Financing for Sustainable Development

Prepared jointly by

Fiscal Affairs Department
International Monetary Fund

Division of Technology, Industry, and Economics
United Nations Environment Programme

Environment Department
The World Bank

FINANCING FOR SUSTAINABLE DEVELOPMENT

July 2002

Fiscal Affairs Department
International Monetary Fund

Division of Technology, Industry, and Economics
United Nations Environment Programme

Environment Department
The World Bank

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme, the World Bank, or the International Monetary Fund concerning the legal status of any country, territory, city, or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the United Nations Environment Programme, the World Bank, or the International Monetary Fund, nor does citing of trade names or commercial processes constitute endorsement.

Design by Jim Cantrell
Photos: World Bank

Contents

Figures

Boxes

FOREWORD

The central challenge we face today is to ensure that globalisation becomes a positive force for all the world's people, instead of leaving billions of them in squalor.

Kofi Annan, Secretary-General,
United Nations

Ensuring that sufficient resources will be available to finance the internationally agreed development goals is at the heart of the discussions at the World Summit on Sustainable Development. Resources will have to come from both the public and private sectors, and innovative approaches will have to be designed to make financing mechanisms more effective.

In this context, staff of the World Bank, the International Monetary Fund, and the United Nations Environment Programme (UNEP) have worked together to explore options for financing sustainable development, as an input to the Johannesburg Summit.

This document is the result of that co-operation. It does not aim to cover all of the complex issues related to Official Development Assistance (ODA) and Foreign Direct Investment (FDI). Nor do our institutions necessarily endorse all the views expressed. Its specific objective is to explore potential avenues to attract private sector funding and generate more resources for the public sector to invest in sustainable development.

We hope that this document will be a valuable input to discussions on financing for sustainable development. We welcome your comments.

Mrs. Teresa Ter-Minassian
Director
Fiscal Affaris Department
International Monetary Fund

Mrs. Jacqueline Aloisi de Larderel
Assistant Executive Director
Director, Division of Technology,
Industry and Economics
United Nations Environment Programme

Mr. Ian Johnson
Vice President
Environmentally and Socially
Sustainable Development
World Bank



ACKNOWLEDGMENTS

This paper was prepared by a joint team from the World Bank and the United Nations Environment Programme, following a planning meeting in July 2001 attended by Jacqueline Aloisi de Larderel, Paul Clements-Hunt, and Eric Usher (UNEP), Kristalina Georgieva, Stefano Pagiola (World Bank), Alke Schmidt (European Bank for Reconstruction and Development), Carlos Joly (Storebrand), and Lionel Fretz (Ecosecurities).

The material is derived from specially commissioned background papers prepared by teams at UNEP and at the World Bank with the assistance of the International Monetary Fund (IMF). UNEP was broadly responsible for the material on mobilizing private sector resources in chapter 2, and the World Bank and IMF for the material on mobilizing public sector resources in chapter 3; chapter 4 on public-private partnerships was prepared jointly. The teams included:

- **World Bank and IMF:** Hiba Ahmed (water), Katie Bolt (natural resource rents), Kirk Hamilton (natural resource rents), Roberto Martin-Hurtado (energy, waste management, public-private partnerships, environmental levies), Stefano Pagiola (Team Leader; user fees, innovative conservation mechanisms), Priya Shyamsundar (environmental levies, forests, international resource flows), and Patricia Silva (user fees, forests, international resource flows) of the Policy and Economics Team in the World Bank's Environment Department, and Muthukumara Mani (environmental levies) of the IMF's Fiscal Affairs Department.
- **UNEP:** Husein Abaza, Paul Clements-Hunt (Team Leader; foreign direct investment and socially responsible investment), Mareike Hussels (water), Jacob Malthouse (microfinance), Mark Radka (sustainable energy), Mark Sanctuary (sustainable energy), and Eric Usher (sustainable energy) of the UNEP Division for Technology, Industry, and Economics (DTIE). Lionel Fretz and Paul Soffe

from the consulting firm Ecosecurities were advisors to the UNEP team.

The paper benefitted from comments provided by Robert Clement-Jones, Charles Feinstein, Arvind Gupta, David Hanrahan, Danielle Hirsch, Michael Keen, Agi Kiss, Anil Markandya, and Gary Stuggins.

An early draft of this paper was discussed in an open "e-discussion" organized by the World Bank Institute (WBI) and lasting over a month during March-April 2002. The "e-discussion" attracted almost 200 participants from all over the world. We are grateful to all who commented. We are also grateful to Vesselina Hekimova and Cary Anne Cadman of WBI for arranging the e-discussion, and to Patricia Silva of the University of California at Santa Barbara for moderating it.

A revised draft, incorporating comments received, was presented at the Conference on Financing the Environmental Dimension of Sustainable Development organized by the Organisation for Economic Co-operation and Development (OECD) Global Forum on Sustainable Development in Paris on April 24-26, 2002. The current, final version reflects comments received at that conference.

Abbreviations

BOT	Build-Operate-Transfer
BOO	Build-Own-Operate
CDM	Clean Development Mechanism
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GPA	Global Programme of Action on water
IEA	International Energy Agency
MDGs	Millennium Development Goals
MSWM	Municipal solid waste management
NGO	Non-Governmental Organization
O&M	Operations and Maintenance
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
RET	Renewable Energy Technology
SRI	Socially Responsible Investment

All monetary values are in 1999 US dollars, unless otherwise indicated.

A billion is a thousand million.

1 Introduction

The 1992 Earth Summit in Rio de Janeiro clearly established the objective of sustainable development. Definitions vary, but the spirit is captured by the notion of the Development Assistance Committee of the OECD that "Sustainable development entails balancing the economic, social and environmental objectives of the society—the three pillars of sustainable development—integrating them wherever possible, through mutually supportive policies and practices, and making trade-offs where it is not possible. This includes, in particular, taking into account the impact of present decisions on the options of future generations." Ten years later, that objective remains the goal of the world community, having been most recently restated in the Millennium Declaration and the Millennium Development Goals (MDGs).

Achieving this objective, however, will require considerable resources and creative utilization of both existing and additional resources. Preliminary estimates indicate that it will take an additional US$40 to US$60 billion per year to reach the Millennium Development Goals. Where will these resources come from and how can they be applied to most effectively address sustainability challenges? This paper seeks to contribute to answering these questions.

Official Development Assistance (ODA) will continue to play an important role in financing sustainable development. As witnessed by the Financing for Development (FfD) conference in Monterrey, Mexico, in March 2002, significant efforts are underway by the intergovernmental community to boost both the level and effectiveness of ODA. Developed countries committed to ensuring that aid resources match progress on policy reforms, to tearing down trade barriers that harm the poorest, to implementing the initiative to reduce the debt of the heavily indebted poor countries (HIPC), and to building capacity using the power of the knowledge economy.

Even at the increased levels agreed upon at the Financing for Development conference,

official development assistance (ODA) and greater market access alone are unlikely to be sufficient to meet the tremendous range of developing-country sustainability needs in the mid-term. Other resources must be found.

This paper discusses how developing countries can generate some of the resources they need for sustainable development, and how the private sector, developing countries, donors, and local communities can contribute to this effort. In particular, the paper identifies innovative ways of encouraging more effective sustainability financing whether through public, private, or public-private approaches.

We believe that developing countries can take action on two overlapping and closely related fronts to generate additional resources to complement ODA flows: attracting private sector resources and generating increased public sector resources.

Throughout the world, the private sector is playing an increasingly important role in economic activity. Yet its contribution to sustainable development could be greater. Attracting even a small part of the total resources available in the private sector would represent substantial additional funds—potentially dwarfing the resources available from ODA. The challenge is to attract more private sector finance to developing countries and to channel it to activities supporting sustainable development efforts. This challenge is discussed in chapter 2.

Developing-country governments already expend significant resources on a variety of activities. But the evidence suggests that there is sometimes substantial scope for them to generate additional resources and—perhaps more important—to free up significant resources currently being used inefficiently, as discussed in chapter 3.

Closer cooperation between the public and private sectors is needed in a whole range of activities and sectors. Chapter 4 examines the water sector as an example of how the public and private sectors can work together.

It is of course impossible for a paper such as this to cover the myriad issues that affect sustainable development. We focus narrowly on the issue of generating additional resources to finance sustainable development and do not discuss how these resources are to be employed.

The paper focuses on approaches that developing countries can undertake largely at their own initiative. Developing-country actions are, of course, only part of the solution to the problem of financing sustainable development; also important are increases in effective ODA and greater market access to OECD countries. Even so, there is much that developing countries themselves can do to raise additional financing for sustainable development. The paper does not discuss the various proposals for funding mechanisms that would require widespread international agreement (such as the Tobin tax, which would tax currency speculation). Developing countries would not need to wait for a global consensus to undertake the measures outlined here. The paper focuses particularly on how developing countries can generate resources within sectors that are particularly critical for sustainable development and that have the greatest potential for "win-win" solutions that reduce environmental damage while generating resources.

Chapter 6 provides an abbreviated list of references for further reading. Full references, methodology, and data sources can be found in the background papers referenced in chapter 6.

This document is a genuine effort to present the evolving work of UNEP, the World Bank, and

the IMF, organizations contributing to both policy and practice in the fields of environmental protection and sustainable development. It seeks to raise critical questions with respect to the financing of sustainable development and to identify possible means of boosting the flow of capital to address sustainable development challenges. Understandably, the points of view expressed by UNEP, the World Bank, and the IMF are not always in exact alignment. However, we hope that this collaborative effort among these institutions—each with their own unique perspectives—will build a deeper understanding of how sustainable development can be more effectively financed and of the actions policy makers and practitioners can take to achieve this.

Attracting Private Sector Resources

2

The last decades have seen the emergence of global markets, an explosive growth in private sector foreign direct investment (FDI), a significant rise in international portfolio flows, and widespread moves to privatize activities once deemed the sole province of the public sector. In 1992, FDI flows to developing countries were at US$36 billion. Before the decade closed, they had jumped to over US$160 billion—roughly double the flow of ODA. This growth in international capital flows is an indicator of the private sector's exploration of new global market opportunities, investor interest in the emerging and transition economies, and the new proactivity of countries seeking to attract international capital.

At the same time, the debate surrounding corporate responsibility and the role of economically powerful multinational companies in a globalizing economy has also come to the fore. In 1999, the assets of the world's top ten banks were equivalent to the combined gross domestic product (GDP) for all 108 developing countries. The imbalance between the world's wealthiest corporations and its developing countries, particularly countries rich in natural resources, has also highlighted questions concerning the private sector's ability to influence, unduly or otherwise, the policy and regulatory environment governing investments. The rash of accounting, financial, and governance scandals that have marked the end of the long 1990s bull market have further intensified the debate with respect to how companies handle issues related to ethics, corporate citizenship, and sustainable development as they seek commercial opportunities worldwide.

The flow of private sector resources to developing countries has been very uneven and in the case of portfolio investments highly volatile. The majority of FDI—some 75 percent—has gone to just ten middle-income countries. Furthermore, FDI is heavily concentrated in a few sectors: automotive, chemicals, electronics, energy, petroleum and petrochemicals, and pharmaceuticals.

Lesser developed countries lost out heavily: in 1998, the 48 least developed countries attracted less than US$3 billion and African countries together received only about one percent of global flows. The Asian financial crisis that started with the devaluation of the Thai Baht in July 1997 highlighted the volatility of portfolio flows.

Potential sources of private sector financing

With these trends in mind, the prospects for developing and transition countries to attract additional private sector resources are examined here, along with ways to ensure that such resources will be channeled to sustainable activities. Three mechanisms are examined in detail: FDI, socially responsible investing (SRI), and microfinance.

Foreign direct investment

FDI is driven by both short- to mid-term commercial interests and the long-term strategic considerations of corporations. With relatively low levels of capital usage, developing countries potentially offer high ratges of return. Markets in key sectors in the industrialized world are increasingly competitive, and may offer relatively low and diminishing profit rates and limited prospects of long-term growth as the populations of OECD countries age. Many large companies with global reach see the developing world as their key future markets, capable of offering growth and new business prospects. At the same time, private sector firms are increasingly coming to recognize the importance of socially and environmentally sustainable activities in their efforts to secure a license to operate, to protect or enhance their reputation, and to go beyond regulatory compliance as a means of competitive advantage (Box 2.1).

Box 2.1: The triple bottom line

Many corporate leaders now recognize that social development, environment, and growth are not always in conflict. For a variety of reasons—reducing costs, creating new market development opportunities, protecting and gaining consumers, and managing risks—companies are adopting sustainable development as a management framework to build long-term value in line with shareholders' and society's expectations. Commitment to corporate social responsibility moves companies to a "triple bottom line" of financial strength, social justice, and environmental sustainability. Public information and comparative benchmarking influence consumers, investors, public interest groups, and governments to put pressure on company performance to meet environmental and social standards.

The social, environmental, and economic impacts of FDI, both positive and negative, catalyzed an increasingly heated debate as the volume of FDI flows increased during the 1990s (Box 2.2). Important issues raised by those questioning the benefits of FDI include:

- Whether large FDI flows simply scale up pollution and community dislocation impacts of foreign investment in the limited number of countries where FDI is directed
- Whether global or trans-regional companies sacrifice social and environmental standards when investing in countries where the regulatory and enforcement environment is not as advanced as in the OECD countries
- Whether large natural resource extraction companies unduly influence the policy framework governing investments in developing countries in order to obtain additional commercial advantage or special privileges.

The complexity and diversity of FDI transactions means that analysis of individual corporate or industry-sector examples is the most reliable way of establishing the cost-benefit

trade-offs of this type of globe-roaming investment. The debates surrounding FDI are sure to continue and intensify as moves to further liberalize global trade bring down commercial borders.

As the 1990s progressed, an increasing number of developing countries worked proactively to attract FDI. However, political and economic risks, reputational issues connected to governance questions, and a wide range of operational challenges create significant constraints in many developing countries. Conditions that might preclude significant levels of FDI include: macroeconomic vulnerability, an inadequate pool of skilled and trained labor, endemic corruption, the potential of social and civil disruption, and limited natural resource stocks.

In assessing private sector investment opportunities in the developing world, political risk is often the primary factor determining the decision. In urban infrastructure projects, for example, local authorities generally do not have an international credit rating or a track record upon which the private sector can base a judgment of creditworthiness. Changing political leadership at the local authority level and at the national level can create risks of breach of contract, currency inconvertibility, and expropriation. In the worst case, war or civil unrest can put the assets and the private sector's ability to operate at risk.

An increasing number of public and private sector observers contend that new, innovative approaches combining FDI with ODA could rebalance critical political risks in a manner that promotes private flows to a broader group of countries. Furthermore, during the 1990s there was a significant shift in donor perception of the role of ODA, with many donor governments coming to view their primary role as facilitating the private sector in transferring hardware and skills. Donors have also developed a strong interest in new types of public-private partnerships.

The development of new types of public-private partnerships creates a number of operational challenges for both aid agencies and private sector partners. These challenges include: balancing private sector interests with those of aid agencies when awarding ODA; ensuring rigorous competitive assessment and full transparency in bidding processes while avoiding bureaucratic delays; and dealing with programmatic conflicts of interest between individual companies and aid agencies.

Box 2.2: NGO sustainability tools for FDI

Many people are concerned that foreign direct investment (FDI) may have negative social and environmental impacts for host countries, because of wage competition, resource extraction, and increased pollution. Realizing that criticism alone is unlikely to have the desired effect, however, a number of non-governmental organizations (NGOs) have moved to an approach of constructive engagement that aims to help investors make responsible decisions on the ground. For example, Friends of the Earth (FoE) has developed a model forest policy that provides financial institutions with guidelines on how to handle their responsibilities in the field of the management and conservation of forests. FoE has prepared a "development screen" that suggests criteria for evaluating whether or not private sector projects will contribute positively to development. As another example, the Amazon Financial Information Service provides a webpage with resources to assist project developers and financiers in performing due diligence on potential investments. It includes links to maps of biodiversity hotspots, to a variety of guides and handbooks (for example, on public consultation and pollution prevention and abatement), and to consulting firms and research vendors. Undoubtedly, this kind of stakeholder input will help to ensure that FDI contributes to environmental and social sustainability.

The March 2002 OECD Roundtable on Sustainable Development, in which aid agencies and business groups participated, presented ideas aimed at enhancing cooperation and understanding and highlighted how ODA and FDI could complement each other so that public sector financing leverages private sector investment. The World Business Council for Sustainable Development (WBCSD) cited the following potential initiatives:

- Supporting good governance through joint capacity building programs to improve the understanding and skills of civil servants on the enabling environment needed to attract sustainable investment and promote growth.
- Improving institutional infrastructure. Examples of how to do this include:
  - Creating a global investment exchange for economically viable and sustainable projects from social entrepreneurs in developing countries. ODA could play a valuable role in providing technical assistance and seed funding for the design of the project proposals.
  - Capacity building in the identification and implementation of pilot projects for the Clean Development Mechanism (CDM).
- Providing additional microcredits for small entrepreneurs in selected developing countries. ODA could help in strengthening the managerial skills of microcredit institutions.

The public and the private sector each need a better understanding of how the other sector operates, along with its expectations and disciplines, for effective partnerships to be developed.

Socially responsible investment

Socially responsible investment (SRI) is based on the concept that investments can create positive and effective social change. It combines attention to the rate of return with concern for the consonance of the investing organization's values and the entities in which it invests. SRI is a potential mechanism for channeling additional funds to the developing world. SRI has grown rapidly in both Europe and North America, and the Japanese market is now emerging. The U.K. ethical investment market grew by 47.7 percent between 1998 and 1999, and was estimated to have exceeded US$400 billion by the end of 2001. The United States is the world's largest SRI market, estimated at US$2,100 billion funds under management.

Despite its recent impressive growth, SRI faces numerous quantitative and qualitative challenges. Integrating social, environmental, and ethical criteria into the financial assessment of business is challenging. A range of SRI approaches have been developed since the early to mid-1970s, notably in North America and Europe. Initially, approaches focused largely on negative lists—screening out of businesses involved in, for example, tobacco, alcohol, weapons, or animal testing activities. Recent years have seen a definite movement to a greater appreciation of businesses that build value by integrating a sustainable development approach into their core business model and offering services or products specifically designed to meet the environmental and social, as well as economic, needs of clients. A variety of market indexes have been developed to allow individual and institutional investors to track the developing SRI investment sector, and the whole SRI field is set to grow further.

At present, SRI involvement in developing countries is embryonic at best. SRI approaches typically focus on publicly traded companies listed on stock markets. In the developing world, few companies are listed, limiting the applica-

bility of SRI. Efforts to take the SRI approach into the developing world in a more systematic way are emerging (Box 2.3).

SRI approaches could alleviate some of the concerns of foreign investors investing in developing countries. Companies that meet SRI criteria and have the knowledge and internal systems to enable them to effectively manage risk (whether social, financial, or environmental) will be in a stronger position to pre-empt potential pitfalls, to manage stakeholder relations and expectations effectively, and therefore to capture new markets and manage growth more efficiently. Social risks, in particular, are often intangible and harder to put a financial valuation on; yet they can have significant impact on the value and branding of a company should they be mismanaged. Skills in assessing such risk are built up over time, and asset managers need to develop these skills if they are to manage risk systematically rather than subjectively and to place indicative financial values on these risks in a way that makes sense to the market.

Risk management is itself a critical component of SRI. Strengthening SRIs to include an effective analysis of social and environmental risk, in a developing country context, will help it become mainstreamed as an asset class linked to both capital markets and private equity investments.

Microfinance

Microfinance is the provision of services (credit, savings, insurance) to poorer individuals or communities that are often un-served or under served by traditional financing institutions. More than 7,000 microfinance institutions worldwide serve 16 to 30 million poorer people. The success of the Grameen Bank in Bangladesh in providing such finance is widely acknowledged as a model for what has become a growing movement to create and promote microfinance globally.

Successful microfinance approaches can empower individuals and the informal business sector to foster sustainable livelihoods in marginalized communities worldwide. A widespread deployment of capital on a micro scale throughout the developing world could contribute significantly to a virtuous circle of investment, benefit, and reinvestment at the community level.

Box 2.3: Emerging SRI approaches in developing countries

Asia. The Association for Sustainable and Responsible Investment in Asia (ASrIA) was formed in 2000 as a not-for-profit association dedicated to promoting SRI in Asian capital markets. It has over 60 Founding Members working in partnership with public and private organizations. ASrIA's inaugural conference took place in Hong Kong in November 2001 and was attended by SRI professionals from around the globe. ASrIA aims to increase momentum for sustainable investing by: raising awareness and providing information; facilitating the provision of high quality SRI products and services; driving the development of policies within both the financial and the public sectors; and developing an outreach program to educate the Asian investment industry in SRI techniques and practices.

South Africa. In 2001-02, the African Institute of Corporate Citizenship (AICC) explored the prospects for SRI in South Africa and concluded that the country is ready for the introduction of a broad range of SRI products. SRI was also endorsed by the recently released King Report on Corporate Governance, published by the Institute of Directors in Southern Africa and recognized as one of the most comprehensive publications on corporate governance. In June 2002, the Johannesburg Stock Exchange introduced an SRI index.

Microfinance has the ability to deliver this capital, although care is needed to ensure that it is spent in ways that contribute to sustainable development.

There is a growing body of evidence drawn from the microfinance experience in many countries that borrowers that were previously thought un-creditworthy are not only able to pay for their microcredit but that there are significant non-financial benefits. Once a dynamic cycle of sustainable livelihoods is created within a community, the collective ability to pay for clean water and secure electricity, among other basic necessities, is enhanced. Obvious benefits stemming from such a cycle include, among others, significant time saving and health from clean water, enabling greater economic opportunities and productivity, and educational benefits from the ability to study during evenings.

For water and energy utilities looking for innovative ways to serve "off network" and "off grid" communities, a community based on "sustainable livelihoods" is, potentially, a community that can service monthly utility payments via traditional billing.

As the microfinance approach has spread into Africa, Latin America, and economies in transition, however, it has undergone metamorphoses, resulting in a broader range of approaches tailored to regional circumstances (Box 2.4). Although an increasing number of successful microfinance approaches are emerging worldwide, there is a clear need to scale up the overall impact of microfinance, building on the models that are commercially viable.

Microfinance institutions have many hurdles to overcome:

- Microfinance institutions are seen by bank regulators as risky concerns and thus have high capital reserve requirements relative to other types of financial institutions.
- Microfinance institutions traditionally have not been run along private sector lines and have been viewed, unfairly or otherwise, by mainstream capital providers as having not operated as efficiently as possible.
- Many microfinance institutions lack the scale to operate profitably since transaction costs outweigh financial returns.

A variety of financing approaches could be applied to help microfinance institutions over-

Box 2.4: Approaches to microcredit

As the microfinance approach has spread globally, a number of developments have occurred: (1) group lending has given way to individual lending and village banking; (2) loan sizes have grown from several hundreds of dollars to several thousands, notably in the economies in transition, the former Soviet Union, and in the United States; (3) several microfinance institutions have transitioned to the formal financial sector to become banks; and (4) conversely, many initiatives have been forced to cut back or end lending operations because of poor performance.

At the same time, an increasing number of mainstream financial institutions are exploring the field of microcredit. For example, in January 2001, Deutsche Bank launched the Microcredit Development Working Group, whose main goal is to supply interested bank employees with information about microfinance and to provide opportunities for interested volunteers to become involved. Recent projects have included:

- A project in Bolivia involving Emprender, a private sector microcredit institution that targets poor regions outside Santa Cruz and other cities.
- A credit memorandum for Milamdec Foundation on Mindanao in the Philippines. This microcredit institution lends only to women, mostly in Muslim agricultural communities.

come these hurdles. For example, infusion of equity capital—either from public or private funds—or some form of transaction-cost recovery system such that the microfinance institution still takes credit risk but the incremental cost of making small loans is absorbed through some other budget, whether international or domestic. Initiatives to remove or lower these hurdles could include capacity building programs to enable microfinance institutions to "bundle" or securitize their loan books and take them to mainstream capital markets.

New tools and approaches to attract private sector financing

The private financial sector—banking, insurance, asset management, and venture capital concerns—is where financial innovation has often emerged in practice. If the sophisticated thinking that has seen the development of derivatives, hedge funds, exotic futures markets, and other risk diluting products were applied with full force to sustainability challenges, what results could be achieved to create new capital to serve sustainable development? This question begs others: Why do promising businesses, projects, and initiatives seemingly have such a hard time attracting debt and equity investment, or even attracting the attention of mainstream institutional investors? Has the creative financial thinking to support sustainability been undertaken? Do we have the financial tools to foster bankable sustainability projects in the developing world? There are no hard and fast answers to these questions.

The narrow spread of private flows to a limited number of developing countries leads to several additional questions. Is the current "tool kit" of the financial sector adequate in the way it views, quantifies, and prices risks and opportunities in developing countries? Are significant developing-country investment opportunities being missed because current methods of assessing risks and opportunities are too narrow? Are existing assessment methodologies so focused on areas where high transaction volume is required that any opportunities not fitting a "mainstream profile" are simply precluded at the outset? Are those financial institutions assessing opportunities in the developing world framing and pricing the risk accurately because only limited bankable investment opportunities exist? If so, what public-private mechanisms might be developed to improve the risk-return profile of investment opportunities in an increased number of developing countries?

Some answers to the questions raised above have been alluded to earlier in this document and many are covered rigorously in other publications. Briefly, sustainability-focused projects in the developing countries can appear unattractive for a the following reasons: they are subject to considerable political risk; they are perceived to offer low returns; and in many parts of the world, the policy environment remains unattractive for any form of private sector investment.

Case studies

Creative ways of financing and realizing sustainability goals are emerging, although a great deal remains to be learned with respect to how to employ these approaches effectively. There is also a need to broaden the number of countries to which long-term investment flows. To highlight the new tools and financing approaches—which both foster investment and serve sustainable development—case studies from the water and renewable energy technologies fields are examined here.

Water

From mega-city water supply and wastewater treatment projects to village-level clean drinking water initiatives, the decade of the 1990s has been one of exploration and partnership in the water field. A broad record of successes and failures now exists whose lessons for the effective delivery of water and sanitation services can, if employed intelligently, yield dividends in the early decades of the new millennium.

The numbers tell the story: one billion people living without access to safe water supplies; two billion without adequate sanitation services; and three million people dying each year from water-related disease. The estimated gap in funding needed to meet the growing demand for water services is between US$9 and US$30 billion per year, with some estimates placing the figure as high as US$100 billion. For private water provision companies, these two billion potential customers represent a significant opportunity. The private financial sector is also seeing new market opportunities to supply water-related products and services (Box 2.5).

The debate surrounding the public and private sector roles in the provision of water-related services—water supply, wastewater treatment, sanitation, and irrigation—remains fiercely argued, however. Appreciation of water as an economic or social good, and the preference for demand driven or supply driven approaches to the provision of water-related services, will remain some of the most contentious issues as different societies select their balance between public and private provision of vital water services. Moves to privatize water as a good often run into strong opposition within many communities on ethical, cultural, and, in certain cases, spiritual grounds.

In July 2001, the UNEP Global Programme of Action (GPA) on water hosted a two-day workshop bringing together public, private, and civil society water specialists and practitioners from around the world. Following the workshop, UNEP GPA drew the following broad conclusions:

- Public-Private Partnerships (PPPs) and privatization in the water sector still have to prove their merits: except for some well-publicized cases, the overall verdict on the expe-

Box 2.5: Privatizing water supply in Asia

The Asian Development Bank report *Privatization of Water Supplies in Ten Asian Cities* (January 2000) concludes that:

"The jury is still out on PSP [private sector participation] in the water supply sector in developing countries. The only acknowledged success in our region is the Macau water supply, and it was first privatized 95 years ago.

"We have seen competitively bid concessions in Manila and negotiated concessions in Jakarta and Macau. BOTs (Build-Operate-Transfer) are being converted into a concession in Kuala Lumpur. We have a competitively bid BOT in Chengdu and a negotiated one in Ho Chi Minh City. Kathmandu is considering a lease contract. Others like Bangkok and Colombo are buying time while introducing 'contracting out' and a regulatory body respectively. Finally, we have Karachi, where PSP ground to a halt in the face of public and political resistance.

"One cannot help but conclude that most of the privatization was driven by donors and contractors and not by consumers nor Governments looking for improved and more sustainable services. The playing field must be leveled. Governments, utilities and consumers need to know more about other PSP options."

rience so far is rather negative. The pros and cons of private sector involvement in water need to be better understood.

- A demand-driven approach is preferable to a supply-driven approach;
- Sanitation provision should be part and parcel of water supply; water supply cannot be seen in isolation, certainly not from an environmental perspective.
- Alternative technologies should be considered as realistic and fundable options along with the major infrastructure works.
- There is a need for some sort of "water fund(s)" to allow for a transfer of capital from developed to developing countries, targeted exclusively at improving/increasing wastewater treatment facilities and drinking water and sanitation infrastructure.
- The ecological value of water is an important consideration.

During the 1990s, most private investment in water and sanitation infrastructure projects took the form of PPPs, mainly because of the "public good" nature of the product and its importance to human health and well being. Governments felt they could not fully relegate responsibility for such an important function, and so ultimate ownership of water and sanitation infrastructure typically remains with the government. The public authority must maintain influence over tariff pricing to ensure that the monopoly power sold to the private sector is not exploited. Also, long-term demand-side planning of water resources will become an increasingly important function for local and national government, particularly in areas of high population growth and high pressure on supplies.

For the private sector, the primary risk in public-private water infrastructure projects in the developing world is political risk. Overcoming political risk is critical to attracting investment. Local authorities and private investors can take the following steps to reduce political risk:

- Involve stakeholders in the pre-privatization planning process. This can help secure popular support from the outset. Increased information flow gives stakeholders a better understanding of the responsibilities and rewards in private sector investment.
- Create an independent regulator distanced from political and bureaucratic processes. This is increasingly seen as a necessity. The regulator should not only ensure that transactions and negotiations are transparent during the bidding process; once a bid is accepted, and during renegotiations and evaluations of tariff, the regulator should also ensure that such information is actively disseminated among system users.
- Publicize the level of service discrepancies among providers in a region or nation. Benchmarking performance, pricing, and efficiencies, and publicizing the results, gives providers additional incentive to improve service levels.

One project finance innovation currently gaining popularity in the electricity sector may be found to provide sufficient advantages in the water and sanitation sector to be useful in attracting non-recourse finance. In the "holdco" concept, a company bundles a group of similar yet diversified assets into a portfolio (Box 2.6) and seeks equity and debt funding for the holding company, rather than on a project basis. This approach provides diversity to investors or commercial banks interested in investing in the sector but unwilling to take the political risk of investing in one project.

Box 2.6: A portfolio approach to investment

A portfolio approach can be offered by targeted investment funds. The independent asset management company Sustainable Asset Management (SAM) offers a recent example. In 2001, SAM launched the Sustainable Water Fund to respond to trends facing the sector and to provide a vehicle for diversified investment targeted at companies practicing sustainable management by "adding value in environmental and social as well as economic terms". The fund focuses investment in four segments of the industry: distribution and management, advanced water treatment, demand-side efficiency, and water and food. Its scope is thus wider than the water investment discussed thus far. While the portfolio of investments is largely focused on the industrial world, inclusion in the fund will identify those transnationals operating in distribution and management and advanced water treatment who are deemed by the fund to be operating a sustainable business. Additionally, the fund manager can influence private sector investment in developing countries by valuing such investment highly in assessing sustainable business practice. In doing so, the fund may lead other transnationals to pursue investment in developing countries and emerging markets.

Some examples of innovation in the water sector are highlighted below (see also chapter 4):

- Microfinance initiatives have typically been associated with collectives of women. In India, the experience of the Self-Employed Women's Association program in enabling the women of impoverished areas of Gujarat state to build common infrastructure in their neighborhoods, bringing water and sewerage to their homes, has been lauded as an example of successful microfinance.
- In December 2000, the European Union adopted the Water Framework Directive. This legislation may provide an important example for the developing world, particularly in areas where numerous sovereign states share a river basin. The Water Framework Directive achieves integration by creating a framework incorporating the standards developed in earlier laws within a comprehensive resource management planning process. Water resource management will be at the river basin level and thus will recognize the naturally defined unit rather than administrative or political borders.
- The use of financial mechanisms—similar to those introduced for decreasing air pollution—to create incentives for the development of sustainable water infrastructure in the developing world is being explored. Flexibility mechanisms require a cap on participants' use of a scarce resource; they achieve flexibility through allowing by those who use more or less than the cap to buy or sell their surplus or deficit. Such mechanisms should ensure that the scarce resource is available to those who value it the most. In countries where water rights have been allocated and are deemed a tradable asset, the ability to trade has ensured that the water available is allocated to its most valuable use. Insurance companies can support and promote improved water management through financial backing and product innovation (Box 2.7).

Sustainable energy technologies

The World Energy Assessment defines sustainable energy as "energy provided and used in ways that support sustainable development in all its economic, social, and environmental dimensions. It does not mean simply an expanded supply of energy, but a progressive shift to energy resources and technologies that support human well being and ecological stability over the long term."

Box 2.7: Water and insurance

The impending crisis in freshwater availability and quality creates a number of risks, including property damage through water extraction or contaminated water, and business interruption losses or credit risks due to water shortage or contamination. The development of legally binding instruments on civil liability for ecological damage, even in transboundary contexts, will further emphasize the salience of issues such as salinization, desertification, and loss of biodiversity for the insurance industry.

Options for improved water management exist and can be supported and promoted by the insurance sector through financial backing and product innovation. Insurance companies can support new technologies for alternative and efficient water use, for example through property coverage for wastewater plants or product liability for crops irrigated with wastewater. It is increasingly acknowledged that financial products that reflect the true costs of water and promote upstream solutions are critical elements for redirecting the management of global water resources on a more sustainable path.

Clearly, attaining a sustainable energy pathway will be a highly complex process and there is no "one size fits all" approach that serves the diverse needs of developing countries. The issue of energy subsidies remains problematic for policymakers and is politically charged in both developed and developing countries (Box 2.8 and chapter 3). Using cleaner fossil fuel and renewable energy technologies will play an important role in meeting the energy needs of the developing world during the 21st century. Equally, the more effective introduction and scaling up of renewable energy technologies (RETs) in OECD countries, where energy use and intensity is so much higher than in the developing world, will be a critically important process.

The applicability of RETs to the developing world, and the ability to attract finance to support their introduction, is attracting increasing interest from project developers and financiers. There is growing evidence that RETs can:

- Help expand access to improved energy services in developing countries, especially decentralized services (such as photovoltaic

Box 2.8: UNEP activities on energy subsidies reform

The effects of energy subsidies on the economy, society, and the environment are wide-ranging and complex. But it is becoming increasingly apparent that many types of energy subsidies today run counter to the goal of sustainable development. Recognizing the importance of energy subsidies reform for sustainable development, the UNEP Division of Technology, Industry, and Economics and the International Energy Agency (IEA) jointly conducted a series of workshops on the issue in Europe, Africa, Asia, and Latin America. The workshops focused on raising awareness of the linkages between energy subsidies and their environmental, social, and economic impacts. The aim was to support policymakers in finding policy options for sustainable energy strategies and in designing and implementing subsidy reform.

The workshops identified some of the negative impacts of energy subsidies; for example, they lead to higher energy consumption, place a heavy burden on government finances, and often undermine private and public investment in the energy sector. In addition, they do not always help the people who need them most. The workshop discussions highlighted the need to tackle subsidies as part of a package of economic, social, and environmental reforms aimed at improving the overall performance of the economy and addressing social issues such as health, education, and welfare.

electrification, household biogas systems, and efficient cook stoves)

- Make use of local resources (such as crop residues and waste streams) to power energy systems, thus decreasing dependence on imported fossil fuels, and all the difficult economic instabilities this can cause.

Developing countries use far less energy per capita than industrialized nations. The average American consumes as much energy as six Mexicans, 25 Egyptians, or over 100 Kenyans. If industrializing nations mirror the energy intensity—some would say profligacy—of the industrialized countries during their development process, this will deepen global environmental concerns, notably the threat of global climate change. Under those conditions, energy consumption in the developing world will exceed that of the industrialized countries by 2030. Some observers project that renewable energy technologies will offer the least-cost pathway for developing countries to reach their energy needs.

The deployment of renewable and clean fossil fuel sources, therefore, is a core element of any sustainable development strategy. However, there are a number of unique barriers to their deployment in developing countries, in addition to the ability of users to afford them. The principal barriers to the deployment of renewable energy and new energy technologies in developing countries are:

- **Cost.** Renewable technologies generally have larger up-front costs and lower operating costs. Conventional financial analysis using typical discount rates usually makes them less attractive than fossil fuel alternatives. This is compounded by the fact that, in many cases, subsidy systems favor fossil fuel systems by lowering the fuel price.
- **Scale.** The deployment of renewable energy will in many cases be smaller and more widely distributed, and thus lack the scale for attracting conventional sources of finance. As a result, project development and other transaction costs are a higher percentage of the total project cost for most RET projects.
- **Risk.** In the absence of subsidies, the returns to investors from RET projects are similar regardless of location. Yet developing countries are (rightly) perceived as being of higher risk. Because of the perceived political risk, private finance is not available in some countries, regardless of the quality of the renewable resource or technology.

Within the renewable energy and water sectors, a number of steps could be taken to accelerate the deployment of renewables in developing countries. These include:

- Government and policy actions:
  - Create the right incentives and institutions, provide more information to the private sector, and develop basic knowledge on technologies and policies that support renewables, such as carbon trading and use of the CDM.
  - Develop more favorable policy frameworks that internalize the environmental costs and benefits of RETs and develop stronger legal frameworks that enable developers and their financial partners to confidently have recourse through legal process when contractual commitments are broken.
  - Promote free-market reforms of electricity sectors that create competitive markets that encourage new entrants.
  - Host nation governments: Encourage more joint venture project vehicles, involving OECD parties with proven

track records in RET deployment and remove barriers to these arrangements. However, the assumption that RETs effective in OECD countries will be equally effective elsewhere needs to be challenged in light of specific country circumstances.

- Public and private funding actions:
  - Increase provision of multilateral and investor-nation public capital to private sector funds targeting specific regions.
  - Channel public resources currently supporting technology transfer demonstrations into early stage risk capital or seed capital support for innovative businesses. Concentrate on technologies that are commercially proven in OECD contexts.
  - Adopt fast track procedures in public sector financing
  - Extend the scope for the provision of host and investor nation government guarantees
  - Develop agreements, guarantees, and financial products to mitigate risk (futures, options) that specifically target RETs and stimulate the market to boost investments in RETs (see Box 2.9).

Summary: Private sector resources

Broadening private flows to a wider range of developing countries is necessary to address key sustainable development challenges. At the same time, failed or controversial examples of public-private partnerships created to achieve environmental and sustainability goals during the 1980s and 1990s means there is no room for complacency with respect to the implementation of the PPP model. Lessons learned with respect to both failed and successful public-private relationships must be taken into account as new models of co-operation are developed. Having said this, the thinking, approaches, and tools needed to increase private sector capital flows to support the sustainability agenda in developing and transition countries are slowly emerging.

The development of market supporting framework conditions will remain the primary consideration for a country's ability to attract international capital. Issues of political and macro-economic risk are paramount when the private sector considers investing in a country or region. Innovative infusions of ODA and FDI based on new forms of public-private partnerships could act to reduce real and perceived political risk. Partnerships built on enhanced understanding of

Box 2.9: Boosting investment in renewables

The German Renewable Energy Law, adopted in 2000, is an example of how a policy framework that focuses on providing security of returns can boost investment in renewable energies at relatively low cost. Although not directly transferable to the developing world, the law can serve as a model of how governments can leverage an increase in private investment. The law guarantees fixed tariffs for electricity that is fed into the grid from renewable energy sources, based on the actual generation cost of the respective technology. Thus it not only recognizes the contribution of renewable energy to reducing greenhouse gas emissions and saving depletable fossil fuel reserves, it has also caused a boom in private investment in the renewable energy sector of more than US$10 billion during the two years since its inception. This has resulted in the creation of 60,000 new jobs, mostly in medium-sized enterprises in the developing world. Moreover, competition within the renewable energy technology sector has caused a significant increase in the production of energy from renewable sources and a decrease in installation prices. For the customer, the cost of the law comes to US$3.5 per household per year.

public-private expectations and disciplines could act as a catalyst to attract new and additional private capital sources to more developing countries.

ODA which supports and complements market-oriented solutions and fosters capacity building to enhance a country's ability to benefit from market dynamism will play a pivotal role in boosting the ability of the lesser and least developed countries to attract capital.

New capital flows to a wider range of developing countries should respect a triple-bottom-line approach. SRI approaches, increasingly considered mainstream in OECD markets, is limited by the immaturity of capital markets in the developing countries. Nevertheless, the SRI philosophy will continue to spread in non-OECD markets. SRI funds dedicated to developing and transition economies will be developed to seek new investment opportunities.

Microfinance approaches have emerged to serve poorer individuals and marginal communities worldwide. Regional variations in the microfinance model have developed to accommodate the different needs in different parts of the world. Many hurdles exist to slow or prevent the proliferation of commercially viable microfinance approaches, and microfinance failures still outnumber success stories.

From the sustainable energy and water sectors, public and private actors are exploring new financing approaches to tackle the myriad challenges associated with sustainable development. The 1990s witnessed the emergence of a significant number of innovative public-private approaches to deal with pressing sustainability challenges. The extent to which the lessons from these experiments have been learned remains to be seen.

Generating Public Sector Resources

3

This chapter discusses how increased public sector resources might be generated in developing countries. We begin by examining the potential to reform many existing policies that are not only costly but often unsustainable and environmentally damaging. Reforming them would free up resources for more valuable uses and often directly improve sustainability. We then discuss the potential for generating new financial flows by capturing a greater share of the rents from natural resources and by instituting "green" levies. Wherever possible, we attempt a rough estimate of the magnitude of resources that might be either generated or freed up by such means (full references and explanations of the estimates made are available in the Working Paper referenced in chapter 6). We focus on sectors in which the environmental and natural resource implications of policies are significant, such as energy and water.

Freeing up existing resources

For many developing countries, one of the biggest potential sources of funds could come from freeing up existing resources for better uses rather than from generating new resources. Many important goods and services are priced too low as a result of existing policies. Predictably, such mispricing results in over-use of these goods, with consequent adverse effects on efficiency and on the environment. Reforming prices would free up substantial amounts of budgetary resources, as well as improve the efficiency of the sector and, often, reduce environmental pressures.

We define subsidy policies broadly as any policies whose effect is to reduce the cost of an activity. Some subsidies are explicit, such as selling electricity to consumers for less than its cost of production, with government funds covering the deficit of the electricity producer. Other subsidies are implicit, such as selling fuel domestically for less than its value on the world market,

which results in the government forgoing potential income from that sale. Under this approach, the extent of subsidies for input use is the difference between what users pay for that input and what they would have paid in the absence of all policies, multiplied by the quantity used.

A depressingly common story emerges in each of the discussions below: a sector is highly subsidized, either explicitly or implicitly. Typically, consumers are not charged at all for the capital costs of providing goods and services such as electricity or irrigation water, and are only charged a small proportion of operating costs. This leads to two parallel—and entirely predictable—results. First, the good being supplied is used very wastefully, since low prices provide no incentive to conserve. In addition to the inherent inefficiency it causes, this waste can also have important adverse environmental effects: excessive energy use results in high levels of air pollution, and excessive water consumption places pressures on aquatic ecosystems. Second, high levels of use coupled with minimal cost recovery leave the institutions overseeing the sector chronically short of funds. Consequently, their ability to manage, maintain, and expand the sector's infrastructure diminishes, until the infrastructure crumbles from neglect—and sometimes collapses entirely.

An equally common aspect of this story is that although the subsidies are often justified as protecting the poor, there is substantial evidence that they are in fact often regressive. They tend to be regressive for two reasons: *leakage* (the non-poor reap some of the benefit when consuming the subsidized good; subsidized kerosene, for example, is also bought by the non-poor) and *mistargeting* (the poor fail to benefit from the subsidy because they do not consume the subsidized good; few of the poor, for example, are connected to the electric grid). Moreover, the parlous financial condition of public utilities that results from these subsidies often prevents them from expanding coverage of services such as electricity and clean water, leaving the poor using more expensive and often inferior substitutes.

Reducing energy subsidies

Energy subsidies have a well-earned reputation of being perverse, because they not only encourage wasteful consumption of a natural resource but also cause important negative externalities—both local (air pollution, congestion) and global (climate change through carbon emissions). Reforming these subsidies, therefore, would not only free substantial budgetary resources for other uses but also increase efficiency in energy use and reduce environmental damage.

Electricity subsidies represent an important share of energy subsidies. New estimates produced for this report indicate that in 1999 the developing world subsidized electricity at a rate of 46 percent, for a total subsidy of US$102 billion, or 2 percent of the developing world's GDP. Countries in the former Soviet Union, with ample access to electricity and very low fuel prices, have the highest electricity subsidies, with a subsidy rate of 76 percent. Subsidies in this region account for 40 percent of total subsidies worldwide. In contrast, Sub-Saharan Africa, with low access to electricity, and Latin America and the Caribbean, which has restructured the sector in the past decade, together account for only slightly more than 9 percent of total subsidies. Our results indicate that implicit subsidies to gasoline and diesel in developing countries amount to about US$18 billion. The Middle East and North Africa account for 60 percent of these subsidies.

Developed countries, it should be noted, also provide a range of implicit and explicit subsidies to energy use. On a per capita basis, energy subsidies in the industrialized world are higher than those in the developing world.

An important consideration is the financial sustainability of subsidies—especially electricity subsidies. These subsidies, under a combination of growth-driven increase in demand and fixed tariffs that are quickly eroded by inflation, are growing to the point of threatening public finance stability in many countries (Box 3.1). In the former Soviet Union, electricity subsidies amount to almost 14 percent of GDP.

Given the current size of energy subsidies, it is not surprising that the potential efficiency gains and positive effects on the public budget from phasing them out is substantial. For the developing world, the net effect on the public budget from phasing out subsidies to gasoline and diesel could reach US$18 billion. Moreover, if countries with low taxes on those fuels where to increase them to the average level in their respective regions, the net effect would add to some US$71 billion. Electricity subsidies, including the opportunity costs of fuels, account for some US$102 billion. Eliminating them would generate efficiency gains of some US$20 billion. However, both the effect on the public budget and the efficiency gains differ greatly across countries. Moreover, these figures must be contemplated in the context of reforms that reduce the financial burden while helping the poor.

Reducing energy subsidies would encourage energy savings that would in turn result in environmental improvements. In addition to local benefits regarding air pollution, important global benefits would be gained in the field of climate change, as reduced consumption would translate into reduced carbon dioxide emissions. Phasing out subsidies on electricity, gasoline, and diesel could reduce those emissions by roughly 0.6 billion tons of CO_2. This represents 4.6 percent of developing-world emissions, and 2.4 percent of global emissions.

Although energy subsidies in the developing world are often justified as protecting the poor, evidence suggests that the non-poor capture up to 90 percent of subsidies. The poor often are not connected to the electric grid, nor do they drive cars; as a result, they receive few benefits from energy subsidies. Worse, lack of access to modern energy leaves them using unprocessed solid fuels, particularly biomass (crop residues, wood, and dung) for cooking and heating, in inefficient stoves without proper ventilation. The outcome is that people—mainly poor women and children in rural areas and urban slums—are exposed to high levels of indoor air pollution. Near-

Box 3.1: Financial impact of energy mispricing in India

Power subsidies are imposing a growing and unsustainable financial burden in India. In 1992-93, total financial losses in the power sector came to US$1.7 billion. By 2001, low tariffs (which encourage high and wasteful use), high technical losses, and widespread non-payment, combined to increase state utility losses to more than US$5 billion per year. If current trends continue, state utility financial losses will reach US$10 billion per year in another three years. To put this magnitude of losses into perspective, US$5 billion is half of what all the state governments in India combined are spending on all levels of education every year. It is double what they are collectively spending on health, and three times what they are spending on water supply. If power sector financial losses were reduced by only one third, the savings in a single year would be sufficient to fill every teacher vacancy in the country and provide every school with running water and toilet facilities.

ly 2 million children and women die every year in developing countries as a result. About half of these deaths occur in India and China.

In countries where lack of access is an important issue, some form of assistance may be required to help poor households obtain higher-quality energy services. Such assistance should be directed at encouraging access to services rather than at subsidizing the operating costs of providing the services. In countries where affordability is the main issue, as in Eastern Europe and Central Asia, safety nets (such as raising pensions or providing targeted assistance) must be put in place in parallel to the tariff increases. When it is –40ºC outside, energy prices obviously cannot be raised without concern for affordability. This highlights the fact that subsidy reform must be contemplated in the context of broader policy reform, not merely as a sector intervention, and must be tailored to the specific circumstances of each country.

Reducing water subsidies

Irrigation

Investments in irrigation infrastructure have played an important part in increasing global food production. In recent years, however, irrigation expansion has slowed dramatically due to sharp decreases in irrigation investment. Increased demand for irrigation services, coupled with a reduction in new irrigation investments and increased water scarcity, make increasing the productivity and efficiency of existing irrigation systems essential to improving food security and reducing poverty. The main challenge is to increase water productivity in order to achieve "more crop per drop." Historically, irrigation systems throughout the world have only charged farmers a small fraction of operations and maintenance (O&M) costs and none of the capital costs. This has imposed huge costs on government budgets—developing countries spend an estimated US$10 to US$15 billion per year on irrigation; India alone spends almost US$5 billion. Moreover, this approach has often led to profligate water use—sometimes on low-value commodities.

Increased efficiency and productivity of water use in irrigation is a challenging objective given the condition of most irrigation systems in the developing world. In many countries, the irrigation sector is caught in a vicious cycle of downward-spiraling performance: lack of maintenance results in poor irrigation and drainage services, leading to farmer dissatisfaction and, in turn, low collection rates of irrigation service fees. This then leads to weak smaller irrigation budgets, further reducing funds available for maintenance (Box 3.2). Cost recovery is only about 13 percent in Pakistan, 25 percent in China, and 10 percent in the Philippines.

Pricing irrigation water appropriately is necessary to increase the efficiency and sustainability of irrigation systems and to help conserve and improve water usage in the sector. Irrigation pricing reform, however, is a sensitive issue in most of the world, with complex political, historical, social, cultural, and economic dimensions. It is also a complex matter in practice, as it involves substantial regulatory arrangements, operational requirements, and financial commitments

Domestic water

Water and sanitation systems often fall into a low-level equilibrium trap, in which utilities provide limited or low-quality service because of insufficient resources, and inadequate service leads to few resources being collected. Inadequate service refers to both the lack of new connections or in

Box 3.2: Irrigation in Central Asia

Substantial investments in irrigation during the Soviet era have led to a massive dependence on irrigated agriculture in the Central Asian republics in the Aral Sea Basin. Agriculture, almost all of which is irrigated, provides 20 to 40 percent of GDP and employs some 28 million people. None of these irrigation systems charged more than nominal water fees, resulting in extremely high levels of water use, with water applications per hectare 50 percent higher than comparable countries such as Pakistan. The environmental consequences of these systems have been well documented. They include, most spectacularly, the drying up of the Aral Sea, but also substantial salinization problems that affect the productivity of downstream agriculture and the health of riparian populations. Over the last decade, lack of funding has resulted in plummeting investment in irrigation and drainage systems, and a near-collapse of maintenance. As a result, as much as 70 percent of water abstracted for irrigation is wasted before it reaches fields, and many drainage systems are almost inoperable. Unreliable or scarce water supply has reduced the irrigated area substantially, usually affecting poorer households disproportionately.

unreliable service. Both have serious consequences for service users, especially the poor, who often incur substantial costs to seek alternatives.

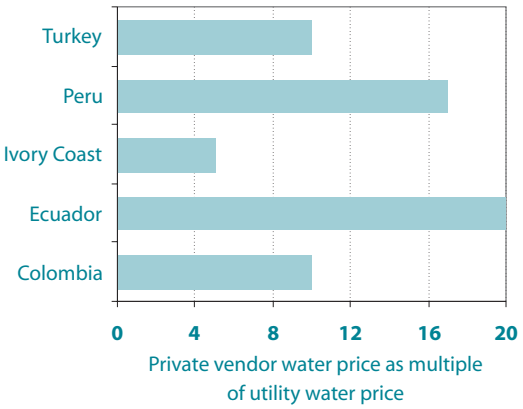
Studies have found that the poor are the least likely to have reliable service or access to new connections. Instead, the poor continue to depend on traditional sources of supply, which are often afflicted by declining access (as new sources become fewer and fewer) and quality (due to contamination from poor sanitation and industrial effluent). In most developing countries, the poor pay very high prices for alternative water supplies. Water vendors charge prices that may be ten times or more those charged by public utilities (Figure 3.1). In Nigeria, for example, water vendors were found to collect about 24 times as much revenue as the public water utility. Poorer households also have more difficulty in adapting to unreliable service. For example, few of Cairo's poorer households have water pumps to increase pressure because such pumps can cost as much as 100 percent of annual household income.

Metering and charging a volumetric price that reflects the cost of the service is vital both to improve water use and to reduce waste by service users. In Panama, metering lowered consumption by over 20 percent in four months. Across the Latin America and the Caribbean region, survey and focus group findings show that in poor communities attitudes to metering are generally positive.

Generating new resources

The potential for generating additional resources is substantial, but varies significantly across countries. We examine here three main approaches, in sectors that are particularly relevant for sustainable development. We begin by examining the potential for capturing a greater share of natural resource rents, focusing on the potential in the forestry sector. We then examine the possibility of charging for services that are currently

Figure 3.1: Lack of connections force the poor to pay very high prices for water



free or nearly so, such as access to protected areas and waste management. Finally, we discuss the potential for a range of taxes and charges.

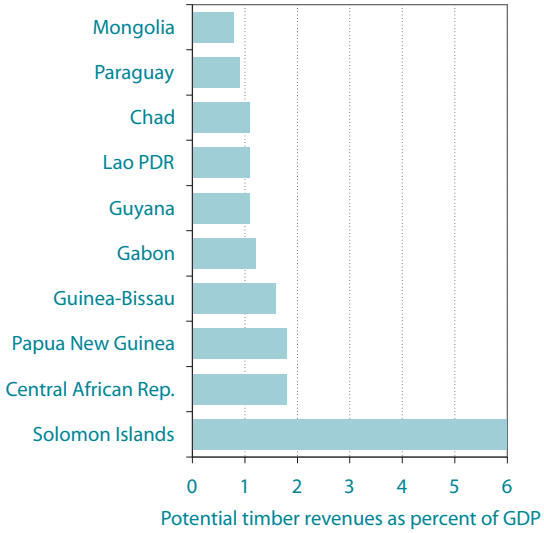
Capturing natural resource rents

The value of a natural resource is defined by its value when extracted—the resource rent—which is the difference between its market value and the full cost of extracting it. Full extraction costs include wages and salaries, depreciation of the capital stock (production machinery and structures), and the opportunity cost of the capital employed (typically an assumed "normal" rate of return on capital). Total resource rent is therefore equal to the economic profit of extraction.

The bulk of potential revenue from rents is, of course, from fossil fuels and minerals. However, these rents are probably already mostly captured. While there may be room for some marginal improvements in rent capture, fossil fuels and minerals provide limited scope for generating additional revenue.

In contrast, the potential for additional rent capture is substantial in the forest sector. Although the potential revenues from this sector are clearly much smaller than those from fossil fuels and minerals, amounting to about US$9 billion, evidence indicates that only a small part of these potential revenues is currently captured in developing countries. Moreover, increasing rent capture in the forestry sector would encourage more sustainable practices. Clearly, this potential is limited to forest-rich countries, particularly in East Asia and Latin America. Among them, larger countries could generate the largest amounts—over US$2 billion in China, US$1.5 billion in Brazil, US$0.7 billion in Indonesia, and US$0.6 billion in India. Overall, ten countries account for almost two thirds of all potential timber rents. These revenues are likely to be particularly important for some smaller forest-rich countries, however, for whom timber rents could represent a significant revenue source (Figure 3.2).

Figure 3.2: Capturing timber rents could generate substantial revenues for smaller countries



Capturing these rents will not be an easy task, however (Box 3.3). Low timber rent capture in developing countries is closely tied to illegal harvesting and low capacity to collect rents. Implicit and explicit contractual agreements often benefit a few politically powerful interest groups. Efficient management of forest resources requires transparent and stable procedures, so that the profits of logging activities can be reasonably estimated and compared to the social costs of logging development. Measuring how much rent is captured by the government and how much (if any) is returned to local communities as compensation for the loss of these resources are important steps to fully evaluate the tradeoffs involved in granting logging concessions. Data quality and availability will continue to be key challenges in the process of making informed policy decisions in most developing countries. Such limitations, however, should not be seen as excuses for not

Box 3.3: Capturing forest rents in Indonesia

Indonesia is endowed with the second largest expanse of tropical moist forest in the world, with between 92 and 112 million hectares. With such an abundant endowment, it is inevitable that some deforestation will occur in the pursuit of economic development. However, policies that favored the plywood processing industry have not generated compensation for the use of these resources. It has been estimated that these policies cost the government of Indonesia over US$10 billion dollars in cumulative forgone tax revenue from 1990 to 1999.

Reform of the forestry sector was a part of the lending package provided by the IMF and the World Bank to restore stability in the Indonesian economy after the 1998 crisis. The reform package included measures to increase taxation from the forestry sector by raising stumpage fees, auctioning concessions, and implementing performance bonds, as well as reducing marketing and investment restrictions in the forestry sector. The results of these reforms have been mixed. Some progress was achieved in dismantling forest product marketing monopolies. Logging fees, previously accruing to the national government, are now shared with the regions. As a result, there is more incentive for enforcement at lower levels of government. Nonetheless, many feel that while the policy reforms adopted complied with the letter of conditions agreed in the adjustment lending packages, the spirit of the reforms have often been undermined.

paying particular attention to the effects of forest policy reform, on the environment and the natural resource base, and especially on the poor who depend on forest resources for their livelihood.

Charging for services

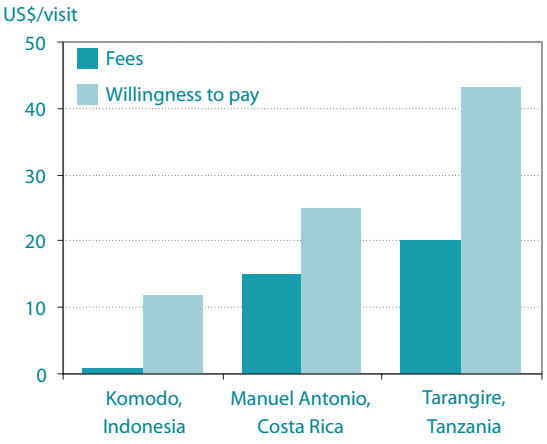
Many services are currently provided at little or no charge to their users. By charging for use of these services, developing-country governments could at the very least reduce the budgetary burden they bear to provide them. We focus here on two such services: the recreational services provided by protected areas and the management of municipal solid waste.

Protected areas

Tourism has been growing rapidly worldwide. For many countries, it is already one of the principal income sources, and particularly valuable as a source of foreign exchange. Although events such as the September 11 attacks as well as local and regional problems can lead to sharp fluctuations in tourist numbers, the overall trend is expected to continue to increase. Protected areas and the recreational services they offer are often a major source of attraction for such visits. However, the fees collected from visitors to these areas are often nominal. In the early 1990s, only about half of the world's protected areas charged entrance fees. The use of fees has grown substantially in the interim period, but still remains a rather underutilized tool.

Visitor fees at many popular parks remain well below visitors' willingness to pay to visit them (Figure 3.3)—a substantial missed opportunity for many developing countries. Some ad-

Figure 3.3: Fees at protected areas are often far less than visitors' willingness to pay



mittedly very crude calculations give a sense of the order of magnitude of financial resources that might be generated. Under reasonable assumptions about both the number of visitors and acceptable fee levels, one can estimate the potential revenue that might be generated as being between about US$1 billion and about US$3 billion. Note that where fees are already being charged, some proportion of this amount is already being captured. These estimates are not estimates of net new financial resources that might be generated, but of the gross total financial resources that might be generated.

Generating additional revenue from protected area visits is not simply a matter of raising entrance fees, however (Box 3.4). As can also be seen from Figure 3.3, willingness to pay can vary substantially from case to case, depending on factors such as the type of protected area and its uniqueness. It also depends on the existence of a wide range of supporting infrastructure: tourism cannot occur on any scale without airports, roads, hotels, and restaurants. Costa Rica's success in this area did not come overnight: it was built on many years of investment in both its infrastructure and its image. This is a general lesson that applies to many of the areas discussed in this paper: you have to spend money to make money. Resources also need to be dedicated to conserving and managing protected areas. Conservation budgets worldwide are almost always inadequate. If the revenues generated from entrance fees, however small or large, are all siphoned off to general revenue without corresponding allocations for conservation, the income stream will likely prove very short-lived. In general, therefore, charging user fees for visiting protected areas should be seen as a way to generate revenue for their protection rather than as a means of generating revenue for general purposes (Box 3.5).

Box 3.4: Raising visitor fees in Costa Rica

Facing a decrease in international donations to fund protected areas and a budget crisis that required a reduction in the budget allocated to park services, Costa Rica began experimenting with increases in entrance fees to national parks in the 1990s. In September 1994, Costa Rica dramatically increased the fees charged to foreign visitors, from US$1.50 to US$15. The number of foreign visitors declined by almost one third, but revenues nearly tripled as a result of the fee changes. Political opposition to the new fees from the tourism industry was fierce, however, and despite the substantial increase in the amount of revenue generated, Costa Rica lowered the fees foreigners paid to US$6 in 1996. Since then, foreign visitation rates have increased by an average of 10 percent per year, providing a steady increase in revenue. High visitation levels at some of the most popular parks suggests that there is scope to set higher and differential fees across parks, in an effort to limit the environmental impact of tourism.

Increasing revenues from protected areas need not always take the form of raising fees from areas managed by a national park agency. Many countries have moved toward leasing concessions to manage protected areas to the private sector or NGOs.

Municipal solid waste

Municipal solid waste management (MSWM) is a heavy burden for municipalities in developing countries, consuming around 20 to 50 percent of municipal budgets. At the same time, cost recovery levels are very low: less than 10 percent is not uncommon. We estimate implicit subsidies of MSWM in developing countries to be around US$28 billion (taking into account that part of MSWM expenditures contribute to public health

Box 3.5: Should revenues from environmental levies be earmarked?

Earmarking revenues from environmental taxes or charges is gaining increasing acceptance in many parts of the world. In most countries, pollution charges and waste discharge or treatment fees are becoming more closely aligned with the cost of providing basic environmental services, and these revenues are increasingly being retained by the bodies that are responsible for financing those services. Earmarking can sometimes be a useful tool to increase public acceptance of new or increased levies. Such "cost-recovery" approaches may make it easier to build consensus, remove barriers, and guarantee budget resources to finance environmental programs.

Although public-finance theory would generally advise strongly against earmarking, as a potential constraint on flexibility, it is now generally accepted that it can be a small price to pay for environment-friendly measures that would otherwise fail. Financing through earmarking of funds can be quite effective if the underlying reasons for the environmental problems are simultaneously tackled at the policy level. At the same time, without strengthened environmental regulations and enforcement, environmental funds may end up contributing to existing distortions. The benefits of earmarking have been found to be most pronounced when environmental revenues are earmarked to decentralized programs.

and so should not be considered a subsidy to individuals). This represents US$11.4 per urban citizen. Despite this expenditure, low levels of solid waste collection and inadequate disposal result in a range of serious environmental and health impacts—a situation that is worsening as a result of rapid urbanization.

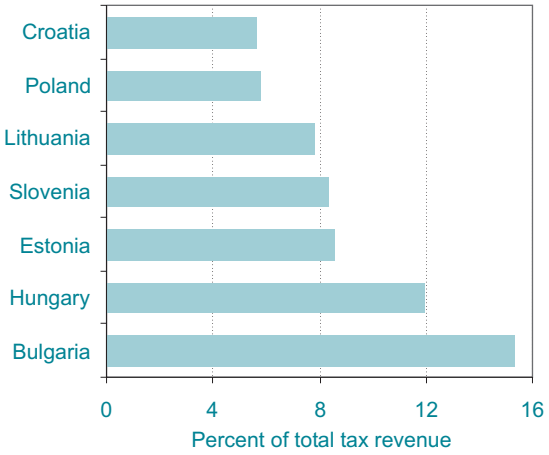
Enhancing MSMW cost recovery and improving efficiency has the potential to generate the revenue that would allow badly needed expansion of the service in many countries. As with other urban environmental services, the poor are the least likely to be covered and would benefit from expansion of the service. At the same time, the level of service must be adjusted to what society can afford. MSWM costs can be reduced by supporting informal recycling entrepreneurs and by involving community participation in waste collection. A range of instruments is available to enhance cost recovery, but linking waste fees to utility payments, such as electricity and water, has proven particularly efficient in several countries. Scattered data on tipping fees suggests that there is also room for improved cost recovery on the disposal side. However, although some evidence from industrialized countries suggests that increased user charges promote waste reduction, the risk in developing countries of an increase in open dumping disposal must not be understated.

Imposing environmental levies

There has been growing interest in imposing environmental taxes and charges, as they would have the simultaneous benefit of generating income while discouraging environmentally harmful behavior. Potential environmental levies include taxes on products that create pollution when they are manufactured, consumed, or disposed of (carbon and sulfur taxes; taxes on fuels, fertilizers, pesticides, batteries), and emission charges or taxes based on the quantity and quality of pollutants discharged (water effluent charges, air pollution charges, noise charges).

The transition economies of Central and Eastern Europe have been particularly fertile ground for such experimentation (Figure 3.4). In the eleven transition economies in Central and Eastern Europe for which data are available, an average of 2 percent of GDP can be attributed to

Figure 3.4: Some East European countries generate a significant proportion of tax revenues through environmental levies, 1999



environmental taxes and charges. In Bulgaria, the revenues obtained are as high as 15 percent of tax revenues and 4 percent of GDP. However, some analyses suggest that the charge systems in Central and Eastern Europe have failed to induce investment in abatement technologies and that their effects on emission levels have been rather small.

In developing countries, data are more limited. Several countries have instituted environmental taxes and charges, with revenues being an important goal.

China, for example, earned over US$600 million in 1999 from emission charges, which amounts to about 1.1 percent of its total tax revenue. About 80 percent of the funds generated through such charges have been used to finance pollution prevention and control, accounting for about 15 percent of total investment in these activities. A recent World Bank study suggests that although charges in China are often too low to induce abatement to the legally required level, they have proven highly potent in fighting pollution and cutting pollution intensity. For example, each 1 percent increase in the water pollution levy has led to a 0.8 percent drop in the intensity of organic water pollution, and each 1 percent increase in the air pollution levy has cut the intensity of suspended particulates by about 0.4 percent. While effective levies vary greatly in China, their geographic distribution is correlated with provincial rates of urbanization and industrialization.

In Colombia, water pollution charges earn twice as much as the national budget allocated for the 14 environmental authorities that implement these charges. A salient feature of Colombia's program is that each region starts by setting its own pollution reduction goals, imposing the national base charges, and tracking total discharges for six months. The regional regulatory agency then has complete flexibility in terms of the method it adopts for reducing pollution and its options for minimizing costs through less expensive clean-up solutions. A cornerstone of this program has been the successful collaboration between the regional environmental agencies and local businesses and communities in arriving at the desired environmental goals. Since its inception, the pollution tax has also become a substantial revenue source in the country.

In general, while the potential for environmental taxes and charges remains huge, the environmental impacts of these taxes have been mixed. Lack of monitoring and enforcement capacity, lack of information on abatement costs and technology, and low standards have contributed to the somewhat mixed environmental record of these taxes in many countries. Charge systems are more likely to be environmentally effective when their primary objective is to curb pollution (as in Colombia), the charge is set at a high enough level, there is adequate monitoring, and there is a fair amount of understanding and acceptance among all stakeholders. Moreover, a revenue-neutral tax approach has considerable

political potential, for the new taxes on pollution can be combined with welcome reductions in other taxes that will generate support for the proposed reform.

Summary: Public sector resources

Several main lessons emerge from this discussion:

- There is substantial potential to generate additional public sector resources, although data limitations preclude a comprehensive estimate. The amounts vary considerably across sectors and countries, however. The most important potential source of additional revenue comes not from efforts to generate new revenues, but from freeing up available resources by improving the efficiency with which they are spent—in particular, by removing subsidies that are expensive and, often, environmentally harmful.
- Even when the sums involved appear limited, reform can help (a) make sub-sectors financially self-sustaining rather than wholly dependent on the public purse; (b) increase economic efficiency; (c) reduce environmental damage; and (d) improve the welfare of the poor.
- Reform is not anti-poor. Though many policies claim to be pro-poor, they often are not. Electricity and water subsidies are of no assistance to poor people who almost always lack access to these services. Reducing these subsidies, therefore, might well benefit the poor if the resources that are freed up are used in more appropriate ways.
- Reform will require political will, but also capacity building and investment. In many cases, it will be necessary to spend money in order to make money. Cost recovery in domestic water, for example, will require establishing water metering and creating or strengthening the institutional capacity to read meters.

Integrating Public and Private Sector Roles

4

Both the public and the private sectors have critical roles to play in financing sustainable development. Although it has proven convenient to discuss these roles separately, they are in fact closely intertwined. There is a need to identify roles that the public and private sectors can most usefully play, to coordinate the two roles, and to work together on new tools. In this chapter, we discuss how to combine the strengths of the public and private sector roles. We use the example of the water sector, which has substantial unmet needs for infrastructure investment, to illustrate the potential.

Notwithstanding the upside potential of public-private cooperation, the 1980s and 1990s saw many examples of the challenges inherent in engineering successful partnership mechanisms, particularly in efforts to privatize urban environmental utilities. In some ways, the last two decades have provided an experimental laboratory to view the different political, commercial, and technical approaches to public-private partnership. Whether in efforts to privatize water supply services in Latin America or through private sector service providers addressing urban solid waste problems of Southeast Asian mega-cities, many lessons can be learned from efforts during this time to conceive and deliver effective public-private partnerships addressing critical environmental and social issues. A full understanding of these "lessons learned" will assist with the development of more effective public-private models in the future.

New roles, new tools

In today's world, so strongly characterized by globalization and the widening reach of the private sector, the rationale for public action is stronger than ever, albeit in a substantially different role. The public sector has traditionally played an important role as a steward of the environ-

ment and natural resources. This role is closely linked with the special properties of environmental issues, especially the existence of extensive market failures arising from the public goods nature of many environmental benefits and services; from externalities such as pollution; and from the cross-sectoral, cross-boundary, and global nature of many environmental issues.

Traditionally, the public sector has controlled the exploitation of natural resources—forestlands, subsoil minerals, and oceanic resources in coastal areas—as the owner of such resources and has provided environmental infrastructure services through state-owned utilities. Recognizing the opportunities for improved efficiency and financial sustainability through the private provision of environmental services and private management of resources, governments recently have been moving away from a role as provider to one of regulator and enabler.

The role of governments, however, remains especially important in establishing a policy, regulatory, and institutional framework for sustainable resource management and environmental performance. Governments play a key role in introducing mechanisms for addressing environmental externalities, as well as cross-sectoral and cross-boundary environmental issues. They can regulate the management of open-access resources such as fisheries by, for example, issuing individually tradable quotas. The protection of downstream users through better upstream management of a watershed involves large transaction costs and can be managed best by public authorities. For example, public authorities could develop systems of payments for environmental services to compensate upstream users for providing these services. Governments can also facilitate public access to environmental information and public participation in decisions affecting the environment. An emerging area for public authorities involves creating markets for environmental services through regulation and the development of new mechanisms such as carbon sink funds, green certification, and ecotourism.

Along with the changing relative roles of the public and private sectors, the ongoing decentralization of regulatory functions from central to local government levels worldwide has increased the need for local government involvement in many areas of environmental regulation, and enhanced the role of civil society in influencing decisionmaking. The new challenges created by decentralization for effective environmental regulation and management at the local levels deserve special attention in capacity building efforts.

Traditional command-and-control regulations and enforcement are often expensive and institutionally unfeasible. Therefore, a wider range of policy tools is needed to complement traditional regulatory instruments; examples include methods that encourage self-regulation and greater environmental responsibility in the private sector, such as increased disclosure requirements and assurance-based compliance programs. Market mechanisms often encourage the private sector to achieve the same goals as regulation, but in a shorter time. Environmental regulation, therefore, must harness the role of markets and the private sector to support sustainability as well as facilitate the implementation of effective public-private partnerships and approaches.

Even with improved incentive structures, there will always be a need for regulation and enforcement. The private sector typically responds fastest to regulatory measures that threat-

en its license to operate. Empty threats in the form of regulations that cannot be adequately enforced send a counterproductive message. Enforcement has to be consistent to create a level playing field; it has to promote good operating practice; and it has to provide a predictable environment for investment. The so-called "80:20 rule" of environmental regulation holds true even in the best-governed countries. This rule suggests that if it is possible to get 80 percent voluntary compliance with environmental laws and standards, then an effective regulatory agency can take action against the 20 percent who do not comply. An active civil society and a changing culture of corporate responsibility in the private sector have been important in improving compliance and contributing to positive environmental change.

An example: Partnerships in the water sector

In the last decade, regional and local governments throughout the world have started to turn to the private sector for the development and operation of their water supply and sanitation services. The benefits of private sector involvement include greater access to investment capital, much needed technical and managerial skill, and efficiency gains motivated by the incentive to increase profits. During the 1990s, however, a range of projects that ran into political an contractual problems highlighted the difficulties of executing effective public-private partnerships in the water supply and sanitation sector. Despite these difficulties, the growing demand for water services combined with willingness and ability to pay means the real challenge for the developing world in the water sector is to encourage private company involvement by creating the necessary political, social, and legal framework to attract private sector investment. Only 20 percent of developing countries have been able to attract private investment to the water and sanitation sector (compared to over 50 percent in the telecommunications and energy sectors), and the sector accounts for only 5 percent of private investment in infrastructure. This limited progress can be attributed to the prevalence of decentralized municipal provision of water and sanitation services and the great political sensitivity surrounding the sector.

Long thought of as a "social good", water services typically have been provided by inefficient government utilities at tariffs that do not cover the cost of supply or allow for maintenance and repairs. This philosophy is rooted in the perception that most people are too poor or are unwilling to pay for such services if they are offered at a price that reflects the actual costs of providing the services. Such inefficient systems are unable to attract investment financing outside of government spending or direct development aid, because cash flows do not support debt service and there are no economic incentives to improve. As a consequence, the public sector provides more than 90 percent of urban water supply and sanitation in developing countries, and 90 percent of water-related investments are from domestic sources. While operation and maintenance costs may be covered by the tariffs, capital costs usually are not, making investment in water infrastructure a heavy burden. Governments typically spend 4 to 8 percent of overall public investment on water infrastructure, and this is generally insufficient to cope with the needs.

The results are a crumbling infrastructure that leads to high water losses and poor service, and far from universal coverage. The level of unaccounted for water is as high as 45 percent in

Bogota and 58 percent in Manila. In many utilities the situation is so bad that losses are controlled by having water in the distribution system for only a couple of hours a day, and by keeping pressure very low. It is estimated that US$9 to US$30 billion per year during the next 25 years are needed to reach universal coverage in water and sanitation services. Some estimates are as high as US$100 billion. In addition to the financial burden and the excessive pressure on the resource, and as noted in chapter 3, the poor get the worst deal by having to pay a higher price for an inferior substitute (namely bottled water).

Most private investment in water and sanitation infrastructure projects has taken the form of public-private partnerships. Because of the "public good" nature of water and its importance to human health and well being, governments cannot fully relegate responsibility for it to another authority. Most governments retain ultimate ownership of infrastructure assets, while transferring varying degrees of capital investment responsibility and risk to the private sector.

Service, Management, and Lease Contracts

Service and management contracts are useful in regions where creditworthiness is difficult to assess or where the private sector deems the capital investment risk to be too high. In these contracts, investment responsibility remains with the public authority. Private participation in the water sector of the least developed countries has typically been at this level. Service, management, and lease contracts may be utilized to improve services in very poor countries while tariffs are gradually increased to a rate that justifies investment, at which time a concession contract would be viable. This "step-wise" process matches rate increases with service improvements while establishing a regulatory framework and experience and credibility for the public authority.

BOT/BOO structures and concessions

Even when the public authority has the capacity to access investment funds, it may have more pressing needs. Build-Operate-Transfer (BOT) or Build-Own-Operate (BOO) structures can be employed when specific construction projects are needed, such as the construction of a new treatment plant. BOT/BOO structures have been successfully employed in the industrial world and in the emerging markets of Latin America and East Asia. In a BOT structure, the private sector finances the investment, builds the infrastructure, and operates it for a period of time during which revenue received covers the construction costs. In a BOO structure, the private sector maintains ownership. In both cases, the public sector guarantees the revenue.

Divestiture and full privatization

There are two prerequisites to privatization: (1) a strong legislative environment—where the public authority maintains influence over tariff pricing to ensure that the monopoly power sold to the private sector is not exploited, and (2) private-provider access to capital. For these reasons, divestiture (partial sale of assets) and full privatization have been rare outside of the industrial world.

Overall, results from public-private partnerships in the water sector remain mixed. International companies focus first and foremost on the least risky and most profitable urban areas and tend to avoid disadvantaged urban communities and rural areas. Moreover, the private sector faces similar constraints to the public sector

in extending services to the poor and ensuring environmental protection. These constraints include uncertain land tenure, the cost of connection fees for the poor, low priority given to wastewater collection and treatment, and a lack of incentives to ensure conservation and protection of water sources. Revenue guarantees have tended to artificially protect private sector participants from the market and to saddle the public sector with contingent liabilities that it often cannot afford.

Latin America's experience illustrates the challenges involved in reforming the water sector and promoting private sector participation. The scale of water service reform in the region has been unparalleled in any other part of the world. By the end of the 1990s, just about every country in the region had undertaken or was actively considering water sector reform measures. However, the real transition for most water consumers has not been from public to private operation but rather from unregulated centralized public provision to regulated decentralized public provision. By imposing regulation and private sector participation from the center on a sector that is often legally under municipal control, a tension has been created, adding to the difficulty of attracting private investment into a highly fragmented sector. The region faces two possible options: to try to consolidate the structure of the industry by promoting the creation of larger regional companies, as in Chile and Brazil, or to adapt the regulatory framework to the requirements of a fragmented and still largely state-owned sector.

Examples of successes and failures in the private provision of water and sanitation provide lessons on the use of public-private partnerships. Arguably the most frequently cited example of a private venture outside of the OECD is the Buenos Aires water concession (Box 4.1). The concession is regarded by most as a success and has

Box 4.1: An example of partnership: Aguas Argentinas-Buenos Aires

In 1989, Argentina privatized the water and sanitation provider of the metropolis of Buenos Aires via a competitive bid for a 30-year concession. Prior to privatization, the water tariff had been increased incrementally over two years by 54 percent to compensate for inflation and to bring the tariff closer to a cost-recovery level.

An international consortium, Aguas Argentinas, won the bid by offering a tariff reduction of 26.9 percent. The concession succeeded in improving the condition of the existing infrastructure; decreasing by 10 percent the amount of water lost through leaks or illegal off-taking; decreasing operating costs by rationalizing labor practices; decreasing the number and frequency of clogged drains and pipe burst; and beginning system expansion. Despite these successes, a number of contractual problems emerged: (1) information asymmetries led the company to overly optimistic performance and investment targets; (2) an opaque and arbitrary system impeded consumers from monitoring their billing to adjust their usage; (3) large cross-subsidies gave the company incentive to focus system expansion on higher-income neighborhoods; and (4) high access charges, intended to finance system expansion, were too onerous to poor consumers. These charges, which were as high as 36 percent of household income, led to non-payments that reached US$30 million.

The problems inherent in the original agreement led to a series of tariff increases and a major renegotiation in 1997. The solution was to replace the infrastructure charge to new users with a Universal Service charge, to decrease the connection charge and extend repayment time so that the charge was affordable for the poor, and to reduce the company's expansion targets and extend the deadline to reach its targets. This case illustrates that attaining a combination of political acceptance, affordability, and financial sustainability can ensure positive results.

improved water and sanitation conditions far more than would have been possible without privatization. An important factor in this success is that many of the hurdles private investors would face in the water sector were uncovered in the early stages of this concession contract. This case highlights the importance of accurate and available information, transparency in competition and in the tariff structure, independence and competency of the regulator, and appropriate sharing of the costs and benefits of system improvements.

We stressed in chapter 2 that political risk is the primary risk for investments in developing countries. In addition to the need for a strong independent regulator, private investors and local authorities can take steps to mitigate some political risk by ensuring stakeholder buy-in. In the case of Aguas Argentinas, the increase in water tariffs prior to granting the concession eased the potential political pressure from infrastructure system users. Reforming policies to ensure that the private partner can charge tariffs that allow for full cost recovery, including benefits commensurate with the risks involved, is a key element.

The Aguas Argentinas example also brings out the problem of affordability. As in other infrastructure cases (such as electricity), poor people are usually willing and able to pay the recurrent cost of the service. However, they encounter problems in paying for the up-front cost that the connection charges represent. A solution may be to distribute the cost of the connection over an extended period of time, factoring it in the service bill. This brings back the issue of political risk. To undertake such a solution, the private sector needs to know that the public sector will provide for long-term stability in the rules of the game.

The experience of public-private partnerships in the water sector indicates that while there is considerable untapped potential, there is also scope for failure. Public-private partnerships are not a panacea. Careful design of the contractual arrangements—to ensure that the right incentives are built-in—and the establishment of a supporting policy framework are critical for their success.

Innovative mechanisms for conservation

Managing environmental problems requires more than building infrastructure. In the case of water, for example, it is also important to protect the ecosystems that provide valuable services such as water filtration and regulation of hydrological flows. Addressing such problems can also have important impacts on revenue, by averting the need for substantial expenditures on infrastructure or repairs from flood damage. In the most celebrated example, New York City was able to avoid having to spend over US$4 billion to construct a new water filtration plant by investing about US$1 billion in conservation activities in the Catskills watershed from which it draws its water. The cities of Quito and Cuenca, in Ecuador, have adopted similar approaches.

Recent years have seen significant interest in new market-based mechanisms that address these problems, such as systems of Payments for Environmental Services (PES). Costa Rica pioneered this approach in 1997 by developing a formal, countrywide PES system, the *Pago por Servicios Ambientales*. Such systems are based on the principle that that those who provide environmental services should be compensated for doing so, and those who receive these services should pay for their provision. PES systems consist of mechanisms to capture part of the benefits

received by service users, for example, by adding a water conservation fee to water bills and channeling the resulting funds to land managers in ways that induce them to change their land use practices (retaining environmentally beneficial practices and avoiding harmful ones). Establishing PES systems often requires initial investments (to clarify the linkages between land use and water services, for example, and to create or strengthen the necessary institutions). Once they are operating, however, PES systems are self-sustaining, with the flow of payments from beneficiaries used to pay the service providers and the running costs of the system itself.

These systems require close cooperation between public and private sector actors. Water users, for example, can be represented by either public sector agencies (municipal water delivery systems, for example, or national power companies) or by private sector groups (such as irrigation water user groups or some hydroelectric power producers). Similarly, the service suppliers can include private landowners and public agencies such as protected area systems.

Summary: Public-private partnership

There is a new context for public action in the developing world. It is provided by the combination of *old challenges*—such as water infrastructure provision, resurrected when the "old solutions" manifest themselves as unsustainable—and *new challenges* such as the decentralization of public administration.

In this new context, the public sector's primary role is to define the regulatory framework, while the private sector implements market-based solutions. However, even with improved incentive structures, there will always be a need for regulation and enforcement.

There is a need and opportunity to develop public-private partnerships, as is demonstrated in the water sector example. For partnerships to work, political risk needs to be kept at bay and the partnerships need to be carefully designed. A combination of political acceptance, affordability, and financial sustainability must be attained in order to ensure positive results. Partnerships are not a panacea and will not work without supporting policy reform.

5 Conclusions

The core message of this paper is that there is considerable scope for developing countries to generate resources for their sustainable development needs. Four main themes run through this paper:

- Appropriate actions by developing countries can generate or free up substantial additional resources, either by attracting new financing from domestic and international private sector sources or by reducing waste and inefficiency in the use of public sector resources. To the extent possible, we have attempted to quantify these potential resource flows, although data limitations preclude a comprehensive analysis. We have also sought to identify areas in which developing countries can act alone and those in which they need the support or cooperation of other actors.
- Creating a positive policy environment is fundamental to achieving sustainable development. Without an appropriate policy framework, private sector resources will not be forthcoming, and public sector resources will continue to be used sub-optimally. Moreover, and perhaps as important, a positive policy environment can help channel economic activities (whether undertaken by the private or public sectors) away from environmentally harmful activities and towards more sustainable ones.
- Special attention needs to be given to the needs and the potential contribution of the poor. Any policy reform or other effort must clearly take considerable care not to inadvertently harm the poor. The fear that this may happen is somewhat exaggerated, in that the policies that need changing are not generally pro-poor, although they often claim to be. Equally important, the poor are not just passive recipients; there is growing evidence that they can play an important, pro-active role. A growing number of microfinance and sustainable livelihood initiatives are demon-

strating how once-marginal communities are achieving independence through economic empowerment. Furthermore, as these initiatives release community-level entrepreneurial energy, significant socioeconomic and environmental benefits accrue.

- One size does not fit all. There is substantial variation in the needs, opportunities, and constraints facing individual developing countries. Even within countries, there is substantial variation across regions or sectors. Although a paper of this size obviously cannot do justice to this diversity, we have tried to point out differences where appropriate.

That substantial amounts of resources can be freed up by appropriate policy changes has long been known, as have the improvements in efficiency and the reductions in environmental damage that would result. That the private sector can and should play a more important role in development has also been increasingly recognized. Although familiar themes emerge from this paper, additional lessons learnt during the 1990s indicate that creative pathways and new tools to more effectively finance sustainability solutions—notably through greater public sector leveraging of private sector finance—are emerging.

Further Reading

6

Background papers

This paper is based on two specially commissioned background papers. A full list of references and citations for the information used in preparing this paper can be found in those papers, along with a more complete discussion of the issues discussed in this paper and an explanation of the assumptions and methodology that underlie the numerical estimates presented here.

United Nations Environment Programme Finance Initiatives (UNEP FI). 2002. "Innovative Financing for Sustainability." An internal background paper prepared in collaboration with Ecosecurities Ltd. Geneva: UNEP.

World Bank. 2002. "Financing for Sustainability: Generating Public Sector Resources." Washington: World Bank.

Consultations

A month-long "e-consultation process" was implemented in late February to early April 2002 to encourage a broad multi-stakeholder consideration of the consultation document. The World Bank Institute (WBI) and the Department of Economics at the University of California at Santa Barbara acted as moderators for the e-consultation process. Over 200 participants from all over the world took part. For more details on the e-consultation approach and goals, and to understand how it influenced the paper, please visit: <<www.worldbank.org/devforum/forum_financing.html>>.

Readers interested in reading further on the issues discussed in this paper may find the following references useful:

General

Devarajan, S., M.J. Miller, and E.V. Swanson. 2002. "Goals for Development: History, Prospects, and Costs." Washington: World Bank.

World Bank. 2001. *Making Sustainable Commitments: An Environment Strategy for the World Bank*. Washington: World Bank.

————. 2002. *The Environment and the Millennium Development Goals*. Washington: World Bank.

———. 2002. *Global Development Finance 2002: Financing the Poorest Countries*. Washington: World Bank.
———. 2002. "The Role and Effectiveness of Development Assistance: Lessons from World Bank Experience." Washington: World Bank.
———. 2002. *World Development Indicators 2002*. Washington: World Bank.

Subsidies

van Beers, C., and A. de Moor. 2001. *Public Subsidies and Policy Failures*. Cheltenham: Edward Elgar Publishing Ltd.

Energy

Energy Sector Management Assistance Programme (ESMAP). 2001. "Energy Services for the World Poor." Washington: World Bank.
International Energy Agency (IEA). 1999. *Looking at Energy Prices: Getting the Prices Right*. *World Energy Outlook 1999*. Paris: IEA
———. 2000. *World Energy Outlook 2000*. Paris: IEA.
United Nations Environment Programme (UNEP). 2000. *Natural Selection: Evolving Choices for Renewable Energy Technology and Policy*. Paris: UNEP. <<http://www.uneptie.org/energy/publ/naturalselection.htm>>.
UNEP/IEA workshops on energy subsidies reform. An overall synthesis of the main outcomes and recommendations of the workshop series and associated analytical work as well as the findings from the individual workshops are available at: <<http://www.uneptie.org/energy/act/pol/wokshops/sub_ ws.htm>>.

Water

Dinar, A. 2000. *The Political Economy of Water Pricing Reforms*. Washington: World Bank.
Fitch, K, and T. Streiff. 2002. *Water Availability*. Zurich: Swiss Re. <<http://www.swissre.com>>.
Kan, E., and T. Streiff. 2002. *Water Quality*. Zurich: Swiss Re. <<http://www.swissre.com>>.
Leclerc, G., and T. Raes. 2001. *Water: A World Financial Issue.* Paris: PriceWaterhouseCoopers.
Porter, M. 2000. *Developing Best Practices for Promoting Private Sector Investment in Infrastructure*. Manila: Asian Development Bank.

Privatization

Lovei, M., and B.S. Gentry. 2002. *The Environmental Implications of Privatization: Lessons for Developing Countries.* Discussion Paper No.426. Washington: World Bank.

Forests and natural resource rents

Ascher, W. 1999. *Why Governments Waste Natural Resources: Policy Failures in Developing Countries*. Baltimore: Johns Hopkins University Press.
Bosquet, B. 2002. "The Role of Natural Resources in Fundamental Tax Reform in the Russian Federation." Policy Research Working Paper 2807. Washington: World Bank.
Colfer, C.J.P., and I.A.P. Resosudarmo. 2002. *Which Way Forward? People, Forests, and Policymaking in Indonesia*. Washington: RFF Press.
Hamilton, K., and M. Clemens. 1999. "Genuine Saving Rates in Developing Countries." *World Bank Economic Review* 13(2): 333-56.

Waste management

Beede, D.N., and D.E. Bloom. 1995. "The Economics of Municipal Solid Waste." *The World Bank Research Observer* 10(2): 113-150.

Protected areas

Lindberg, K., and E. Halpenny. 2001. "Protected Area Visitor Fees: Country Review." Burlington: International Ecotourism Society.

Environmental levies

Bluffstone, R., and B.A. Larson, eds. 1997. *Controlling Pollution in Transition Economies: Theories and Methods*. Cheltenham: Edward Elgar Publishing Ltd.
Huber, R.M., J. Ruitenbeek, and R.S. Da Motta. 1998. "Market Based Instruments for Environmental Policy Making in Latin America and the Caribbean: Lessons from Eleven Countries." Discussion Paper 381. Washington: World Bank.
World Bank. 2000. *Greening Industry: New Roles for Communities, Markets, and Governments*. Policy Research Report. Washington: World Bank.

Innovative mechanisms for conservation

Pagiola, S., J. Bishop, and N. Landell-Mills, eds. 2002. *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. London: Earthscan.
Pagiola, S., and G. Platais. 2002. "Payments for Environmental Services." Washington: World Bank.

International Monetary Fund
700 19th Street, N.W.
Washington, D.C. 20431 USA
Telephone: 202-623-7000
Facsimile: 202-623-4661
E-mail:
Internet: http://www.imf.org

United Nations Environment Programme
Finance Initiatives Unit
15 chemin des Anémones
CH-1219 Chatelaine, Geneva
Switzerland
Telephone: +41-22-917.8178
Facsimile: +41-22-917.8076
E-mail: fi@unep.ch
Internet: http://www.unepfi.net

United Nations Environment Programme
Division of Technology, Industry and Economics
39-43 Quai André Citroën
F-75739 Paris Cedex 15
France
Tel: +33-1-4437.1450
Fax: +33-1-4437.1474
E-mail: dtie@unep.fr
Internet: http://www.uneptie.org

THE WORLD BANK
1818 H Street, N.W.
Washington, D.C. 20433 USA
Telephone: 202 473 1000
Facsimile: 202 477 6391
E-mail: feedback@worldbank.org
Internet: www.worldbank.org

Printed on recycled, unbleached paper stock using soy inks.

Please recycle.