



Evaluation Findings on Urban and Rural Water Supply and Sanitation

ECG Paper #4



ABOUT ECG

The Evaluation Cooperation Group (ECG) is a network of evaluators of multilateral financial institutions (MFIs) established in 1996 to strengthen the use of evaluation for greater MFI effectiveness and accountability; share lessons; harmonize performance indicators and evaluation methodologies and approaches; enhance evaluation professionalism within the MFIs and collaboration with the heads of evaluation units of bilateral and multilateral development organizations; and facilitate the involvement of borrowing member countries in evaluation and build their evaluation capacity.

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ECG Paper 4



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Abbreviations

AfDB	African Development Bank
AsDB	Asian Development Bank
CEB	Council of Europe Bank
EBRD	European Bank for Reconstruction and Development
ECG	Evaluation Cooperation Group
EIB	European Investment Bank
GEF	Global Environment Fund
IADB	Inter-American Development Bank
IDA	International Development Association
IEG	Independent Evaluation Group
IFC	International Finance Corporation
IFI	International financial institution
IsDB	Islamic Development Bank
MDB	Multilateral development bank
MDG	Millennium Development Goal
ODA	Official development assistance
PPP	Public-private partnership
UNSGAB	United Nations Secretary General's Advisory Board on Water and Sanitation
WSS	Water supply and sanitation

Introduction

Multilateral finance institutions are grappling with some of the most complex challenges facing the world today, and Evaluation Cooperation Group (ECG) members have worked to assess the performance of their respective institutions' policies, programs, projects, and processes and to learn what works in what context. To capture common opportunities, challenges and lessons, ECG initiated a series of papers that are published periodically.

This publication evolved from a workshop that focused on urban and rural water supply and sanitation. The workshop served to share ideas and bring together various perspectives from inside and outside ECG.

The findings presented here are from three speakers. The first was Mr. Ronald Parker, who led an Independent Evaluation Group (IEG) evaluation on water. The second speaker was

Professor Patricia Wouters, who leads a multidisciplinary team on water law, policy, and science at the University of Dundee, Scotland. She has published extensively and presented her work around the world, providing expert advice on water and law, in particular. The third speaker, Mr. Gérard Payen, is president of AquaFed, an association that brings together more than 300 water service providers in 40 countries worldwide; he was formerly senior executive vice president of Suez, a water services company that is active in developing countries. Their presentations cover the challenges and opportunities for development in water supply and sanitation.

Also included here are two appendixes. The first is a paper prepared by IEG that outlines issues evaluators are likely to confront in water supply and sanitation. The second presents findings from recent water evaluations.

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Asian Development Bank
April 2011

Panel: Water Supply and Sanitation— Challenges and Opportunities for Development

Ronald Parker, World Bank Group

My presentation is based on a white paper that I prepared with my colleague Silke Heuser that has been made available to you in advance of this meeting.¹ My remarks cover three broad topics: (i) the world's water situation and the challenges it faces; (ii) the challenges that the water supply presents to evaluators; and (iii) the convergence and divergence of Evaluation Cooperation Group (ECG) findings and other recent evaluations in water and sanitation.

The World's Water Situation and the Challenges It Faces

In terms of the world's water situation, there is good news: things are getting better. Over the past two decades there has been considerable progress. Access to safe drinking water has increased by 10 percentage points, and 87 percent of the world's population now has some degree of access. Progress in India and China, however, is offset by shortfalls in Africa, where sanitation lags considerably. It could take \$87 billion over 20 years to close the gap.

What are a few of the major challenges? Fifty-five countries may not meet the Millennium Development Goals (MDGs) for water, and 74 countries may not meet the MDG sanitation goals. Poor nations in particular lack capital for the water infrastructure they need to meet the MDGs. One billion people, a sixth of the world's population, still lack access to safe drinking water, and about a third of these live on less than \$2 a day. It is evident that the low-hanging fruit has been picked. There is little hope that these households

can pay for water connections. Meeting the cost of needed infrastructure is daunting in the absence of tariffs that can cover its operation. The water resources that will be needed to further expand access are degraded in a way that the ones that we have previously used are not.

Challenges of Evaluating the Water Supply

Evaluators have studied water supply and sanitation (WSS) for years. We are used to the lack of baseline data and poor monitoring, and evidence of health improvements is scant, but we soldier on. However, the context is rapidly becoming more complex. Climate change is expected to accelerate water scarcity: competition for agricultural and urban water will grow as food shortages come up against a rising urban population; increasingly scarce water resources will need to be allocated with processes that we are not yet very good at doing; coastal megacities face migratory pressures, and many areas of the world could face climate change impacts. Solving these issues will require us to go beyond the country level, and the international financial institutions (IFIs) will need to decide how or if they are going to engage.

The water crisis forced the Independent Evaluation Group (IEG) water evaluation team to weigh resource sustainability more heavily than we had in the past. In the World Bank, we now talk about water with a capital "W." We take a holistic view that requires us to look at all water users. Accordingly, in our evaluation, the IEG team looked more broadly than the rest of you may have. You were more focused on WSS; we

1. Appendix A contains a revised version of this paper.

looked at water resources management, water transport, fisheries, and so on. As we did, we came up against some challenges. We initially expected that the sector strategy would be a good yardstick to use for the evaluation, but that proved not to be the case. While strategies often do not quantify goals or provide convenient benchmarks, the World Bank's water goals are particularly unhelpful.

The scale of what actually is done in areas such as alleviating poverty or making environmental improvements can lead us to make normative judgments. The scale of the problem is huge, directly observable achievements are limited in scope, and there is a certain amount of reputational risk because when goals are vague, almost any amount of progress could lead us to conclude that, yes, progress is being made. As evaluators we have the tendency to want to come up with the ground rules—something like, “Five ground water projects in all of Northern Africa is not enough.” We do not do that; consequently, we have to let the numbers speak for themselves.

Data management is another challenge that we face as evaluators. In 2010, *The Economist* published a special section² on the explosion of data and how data abundance is challenging institutions in many fields. In the past, we dodged this issue by sampling, but as evaluators we are all too familiar with organizational defensive behavior that says, “Well, yes, but if you looked at it in another country, you would have found something different, or if you looked at another project, you would have seen something different, or if you looked at another project site ...”

In preparing the IEG water evaluation, we looked at the universe of activities, and, as *The Economist* pointed out, new electronic tools make dealing with such universes, no matter how large, a relatively simple task. Even though we were dealing with 1,900 projects with findings that were contained in more than 20,000 lengthy

documents, we were able to identify all the critical water activities and find out what was working and what was not working in all of them, which had the enviable result of our not getting push-back about our sampling process.

On the basis of our review, we concluded that small investments in software and training pay off hugely in these sector evaluations. One group that we taught how to use these tools did a sample comparison and found they produced results 10 times faster, and that the results were error free.

Recent Evaluation Findings

Evaluation Cooperation Group (ECG) members shared findings from several recent evaluations with us. We hoped that such sharing would stimulate discussion and help us determine the degree to which our findings overlap, even though we did not all look at the same subsector.

ECG members generally agreed about a number of findings. First, given the world water crisis and scarcity, they found that increasing water use efficiency is going to be important for their institutions. Greater attention to cost recovery is needed, but getting tariffs right is complex. Second, institutional weaknesses in the water and sanitation sector have constrained progress, notwithstanding that water supply projects were generally successful, or at least as successful as other infrastructure projects in our institutions. Finally, we noted that monitoring and data collection do not provide adequate information for sector decision makers confronting water scarcity.

Where did the ECG partners diverge? They had less common ground on a number of issues. Some felt there has been insufficient emphasis on the economic analysis of water projects. Water and sanitation schemes for the poor are not affordable, even with subsidies. More attention is needed for the WSS needs of low-income neighborhoods. Finally, though there was not much divergence on this issue, connecting households to sewerage systems needs more attention.

2. “Data, Data Everywhere: A Special Report on Managing Information,” *The Economist*, February 27, 2010.

In the papers that ECG members shared, evaluators called for increased collaboration. The Asian Development Bank (AsDB) proposed a joint publication that would examine what works and why, as well as what needs to be done differently. The African Development Bank (AfDB) argued for more attention to donor coordination, particularly around procurement and monitoring. The Council of Europe Bank (CEB) favored coordination of tariff policy regulations. The European Bank for Reconstruction and Development (EBRD) suggested a coordinated IFI or donor position for the sector. The European Investment Bank (EIB) concluded that the institutions needed a more continuous presence in the sector, but that specific donor conferences would help with midcourse corrections and creating a shared position. The Islamic Development Bank (IsDB) supported increased donor coordination and collaboration. And IEG called for collaboration with other partners to tackle water crises and to deal with operation and maintenance costs.

I will now turn over the floor to our speakers so they can describe from their perspectives the major challenges facing development banks working in the water sector. They might want to identify gaps that need more attention and to challenge us as evaluators to focus on the major issues and to make a meaningful contribution to interagency performance. I urge them to be provocative.

Patricia Wouters, International Water Research Institute, University of Dundee, Scotland

Thank you for inviting me to be part of this exercise. I learned a great deal from reading the white paper and the synthesis reports that many of you have submitted for this meeting.

Let me begin by telling you about my set of lenses. I am an international water lawyer. I am Canadian by background. I have worked around the world advising national governments, primarily on international water law policy. I am now involved mostly on global policy boards and initiatives. On the basis

of this background and experience, I would like to invite you to consider some new pathways.

My comments focus on three areas. The first area is substantive concerns—topics that we may have missed or underexamined, such as regional water security. These are higher-level objectives. The second area of concern relates to what I call process-related concerns, which cover the soft side, rather than the hard side, of investment. I will end by presenting some ideas and by suggesting a way forward. I welcome your questions on those points because they really are rather out-of-the-box, but for those of us who work in the water sector, you have to try and try and keep trying. For this reason I was delighted when Ron talked about the “capital W” in water. I think that is the right perspective, and I am happy that you looked beyond WSS, because I do think that there are other important issues that merit our attention.

Substantive Concerns

My first substantive concern relates to balance. I have lifted some of the key statements from the background materials provided for this meeting in order to focus our attention. The first of these concerns is taken from the draft overview paper, which states that there is that increased awareness of the trade-offs between different water users on the one hand and the natural environment and conservation on the other, and that elimination of wasteful uses is now a more important factor than it has been in the past.

First, I invite you to think about how we look at evaluating and setting a balance. I believe that an evaluation might look at where we position the fulcrum for balancing a range of competing interests. I fear that we will not have enough water in the right places to meet all of the competing needs. And I am fearful that we are being a bit Pollyanna-ish in saying things are getting better when we know things are just getting harder: the water situation, the water crisis, all the complications with climate change, and economic fallout. I wonder how we will identify and assess balance.

Second, I wonder whether we could not invite a more critical analysis of legal reform and its impact. I do not know if any of the evaluators have a legal background, but I invite the lawyers to be more progressive and less lawyer-like. I wonder whether we can find a way to evaluate more dynamically the impact of legal reform and look, for example, at whether we can measure social justice emanating from effective water resources and WSS use. My inspiration for that comment comes from some of the country reports. The reports from Vietnam and several developing countries, for example, discuss what they want to do for their people. Overall, I do not see a holistic analysis of the role of law, the rule of law, and social justice, beyond water law reform. The Romanian case study gives a nice summary of what we have done in water law, but I think we could do better. We keep talking about how increasingly scarce water resources will need to be allocated, and about how pollution of surface and groundwater needs to be controlled. That has a legal focus, but I suggest it goes beyond a new water law. I think it comes at a higher level, and I hope that an evaluation might move to such a level.

The first of the seven key principles in the AsDB water policy focuses on at new policies, laws, and institutional capacity building. The IADB says there is a shortage of technical capacity and information for regulatory purposes. Last week, we had a study tour from Malawi wanting to look at new types of regulatory reform—for example, at whether there could be multisector regulation of not only the water sector but also energy. How do we move beyond simply analyzing new water laws? Can we look more closely at social impacts? The IsDB is encouraging and implementing water sector reforms, making water sector financing strategies more innovative, and building capacity into water sector reform. As evaluators, I think we should look higher than that.

My third and final comment on substantive concerns is that I was happy to see that the review you did of the sector some time ago included transboundary waters, a topic that is missing in the current white paper. (The current paper does note that water sustainability discus-

sions often need to go beyond the watershed and the country and consider cross-border events.) I do think the World Bank is trying to be forward thinking in addressing transboundary issues.

Multilateral organizations have a long tradition of trying to tackle transboundary waters. They did it in the 1960s, but then it went away. I suggest that this topic is now back in a big way. We need not only to tackle that and but also to look at a regional water security paradigm. We need to think in terms of the United Nations Charter and higher-level objectives for how water projects—capital W water projects—enhance or do not enhance regional peace and security in line with higher-level objectives, which the world is now increasingly concerned about, especially now that there is not enough money to go around. In Europe, which we thought was a fairly homogeneous setting, we found that each country took a go-it-alone approach during the financial crisis. We had remarkable unilateralism, and that was in Europe. What will happen when there is not enough water to go around across boundaries? We need to focus more on transboundary and United Nations Charter issues.

Process-Related Concerns

With respect to process-related concerns, the headline event is a soft versus hard investment focus, management- versus infrastructure-focused, as discussed in the white paper. I have two areas of concern in this domain.

First, time and again, especially when discussing WSS and governance/institutional/legal issues, the report notes that weaknesses in institutional capacity constrain effectiveness of the WSS sector. The development bank reports underline time and again that banks have project funding, project financing, and short-term vision, but do not have a long-term vision on governance and institutional and legal frameworks. That is a major shortcoming—one that constrains how developing countries will deal with the water sector.

In the IsDB, a public-private partnership (PPP) was an adequate reform for the water sector, but it lacked

performance and governance. In EIB, failures in the institutional setup were a major constraint. For the EBRD, municipal water and wastewater infrastructure projects had relatively lengthy overruns, often against the background of generally weak institutional capacity. In sum, we have a serious problem with institutional capacity that has not received sufficient emphasis. And so we get back to the balance—for example, do we build lots more dams? Infrastructure—big infrastructure—is at the front and center in the World Bank's projects, but I wonder what happened to support for governance and institutional development, which I consider still to be a problem.

My second process issue is capacity development. At this workshop you might want to discuss whether the benefits of small investments in training and software are worth the cost, given that they could facilitate detailed analysis. I think this should be discussed more fully; we should then try to transplant that sort of idea into the question of whether capacity development, even as a small percentage of development budgets on projects, should not be enhanced and analyzed more rigorously and critically. Instead of ticking a box, let's try to assess what we have.

So, for example, in the AfDB, although consultation with project beneficiaries is common, overall beneficiary participation remains weak. The AfDB raised a solid point that I hope you will discuss more in that the approach, and what I call the horizon, of strengthening monitoring and evaluation should be a capacity-building process. It is from that statement that I got my heading for the process-related issues and what is a long-term investment in human capital under national urban and rural WSS. Currently, it is dealt with on an ad hoc basis. Perhaps you may want to consider ad hoc versus long-term capacity development. The IsDB finds building capacity for improving skills and water quality monitoring has been overlooked. The AsDB says that complex technical solutions are being proposed that are beyond the capability of the organizational structure in place. Weakness in capacity was cited as a contributory factor in projects that were rated less successful.

I was struck by another statement that I hope you will discuss in greater detail: the World Bank report said that support for institutional reform and capacity building has had limited success in the water sector. We might want to explore that statement and whether we have evaluative tools for giving it a bit more depth and scope.

Ideas and Suggestions

With respect to out-of-the-box ideas, I will suggest several. The first is to identify fulcrum points. When trying to balance something on a triangle, you know that you have a fulcrum at the top. Could we not identify fulcrum points for a balance assessment exercise? So for identifying the things that need to be balanced or weighed against each other—for example, competing uses, environment versus development, soft versus hard, agriculture versus ecosystem in-stream flow—we could identify the competing interests and have a balance, a fulcrum, or a measurement, as one of the evaluative tools. I do not know whether that can be done. Maybe you have done it, but I did not see it.

Second, I invite you to be more horizontal and to do some cloud gazing. By this I mean to take inspiration from the AfDB and from what I have seen in my own work, and to set horizon-type parameters for measuring panoramas (the capital W) that would give us a broader, longer-term view of where we are now and the challenges that lie ahead. We would have a snapshot within the context of a horizon—not one that just looks backward. That would be looking at, for example, transboundary issues and water security but also something else. As French President Sarkozy has said, we should be trying to determine how a nation is doing on the basis of what economists now are trying to derive and call a happiness quotient. It is within this context that I invite you to think about the cloud-gazing horizon.

The third idea, one that is critical for the water sector, is how do we measure integration and how boundaries are transcended? There are two issues here. The first is how we measure progress on integration across sectors, because

water is water, energy, food, climate change—it goes on. But I also would like to know how we measure transcendence of boundaries or borders across nations, sectors, and disciplines—how we measure that within a nation state and within a region. Measuring integration and how boundaries are transcended might be a new evaluative tool.

Then two more. One is fairly specific. I would like to know how we measure impact from the rule of law. How does having a rule of law at a national level impact the effectiveness of water law reform, cross-sectoral reform, and what we are getting from projects? Here we might also look at those higher-level objectives in the end. Does the rule of law in a country or region, or on a project, meet the higher-level objectives of regional peace and security in the United Nations Charter? Can we measure building this kind of hierarchy of deliverables based on the rule of law? That is some of the work that we are trying to do.

My final idea relates to people. Could we identify and measure evidence of residual capacity, that is, who has had capacity enhancement and what its impact has been? I do not know how you would do this, but in my experience it is always about the local person, about local capacity. How do you identify local champions or leaders and what they have actually been involved in? How do you capture, measure, and enhance the impact, and how can we use that information? Feedback from the development banks, even those in Europe, cites lack of capacity as a major issue. If this true, how do we identify it, deal with it, and measure it?

Gérard Payen, United Nations Secretary General's Advisory Board on Water and Sanitation, and President, AquaFed

Let me begin by noting that I am here wearing two hats. First, I am a water specialist. I have been for many years a water provider, heading a large multinational company. I am in close touch with the private companies that operate public water systems because I am president of AquaFed, a global federation of those private water providers.

Second, I am an adviser to Ban Ki-moon, the United Nations Secretary General, who has an advisory board for WSS called the United Nations Secretary General's Advisory Board on Water and Sanitation (UNSGAB). Board members include representatives of several ministries. There also are some members of IFIs. Today we have on board Omar Kabbaj, former head of the AfDB. Our role is to stimulate governments and global institutions to improve their water policies. The board has six working groups, and I chair two of them: the financing working group and the monitoring working group. Both are related to your work.

My remarks today center on expectations of the external world with respect to WSS. I will discuss five such expectations: impact reporting; leveraging non-official development assistance (ODA) funding; effects on other water projects; output-based aid; and the need to scrutinize data.

Impact Reporting

Our first expectation is that you measure the impact of the projects you are financing. Despite the importance of access to water and access to sanitation on the global policy agenda, most of you do not report on the impact of your projects in this area. UNSGAB has requested many times—the first time was in the first Hashimoto Action Plan in 2006—that all international financial and bilateral institutions report on the number of people who gain access to safe water and basic sanitation and wastewater collection as a result of their funding. We have been successful with a few bilateral groups, but no multilateral institution is seriously responding to this need.

When a project is evaluated, its impact is generally assessed physically, that is, in terms of improved infrastructure. How many connections were built? How many cubic meters of water were mobilized? That is not enough, because all people need water, and simply because you put more water into the networks does not mean that people actually receive more water. What is important to measure is the *use* of water by the population, not only the physical improvement of infrastructure.

The water sector faces three major challenges. The first is increasing water scarcity, which relates to water resources. The second is providing access to water and sanitation to everyone. The third is water pollution. Those three challenges are interrelated, but they are also autonomous. I say that because to a water specialist, access to water has nothing to do with water scarcity. Access is the result of water policies that aim at providing water to people. If you can report on this impact, that would be great.

Leveraging Non-ODA Funding

In developing countries, ODA generally represents 5 percent to 10 percent of all public expenditures of the water sector. This number is very important, but it also relatively small, which means—and this is the view of UNSGAB—that the priority of development banks should not be to finance individual projects but to find ways to become catalysts. ODA money is probably most powerful in developing countries, where it is used to attract other types of funds. UNSGAB has repeatedly requested that development banks report on the leverage effect of their funds. By leverage, I do not mean co-investment with other development bodies; I mean leveraging of non-ODA funds. We feel that is essential because the water sector is underfinanced and ODA must be used to increase the overall financing of the sector.

Effect on Other Water Projects

Development banks need to know that their money is the best money for water utilities in developing countries, and in particular for finance ministries. This means that when financing a project, you may slow progress on 10 others, because if a minister of finance finds that the financed project is a very good one with cheap money, he may wait for new, similar funding from your bank before making the effort to build another project. I do not say that this is typical everywhere, but there is a risk that by building a very good project you can slow down the whole water sector in the country if you do not take care of water sector financing at the national level.

So when you evaluate a project, please measure its impact on the water sector of the country, not only on the population that is directly affected. Wearing my private hat with AquaFed, I can say that we think is very important because in many cases people say, “Well, the water sector does not seem very attractive to the private sector.” The reality is not that it is not attractive, but that there are few opportunities because ministries of finance can often find easier ways to fund their projects.

Output-based Aid

Output-based aid is something new in the water sector. It is an initiative that several of you are pushing, in particular the World Bank. The term refers to projects for which financing normally goes directly not to nongovernmental organizations but to companies that provide people with physical connections to water networks. The companies are paid only after those connections are realized. The projects are clever and useful, and they can work well.

Having said that, I must add that AquaFed members commonly report two problems with output-based aid. The first problem is that in order to work as intended, these schemes fund the contractor only after the connections are made. This is good in principle, but it is terrible for small companies, which must have some cash in advance in order to survive. With ODA and output-based aid, it is not the case. I know small operators in Uganda that have a lot of difficulty in prefinancing those operations; one of them even had to mortgage his house. There is no reason for making ODA more difficult to contractors than any other type of contract.

The second problem is that the administrative costs of output-based aid are very high. I am sure that the procedures can be simplified, and that is possible to go more quickly and more efficiently.

Scrutinizing Data

I make this last comment wearing my UNSGAB hat, where I chair the finance working group.

As you evaluate policies and projects, please challenge the data that come from others; do not take those data for granted. For example, earlier today, one report noted that 1 billion people worldwide lack access to safe drinking water.

That figure is absolutely untrue. In fact, we do not know how many people lack access to safe drinking water. The 1 billion number has been measured carefully; it was issued by the joint monitoring program of the World Health Organization and the United Nations Children's Fund. It refers, however, to the number of people who do not benefit from access to improved water sources, which means in practice people who are using a water source that is not protected from contamination by animals. So today we know that 900 million people are using water that is not protected from contamination by animals.

Does this mean that the other 5.5 billion people in the world have access to safe water? Not at all. The number of people who do not have access to safe water, in my view, is in the range of 2 to 3 billion, or maybe even 4 billion. But in practice we do not know because there is no global measurement of water quality. This is why today the issue of access to water is underestimated in global policy. .

A second oft-cited but erroneous statistic is that 2 billion people are not connected to a sanitation network. This figure comes from a misunderstanding, namely that the MDG on sanitation is on basic sanitation, which means toilets, and we know that more than 2 billion people do not have access to sanitary toilets. But how many people do not have access to wastewater networks? We

do not know precisely, but there is an estimate that is used by the United Nations and by the Organisation for Economic Co-operation and Development, which is that today 4.4 billion people have no access to wastewater networks.

Many of your reports noted that PPP contracts in the developing countries have had mixed results. AquaFed looked at that in detail, and I would like to make two points. First, I never have seen any assessment of the results of public utilities in developing countries. Are they mixed or not mixed? This is debatable, but I do not think that the results of private operators are worse. More important, until recently, this topic was informed only by bits of information. Now we have a global base of information with statistical meaning. It is a report published by the World Bank in September 2010 on PPPs in the urban water sector in developing countries. It presents a statistical review of all PPP contracts in the water sector in developing countries, and it shows that some of those contracts are not good. Not all of them are delivering good results; indeed, some of them have delivered very bad results. But on average, they have provided access to safe water to tens of millions of people. On average, they have increased the efficiency of water utilities. On average, they have increased the quality and the level of service delivered to people. Statistically, no difference was found between the prices or costs requested by private operators and those of public utilities under the same circumstances. Please use those reference reports and do not pass on data from other reports without challenging the source of their information.

Discussion

Vinod Thomas

Our speakers have made fascinating points. Looking beyond projects is a good message because a lot of work does go into project evaluation and planned project measurements. Beyond that is the need for more understanding of the perspectives of the sectors and the countries. Another question is whether evaluators are picking up some of the horizontal issues that Patricia mentioned. Finally, dependence on others' data and the quality of those data are crucial, both on the public and the private sector sides.

Cheryl Gray, World Bank Group

I have two questions. The first relates to Patricia's point that the MDBs need to do more on institutional reforms and capacity building, and not just on infrastructure. That has been the topic of much debate, and there have been huge swings of opinion. In the late 1990s, the World Bank nearly got out of supplying hard infrastructure. There was a huge emphasis on institutional reform, regulatory policy, governance, privatization, and private sector development. Most people do not think that approach was successful; project ratings were bad and people were frustrated. Many complained that the projects not having an effect. They believed that infrastructure needed to be built. In this decade, the World Bank has swung back in a huge way, as have other MDBs.

Second, looking at the experience of the past few years, I wonder about the idea of going back to what we have not been able to make work, because it is so hard to change basic governance and basic institutions in a country. We face a conundrum. We have been quite successful at building infrastructure and developing some private sector participation, but we have not been very successful on the regulatory institution

side. So I just wanted Patricia to comment, given that history, on whether that makes a difference in what you suggest.

A third question: neither of you touched on cost recovery. Our evaluation put a strong emphasis on cost recovery, as hard as it is—differentiated tariffs or something—because sustainability simply was not going to work without more and better cost recovery, which the World Bank has almost given up on. Now they are going to look at it again. I would appreciate your views on how much the MDBs should be pressing for higher, but not necessarily full, levels of cost recovery.

Ronald Parker

Regarding the mixed results, we are aware of the study that Mr. Payen cited, but the World Bank evaluation looked only at projects in which it was involved. The evaluations submitted by the ECG members found a similar phenomenon: the projects their institutions had referred to the private sector also had mixed results. We found that when things did not go well there were many external causes, including natural disasters and changes in regimes—things for which the private sector is no way responsible.

Patricia asked why we did not say more about the “capital W” water. We have a 100-page evaluation with 100 pages of appendixes, and for the purpose of this meeting we did not include all of the things that were outside of WSS because none of our colleagues submitted information on that.

Satish Rao, Asian Development Bank

Patricia made good points about the relevance of cross-border projects for enhancing peace and

whether the MDBs should be more involved in such projects. I think that at least in some regions, MDBs have been reluctant to do this because we are supposed to be apolitical. In many ways, transboundary waters often come in the field of politics between countries.

As an example, in Central Asia we have a small, upstream country that is building a hydropower dam, and a larger, downstream country that is objecting to it. This situation has gone on for years, but now it looks like the smaller country is going to go ahead with its plan. This is definitely not going to add to the peace, but I am not sure that other countries would like MDBs to get involved in this.

Second, MDBs would not like to get involved in such a strong disagreement between two countries. Are transboundary waters really an area for apolitical institutions such as the MDBs? And if so, how should they go into this?

Dennis Long, European Bank for Reconstruction and Development

Gérard talked about low coverage rates or the lack of full coverage; Ron mentioned that we probably will not meet the MDGs. The 1980s was the Decade for Water Supply and Sanitation, and during that time I worked as an engineer in the WSS sector. While much was accomplished, the MDGs were not met. If we really want to achieve our targets, it is going to take a lot more funding than we collectively have. We will have to be willing to invest substantially more money.

Werner Schmidt, European Investment Bank

I'd like make two points, First, findings from the EIB evaluation did not confirm that private operators did worse than public sector operators; in fact, we found some evidence that the reverse was the case.

Second, I would like to underline one point Cheryl made. Cost recovery can pose serious threats for sustainability.

Colin Kirk, African Development Bank

With reference to regional advancements, I believe that this applies more to water resources management than to WSS because it is the former that tends to be transboundary. I am not aware of too many transboundary issues around WSS projects, except that, of course, water has to come from somewhere. The AfDB has made it a focus of its work. It is part of the that bank's mandate to take a regional or subregional approach to its work. Because of difficulties such as those Satish alluded to, it has not taken this mandate seriously until the past two or three years.

We are seeing a whole generation of transboundary, regional, and subregional projects. Not all of them are in the water sector; many of them are transport infrastructure, and many are linked to energy, water, and water resource management. I think we are stumbling up against not political issues, but practical issues associated with getting interested parties to agree on a way forward. It is not "big P" politics but "small p" politics that is the constraint.

The AfDB is trying to learn about this. We have begun to look at a number of aspects of regional integration and regional transboundary projects. I hope in time we will have more to say about this.

Ramesh Adbikari, Asian Development Bank

Just one observation regarding a remark made by Mr. Payen that was close to my heart because it concerns our roles as multilateral institutions. He referred to the importance of reporting on the leverage effect, not just the catalytic role of our institutions. We are talking not about leveraging our ODA funds but about non-ODA financing. Maybe you have to link that to another issue, which is the importance put on cooperation and coordination in our work. We have to be aware that the push for coordination and cooperation sometimes requires our institutions to look for funds other than those from the private sector, which adds to the resources available.

Marvin Taylor-Dormond, World Bank Group

The report we produced for the Bank that is part of this white paper does not include the financing of the World Bank Group through the private sector. We will be doing such a report in a few years. I'd like to hear your views about the role of the private sector in addressing this problem. Mr. Payen, from your perspective in the United Nations, what issue do you consider critical to assess and evaluate when we undertake this work?

Huso Zivalj, Islamic Development Bank

Coordination and collaboration among financial institutions and among international institutions such as the United Nations agencies and water-related organizations is key to decreasing the number of people who do not have access to water and proper sanitation. Without such coordination, each institution will go on its own way. For example, IsDB has 56 member countries with 1.5 billion people, two-thirds of whom do not have proper sanitation. Half of them do not have proper access to the water supply. If we had proper coordination within all these institutions and international organizations, the situation would be much better.

Vinod Thomas

I was struck by the comments on what water project evaluations tell you, as well as on the bigger story, about which the evaluations do not shed enough light. As evaluators, we have to listen to that point. When you think about the infrastructure construction that was the objective of projects, to what extent does it tell you about results? I am also interested to hear whether you think the quality of the aquatic resources and the environmental side of it does not have a big effect not only on access to but also on availability of water. Obviously we are struck right now by issues of water availability and keeping adequate water through the environmental lens.

And with respect to the quality of data: is that not equally an issue on the private sector side? Do

you believe the data any more than you believe the data from the public sector? We hear horrendous stories about lack of independence from the data that come from either side. There are big differences, and I think the comment on the public versus private was saying that it is just as mixed on both sides. I would really appreciate comments on that.

Patricia Wouters

Cheryl's remark about how we started off with major infrastructure, then went to the soft side, and now are back to the hard side, is well taken. We have to be careful with how we look at the question. I think it has to be a mix. I wonder whether in an evaluation you could strengthen the case for enhanced and qualitative, not quantitative, soft investment. With respect to the comment that, "We tried, it didn't work," I am going to ask a personal question of everybody sitting around the table: How long did it take you to become an expert in what you are doing? It did not happen in two or three years. So the real strength of sitting around this table today is not the video conference, the hard side, it is the people, it is the soft side, and this has to be a long story and a long investment. We should focus evaluation on how we look at that within a longer perspective and how we drill down and assess what is happening.

I have been on this capacity development issue, and it is not capacity-building, with respect, I hope you will sharpen your language. I am losing the battle, but I think it is about capacity development. Everywhere I have gone, I have learned as much as they have learned from me. So it is capacity development, capacity enhancement, and it is long-term. Think about sending your children to university. If any of you have 15-year-old children, how they are not going to know in three years, it is going to be a 10-year vision, 10–15 years. So when we look at soft versus hard, it is easy to look at a dam and say, "We have done more." The answers are not going to be technologically driven: it is not going to be about more dams, it is going to be about better people. We have to change the focus.

Cost recovery. As a lawyer I know the framework directive inside and out. Cost recovery, yes; tariff setting; yes, taking development into account, yes. It is a regulatory framework. This has to be built within a nation state, and it depends on the situation and the capacity there. Many developing countries are far better at cost recovery than developed countries are. We have some better records of paying in Morocco and Zambia than you do in parts of England, in fact. So let's look at how cost recovery is being done. It is an issue within the legal and regulatory framework, but also on the policy side. I think it is being done better than you might guess. I think that is once again a framework for analysis.

Ron, I was not criticizing you for not looking at "capital W" water. I am happy that you have that context. My message was meant to be one of support of the capital W water, but I like the water supply and sanitation, I think that is fine.

The other big issue that I heard was from Satish on whether MDBs should be involved in transboundary water. You are talking about Tajikistan and Uzbekistan; I know the case well, as I know you know the Lesotho Highlands Water Project well, as we know the Nile Basin Agreement was not signed, as we know the Mediterranean Water Accord failed because they did not want to have a regional approach—it was Israel and Palestine.

But I invite you to look at what happens if you do not go into transboundary waters. We have a freeze on status quo, and the status quo is the big guys, unilateral development, and they will always win. So we will preserve what is happening with Egypt right now, even though they are downstream. We usually can preserve what is happening with the strongest state. Could I invite you to be courageous and actually look at transboundary waters? As our fellow from the AfDB said, there is a spillover effect: it is not only about water, it is about oil and gas. What happens when Russia turns off the taps on oil and gas transport? So it is oil and gas, it is energy, it is transport. I think you have to wake up in the water sector, and this has to be part of the dialogue.

Dennis Long talking about the funding gap. What do we do about it? It is what I started my talk on. I am talking about balance. How do you come up with a fulcrum that helps a government or region make decisions when there is not enough to go around? So it is about competition and conflict. What if you looked at avoidance techniques? We are not going to have enough water in the right places, especially for the poorest and the weakest.

Finally, Vinod said were we not concerned about environmental issues and aquatic resources. That goes again to the balance and how we have to look at development issues versus preserving the environment. This is something that you need to look at. We have to be concerned about resources.

Gérard Payen

With respect to cost recovery, I want to remind you that in the water sector some progress was made in 2003, when the canvassing report suggested a shift from the mantra of full cost recovery to a new one that is named sustainable cost recovery. Sustainable cost recovery is the expectation that costs are funded by taxpayers from public budgets and users through tariffs. This is acceptable, provided that the tariffs are affordable and the public budget subsidies are predictable, but such often is not the case. But in the water sector, the mind-set has shifted to sustainable cost recovery.

Last year, a reference report by the Organisation for Economic Co-operation and Development concerning sustainable cost recovery explained clearly that the ultimate funding sources of the sector are named the "three Ts": taxes, tariffs and transfers from external sources, such as ODA. So this new mind-set is that the goal for public authorities is not to increase the water tariffs; the goal is to address the needs of their policies. The policies usually are, or should be, to supply water to everybody in that territory. This has a cost, and that cost has to be split between taxes from the public budget and users. So the question is not whether we should increase the tariff; the question is whether we

need to increase the tariff if the public budgets are not sufficient. The answer is obviously yes, but it is a different approach.

There was a question about the amount of funds available in the water sector and about doubling the funds. There again, the canvassing report requested that all financial flows be doubled. In most estimates of expenditures for WSS today, the only expenditures measured are public expenditures. When half of the population of developing countries has no public service, on one side you have the public authorities delivering a service to half of the population, more or less, and this is accounted for. But what is the cost to the other half? Nobody cares. The few research reports available show that in cities those people who do not have direct access to the official public network pay an average of 10 times more for water than the connected ones.

There probably is a hidden cost in the water sector that can be tapped into for developing access to water. On the basis of my experience, which has involved efforts to extend water services in many slums, I believe that when you do that, the people do not spend more for water than before, but the benefit for the amount of water daily is tripled, or even multiplied by ten. So, it is true that the sector is underfunded, but the people spend money that could be used in another way. It is not because the water sector is underfunded that this funding should be increased. It is possible the diversity of public expenditures, when you compare the national budgets, is really impressive. If you look at the brand-new global report on water economics, it shows that in some countries the priority given to WSS is far greater than in others.

I was pleased that someone mentioned the catalytic effect of MDBs. When I say "catalytic effect," I do not mean only attracting private money. I mean that the first money to be tapped is used for the improvement of efficiency, of utility. When you use a cost or when you increase revenues, you obviously have more room for investment, and

this was possible in many utilities, but it can be helped through external funding. Another way is to use external funding to improve the service, which facilitates the increase in water tariffs. It is impossible, or nearly impossible, to increase water tariffs without any improvement in service, but when the service can be improved, the water tariffs in most cases can be increased.

With respect to the private sector, let me stress that it is typically made up of two subsectors: the operators and the bankers or financial bodies. They are probably different: operators are there for improving the service or the efficiency of the utility; bankers are there for lending money, which is a different story. There are PPP contracts for improving management of utilities in which there is no private lending, but obviously private lending can be organized, too. So these are two different roles.

Development banks are clearly a credibility factor in projects. But in many cases the coming of private operators has also been a credibility factor, and with the help of those two factors, many loans from private banks could come through. The role of private operators should not be underestimated.

Having said that, I want to be clear: even AquaFed, the international federation that I chair, does not say that the private sector is doing a better job than the public sector. There are good professionals in both sectors; this is not the issue. The issue is to deliver good-quality water to everybody, and operators, public or private, face the same constraints. They are facing problems with political decision makers who are only deciding on weak policies. If the tariff structure and public subsidies are not enough to provide room for investment, no investments will be made, regardless of what they apply to. So in many respects, public and private operators have the same problems: their sector is underfinanced, but operators can contribute to improving this financing by improving the efficiency of management of WSS.

Concluding Remarks

Ronald Parker

I asked our speakers to be provocative, and they were, and they have made our task more difficult. Patricia is right that we need to do more with looking at scarcity as a social justice issue in evaluating the role of legal reform and policy. I, too, see capacity enhancement as a long-term process, and I think that when we look at what our institutions do in those areas, we find too often that what passes for capacity development is investments in computers—investment in things that you can carry in boxes. We do not take enough time to make sure that the people who receive these things know how to use them or what to do with them.

Similarly, I think that Gérard is right that we need to go beyond the access agenda and begin to look at what are the impacts, what are the health benefits of what we have done in water. I also stand cautioned that, as an evaluator, I am not a developer of statistics, but we need to take more care in at least qualifying the weaknesses of some of these widely touted numbers.

Vinod Thomas

Let's give a round of applause and express our thanks to Patricia and Gérard, to Ron, and to everyone at the table.

APPENDIX A:

Overview of Issues Evaluators Are Likely to Confront in Water Supply and Sanitation¹

Preface and Acknowledgments

The Independent Evaluation Group (IEG) recently completed a comprehensive evaluation of the work of the International Bank for Reconstruction and Development and the International Development Association (IDA) in water resources management and development, water-related environmental sustainability, and water services delivery. This paper builds on that experience, but it is primarily intended to stimulate discussion of water evaluations more generally. The views presented are those of the authors alone and do not represent the views of IEG or the World Bank Group.

Water is an area where most Evaluation Cooperation Group (ECG) members operate and where most also have recent evaluation findings and recommendations. This paper brings together the higher-level findings, lessons, and major recommendations of ECG members related to their evaluations of operations in urban and rural water supply and sanitation (WSS) and compares these findings with those of the IEG evaluation in areas where more than one organization had conclusions to draw. The cross-institutional analysis was performed with textual analysis software. Results were distributed to ECG members for review. When members requested a change, the paper presents their version as it was written or received.

This work greatly benefits from the comments of peer reviewers Judith Rees, professor of Environmental and Resources Management and director of the Grantham Research Institute on Climate Change, the London School of Economics; and Marlis Sieburger, division chief of the Evaluation Department at the Kreditanstalt für Wiederaufbau Evaluation Department. They reviewed aspects of the paper corresponding to their respective areas of technical expertise, and the paper has been much improved thanks to their efforts.

The current version of the paper is divided into three sections: (i) Water and Development; (ii) The Challenge of Evaluating Development Actions in WSS; and (iii) Comparing WSS Findings with Those of Recent Evaluations by ECG Members. Each section raises some issues that it was not possible to deal with in the subsequent sections, in part because the authors were limited by the information submitted by the member organizations.

This paper was prepared by Ronald Parker, consultant to IEG and former lead evaluation officer and task team leader of the IEG water evaluation. Silke Heuser, IEG consultant and member of the IEG water evaluation team, provided research support and developed an initial analytic comparison of ECG findings.

Water and Development

Providing clean water, removing used water from neighborhoods, and treating wastewater before releasing it back into the environment

1. Prepared by Ronald Parker, with support from Silke Heuser.

are major focuses of development efforts, and this will continue to be the case for the foreseeable future. Researchers from the Bloomberg School of Public Health at Johns Hopkins University note that nearly 2 million people—most of them children under five—die every year from diarrheal diseases caused by water-borne pathogens. Millions more are blinded, disabled, or malnourished because of water-borne illness or pollutants. Cholera, typhoid, Guinea-worm disease, dengue fever, river blindness, polio, and diarrhea are agents of this plague, a by-product of poverty, underdevelopment, and failed governments and economies. Eighty percent of illnesses in developing countries are water related.

In recent years, about one-third of all World Bank lending has had something to do with water. The Bank is the largest external provider of finance to the water sector. ECG members did not provide information on how water lending figures in their portfolios, so no comparisons can be made. But it is likely that if they used the same criteria, the percentage would be similar.

International financial institutions' (IFI) justification for maintaining this level of involvement is tied to their core mission. Billions of the world's poorest still do not have even minimal access to safe drinking water and basic sanitation services. Each day millions of women and girls collect water for their families—participating in a ritual that reinforces gender inequalities in employment and education. The complexity of the challenge is magnified by increasing urbanization: for the first time in human history, more than half the world's population lives in cities. Population growth in many developing countries has overwhelmed recent expansions of the potable water infrastructure, so that in spite of hard-won developmental achievements, the quality of service may still be deteriorating in some neighborhoods. In cities with large squatter settlements, the lack of streets and other urban amenities (including a discrete identifier such as an address for each household) further complicates service expansion. Peri-urban areas, in particular, are known for their rapidly growing populations and lack of water infrastructure. The

water infrastructure deficit affects other sectors, including health and education, and the development of a robust private sector.

There have been noteworthy achievements in WSS thanks to the efforts of concerned governments and their development partners. Large-scale water supply infrastructure investments have helped increase the number of people with nominal access to safe drinking water by 10 percentage points in the past 18 years, from 77 percent of the world's population in 1990 to 87 percent in 2008, although few of them receive 24-hour service (UNICEF and the World Health Organization 2010). But progress is markedly uneven. Gains in China and India are offset by serious shortfalls in Sub-Saharan Africa. Even adjoining settlements demonstrate huge inequalities. Kenya's government reports that 93 percent of Nairobi residents have access to clean water, and 99 percent have access to sanitation. But a "water and sanitation nightmare" confronts residents of the sprawling Kieran settlement, just 7 kilometers from the center of Nairobi (UNDP 2006). Less than 40 percent of households can access legal water supplies, and one-third of those get water from a standpipe. The rest must buy water from private vendors at prices seven times as high as those paid by Nairobi's wealthy households. Drainage channels on the sides of roads are often blocked, and pit latrines overflow in the rainy season, the report added. And Nairobi is not unique in these respects.

The Water Supply and Sanitation Challenge

Poor countries often lack adequate capital to build the reservoirs, water treatment plants, and delivery pipelines that form the core infrastructure for modern WSS services. About one-third of people who lack access to drinking water live on less than \$2 a day, the United Nations reports. Some 385 million people must try to survive on \$1 a day.

Covering the cost of the desperately needed infrastructure is a daunting challenge in the absence of a sustainable stream of tariffs to cover its operation. The lack of sustainable income

streams has much to do with the failure of utilities to charge existing customers anywhere near the full cost of the service with which they are provided. Poor people can and do pay quite a lot for water. But their incomes tend to be lumpy; that is, they do not receive weekly or biweekly salaries, and this makes it difficult for them to pay a monthly bill. For this reason, full-scale Western-style connections might not be the appropriate type of service provision for the very poor. Targeted subsidies probably also have a role to play (Chile has shown how this can be done). More than 1 billion people worldwide—one-sixth of the earth's population—lack access to safe drinking water. And providing the full range of WSS services just ups the bill. In 2008, the United Nations International Year of Sanitation, an estimated 2.16 billion people in developing countries lacked connections to reliable water supply *and* a sanitation network.

The United Nations Millennium Development Goals (MDGs), adopted in 2000, aimed at reducing the proportion of people without access to safe water and sanitation by half by 2015. An estimated \$11 billion per year would need to be invested to achieve the MDGs for drinking water and sanitation worldwide, the United Nations noted. Other projections triple that figure. A panel led by former International Monetary Fund President Michel Camdessus (Camdessus Panel 2003) estimates that closing the sanitation services gap could cost \$87 billion over the next two decades. By 2006, the United Nations had already concluded that 55 countries were not on track to meet the 2015 MDG for water, and if current trends continue, 74 nations are not expected to achieve the sanitation goals.

The report of the 4th World Water Forum listed a range of initiatives taken to address the MDGs for water and sanitation. It noted that commitment to meeting MDGs was generally declining, making their achievement by 2015 unlikely, and stated that the global economy has never invested more than 0.3 percent of world gross domestic product in the sanitation sector in any given year. Analysts at Booz Allen Hamilton have estimated that to provide the water needed

for all uses (including economic) through 2030 to the population as projected, the world will need to invest as much as \$1 trillion a year in applying existing technologies for conserving water (especially in food production), maintaining and replacing infrastructure, and constructing sanitation systems. And this does not include any consideration of the potentially much higher infrastructure costs associated with climate change. This immense sum represents about 1.5 percent of today's annual global gross domestic product. This figure works out to about \$120 per capita, a seemingly achievable expenditure, according to Peter Rogers (2008), a member of the IEG water evaluation panel.

The obstacles confronting WSS expansion and related policies have grown enormously because of the current worldwide economic recession, notes Britain's Department for International Development. In 2005, the world's eight wealthiest nations pledged to double their aid contributions by 2010, which would have produced an additional \$50 billion, half of it reserved for Sub-Saharan Africa. Those nations have fallen behind on their commitment. Their financial capabilities are being strained to the limit to cover the costs associated with the collapse of the global financial system and resulting job losses. The developing world's current plea for attention risks being lost in the multitude of voices in the developed world calling for restoration of lost employment, financial markets, and commerce. Meanwhile, the human cost of poor WSS service overwhelms health care providers.

Development patterns, increasing population pressure, and the demand for better livelihoods in many parts of the globe are contributing to a steadily deepening global water crisis. In its 2006 Human Development Report, the United Nations Development Programme estimated that by 2080, 1.8 billion people will likely be living in a water-scarce environment.

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 those of future generations.

Only 3 percent of the world's water supply is fresh water, and two-thirds of that is locked in glacier ice or buried in aquifers. This leaves only 1 percent readily available for human use. And water is not only limited; it is also unevenly distributed. In arid regions, water shortages are always a threat. Add to this the scientific consensus that climate change will worsen water-related challenges in the coming years. Weather changes are already disrupting rainfall patterns, feeding ever-more-powerful windstorms, and creating droughts of unprecedented severity and frequency.

The Challenge of Evaluating Development Actions in WSS

Most evaluation departments have a long history of evaluating investments and grants for traditional water-related activities. Today, the context in which these activities take place has become more complex, and critical aspects of the situation are sometimes not fully addressed in evaluators' annual work programs. It is commonplace to note the lack of baseline data and the poor state of monitoring and evaluation with regard to water services and their health benefits, and these issues will receive only passing mention here. But IEG encountered other issues while carrying out the World Bank's water-related work that might be worthy of discussion.

The first issue is the need to expand the usual discussion of sustainability beyond stream of benefits and institutional/financial sustainability in the face of climate change and water stress. Water projects are now being undertaken in the context of increasing water scarcity and competition for resources between different water-using groups. Consequently, the projects themselves, and evaluations of them, have to look beyond the narrow confines of the project area to consider wider resource management and allocation questions. They also have to pay much more attention to timescales and to broaden

discussions of project sustainability to include socioeconomic and environmental change. A related question is whether separate, largely unconnected project funding is always appropriate given the need for integration and long-term development of capacity to deal with changes in rainfall patterns, resource availability, resource degradation, increased wastewater amounts, and climate variability.

A second issue relates to the vagueness of our organizations' water strategies, coupled with an upsurge in the number of approaches that they advocate for addressing water problems. The proposed solutions evolving toward intricate thematic integrations; at the same time, there is an unfortunate tendency not to think through the compatibility of the proposed solutions with respect to each other and to other development problems within an economy. The problem is not just the complexity of the water sector—it has always been complex. It is that in trying to confront the sustainability issue, those responsible for creating water strategies have integrated so many development themes that to some degree they seem to consist of a mixture of ends and means. This confusion is at the heart of many problems with projects, and the problems carry over into their evaluations. Moreover, the shift in emphasis toward integrated water resources management is a challenge in and of itself. Ideally, evaluations need a consistent set of desirable ends, measurable over time. With such ends, it may be possible to review the means that best enabled their achievement. But when a goal is excessively vague, one can draw few worthwhile lessons from its evaluation, even when project actions contribute do contribute to its attainment. For example, holding community meetings may be consistent with water strategy goals on enhancing stakeholder participation, but it is probably impossible to pinpoint exactly what such meetings contributed to improved resource management in a large watershed.

The third issue is the explosion of textual data stored in the files of development organizations. When the World Bank began to store its reports

and project documentation electronically in 2000, it had 1.2 million records covering the 50 years of its existence. Ten years later, records had increased sixfold, to 7.5 million. Those records contain a good deal of valuable material, and the ability to access it analytically would be helpful to any evaluation. But an evaluator could be forgiven for not giving a task of that scale a second thought. One reason is that few of us are up to date on the tools that have been developed to cope with the explosion of electronic data. Wal-Mart processes more than a million customer transactions an hour, but it has tools that analyze its sales data in such minute detail that even weather patterns are taken into account: managers know which items will be in demand and which sales displays to change when major storms are expected, for example. Similarly powerful tools are available to help evaluators deal with millions of electronic records in real time.

Sustainability Considerations for Water Resources and Waste Water Treatment

Experts warn that climate change threatens to accelerate water scarcity, particularly if changes in precipitation and snow cover reduce available water supply in politically strained regions. About 700 million people in 43 countries are currently under water stress. Slum dwellers; residents of small island states; and urban dwellers living along rivers, coastal areas, and floodplains are also especially vulnerable to rising sea levels, increased storm activity, and other risks posed by a warming climate. The IEG evaluation highlighted a significant mismatch between countries receiving investments and those with the greatest water stress.

As the world's population becomes increasingly urban, it faces an increased risk of water scarcity and resource degradation stemming from settlement density. Fueled by migration from rural areas, increasing density will exacerbate the urban-rural tensions regarding water, adding a spatial dimension to the challenge of managing water appropriately. And the urban population is expected to double between 2000 and 2030, which gives us an idea of the dimension of the problem.

With a growing share of population living in cities, competition between agricultural and urban water users will become more intense. Increasingly scarce water resources will need to be allocated, and pollution of surface and groundwater bodies in urban areas will need to be controlled. Coastal areas, which include 18 of the world's 27 megacities, will face the largest migratory pressures; many of these areas will also be hot spots of climate change impacts. The combination of sea level rise, increased intensity of rainfall, more frequent and more serious floods and droughts, and possible increased incidence of cyclones will call for more attention to this freshwater-coastal linkage. For this reason, the IEG evaluation took these factors into account.

As a result of supply quantity and quality constraints, some WSS projects have begun to take a broader perspective. For example, the World Bank-financed Integrated Water Management in Metropolitan São Paulo Adaptable Program Loan is addressing WSS in a manner that is based upon better water resource management and more attention to pollution control and land use in an acutely water-scarce urban area. In a case like this, a traditional approach to WSS evaluation (that is, one that looks at easy-to-count aspects, such as service connections) might be seen by the evaluation community as less than fully relevant.

Water sustainability discussions often need to go beyond the watershed and the country and to consider cross-border events. "We typically do not think of water as a global commons," the authors of the Columbia University study commented. "The fact that the Yellow River no longer makes it to the sea, the fact that an aquifer in Long Island has been depleted and the three-hour daily walk for poor-quality drinking water in rural Ethiopia are all perceived and felt as local or regional problems. The discussion of global water crises refers to the vast number of people around the globe facing these problems. In essence, the global crisis is viewed as a collection of local crises—whether they are related to access, pollution or scarcity—for which there is a global policy imperative."

In a response to the IEG water evaluation prepared for the World Bank's Board of Executive Directors in 2010, WSS staff discussed what their strategic response needed to look like. They wrote that:

While the Bank model is geared toward effective engagement at the country level, it will also have to find ways to respond to issues that cannot be tackled at the country level. Traditionally, the demand for water has been determined by forces and processes generated by human activities: demographics, spatial population shifts, and increasing consumption that comes with rising per capita incomes. Those factors have fallen mostly within country boundaries. With the growing recognition of the relevance of climate change for the sector, there has also been recognition that the sources of pressure on water lie beyond country boundaries, making the task of managing resources appropriately even more complex. Engagement in global or regional issues, such as water-sharing arrangements in international river basins, engagement in major dams (e.g., hydroelectric power in the Congo basin), and more specific issues, such as drainage of peat land in Indonesia, cannot be tackled at the country level. By focusing exclusively on a country-level model, there is a risk of losing sight of these issues which may require attention, not only from country directors, but also from senior management. Strategic corporate decisions will need to be made on whether or not to engage in these issues of global importance with support from the relevant anchors and all parts of the World Bank Group.

The above developments imply the need for a wider perspective for evaluations themselves, and more especially for evaluators, to develop mechanisms that will allow them look more broadly at the sustainability of water investments. Evaluators should also call for more attention in project completion reports (and self-evaluation generally) to the increasingly complex sustain-

ability issues unique to water.

Water Strategies and Organizational Policies as Unusable Benchmarks

Because water is a broad sector, with activities in many discrete areas, the most relevant issues tend to be complex. This complexity leads to organizational strategic guidance that is a bit vague and difficult to evaluate. A brief history of the World Bank's evolving approach and strategic objectives illustrates this problem.

In the 1980s, the World Bank focused on water services and infrastructure development as part of its core business. During the 1990s, the Bank's focus shifted toward improving the management of water utilities, irrigation, rural water systems, water resources, and land use. The Bank's 1993 Water Resources Management Policy Paper further nudged the institution away from infrastructure development. That paper also shifted the Bank's planning process from one based on discrete investments within the sector to a multisectoral approach.

With the turn of the century, the Bank's approach again shifted, this time to one of balancing infrastructure and management-focused investments. In 2001, the World Bank Group committed itself to achieving the MDGs. With the 2001 Environment Strategy, the 2003 Water Resources Sector Strategy, the 2003 Infrastructure Action Plan, and the 2003 Water Supply and Sanitation Business Strategy, water was given more prominence. The 2003 Water Resources Sector Strategy focused on putting the 1993 principles into practice, emphasizing the importance of infrastructure finance. The 1993 and 2003 sector strategy papers are complementary, but they do not give full coverage to key water issues. Table A.1 compares the main provisions of these documents. While the objectives have been greatly compressed for this summary, it should be clear how broad intentions can be in the sector.

A near-total lack of quantification of aims and benchmarks, coupled with the shift in emphasis

Table A.1: Coverage of Water Resources Management Objectives in Seven World Bank Documents

Objective	Number of documents	1992 Dublin Principles	1993 Water Resources Management Policy Paper	2001 Environment Strategy	2003 Water Resources Sector Strategy	2003 Infrastructure Action Plan	2003 Water Supply and Sanitation Business Strategy	Millennium Development Goals
Alleviate poverty	7	X	X	X	X	X	X	X
Promote private sector participation	7	X	X	X	X	X	X	X
Encourage women to participate in water resources management	5	X	X	X	X			X
Restore ecosystems (wetlands, swamps, coastal zones, marinas, estuaries)	5	X	X	X	X			X
Support basin-level institutions	5	X	X	X	X		X	
Enhance stakeholder participation	5	X	X	X	X		X	
Employ demand management practices (promote incentives to water conservation and establish a "polluter-pays" principle)	5	X	X		X		X	X
Strengthen policies and develop economic and sector work	5		X	X	X	X	X	
Improve water institutions	4	X	X	X			X	
Coordinate water resources activities across sectors	4		X	X		X	X	
Provide support for international waterways	4	X	X	X	X			
Promote improved water resources management	3	X	X		X			
Commit to environmental improvements	3	X		X				X
Create effective monitoring and evaluation units to measure results	3			X		X	X	
Protect groundwater resources	3	X	X		X			
Develop hydraulic infrastructure (dams, hydropower)	2				X		X	
Reduce natural disaster risks	2	X		X				
Prepare "high-risk/high-reward" projects	2				X	X		
Promote decentralization	2		X				X	
Improve low-cost technologies	2		X					X
Address political economy of reforms	1				X			
Enhance donor coordination	1		X					
Develop water Country Assistance Strategies	1				X			
Themes covered		13/23	16	13	15	6	11	7

to integrated water resources management, challenges evaluators because the scale of what is actually done in areas such as “alleviate poverty” or make “environmental improvements” can lead to normative judgments based on the scale of the problem (huge) and the relatively limited scope of the directly observable achievements, which tend to be quite limited and documented imaginatively. Conversely, minuscule but detectable progress in any of these areas could be interpreted as showing that an institution was achieving its strategic goals, but accepting such claims at face value involves some measure of reputational risk for the evaluating group

Coping with Data Overabundance

Given the wide scope of the World Bank water strategy, the IEG evaluation was designed to review the Bank’s water work through the broadest possible lens. This resulted in the compilation of a portfolio of nearly 2,000 loans and grants, and the experience gained was contained in approximately 20,000 project documents. Critical information on key issues in need of systematic review were often hidden within that enormous amount of textual data. The good news is that the evaluation team found that using new, sophisticated data analysis tools made working with thousands of documents to find the needed information to be feasible.

When evaluators get together, a common lament is that evaluations repeatedly identify the same lessons, yet, inexplicably, organizations do not make the recommended changes. But we rarely ask ourselves what causes change following an influential evaluation. It may be that evidence has to be compelling—and that means that case study data (especially in the absence of an open-ended commitment to continue the research until a theoretical saturation point has been reached) cannot be the primary data source. In the field of development evaluation, most evaluators are familiar with defensive organizational behaviors that results in criticism such as, “You came to the wrong conclusion because you sampled the wrong countries, or you looked at the wrong projects, or you visited the wrong sites.” Review-

ing the full universe of each intervention type eliminates such criticisms. For colleagues considering water evaluations in the coming years, the advent of textual analysis software may spell the end of the days of sampling.

Many evaluations do not take time to demonstrate how central the topic being evaluated is to the mission of the organization. Although only a few evaluators have learned how to do this, it now takes just minutes to find out how many projects were expected to perform a given activity using textual analysis software. If evaluators want to know how many projects promised to increase the number of connections to a waste water system, it takes only a few hours to collect the data, analyze it, and produce results. If a problem is common to a significant percentage of the portfolio, it becomes difficult for management not to take action.

Water quality monitoring is an example of a key WSS topic where an overabundance of text, coupled with a scarcity of already-analyzed data, was part of the evaluation challenge for IEG. But this was only one challenge: lack of quantification of a number of other elements in project appraisals also made it difficult to understand the real impact of investments. The IEG evaluation identified 731 projects that had an impact on water quality and found that 80 percent of the Bank’s borrowers have had projects that address water quality in some way. So this was clearly an important area to look at. But when the evaluation team began to analyze how well things were going in this area, it found, somewhat surprisingly, that relatively few closed projects presented data to show that water quality parameters had been measured. Only 61 projects attempted to monitor water quality to some degree. So one part of the story regarding these hundreds of projects could be told easily (see table A.2): projects were not doing what was necessary.

What about the remainder of the projects? Much as Sherlock Holmes once solved a case because the dogs did not bark, a lot can be said about the monitoring process in the absence of what would normally be considered monitoring data.

Table A.2: Snapshot of Water Quality Monitoring Activities at the World Bank

Activities	Number of projects	Percentage
All projects that attempted to monitor water quality	61	100
Project began a monitoring process that continued at least until project closing, or designed monitoring system	55	90
Project reported collecting water quality data	48	79
Project used appropriate data parameters given the nature of objectives	40	66
Project reported improved water quality	29	48

Source: IEG water database.

Among the analyses and comparisons done by IEG were lending for water quality management by year, lending trends, regional distribution (both where monitoring was happening and where it was not), the environmental sensitivity of the projects with and without data, ongoing projects versus completed projects (comparing older and more recent projects), evolution of the strategic approach, sectoral breakdowns, frequently pursued activities, type of organization responsible for the water quality-related processes, and activities undertaken to manage water quality by point source and non-point source of pollution, and so on. Cataloging what an organization is doing is an integral part of evaluation. For example, the number of projects dealing with groundwater may be known, but the number of projects that many are extracting water from falling aquifers or addressing groundwater conservation may not. In the case of water monitoring, knowing that more than 700 project loans are trying to do something about water quality without bothering to measure results is an important message, and one likely to cause organizational change.

Evaluators overlook a huge opportunity when they fail to use textual analysis software. It is powerful, inexpensive, and relatively easy to use. It is impossible to manually sift through the stored material for tens or hundreds of projects; doing this job electronically can take a few seconds. And unlike researchers, who get bored and miss relevant information, the computer is tireless and accurate. Lower-tech approaches to large-scale water sector issues can result in evaluations that overlook the complete and compelling evidence

that is available with a few mouse clicks.

Comparing IEG WSS Findings with Those of Recent Evaluations by ECG Members

This section briefly reviews the water evaluation programs of ECG member organizations as those programs were described in material that they provided to the authors. The authors' interpretations of the material supplied were shared with the ECG member organizations, as was the comparison of the findings of recent evaluations. No questionnaire was administered, although the members were asked to correct any errors of interpretation or analysis. Where corrections were sent, they were inserted verbatim. Some organizations provided information on the nature of the portfolio reviewed. Following the description of organizational approaches to evaluation in the water sector is a summary table that compares the members' findings in the sector based on the authors' analysis of the same submissions. Textual analysis software was used to prepare the analyses.

ECG Members' Recent Work in the Water Sector

The IADB's Office of Evaluation and Oversight has had an agenda in the WSS sector since 2000. In 2002, the office produced an evaluation of the IADB approach to WSS reforms in Latin America and the Caribbean. In recent years, the office has started to evaluate the provision of WSS services in rural areas as well as water resource management. For this paper, the office provided a summary that integrated the Latin American

Region and rural water work. It also focused on the experience with private providers.

IsDB

The Islamic Development Bank's (IsDB) Group Operations Evaluation Department carries out water-related evaluations within the context of its mandate to assess the overall development effectiveness of the IsDB group. Since 1992, the department has evaluated a number of IsDB-financed projects related to the WSS subsectors in 16 countries. Of the projects evaluated, 11 were in Sub-Saharan Africa, 13 in the Middle East and North Africa, and 1 in South Asia. According to a paper prepared to inform the ECG meeting in May 2010, IsDB's WSS portfolio has grown steadily, reaching about \$1.3 billion for some 113 projects and accounting for around 6 percent of its total project financing commitments. In addition, it has financed more than 25,000 water points in rural areas of Sub-Saharan Africa.

CEB

The CEB's Ex Post Evaluation Department produced its first reports in 2004. Its strategic approach is to evaluate projects and programs by examining themes around the mandate areas called "Sectors of Action of the CEB." In 2009, the department launched "CEB Lending for Water Supply and Sanitation," the first component within its "Protection of the Environment" evaluation program. This work is still under way, but some initial evaluation findings have emerged from the analysis of the investment portfolio as well as from the first project evaluations. Data show that CEB has financed 36 completed investment projects and programs and 330 subprojects in the WSS sector. Total lending amounted to approximately euro 461 million. The completed investment projects and programs covered 13 of the 40 CEB member states (among them three countries [Albania, Poland, and Hungary] acceding to the CEB since 1998). Within this portfolio, all lending for individual projects was for sanitation investments. The CEB is a main lender for the sanitation sector in Cyprus (three completed and five ongoing projects).

AsDB

The Asian Development Bank (AsDB) launched its water policy in 2001. The policy looks at key issues, including poverty, the environment, likely stress on water resources in the future, and regional impacts. By 2008, the AsDB's Independent Evaluation Department had evaluated 104 projects, of which 18 were in water-based natural resources, 78 in WSS, and 8 in waste management. According to the water evaluation, by the end of 2008, AsDB's water sector public portfolio was \$8.34 billion (182 projects), of which about half (\$4.57 billion) was in water supply (about \$2.19 billion in waste management and \$1.57 billion in water-based natural resources).

AfDB

The African Development Bank's (AfDB) contribution to the ECG paper presents the main findings, lessons learned, and recommendations from recent evaluations of some AfDB investments in urban and rural water supply and sanitation in its member countries. The evaluations were conducted by the AfDB Operations Evaluations Department and comprise a sector review and eight project performance evaluations. According to the evaluations, between 1968 and 2008, total AfDB loan and grant approvals to African countries for urban and rural WSS amounted to about UA3.5 billion, accounting for about 5 percent of overall AfDB assistance to Africa over the period. In 2003–07, the share of the AfDB's assistance to the WSS sector was 10 percent of total assistance. About 50 percent of AfDB assistance—aimed at enhancing urban and rural WSS services—is allocated solely for water supply, and 9 percent is for sanitation; the rest, about 41 percent, is for both water supply and sanitation. This support covers both middle- and low-income African countries, as well as all regions.

EBRD

The European Bank for Reconstruction and Development's (EBRD) Evaluation Department has published two special studies that evaluate its

work on WSS. The first study is a sector review of the implementation of EBRD's 2004 Municipal and Environmental Infrastructure Operations Policy. The second, two-volume study covers EBRD's contributions to regional efforts to help improve the provision of water and wastewater services to enhance the "environmental health" of the Danube River Basin. Volume 1 covers the whole basin; volume 2 is a case study focusing on Romania. EBRD has been financing regional efforts to improve the provision of water and wastewater services in the Danube River Basin since 1994 through its participation in a series of water and wastewater projects, totaling euro 2.2 billion. In addition, between 1993 and 2009, the International Bank for Reconstruction and Development financed 202 projects in the municipal and environmental infrastructure sector, with a total EBRD financing of euro 3,355 million, about 53 percent of which went to water supply and sewage.

EIB

In 2009, the European Investment Bank's (EIB) Operations Evaluation conducted an ex-post evaluation of water and sanitation projects outside the European Union. The evaluation covers the period from January 1993 to December 2007. Since 1993 the EIB has approved 110 water and sanitation investments in 41 partner countries, 27 of them outside the European Union, for a total amount of euro 4.0 billion. The majority of projects were implemented in Mediterranean (55 percent) and African, Caribbean, and Pacific countries (13 percent). In terms of subsectors, 40 percent of the projects were concentrated in water supply and 34 percent were in sanitation. During this period, European Union and EIB water policies have experienced significant changes that have been covered by the evaluation.

IEG

In 2010, IEG published a report entitled *Water and Development: An Evaluation of World Bank Support*. In this evaluation, IEG examined all the water-related projects financed by the World Bank between 1997 and 2007. They include water resources management, WSS, and activities related to agricultural water, industrial water, energy

generation, and water in the environment. According to the evaluation, a large part of Bank-financed projects have something to do with water: 31 percent of all Bank projects approved since 1997 are related to water. Between fiscal 1997 and 2007, the Bank approved or completed 1,864 projects with at least one water-related activity. Together, these projects represented Bank financing of about \$118.5 billion, of which \$54.3 billion was directed to water. The average loan was for \$67 million (exclusive of grants and non-lending activities). Water-related lending increased by 55 percent over the evaluation period.

Comparison of Findings

The findings presented above are compared with the higher-level findings from several recent water evaluations in Appendix B. In most areas, findings are complementary. The amount of overlap underscores the validity of the various evaluative processes and maps out an emerging international consensus. The development community has clearly transformed its approach to water in recent years. There is broad agreement that water sectors should place greater stress on the economic importance of what is being done, integrating both between water uses and within the broader development framework.

The most common finding, with seven responses, was that ECG members strongly feel the need for further cooperation among ECG participants.

Six organizations stressed the following:

- It is important to increase water use efficiency.
- Greater attention should be given to cost recovery.
- Getting tariffs right is a complex process.
- Institutional weaknesses are a major constraint to progress in the water sector.
- Results of involving the private sector in water service delivery have been mixed.
- Monitoring and data collection do not provide adequate information to sector decision makers.

Five organizations agreed on one area that provides good news given the seriousness of the

world's water situation. It is that projects providing water supply services tend to be successful; in other words, their satisfactory ratings are at least as high as ratings awarded to infrastructure projects in general, regardless of sector.

Four organizations concluded that improved service provision freed up labor, even though not all countries have an economy robust enough to make productive use of this newly available resource immediately. A similar number identified delays in project start-up as having compromised project results.

Three organizations coincided on, among other things, the importance of finding more resources to overcome the enormous challenges facing the water sector. A similar number agreed that climate change was going to complicate their work, and that household connections to wastewater systems have not received adequate priority.

Two organizations concluded that providing sustainable service to low-income neighborhoods, coupled with better economic analysis within water projects generally, would likely provide major benefits.

Concluding Remarks

This paper has argued that water will be one of the world's major development issues. Scarcity will drive donors to see water issues in an integrated manner and to focus on the interactions and overlaps between the various subsectors and upstream and downstream issues more systematically. The complexity of the challenge clearly complicates the evaluator's task. Sustainability will need to be evaluated more broadly than ever before.

Agencies will need to take more account of other competitive water uses than they have in the past. All of these issues will be covered in a larger number of documents, and their storage will lead to more electronic records and will contribute to the data explosion. Strategic solutions will

increasingly be sought for marginalized populations and broad, water-scarce geographic areas. Institution-specific water strategy documents generally will not be sufficiently specific to serve as meaningful yardsticks.

How will evaluators help their agencies respond appropriately if they are unable to clearly identify the lessons of success and failure? As evaluators become increasingly aware of the trade-offs between different water uses and the natural environment, and conservation, they may begin to design evaluations to document what is happening based increasingly on data that already exist within their own organizations. Using software to review the full universe of interventions in the myriad water subsectors will add credibility to evaluators' work, which will in turn expedite organizational change.

Among the thematic areas where evaluations will need to convincingly document progress are the elimination of wasteful uses, water's role in supporting livelihoods, the promotion of public health and hygiene, and the preservation of nature. There may not be time or resources enough to compellingly demonstrate what is working and not by going to the field for anything but reality checks. But the move from paper to electronic files and the resultant explosion in stored electronic data have created reservoirs of information on project experience that can and should be tapped in issue-focused papers that are prioritized as highly as case studies are now.

This paper reviewed evaluation findings and concluded that they are reasonably consistent. This is both good and bad. The positive conclusion is that the existing degree of agreement means that evaluators are probably getting the story right. The negative aspect is that no institution has yet taken evaluation results fully on board. But learning how to overcome organizational defensive behavior by increasing the influence of our water evaluations is what has brought us together today. *Carpe diem.*

APPENDIX B

Findings from Recent Water Evaluations

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
1. Water Supply									
Projects providing water supply services tend to be about as successful as infrastructure projects, with some evidence for recent improvement.		X		X	X		X	X	5
<ul style="list-style-type: none"> World Bank: The 356 urban water projects in the portfolio have performed about the same as the overall portfolio, but with a steadily improving trend. EBRD: Sixty-four percent of 22 water and sewerage project were rated successful or highly successful. No water and sewage projects have been rated unsuccessful. EIB: Important improvements in service quality have been observed in a number of projects (improved wastewater services through reduced effluent levels, increased safe potable water provision reducing public health risks, water loss improvements). IsDB: Overall, WSS projects have been successful in improving the access to clean water and better sanitation, especially for the poor. Of 24 evaluated projects, 5 were rated highly successful, 8 successful, and 10 partly successful. The remaining projects were rated unsuccessful. ADB: The project's success rate based on project/program completion reports and project/program performance evaluation reports were 61.5 percent in water supply and sanitation and 62.5 percent in waste management, with an overall average of 60.6 percent. 									
Increasing the efficiency of water use (and/or incentivizing reductions in demand) is often successful and, given supply and quality constraints, extremely important. Recycling used water is a part of use efficiency.	X	X	X	X	X			X	6
<ul style="list-style-type: none"> World Bank: Of 60 completed projects that pursued such improvements, 48 reported having improved water use efficiency to some degree. AfDB: There is relatively high, unaccounted-for water wastage due to poor maintenance of supply lines. AsDB: The project-stipulated long-term maintenance program should also require ongoing leak detection and repair. CEB: Hotels and farmers have accepted reuse of treated wastewater (provided by wastewater treatment plants), which has substantially reduced pressure on scarce drinking water resources. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
<ul style="list-style-type: none"> EIB: Water tariff policy often does not reflect the real value of water, and its scarcity is not well understood, as can be discerned from the current high levels of water waste and misuse. Reductions are much more dramatic (as high as 35 percent) in districts where the network and metering have been upgraded. EBRD: The introduction of metering has major environmental and cost advantages because it encourages reduced water use. In EBRD's water supply project in Tashkent, the introduction of meters in many areas has cut the estimated consumption of water in metered households by about 50 percent. 									
A reduction in time spent per household in water collection in rural areas freed up labor but did not always translate into more income generation.	X	X					X	X	4
<ul style="list-style-type: none"> AsDB: The lack of impact on labor force participation and work hours indicates that the time saved from fetching water documented in the study had not been translated into more income generation, contrary to project expectations. According to one impact study, time saved from fetching water improved high school attendance of girls in the middle socioeconomic group and increased leisure time for female members of the households. AfDB: The projects increased beneficiaries' access to clean water and provided additional benefits, especially in terms of reduced workload for women and children. IsDB: Village water supply projects in Mali, Guinea, and Algeria greatly reduced the time women spent collecting water. Improvement of WSS in rural areas has also reduced the influx of people from project areas to cities, as in the case of the Syrian district of Latakia. World Bank: Reductions in time spent per household in water collection freed up labor for other income-producing activities and schooling. 									
The amount of financing available for supplying clean water is insufficient to meet the demand.		X			X			X	3
<ul style="list-style-type: none"> AsDB: Governments do not have adequate financing for water infrastructure. EIB: Operational inefficiencies—for example, brought about by the large amount of nonrevenue water—have a negative impact on the financial situation and the capacities needed to properly maintain and operate the facilities in six projects. 									
1.1 Private Sector Participation									
Supporting private sector water providers has not been a panacea, and private sector performance has been mixed.		X		X	X	X	X	X	6
<ul style="list-style-type: none"> World Bank: Private sector achievements (where found) generally include expansion of networks and improved collection of fees/tariffs. Difficulties leading to poor performance include lack of effective regulation, civil unrest, natural disasters, national financial crises, withdrawal of private providers, and change of government/loss of commitment to the private sector. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
<ul style="list-style-type: none"> IADB: The structural characteristics of the potable water sector generally do not support private sector participation. Poverty and low willingness to pay, coupled with an investment backlog, are the principal obstacles. AsDB: Private ownership is not a precondition to efficient operation of utilities. EBRD: Although plans for potential longer-term private sector solutions are included in some projects, the city administration often does not implement such plans. IsDB: A public-private partnership was the adequate reform for the water sector in Cameroon, which lacked performance and governance. EIB: The involvement of a private company through a management contract resulted in significantly improved finances in one project. In another, the company's financial situation is worsening because of its obligation to invest in loss-making sectors (services in rural areas) and the nonautomatic revision of tariffs. 									
<p>The scale of private sector involvement is small; it is declining in some countries, and large international providers have been replaced by small local operators.</p> <ul style="list-style-type: none"> World Bank: Water services continue to be provided by public operators in most countries. IADB: Private sector participation has not proven to be appropriate for guiding actions to increase coverage in rural and periurban areas. AsDB: The level of private sector investment in water has been declining, although the number of projects is increasing. EBRD: EBRD's portfolio has few examples of loans to private sector companies involved in water supply and wastewater services. 		X		X		X	X	X	4
<p>While small private providers of water-related services are found in many rural areas, they providers are unlikely to make major contributions to overcoming service deficits in rural areas.</p> <ul style="list-style-type: none"> World Bank: 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. EBRD: In many projects the EBRD is enhancing local private companies through involvement of small-scale private sector participation in works or supply contracts during project implementation. The EBRD might consider expanding its focus on bottom-up private sector participation of local companies for some projects; in hindsight, this might have been a better approach for the Tashkent solid waste project. IsDB: In rural water supply projects, involving private businesses in the provision of spare parts and repair services proved successful. 				X		X	X	X	3

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
1.2 Cost Recovery									
Full cost recovery is generally not taking place as anticipated. Cost recovery sufficient to cover just operation and maintenance is also not happening.	X	X	X	X	X			X	6
<ul style="list-style-type: none"> • CEB: There is a need to develop sector performance standards/targets for coverage of costs by user fees. • AsDB: Covering the cost of ongoing operations is an important unresolved issue in ensuring the long-run sustainability of WSS facilities. • World Bank: Full cost-recovery targets were met in 7 percent of projects; operation and maintenance targets were met in 15 percent of projects. • AfDB: There is limited long-term financial viability as a result of the noneconomic pricing of water. • EIB: The main problems encountered were failures in the institutional setup and difficulties in enforcing the tariff increases needed to cover at least part of the operation and maintenance costs. Six projects of the evaluated sample covered all operational costs (excluding depreciation). The other five projects had a cost recovery ratio between 60 and 85 percent of their target. • EBRD: Cost recovery, especially including investment as well as operating and maintenance costs, is still well below 100 percent in many local authorities and utilities in the Danube River Basin. 									
Conditions identified associated with successful cost recovery were few. Projects that succeeded included the following:		X					X	X	3
<ul style="list-style-type: none"> • AsDB: <ul style="list-style-type: none"> – Projects run by water supply institutions that were financially self-sustaining before the project began – Projects that put in place water user committees to manage operation and maintenance – Projects that adopted the “user pays” principle to cover operation and maintenance costs – Projects whose tariff structures were perceived to be fair and affordable – Projects in which reforms were accompanied by service improvements – Projects that used metered rates so customers could reduce their bills by controlling consumption. • World Bank: The factor that contributed most to cost recovery success was improving collection. Most often this involved increasing the capacity and willingness of water institutions to collect fees from beneficiaries. In-time water distribution and proper maintenance contribute to a higher ratio of water fees collected to fees assessed. Increasing water tariffs as planned had a discernible impact on overall project results. • IsDB: For the sake of cost recovery it is important to provide the required institutional support to the managing agency for the enhancement of its billing and collection system, setting up of efficient accounting policies and procedures, control of UFW level, and upward adjustment of tariffs. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
Our organization needs to take a clear stand on cost recovery.		X						X	2
<ul style="list-style-type: none"> World Bank: Limited success with cost recovery has caused the Bank to moderate its approach, but it has not yet identified alternative sources to finance the recovery shortfall and the sustainability of investments is threatened. AsDB: While cost recovery has been recognized as one of the most critical factors for water projects, the self-evaluation reports reveal several challenges in implementing cost recovery. Public acceptance is frequently cited as a major obstacle to cost recovery. 									
Appropriately adjusting tariffs requires interventions on many levels, and these interventions need to be sequenced and coordinated.		X	X	X	X	X	X	X	6
<ul style="list-style-type: none"> IADB: Ensuring the economic and financial balance of operators requires a complex strategy of gradual adjustments, in which the tariff regime, a change in the culture of paying for services, and a solution for more effective subsidies are key factors. AsDB: Successful approaches to tariff reforms include (i) effective stakeholder communications and consultations, (ii) tariff structures that are perceived to be fair and affordable, (iii) reforms that are accompanied by service improvements, (iv) metered rates that enable customers to manage their bills by controlling consumption, (v) gradual tariff adjustments, (vi) crisis conditions that legitimize investments and related tariff reforms, and (vi) a credible and legitimate service provider. EIB: Water demand reduction, tariff policy, and operational efficiency have improved and have had a positive impact on the performance of projects using these strategies. For other projects, the economic impact was lower than anticipated because of low implementation performance, institutional weaknesses, failure to reduce inefficiencies, and unsatisfactory tariff increases. EBRD: The EBRD water supply project in Tashkent, Uzbekistan, has had some success in changing the tariff structure and increasing tariffs, and the water supply services have significantly improved as a result of the more commercialized approach and the project investments. On the other hand, although the solid waste project in Tashkent was designed to move toward full cost recovery, it has been constrained by the slow progress in tariff increases, which are controlled by the central government. World Bank: Water charges need to be realistic; that is, they must cover the expenses of running the systems. Project completion reports repeatedly cite low tariffs or failure to collect user charges as the main reasons for suboptimal system functioning and the principal risks to continued operation. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
1.3 Cost-Benefit Analysis									
Organizations appear to be placing less emphasis on the economic analysis of water projects. Ex post profitability calculations, in particular, were underemphasized.					X			X	2
<ul style="list-style-type: none"> World Bank: Of the 373 completed projects that dealt with water-efficiency activities, the evaluation reviewed the economic analysis. Economic rates of return (ERRs) were estimated during project appraisal for fewer than half (179). Of these, 136 also provided an ERR at both appraisal and completion. Fifty-nine of these projects achieved or exceeded the ERR target at completion. The remaining 77 projects (about 57 percent) did not attain their expected ERRs, partly because they did not fully attain the anticipated efficiency gains. EIB: The ex ante economic viability of EIB-funded water and sewage projects is usually based on cost-benefit analysis, but the economic analysis of infrastructure projects is often limited to a cost-effectiveness (least-cost solution) analysis. With one exception, no ex post profitability calculations were made, since in most cases the underlying data and assumptions could not be established. 									
1.4 Subsidies									
The poor often cannot afford water and sanitation schemes, even with subsidies or financial aid. In addition, service subsidization often leads to service deterioration.					X			X	2
<ul style="list-style-type: none"> World Bank: Despite subsidies, poor households still struggled to meet the requirements. Out of 25 closed projects, 14 (56 percent) provided evidence that the sanitation schemes were not affordable for the poorest beneficiaries. EIB: There is a trend to fix the tariff structure with a view to achieving a cross-subsidy from commercial and industrial consumers to low-volume consumers with lower purchasing power. Service subsidization often leads to service deterioration. 									
1.5 Community Participation									
The evaluation found weak community/ beneficiary participation in project design and implementation.	X	X						X	3
<ul style="list-style-type: none"> AfDB: Although consultation of project beneficiaries is common, beneficiary participation in project design and implementation remains weak. AsDB: Target groups that require different operational modalities should not be combined. Projects should be either community based or water authority based in order to avoid the tendency to focus on larger, more profitable schemes that are easier to implement. World Bank: Weaknesses in monitoring systems were usually due to deficiencies in project design, especially with regard to stakeholder participation, in maintenance, and in the appropriate choice of monitoring equipment and facilities. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
1.6 Delay									
Delays in project start-up and implementation had negative effects on project results.	X			X	X		X		4
<ul style="list-style-type: none"> • AfDB: Project implementation delays reflect weak coordination with respect to WSS within governments and to development partners, which include bilateral and multilateral development agencies. The development partners often have different procurement rules and procedures. Delays in the release of government budgetary allocations also contributed to implementation delays. • IsDB: Evaluated projects in the WSS subsectors took an average of 5.16 years for implementation, compared with the average of 2.84 years envisaged at appraisal. Implementation delays were mainly due to lengthy administrative and bureaucratic procedures and a lack of proper communication and coordination between executing agencies and donors. • EIB: Poor implementation, implying cost overruns and delays, and only partial achievement of the specific outputs and outcomes led to negative ratings for the majority of the 69 projects evaluated. More than 60 percent of the projects suffered (or will suffer) delays of over two years, and 20 percent were (or will be) delayed by more than four years. • EBRD: Municipal water and wastewater infrastructure projects have relatively lengthy preparation times and extensive implementation time lines as they incorporate client-driven design, engineering, public procurement, contracting, and building schedules, often against a background of weak institutional capacity. 									
2. Sanitation									
The past decade saw large gains in the number of families benefiting from a safe water supply (mostly in Asia), although little progress was made in sanitation.	X			X	X			X	4
<ul style="list-style-type: none"> • World Bank: The review of sanitation-related projects found a preference for capital-intensive works: 312 projects supported wastewater treatment and 115 projects addressed household sanitation. • AfDB: The disproportionate focus on water supply infrastructure (and less on sanitation and the environment) limited the achievement of expected project outcomes, especially those for sanitation. • EIB: One of the most important negative impacts of drinking water supply projects is the increased amount of wastewater discharge. In many projects, the EIB did not include a sanitation component. • EBRD: Most cities cannot afford to upgrade all their water supply and wastewater infrastructure to achieve European Union standards at the same time. A program focusing first on water quality and supply, then on wastewater treatment, and then on sludge treatment is more realistic. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
2.1 Sewerage and Wastewater Treatment									
Treatment plants are functioning below design capacity because households have not connected to the systems.			X		X			X	3
<ul style="list-style-type: none"> World Bank: Targets for household connections to the sewer system are generally not met. A number of treatment plants are functioning below capacity because households have not connected to the systems, in part because willingness to pay has been overestimated and facilities have been overdesigned. CEB: The connection rate of private households was found to be unsatisfactory. EIB: Although it is impossible to accurately predict capacity utilization of the underlying assets, more-realistic assumptions are needed at project appraisal. In five projects, effective capacity utilization was significantly below forecast. Because of their size, WSS projects often have a certain amount of headroom in their project design. 									
Wastewater treatment projects tend to achieve their environmental objectives.			X	X	X				3
<ul style="list-style-type: none"> CEB: The wastewater treatment projects have prevented degradation at the discharge points into the Mediterranean and thereby protected the development of the tourism industry. EIB: All wastewater projects evaluated had satisfactory or better ratings for their environmental and social performance, and they have achieved most of their environmental objectives. EBRD: A wastewater treatment project in Rijeka, Croatia, helped improve water quality, according to the environmental authority that monitors the pollutant levels in the coastal waters. EBRD: The Zagreb wastewater treatment project has had a particularly positive environmental impact. Before the project, there was no treatment of wastewater from the city of Zagreb, and raw wastewater was discharged into the Sava River, a practice with major potential for pollution and public health impacts. 									
3. Sustainability of the Water Supply									
Protecting the quality and availability of groundwater resources needs to be prioritized in donor-funded projects.				X	X			X	3
<ul style="list-style-type: none"> World Bank: Shifting away from groundwater extraction is important, given falling water levels in critical aquifers in many countries. Over the evaluation period, extractive activities, such as construction of potable water supply schemes using groundwater, dominated Bank-supported projects dealing with aquifers. However, as groundwater has become increasingly scarce, Bank projects have shifted away from investments in extraction. EIB: Groundwater quality improvement through aquifer protection and improvement of aquatic environments could be observed in three projects. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
<ul style="list-style-type: none"> EBRD: The environmental improvements resulting from the Zagreb solid waste project are very high. Before the project, the site was simply an open disposal site, presenting a significant risk to the groundwater in nearby aquifers that provide water for much of Zagreb. 									
Climate change poses a risk to water availability.			X		X	X	X	X	4
<ul style="list-style-type: none"> IADB: In the context of climate change, finding effective ways to improve water use and manage demand for water is critical. World Bank: The organization's approach to water will face heightened challenges because of 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. Meeting these challenges will require some shifts in emphasis. CEB: Significant improvements are needed in water management policies and practices to sustain lives and food production, support larger urban populations, and improve environmental sustainability. 									
4. Due Diligence (appraisal/financing/contracting)					X				1
<ul style="list-style-type: none"> EIB: Realistic appraisal assumptions, in particular for achievable project objectives; implementation times are required. Grace period length should be reconsidered because of implementation delays. Grant and loan finance should be blended to support promoters' relatively low cash flow generation capacity or to provide technical assistance; recent efforts by the Bank are noted. A thorough assessment of a technical assistance facility, financed either through the loan or a formal agreement with a cofinancing partner, should be an integral part of future operations, in particular in remote areas where follow-up is more difficult. The EIB should be careful not to define an unduly high number of undertakings and conditions. These have to be addressed toward counterparts who can fully influence and enforce them. 									
5. Monitoring									
Projects tend not to collect data on the results of water and wastewater projects, such as improved health of beneficiaries or water quality.				X	X	X	X	X	5
<ul style="list-style-type: none"> EIB: Apart from the more directly related financial indicators, there are often little data on the health and social aspects to which the water and wastewater sectors are closely. Major modifications to the original project scope should be documented, approved, and monitored. Intermediate reviews are powerful tools for review and reassessing projects risks and project implementation. World Bank: Evidence of improved water quality is rare, as are indications of the improved health of project beneficiaries. While half of 117 WSS projects cited potential health benefits and 89 percent financed infrastructure that plausibly could have improved health, only 1 in 10 had an objective to improve health. Projects approved more recently (fiscal 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
2002–06) are even less likely to have been justified by health benefits, to have explicit health objectives, or to plan to collect health indicators. Only 14 water projects included health benefits in their economic analysis.									
<ul style="list-style-type: none"> • IsDB: Rural water supply facilities tend to improve the health of beneficiaries. But unless water quality is properly monitored and controlled, the provision of rural water supply facilities may not significantly reduce waterborne diseases. A thorough investigation and testing of water quality is required. • IADB: An impact evaluation using the Latin American Demographic and Health Surveys did produce conclusive results. This analysis suggests that only through experimental methods would it be possible to precisely compute the actual impact of each intervention in the WSS system. • EBRD: In many projects, the EBRD has included an improvement in data collection and use into the project plans. However, because reliable data can be a basis for successful improvement in municipal services, in some cases the EBRD might consider wider initiatives to address some important shortfalls in data, for example, policy dialogue initiatives at the national level to encourage the collection of better data, or wider technical cooperation projects on data collection and management. For example, there have been many projects to improve wastewater treatment plants along rivers in Romania that flow into the Danube River. However, the EBRD did not monitor the resulting reduction in pollution in these rivers. 									
There is a need to support monitoring processes that deliver information to public and private stakeholders.	X	X	X		X		X	X	5
<ul style="list-style-type: none"> • AsDB: More needs to be done to ensure that data generated from the introduction of performance-based principles in the utilities are used in decision making, and that they are acted upon when performance falls short of targets. • World Bank: The Bank should focus more on gathering and interpreting information for which there is an identified demand rather than on providing technology for data collection. • AfDB: Strengthening of monitoring and evaluation should be viewed as a capacity- building process, that is, as a long-term investment in human capital under national urban and rural WSS policies and strategies. Currently it is dealt with on an ad hoc basis. • CEB: For individual projects in the water and sanitation sector, organizations should consider establishing, in agreement with borrowers, suitable technical and financial performance standards and indicators to be monitored during project implementation. • IsDB: Building capacity for improving the skills in the area of water quality monitoring for water users' associations should be undertaken prior to any expansion of the existing facilities. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
<ul style="list-style-type: none"> EIB: Specific performance indicators for the assessment of project results during implementation and ex post should be established. 									
6. Institutional Reform and Capacity Building									
Weaknesses in institutional capacity constrain effectiveness of the WSS sector.	X	X			X	X	X	X	6
<ul style="list-style-type: none"> AfDB: The organization's lack of clear and appropriate policy and strategy for supporting capacity building and institutional development is a limiting factor. EIB: Many of the water and sanitation promoters face institutional weaknesses and as a result are often also in a relatively weak financial situation. The Bank should not only focus on tangible assets but also, to the extent possible, define projects holistically and endeavor to incorporate institutional capacity building together with WSS aspects. World Bank: Support for institutional reform and capacity building has had limited success in the water sector. IADB: There is a shortage of technical capacity and information for regulatory purposes. IsDB: Projects tended not to include institutional capacity-building components in projects plans for executing agencies and beneficiaries. The Water Points Project in Chad (Bet and Salamat), for example, suffered from a lack of maintenance capacity mainly because of untrained pump mechanics. AsDB: Organizations should not attempt to implement overly complex technical solutions in small communities, which do not have the requisite organizational structure in place. Weakness in capacity was cited as a contributory factor to projects rated less successful. There was a need to provide training for board members of public utility companies 									
7. Further ECG Cooperation									
Organizations feel the need for further cooperation among ECG participants.	X	X	X	X	X		X	X	7
<ul style="list-style-type: none"> World Bank: Collaboration with other partners is particularly important, and it is likely to increase in importance as donors help countries tackle water crises. The absence of adequate resources to cover overhead and maintenance is an issue for the broader donor community to face. CEB: International lenders could improve coordination of their positions on tariff policy regulations in order to support efficient resource allocation and social considerations. AsDB: It would be useful if ECG collaboration brought out a joint publication on lessons identified (that is, what works and why?) and strategic directions for the future water sector operations (that is, what need to be done differently?). AfDB: Effective coordination of water and sanitation and among donors, as well as a common procurement framework, is vital for project success. This applies to capacity-building efforts in monitoring and evaluation in particular. 									

	AfDB	AsDB	CEB	EBRD	EIB	IADB	IsDB	World Bank	Total (number)
<ul style="list-style-type: none"> • EIB: More value added can be generated by EIB interventions where a continued presence in the sector can be ensured, which could trigger specific donor conferences with follow-up investment projects, or imply changes in the EIB's strategy. More formal partnerships between the EIB and other financing partners have to be developed, going further than just a memorandum of understanding, and entailing concrete, project-by-project coordination and division of labor. • EBRD: The goal should be to achieve wherever possible a coordinated IFI and/or donor position on the specific reform agenda that needs to be implemented either before or during project implementation. • IsDB: Donor collaboration and coordination are crucial in achieving the target of providing Water for All. Three fundamental factors should be considered in enhancing water and sanitation services: encouraging and implementing water sector reforms; making water sector financing strategies more innovative; and building capacities of concerned institutions. 									

Note: Information in this appendix is based on reports and or summary papers produced by ECG members and submitted to IEG for inclusion in this paper. AfDB = African Development Bank; AsDB = Asian Development Bank; CEB = Council of European Bank; EBRD = European Bank for Reconstruction and Development; EIB = European Investment Bank; ERR = economic rate of return; IADB = Inter-American Development Bank; IEG = Independent Evaluation Group; IsDB = Islamic Development Bank; PPP = public-private partnership; WSS = water supply and sanitation.

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ECG Papers

- 1 The Nexus Between Infrastructure and Environment (June 2007)
- 2 Making Microfinance Work: Evidence from Evaluations (November 2010)
- 3 Evaluative Lessons for Agriculture and Agribusiness (January 2011)
- 4 Evaluation Findings on Urban and Rural Water Supply and Sanitation

