



Financing for Sustainable Development

An input to the World Summit on Sustainable Development



Revised Consultation Draft

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Abbreviations

| | |
|------|---|
| BOT | Build-Operate-Transfer |
| BOO | Build-Own-Operate |
| CDM | Clean Development Mechanism |
| EU | European Union |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| GPA | Global Programme for Action on water |
| MDGs | Millennium Development Goals |
| MSWM | Municipal solid waste management |
| NGO | Non-Governmental Organization |
| O&M | Operations and Maintenance |
| OA | Official Assistance |
| ODA | Official Development Assistance |
| OECD | Organisation for Economic Cooperation 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.

Preface

This paper is the result of a joint work program of the United Nations Environment Programme (UNEP), the World Bank, and the International Monetary Fund (IMF) on Innovative Financing for Sustainability. It is intended as an input to the World Summit on Sustainable Development to be held in Johannesburg from August 26 to September 4, 2002. UNEP was broadly responsible for the material on mobilizing private sector resources in Section 2, and the World Bank and IMF for the material on mobilizing public sector resources in section 3; Section 4 on public-private partnerships was prepared jointly.

This draft is a revised version of the draft that was made available for comment during a month-long open “e-discussion” on the web, organized by the World Bank Institute (WBI) during March-April 2002. It is circulated in this form solely to stimulate discussion. It should not be cited without permission. It does not necessarily represent the views of UNEP, the World Bank, or the IMF.

A final version will be prepared for presentation at the World Summit on Sustainable Development.

Acknowledgements

This paper was prepared by a joint team from the World Bank and the United Nations Environment Programme, headed by Stefano Pagiola (World Bank) and Paul Clements-Hunt (UNEP).

The material in this paper 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). These 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 (user fees, innovative conservation mechanisms), Priya Shyamsundar (environmental levies, forests, international resource flows), 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:** Jacqueline Aloisi de Larderel, Paul Clements-Hunt (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 consultancy, EcoSecurities, worked as advisors to the UNEP team.

Work on this paper was initiated at 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 (EBRD), Carlos Joly (Storebrand), and Lionel Fretz (EcoSecurities).

The paper benefitted from comments provided by Robert Clement-Jones, Charles Feinstein, Arvind Gupta, David Hanrahan, Anil Markandya, Gary Stuggins from the World Bank, and Danielle Hirsch and Charles Arden-Clarke from UNEP.

This paper has also benefitted from numerous comments and discussion made in the course of a month-long open "e-discussion" on the web, organized by the World Bank Institute (WBI), which 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.

The cover images are courtesy of the World Bank Photo Lab.

1. Introduction

The 1992 Earth Summit in Rio de Janeiro clearly established the objective of sustainable development. 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 existing and additional resources. Preliminary estimates indicate that it will take on the order of an additional US\$40 to US\$60 billion a 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. Even with the increases in flows agreed at the Financing for Development (FfD) conference in Monterrey, Mexico, however, ODA is likely to be insufficient to meet the tremendous needs. Other sources of resources must also be sought.

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. Critically, the paper seeks to identify innovative approaches which foster the delivery of 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: by attracting private sector resources, and by 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 remains small and uneven. Attracting only a small part of the resources available in the private sector would represent a substantial inflow of resource – dwarfing the resources potentially available from ODA. The challenge is to attract more of these resources to developing countries, and to channel it to activities supporting sustainable development efforts. This challenge is discussed in Section 2.

Developing country governments already expend significant amounts of 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 substantial amounts of resources which are currently being used inefficiently. This challenge is discussed in Section 3.

There are many sectors and activities in which close cooperation is needed between the public and private sectors. Section 4 examines the water sector as an example of how the public and private sectors can work together.

Throughout the paper, we focus on approaches that developing countries can undertake largely at their own initiative, and do not discuss the various proposals that have been made for funding mechanisms that would require widespread international agreement (such as a Tobin tax). Developing countries would not need to wait for a global consensus to undertake the measures outlined here. We also focus on the potential to generate resources within sectors that are particularly critical for sustainable development, and where the potential for ‘win-win’ solutions that reduce environmental damage while generating resources is greatest.

It is of course impossible for a paper such as this to cover the myriad issues which 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.

2. Attracting private sector resources

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 the US\$36 billion mark. Before the decade closed, they had jumped to over US\$160 billion – roughly double the flow of ODA. The 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 of the new proactivity of countries seeking to attract international capital.

However, the flow of private sector resources to developing countries has been very uneven and in the case of portfolio investments highly volatile. The vast 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 volatility of portfolio flows was highlighted during the Asian financial crisis, which started with the devaluation of the Thai Baht in July 1997. One senior policy adviser to an international business lobbying organization described the outflow from Asia-Pacific of portfolio investments as “the great home-coming of western capital.”

2.1 Potential sources of private sector financing

With these trends in mind, this section examines the prospects for developing and transition countries to attract additional private sector resources and ways to ensure that such resources will be channeled to sustainable activities. In particular, this section highlights three mechanisms: 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. Increasingly, markets in key sectors in the industrialized world are saturated, highly competitive, and offer low and diminishing profit margins 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, many private sector firms are increasingly coming to recognize the importance of socially and environmentally sustainable activities (see 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 excellence, social justice, and environmental superiority. 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.

However, political risks, reputational issues connected to governance questions, and a wide range of operational challenges, create significant constraints in many developing countries. Issues likely to undermine a country’s attractiveness to FDI include: lack of a skilled and trained labor pool; endemic corruption issues; the potential of social and civil disruption; and limited natural resource stocks.

In private sector investment decisions, political risk is often the primary risk when assessing developing world opportunities. In urban infrastructure projects, for example, local authorities most often do not have an international credit rating or a track record upon which the private sector can base a judgment of credit worthiness. 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.

A rising number of public and private sector observers contend that new, innovative approaches combining FDI with ODA could rebalance critical political risks in a manner which promotes private flows to a broader group of countries. Furthermore, during the 1990s there has been a significant shift in donor perception of the role of ODA, with many donor governments coming to view their primary role as facilitating the role of 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 create a number of operational challenges for both aid agencies and private sector partners. Broad operational 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.

The March 2002 OECD Roundtable on Sustainable Development, in which aid agencies and business groups participated, presented ideas aimed at enhancing co-operation and understanding and highlighting how ODA and FDI could complement each other so that public sector financing leverages private sector investment. A paper by the World Business Council for Sustainable Development (WBCSD), cited the following examples of 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, for example by:
 - Initiatives to enhance equity investment volumes, such as tax incentives for developing countries' investment funds in OECD countries (similar to those created by the Dutch government for green funds).
 - 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 micro-credits for small entrepreneurs in selected developing countries. ODA could help in strengthening the managerial skills of micro-credit institutions.

Both the public and the private sector need an enhanced understanding of how the other operates and of their accompanying 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 offers one mechanism to channel additional funds to the developing world. SRI has grown rapidly in both Europe and North America, and the Japanese market is now emerging. The UK ethical investment market grew by 47.7 percent between 1998 and 1999, and was predicted to have exceeded US\$400 billion by the end of 2001. As an indication of market penetration, in the US alone – the world's largest SRI market – of the total investment market estimated at US\$16.3 trillion funds under management, 13 percent is deemed socially responsible.

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 applicability of SRI. Efforts to take the SRI approach into the developing world in a more systematic way are emerging (see Box 2.2).

Box 2.2: 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 both within the financial and public sectors; and, developing an outreach program to educate the Asian investment industry in SRI techniques and practices.

South Africa. In 2001-2002, the African Institute of Corporate Citizenship explored the prospects for SRI in South Africa (AICC) 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. In June 2002, the Johannesburg Stock Exchange will introduce an SRI index.

SRI approaches could alleviate some of the concerns of foreign investors, as companies that meet SRI criteria and have the knowledge and internal systems that enable them to effectively manage risk, be it social, financial, or environmental risk, will be in a stronger position to pre-empt potential pitfalls, effectively manage stakeholder relations and expectations and, in so doing, allow them 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 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 be able to manage risk systematically rather than subjectively and to be able to place indicative financial values on these risks in a way that makes sense to the market. Risk management is in itself a critical component of SRI and by strengthening SRIs to include an effective analysis of social and environmental risk, in a developing country context, this will help to see it mainstreamed as an asset class linked both to capital markets and private equity investments alike.

Microfinance

Microfinance is the provision of services (credit, savings, insurance) to poorer individuals or communities which are often un-served or under served by traditional financing institutions. There are more than 7,000 microfinance institutions worldwide serving between 16 to 30 million poorer people. The success of the Grameen Bank in Bangladesh 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. 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 not only are borrowers that were previously thought un-creditworthy able to pay for their micro credit 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, amongst 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 approach has spread into Africa, Latin America, and economies in transition, however, microfinance has undergone a metamorphosis resulting in a broader range of approaches tailored to regional circumstances (see Box 2.3). 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.

Box 2.3: Approaches to microcredit

As the microfinance approach has spread globally several significant developments have been identified: group lending has given way to individual lending and village banking; loan sizes have grown from several hundreds of dollars to several thousands, notably in the CEIT, the former Soviet Union, and in the US; several microfinance institutions have transitioned to the formal financial sector to become banks; 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 Empreder, 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.

However, there are many hurdles which microfinance institutions must overcome, including:

- 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 have traditionally not been run on 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 as transaction costs outweigh financial returns.

A variety of financing approaches could be applied to assist microfinance institutions overcome 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 that 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.

2.2 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 should emerge. If the sophisticated thinking which 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 sustainable 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 its views, quantifies, and prices risks and opportunities in developing countries? Are significant international 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 because: they are subject to considerable political risk; in many parts of the world the policy environment remains unattractive for any form of private sector

investment; sustainable development oriented projects are often negatively effected by a low investment priority; and there is a strong perception around sustainability projects that they offer low returns.

2.3 Case studies

There is evidence to suggest that 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 sustainable investment flows (see Box 2.4). To highlight these 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 in this section.

Box 2.4: “Capital is a coward, it flees from risk...”

“On a recent visit to the US, 35 sub-Saharan trade and foreign ministers took part in a roundtable meeting. One of the key themes for the event was – ‘Capital is a coward, it flees from risk.’ I disagree; capital is an inanimate object. The claim that capital is a coward, is more an indictment on the owners of capital rather than capital itself. Where capital from the US has failed to take up African opportunities investors from Asia have come. Does this capital carry a different risk analysis? The largest flows of FDI are from countries of the north to each other. Is there a race dimension to capital? Does capital only have to seek a financial profit or can human development be seen as good return on one’s investment?”

“It is essential to ensure adequate participation of African countries in the formulation of financial standards and codes. International efforts must be made to help build capacity on the continent, to enable progressive, voluntary implementation of internationally accepted standards and codes. Sovereign risk assessments made by private sector must be based on strict, objective and transparent parameters.”

Extract from a keynote speech by Iqbal Sharma-Meer, Department of Trade and Industry, Government of South Africa, at the UNEP Finance Initiatives (FI) African Outreach Event (Midrand, South Africa, January 28-29, 2002)

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 to US\$ 30 billion a 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 (see Box 2.5).

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. [Build-Operate-Transfer] BOTs 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.”

The debate surrounding the public and private sectors 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 good 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 the public and private provision of vital water services.

In July 2001, the UNEP Global Programme for 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 (PPP) and privatization in the water sector still have to prove their merits: except from some well publicized cases, the overall verdict on the experience so far is rather negative. The pro and cons of private sector involvement in water need to be better understood.
- A demand driven approach is to be preferred over a supply driven approach;
- Sanitation provision should be part and parcel of water supply; water supply can not be seen in isolation, certainly not from an environmental perspective.
- Alternative technologies should be considered as realistic and fundable options beside 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 an 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. There are steps that local authorities and private investors can take:

- 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 responsibility of the private sector and the rewards it requires to invest in a project.
- 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, he should also ensure that such information is actively disseminated amongst system users.

- Publicize the level of service discrepancies amongst 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 (see 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. One recent example of such an approach is that taken by independent asset management company Sustainable Asset Management (SAM). 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 developed world, inclusion in the fund will identify those trans-nationals 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 LDCs by valuing such investment highly in assessing sustainable business practice. In doing so, the fund may lead other trans-nationals to pursue investment in LDCs and emerging markets.

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

- Micro finance 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 micro finance.

- 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, thus it will recognize the naturally defined unit as opposed to 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 the use of a scarce resource and allow flexibility through trading for 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.

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 being acknowledged that financial products, which reflect the true costs of water and which promote upstream solutions are critical elements for redirecting the management of global water resources on a more sustainable path.

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”.

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. Using cleaner fossil fuel and renewable energy technologies will be important in meeting the energy needs of the developing world during the 21st century. At the community level, examples of a sustainable energy approach include: gas bottle distribution in developing countries which deliver high environmental benefits in lowering unsustainable local wood fuel use; and the promotion of efficient cook stoves bringing distinct environmental and economic benefits over traditional cooking stoves.

More specifically, the applicability of Renewable Energy Technologies (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 electrification, household biogas systems, and efficient cook stoves), and
- 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. By 2030 energy consumption in the developing world will exceed that of the developed countries. 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 upfront 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. Project development and other transaction costs are consequently a higher percentage of the total project cost for most RET projects.
- **Risk.** The returns to investors from RET projects is (in the absence of subsidies) similar regardless of location. Developing countries are (rightly) perceived as being of higher risk. For example in some countries as a consequence of the political risks private finance is not available regardless of the quality of the renewable resource or technology.

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

- **Government and policy actions:** Governments should 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; develop stronger legal frameworks, that enable developers and their financial parties to confidently have recourse through legal process when contractual commitments are broken; further free market reforms of electricity sectors that create competitive markets that encourage new entrants.
- **Public and private funding actions:** Increase provision of multilateral and investor nation public capital to private sector funds targeting specific regions. Fast track procedures adopted by public sector financing institutions. Extend the scope for the provision of host and investor nation government guarantees; 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.

- Host nation governments should encourage more joint venture project vehicles, involving OECD parties with proven track record in RET deployment. Removal of barriers to these arrangements.
- Develop agreements, guarantees, and financial products to mitigate risk (futures, options) that specifically target RETs.

Box 2.8: Boosting investment in renewables

The German Renewable Energy Law, which was 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 of private investment in the renewable energy sector at more than ten billion Euro during the two years since its inception. This has resulted in the creation of 60,000 new jobs, mostly in medium sized enterprises in lesser developed regions. Moreover, competition within the renewable energy technology sector has caused a significant increase in the production of energy from renewable sources and a decrease of installation prices. For the customer the cost of the law comes to 3.5 Euro per household per year.

2.4 Summary

Broadening private flows to a wider range of developing countries is necessary to address key sustainable development challenges. 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.

Market supporting framework conditions will remain the primary consideration for a country's ability to attract international capital. Political risk issues are paramount when the private sector

considers investing in a country or region. Innovative fusions of ODA and FDI based on new forms of public-private partnerships could act to reduce real and perceived political risk considerations. Partnerships built on enhanced understanding of 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, are limited by the immaturity of capital markets in the developing countries. 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 marginalized 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 although microfinance failures still outnumber the 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 learnt remains to be seen.

3. Generating public sector resources

This section discusses how increased public sector resources might be generated in developing countries. We begin by examining the potential to reform many existing policies which are not only costly but often unsustainable and environmentally damaging. Reforming them would both free up resources for more valuable uses, and often directly improve sustainability. We then turn to potential means 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 scoping of the magnitude of resources that might be either generated or freed up by such means. We focus on sectors where the environmental and natural resource implications of policies are significant, such as energy and water.

3.1 Freeing up existing resources

One of the biggest potential sources of resources for many developing countries would come from freeing up existing resources for better uses rather than from generating new resources. Many important goods and services are mis-priced as a result of policies in place. In many cases, they are priced too low. Predictably, this results in over-use of these goods, with consequent adverse effects on efficiency and on the environment. Reforming them would free up substantial amounts of budgetary resources, as well as improving the efficiency of the sector and, often, reducing environmental pressures.

We define subsidy policies broadly, as any policies whose effect is to reduce the costs of an activity relative to what they would have been in the absence of the policies. 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 given by 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 following sections: 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 many of the subsidies discussed below are often justified as protecting the poor, there is substantial evidence that they are in fact often regressive. This is due in part to 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 in part to 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 result in freeing 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. The former Soviet Union, with ample access to electricity and very low fuel prices, leads the electricity subsidy league, with a subsidy rate of 76 percent. Subsidies in this region account for 40 percent of total subsidies. 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\$13 billion. The Middle East and North Africa account for 60 percent of these subsidies.

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 (see Box 3.1). In the Former Soviet Union, electricity subsidies amount to almost 14 percent of GDP.

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 of the power sector came to US\$1.7 billion. By 2001, a combination of low tariffs (which encourage high and wasteful use), high technical losses, and widespread non-payment, resulted in combined state utility losses increasing to more than US\$5 billion a year. If current trends continue, state utility financial losses will reach US\$10 billion a year in another three years. To put this magnitude of losses into perspective, US\$5 billion is half of what all the states governments in India combined are spending on all levels of education every year. It is double what they are all 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.

Given the current size of energy subsidies, it is not surprising that the revenue potential from phasing them out should be substantial. For the developing world, revenue from phasing out subsidies to gasoline and diesel could be as much as US\$13 billion. Moreover, if countries with low taxes on those fuels were to increase them to regional levels, the potential revenue would jump to over US\$46 billion. Electricity subsidies, including the opportunity costs of fuels, account for some US\$102 billion. Eliminating them would avoid costs and generate a cash flow of some US\$35 billion. However, potential revenues 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 be translated in environmental improvements. In addition to local benefits regarding air pollution, there are important global benefits to 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 CO₂. This represents 4.6 percent of the 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 are often not connected to the electric grid, nor do they drive cars; as a result, they receive few benefits from energy subsidies (see Box 3.2). 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. It is estimated that nearly 2 million children and women die every year in developing countries as a result. About half of these deaths occur in India and China.

Box 3.2: Energy subsidies and poverty in Guatemala

Following privatization of energy distribution companies, Guatemala introduced a ‘social tariff’ (*tarifa social*) which caps domestic tariffs for households consuming up to 300 kWh per month at US\$0.08 per kWh. The *tarifa social* costs US\$50 million annually. Although motivated as a way to protect the poor, the *tarifa social* largely fails to reach poor households. Low connection rates among poor households combined with a high consumption threshold result in about 65 percent of beneficiaries being non-poor households. Non-poor households capture about 90 percent of the total value of the subsidy. 60 percent of poor households receive no benefits at all from the scheme, as they do not have an electricity connection. A much more pro-poor policy would be to use the resources allocated to the *tarifa social* to expand electricity coverage to unserved households. Households without electricity (70 percent of which belong to the poorest segments of the population) pay implicit prices of more than US\$11 per kWh (more than 80 times the price of electricity) to illuminate with candles and wick lamps and to power appliances with dry cell batteries, compared with full cost electricity tariffs of US\$0.11 to US\$0.15 per kWh. It is estimated that an additional 50,000 new connections each year could be financed with the current expenditure of the *tarifa social*.

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

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 -40°C 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 sharply lower investments in irrigation. 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 so as 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\$10-15 billion a 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 in which lack of maintenance results in poor irrigation and drainage services, leading to farmer dissatisfaction and, in turn, to low collection rates of irrigation service fees, leading to weak irrigation budgets which result in inadequate maintenance (see Box 3.3). 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 very complex matter in practice, as it requires substantial

regulatory arrangements, operational requirements, and financial commitments

Box 3.3: 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 20-40 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 this system 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 have reduced the area irrigated substantially, usually affecting poorer households disproportionately.

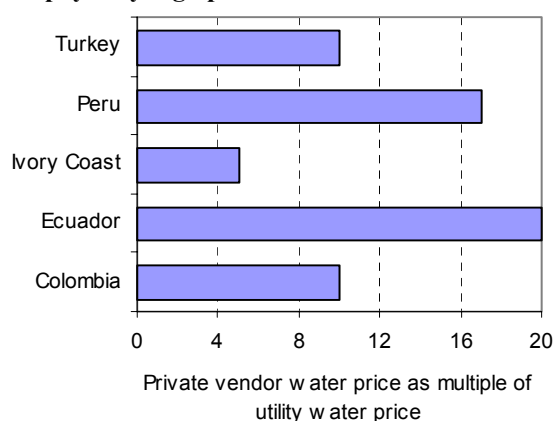
Domestic water

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 is often reflected in the lack of new connections or in 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 often at the end of the line in terms of new connections and reliability of existing service. 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 affluent). In most developing countries, the poor pay very high prices for alternative water supplies. Water vendors often charge prices that are ten times or more those charged by public utilities (see 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 that increase pressure, as they 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 to improve water use and 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 attitudes to metering in poor communities are generally positive.

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



3.2 Generating new resources

The potential for generating additional resources is substantial, but varies significantly across countries. We examine here three main approaches, in sectors which 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 which are currently provided 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.

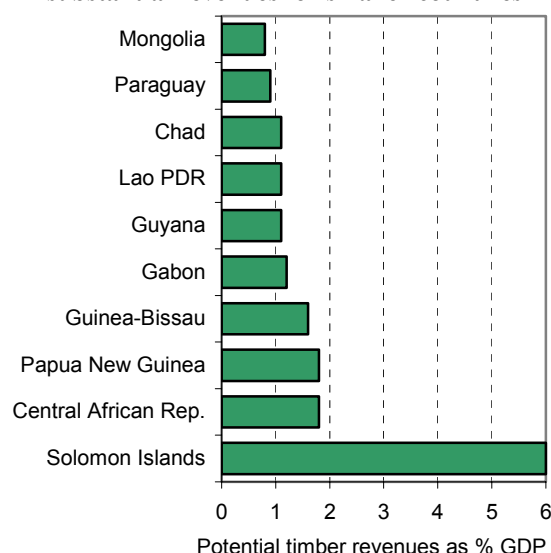
Capturing natural resource rents

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. These rents are probably already being mostly captured, however. While there may be some scope for some marginal improvements in rent capture, these resources provide limited scope for generating additional revenue.

In contrast, the potential for additional rent capture is substantial in the forest sector. The potential revenues from this sector are clearly much smaller, amounting to about US\$9 billion, evidence indicates that only a small part of these potential revenues is currently being 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 clearly 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. Figure 3.2 shows that potential revenues from timber rents could represent a very significant revenue source for a number of smaller countries.

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



Capturing these rents will not be an easy task, however (see Box 3.4). 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 paying particular attention to the effects of forest policy reform, especially on the poor who depend on forest resources for their livelihood.

Box 3.4: 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 any compensation for the use of these resources. It has been estimated that these policies have 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 that the IMF and World Bank provided 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 center, are now shared with the regions. As a result, there are signs of better enforcement incentives at a lower level. Nonetheless, it is felt that while the policy reforms adopted have complied with the letter of conditions agreed in the adjustment lending packages, the spirit of the reforms have often been undermined.

Charging for services

Many services are currently being 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 nineties, only about half of the world's protected areas charged entrance fees. The use of fees has grown substantially in the interim period, but remains overall a rather underutilized tool.

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

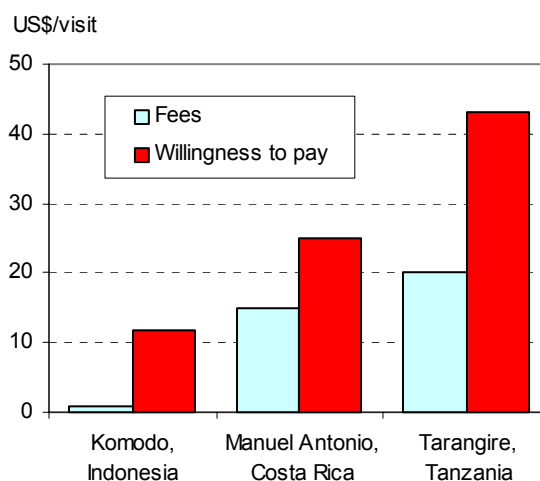


Figure 3.3 shows that visitor fees at many popular parks remain well below visitors' willingness to pay to visit them – a substantial missed opportunity for many developing countries. Some admittedly very crude calculations give a sense of the order of magnitude of financial resources that might be generated. Under reasonable assumptions of number of visitors and reasonable 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 (see Box 3.5). 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 mostly be seen as a way to generate revenue for their protection, rather than as a means of generating revenue for general purposes (see also Box 3.6 below).

Box 3.5: 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. Foreign visitor numbers fell by almost a third, but revenues generated nearly tripled as a result of the fee changes. Political opposition to the new fees from the tourism industry, however, was fierce 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 a year, providing a steady increase in the amount of revenues generated. High visitation levels at some of the most popular parks, however, 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 protected areas managed by a national park agency. In many countries, there has been a move to leasing out 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 20-50 percent of municipal budgets. At the same time cost recovery levels are very low: cost recovery levels below 10 percent are 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 and so should not be considered a subsidy to individuals). This represents US\$11.4 per urban citizen and 0.47 percent of GDP. Despite this expenditure, low levels of 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.

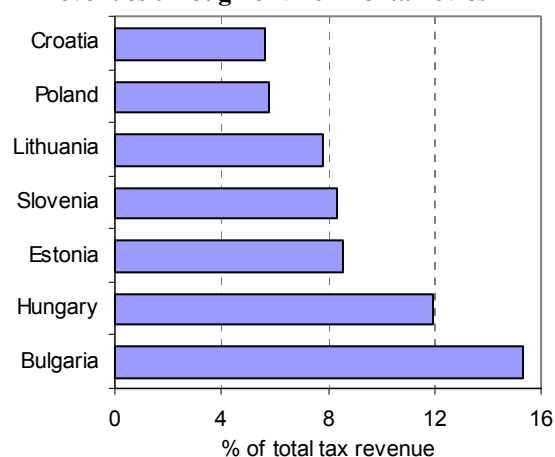
Enhancing MSWM cost recovery and improving efficiency have the potential to generate the revenue

that would allow the badly needed expansion of the service. As with other urban environmental services, the poor are often left without coverage, and would benefit from an expansion of the service. At the same time, the level of service must be adjusted to what society can afford. Costs can be reduced by supporting informal recycling entrepreneurs and community participation in collection. There is a range of instruments 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 favor 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. These include emission charges or taxes based on the quantity and quality of pollutants discharged (water effluent charges, air pollution charges, noise charges) and taxes on products which create pollution when they are manufactured, consumed, or disposed of (carbon and sulfur taxes, taxes on fuels, fertilizers, pesticides, batteries).

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



The transition economies of Central and Eastern Europe have been a particularly fertile ground for such experimentation (see Figure 3.4). In the eleven transition economies in Central and Eastern Europe for which data are available, 2 percent of GDP can be attributed to environmental taxes and charges. In specific countries such as 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 often 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 a very 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 these funds 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 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 rise in the pollution levy has cut the pollution intensity of suspended particulates by about 0.4 percent. While effective levies do 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 this 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 Agencies and the local business and communities in arriving at the desired environmental goals. Since its inception, the pollution tax has also become a source of very substantial revenues 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 the primary objective of the tax or charge 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. Also, 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.

Box 3.6: 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. 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 the standard 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.

3.3 Summary

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 seeking to generate new revenues, but from freeing up available resources by improving the efficiency with which they are spent – in particular, by removing many subsidies which are both 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 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 would, therefore, not only not harm the poor, it might well benefit them 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 institutions to read meters.

4. Integrating public and private

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, and to work together on new tools. In this section, we discuss how public and private sector roles can be articulated, combining the strength of both. We use the example of the water sector, which has substantial unmet needs for infrastructure investment, to illustrate the potential.

4.1 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 environment 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, and 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 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.

In parallel 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 decision-making. 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, and often in a shorter time. Environmental regulation, therefore, must harness the role of markets and the private sector to support sustainability as well as facilitating 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 threaten 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.

4.2 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, the difficulties of executing effective public private partnerships in the water supply and sanitation sectors were highlighted in a range of projects which ran into political and contractual problems. Notwithstanding these difficulties, the combination of a growing demand for water services with willingness and ability to pay (as illustrated in sections 2 and 3) means that, in the water sector, the real challenge for the developing world is to enable 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 and the great political sensitivity surrounding the sector.

Long thought of as a “social good”, water services have been typically 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 services’ cost of provision. Such systems are unable to attract investment financing outside of government spending or direct development aid, as cash flows do not support debt service and economic incentives to improve do not exist. 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 cost usually are not, making investment in water infrastructure a heavy burden. Governments spent typically 4-8 percent of overall public investment on water infrastructure, and this is largely 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\$9-30 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 we have pointed out in section 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. Most 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 credit worthiness is difficult to assess or where the private sector deems capital investment risk is 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 authority has the capacity to access investment, it may have more pressing investment 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 developed 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: (i) 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 (ii) private provider access to capital. For these reasons, divestiture (partial sale of assets) and full privatization have been rare outside of the developed world.

Overall, results from public-private partnerships in the water sector remain mixed. International companies focus first and foremost in 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 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 saddle the public sector with contingent liabilities that it often cannot afford.

The Latin American 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 close of the decade, just about every country in the region had undertaken or was actively considering 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 and consolidate the structure of the industry by promoting the creation of larger regional companies, as in Chile and Brazil; or to rethink regulation, adapting it 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 quoted example of a private venture outside of the OECD is the Buenos Aires water concession (see Box 4.1). The concession is regarded by most as a success and has improved water and sanitation conditions far in excess of what was possible without privatization. At the same time, 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.

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 was increased incrementally over two years by 54 percent to compensate for inflation and 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 conditions of the existing infrastructure; decreasing by 10 percent the amount of water lost through leaks or illegal off-taking; decreasing operating costs, as labor practices were rationalized; decreasing the number and frequency of clogged drains and pipe burst; and beginning system expansion. However, a number of contractual problems appeared: (i) information asymmetries led the company to over optimistic performance and investment targets; (ii) an opaque and arbitrary system impeded consumers from monitoring their billing for the purpose of adjusting their usage; (iii) large cross subsidies gave the company incentive to focus system expansion on higher income neighborhoods; and (iv) high access charges, intended to finance system expansion, were too onerous to poor consumers – up to 36 percent of household income – and 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 to extend the deadline to reach such targets. This case illustrates how a combination of political acceptance, affordability, and financial sustainability can be attained to ensure positive results.

We stressed in section 2 that political risk is the primary risk for investments in developing countries. In addition to the need for a strong independent regulator, there are steps that 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 bear 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 along an extended period of time, factoring it in the service bill. This brings back the issue of political risk. It requires long-term stability of the game rules (a responsibility of the public sector) for the private sector to be in conditions to undertake such a solution.

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.

4.3 Innovative mechanisms for conservation

Managing environmental problems such as those related to water supply 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, country-wide PES system, the *Pago por Servicios Ambientales*. Such systems are based on the principle that those who provide environmental services should be compensated for doing so, and those who receive these services should pay for their provision. They 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, they will be self-sustaining, with the flow of payments from beneficiaries being 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.

4.4 Summary

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 unsustainable, and new challenges such as the decentralization of the 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, the water sector being an example. For partnerships to work, political risk needs to be kept at bay, and the partnerships 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. Summary and 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, it 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 fears that this may happen are 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 demonstrating how once marginalized communities are achieving independence through economic empowerment. Furthermore, as these initiatives release community level entrepreneurial energy a range of significant socio-economic and environmental benefits accrue.

- One size does not fit all. There is substantial variation in the needs, opportunities, and constraints facing different 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.

6. Further Reading

Background papers

This paper is based on a series of specially-commissioned background papers. A full list of references can be found there, 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.

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