower or dam activities.

The Bank has engaged 142 countries in lending for water. The top 10 of those countries have accounted for 579 projects (31 percent), covering 56 percent of total Bank commitments for projects with water activities (nearly 5 percent more than their percentage of Bank lending as a whole). China accounted for 16 percent of water lending, compared to 7 percent of total Bank lending.

Main Findings

Increased Lending and Improving Project Performance

The Bank has increased its lending for water and the number of countries it is serving during the period evaluated. While the number of countries that borrow for water has varied annually, 47 countries were served in 1997, compared to 79 borrowers in 2007. Lending for water increased by over 50 percent during the period.

The integration of water practice across Bank sectors appears to be well underway. Integration of the water practice was an important goal of the 2003 Water Strategy, and during the period evaluated, the majority of the water-focused projects were overseen by Sector Boards other than Water Supply and Sanitation.

Water projects have good success rates when measured against objectives. IEG performance ratings show steady improvement in sector performance measured against project objectives. During the most recent five-year period, water was the most improved major sector by this criterion, with a particularly noteworthy 23 percentage point improvement in the share of satisfactory projects in the Africa region. Within the portfolio, 77 percent of the 857 completed projects had an

aggregate outcome rating of moderately satisfactory or better, compared to the Bank-wide average of 75 percent. For 2008 the trend continued, and water sector projects attained a 90 percent satisfactory rate.

The focus of Bank activity has shifted over time. The Bank has lent heavily for irrigation and water supply, and dams and hydropower have become more important in the last few years. But some activities that are of growing importance as water stress increases have become less prominent in the Bank's portfolio—notably, coastal zone management, pollution control, and to a lesser degree groundwater conservation. While the portfolio has performed well measured against projects' stated objectives, the Bank and the countries have not yet sufficiently tackled several tough but vital issues, among them sanitation, fighting pollution, restoring degraded aquatic environments, monitoring and data collection, and cost recovery. Where it has lent for hydrological and meteorological monitoring, the Bank has focused on providing technology for data collection and relatively less on gathering and interpreting information for which there is an identified demand. Such aggregate findings, however, mask regional and country-specific variations and needs. For example, East Asia and Africa have responded more actively than other Regions to the sanitation challenge. These issues are covered in greater detail below.

Water Resources Management

Effective demand management is one of several critical challenges worldwide in the face of increasing water scarcity. Demand for water can be affected by three broad sets of measures—pricing, quotas, and measures to improve water use efficiency.

Efforts to improve the efficiency of water use and limit demand in the agriculture sector, the largest consumer of water, have had limited success. Efficiency-enhancing technologies alone do not necessarily reduce on-farm water use, and efforts to manage demand with water charges in agriculture have encountered limited success, partly due to the low price elasticity of agricultural water. Fixing and enforcing quotas for water use is a relatively recent approach and deserves careful evaluation when there are more completed projects featuring this approach. More generally, cost recovery in Bank-supported projects has rarely been successful. Only 15 percent of the projects that attempted full cost recovery actually achieved this goal. Projects that have succeeded have generally improved the efficiency of water institutions to collect fees. The limited success has caused the Bank to moderate its approach without clearly identifying sources to finance the recovery shortfall, threatening the sustainability of investments.

In the area of water supply, reducing unaccounted-for water (UfW) has been the main activity directed at improving water efficiency. About half of the projects that attempted to address UfW managed to reduce it by at least 1 percent.

Finding effective ways to improve water use efficiency and manage demand for water will be critical if the Bank wants to maintain a leading role in this area.

Integrated water resource management, the focus of two consecutive water strategies, has had traction in the World Bank but has made limited progress in most client countries. Within the Bank there has been considerable progress in integrating water into the work of other sectors and in consolidating institutional structures to carry out water activities. However, outside the Bank, even in countries where IWRM is now well integrated into the legal framework, it is known mainly just in the water sector. The information necessary to inform decision-making is not easily available, and perhaps more importantly, the economic implications of water constraints are not widely appreciated. Meanwhile, there are indications that the Bank is paying less attention to data collection, an essential prerequisite for successful IWRM implementation, as countries have less motivation to confront a situation with unknown parameters.

When IWRM is successful, it most often happens in a particular location at a time of necessity. Some countries have made progress with water resource management after natural disasters, for example. Shocks often do not affect entire countries, however, nor are they a desirable route to IWRM. The way to open the window of opportunity without waiting for a shock is to support monitoring processes that deliver information to relevant public and private stakeholders. The example of Brazil shows that making water data publicly available over the Internet helps increase stakeholder concern, which helps to mobilize the political will necessary to confront entrenched water problems.

The number of projects dealing with groundwater issues has been declining, though within that problematic trend the portfolio has also witnessed a positive shift away from a focus on extraction. This shift is important given falling water levels in critical aquifers in many Bank borrowers.

Within the groundwater portfolio, activities aiming to increase water supply were most successful, while activities related to reducing pressure on groundwater and conservation generally proved more challenging. Yet such activities will need to become more prominent in the portfolio, if the Bank is to effectively help the growing number of water-stressed countries address increasing groundwater scarcity. In Yemen, for example, rapidly growing demand for irrigation water

caused by improved tube well technology and highly subsidized diesel fuel has resulted in irrigation extracting over 150 percent of the country's renewable water resources.

Watershed management projects that take a livelihood-focused approach perform better than those that do not. Projects combining livelihood interventions with environmental restoration enjoyed high success rates, even though effects on downstream communities (such as reduced flooding and improved water availability) and social benefits in upstream and downstream communities were often not measured. Hydrological monitoring (with or without remote sensing) and watershed modeling could help improve impact assessment and thus make it easier to capture the cost-benefit ratio of such interventions.

Environment and Water

Environmental restoration is underemphasized, possibly because its immediate and long-term financial importance is unclear. More attention to cost/benefit calculations could help the Bank and its clients evaluate trade-offs and get better results.

Most Bank projects focus on infrastructure, while in some cases environmental restoration is more strategically important. It is not always necessary to restore the water-related environment to a pristine state in order to obtain major social, economic, and environmental benefits and reduce vulnerability. Priority improvements to degraded environments, even when small, can have big impacts. A coastal wetlands protection project in Vietnam, for example, successfully balanced reforestation with livelihood needs. The project successfully reforested critical areas and led to substantial reduction in coastal zone erosion.

Countries and donors need a stronger focus on coastal management going forward, as some 75 percent of the world's population will soon be living near the coast, putting them at heightened risk to the consequences of climate change. Approvals of Bank projects in this area have dwindled over time, and the reasons for this should be considered in the Mid-Cycle Implementation Report.

Many projects contain funding for water quality management, but few countries measure water quality. The number of projects that actually measure water quality is declining. Evidence of improved water quality is rare, as are indications of the improved health of project beneficiaries. The data that are generated need better quality control. Water quality in the top five borrowing countries is declining, and less than half of projects that set out to monitor water quality could show whether an improvement had taken place.

Water Use and Service Delivery

The Bank has increasingly focused on water service delivery, but there has been declining emphasis on monitoring economic returns, water quality, and health outcomes. Only a third of wastewater treatment and sanitation projects calculate economic benefits.

Sanitation needs greater attention. Population growth in developing countries has been rapid, as has urbanization. An expansion of piped water services and higher household water use will lead to an accelerating demand for adequate sanitation. The evaluation recognizes that even if the Millennium Development Goals for clean water supply are achieved, 800 million people will still lack access to safe drinking water in 2015, but at the same time 1.8 billion people will still not have access to basic sanitation. Within sanitation, more emphasis is needed on household connections. Connection targets in projects are generally not met, and IEG has seen a number of treatment plants functioning below design capacity because households have not connected to the systems, in part because willingness to pay has been over-estimated and facilities have been over-designed. This report highlights the particular weakness of sanitation institutions, which will continue to constrain progress until their capacities improve.

Hydropower projects have performed well, and significant untapped potential remains for appropriate development, particularly in Africa. After a peak in the mid-1990s dam construction slowed. The Bank has recently increased its financing for dam construction, in many cases for multipurpose dams that provide hydropower and often also support irrigation, flood protection, or industrial use. Almost a third (66) of the 211 Bank-financed dam/hydro projects covered in the evaluation rightly focused on dam rehabilitation, as many dams have experienced gradual deterioration due to lack of maintenance, and a number have been shut down due to salinity, sedimentation, and other problems. A new hydropower development business plan, *Directions in Hydropower*, was completed in 2009 and supports feasibility studies so that projects will be technically, economically, and environmentally appropriate. Indeed, it will be vital to take on board the experience with hydropower projects, including their scale, socioeconomic, and environmental impacts.

Institutions and Water

Water services are delivered by public providers in most countries, although private sector participation has made some progress. Where international private firms have been successful in urban areas, they have contributed significant investments to infrastructure and in some cities they have managed to increase the efficiency of water utilities' operations. In some Bank-financed projects in rural areas, the local private sector manages the operation of water systems,

but it has invested little and shared little of the financial risk. Where governments want private involvement, a well-functioning, well-maintained regulatory system is necessary for its sustainable participation in utility operations. In many cases this has remained elusive, and this has limited private sector involvement.

Projects operating in a decentralized environment have had difficulty meeting expectations, but when the budget and authority accorded to the lower level of government have matched the responsibility assigned to it, the projects had positive achievements. Half of the projects that aimed to strengthen local capacity and two-fifths of projects that supported institutional reforms were successful. Other positive outcomes usually associated with decentralization—increase in accountability, ownership, empowerment, and social cohesion—were achieved in a minority of cases.

Support for institutional reform and capacity building has had limited success in the water sector. Institutional reform, institutional strengthening, and capacity building have been the most frequent activities in Bank water-related lending. Yet these interventions have often been less than fully effective, and weak institutions have often been responsible for project shortcomings.

The Bank has been actively engaged in addressing transboundary issues. Projects have prioritized international waterways shared by a large number of countries. The Bank has been more successful in helping to address disputes than in strengthening transboundary institutions. Its achievements working with its borrowers on transboundary aquifers are in their early stages.

Strategic Issues

The Bank's complementary strategies for the water sector have been broadly appropriate. However, implementation thus far has underemphasized some of the most difficult challenges set by the 2003 strategy, and this has left some needs unmet. The Bank's approach to water will face heightened challenges due to climate change, the migration to coastal zones, and the declining quality of the water resources available to most major cities and industry in the coming decades. These will require some shifts in emphasis going forward.

Water stress needs to be confronted systematically. At present there is no relationship between Bank water lending and country water stress. The issue for the Bank is finding an entry point and helping the most water stressed countries put the pieces together so that water needs can become more central to their development strategy. This is not to say that the Bank should stop providing support to water-rich countries—and increasing lending to water stressed countries is not the only or even necessarily the best solution. The failure to meet human needs for water and sanitation has its roots in political, economic, social, and environmental issues. These are becoming more entwined and cannot be solved unless a broader range of actors get involved.

The most water-stressed group consists of 45 countries (35 of them in Africa) that are not only water poor but also economically poor. Country Water Assistance Strategies have helped to place water resource discussions more firmly in the context of economic development in the countries where they have been done. Including Ministries of Planning and Finance in the dialogue is another critical step, as is expanding the calculation of economic benefits to increase countries' understanding of the economic importance of water.

Collaboration with other partners is particularly important, and it is likely to increase in importance as the Bank helps countries to tackle water crises. This is true not only for water supply and sanitation but also for water resources management in national and transboundary basins. Many of the problems described in this report are far too big for the Bank to tackle on its own.

Successful implementation of the Bank's Water Resources Sector Strategy requires a great deal of data on water resources, and going forward implementation needs to prioritize data-gathering more forcefully. Data on all aspects of water and relevant socioeconomic conditions need to be more systematically collected and monitored. Data needs to be used better within projects. For example, the collection and analysis of up-to-date groundwater data is more important now than ever, and it needs to be taken on board more commonly than it has been.

Recommendations

- **Work with clients and partners to ensure that critical water issues are adequately addressed.**
  - Seek ways to support those countries that face the greatest water stress. The mid-term strategy implementation review should suggest a way to package tailored measures to help the Bank and other donors work with these clients to address the most urgent needs, which will be far more challenging as water supply becomes increasingly constrained in arid areas.
  - Ensure that projects pay adequate attention to conserving groundwater and ensuring that the quantity extracted is sustainable.
  - Find effective ways to help countries address coastal management issues.
  - Help countries strengthen attention to sanitation.

- **Strengthen the supply and use of data on water to better understand the linkages between water, economic development, and project achievement.**
  - In project appraisal documents, routinely quantify the benefits of wastewater treatment, health improvements, and environmental restoration.
  - Support more frequent and more thorough water monitoring of all sorts in client countries—particularly the most vulnerable ones, and help ensure that countries treat monitoring data as a public good and make it broadly available.
  - In the design of water resource management projects that support hydrological and meteorological monitoring systems, pay close attention to stakeholder participation, maintenance, and the appropriate choice of monitoring equipment and facilities.
  - Systematically analyze if environmental restoration will be essential for water-related objectives to be met in a particular setting.
- **Monitor demand management approaches to identify the aspects that are working or not working and build on these lessons of experience.**
  - Clarify how to cover the cost of water service delivery in the absence of full cost recovery. To the extent that borrowers must cover the cost of water services out of general revenues, share the lessons of international experience with them so they can allocate partial costs most effectively.
  - Identify ways to more effectively use fees and tariffs to reduce water consumption.
  - Carefully monitor and evaluate the experience with quotas as a means to modulate agricultural water use.

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