

# ENVIRONMENTAL fiscal reform

What Should Be Done and How to Achieve It



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May 2005

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Cover photo: Indonesian fisherperson. C. Carnemark, 1993.

# Foreword

**M**ore than one billion people – two thirds of them women – live in abject poverty, surviving on less than US\$1 per day. Millions of children do not receive even a basic education. Similar numbers of mothers suffer injury during or do not survive childbirth, and millions of households do not have access to basic sanitation or water supplies. In response to the plight of the world's poor, the international community committed itself to the Millennium Development Goals (MDGs), including the overarching goal of halving extreme poverty by the year 2015.

In recognition of the strong linkages between poverty and environment issues, one of the Millennium Development Goals, MDG 7, seeks to integrate the principles of sustainable development into country policies and programmes, and reverse the loss of environmental resources. The livelihoods and food security of the poor often depend directly on ecosystems, and the diversity of goods and services they provide. Moreover, healthy ecosystems provide a range of “invisible services” that are essential for sustainable development.

To help achieve the MDGs, developing country governments need to raise revenues to invest in schools, healthcare, infrastructure and the environment. As recognised at the Financing for Development Conference in Monterrey, equitable and efficient tax systems, as well as improvements in the pattern of domestic public spending are essential to meeting the MDGs.

Environmental Fiscal Reform (EFR) can play an important role in this regard, helping countries raise revenues, while creating incentives that

generate environmental benefits and support poverty reduction efforts. EFR has the potential to free-up economic resources and generate revenues that can help finance poverty reduction measures, for example infrastructure that improves access of the poor to water, sanitation and energy services. By encouraging more sustainable use of natural resources (such as forests or fisheries), reducing pollution from energy use and industrial activities, and stimulating the use of innovative “clean” technologies, EFR can also improve management of the environment. In these ways, EFR can directly and indirectly address environmental problems that threaten the livelihoods of the poor. However, the challenges of undertaking such reforms are manifold.

EFR encompasses a wide range of taxation and pricing instruments, including taxes on the exploitation of natural resources, taxes and charges on water or air pollution, and the reform of water or energy subsidies. The suitability of individual instruments to specific countries will vary according to the country's level of development, resource endowments, and institutional capacity. Although it may present a challenge to design and implement, EFR to encourage sustainable natural resource use will be particularly relevant to low and middle-income countries, which often rely heavily on natural resources for their development. A growing number of such countries have embarked on such reforms as part of their Poverty Reduction Strategies. For rapidly industrialising economies, EFR can play an important role in controlling industrial pollution.

In some circumstances EFR has clear fiscal, environmental and social benefits, but in other

cases trade-offs are necessary between these objectives. EFR can address such trade-offs through careful design. This requires analysing the political context and effectively managing the reform as an inclusive political process, allowing for strong participation by low-income and marginalised groups in policy design.

Accordingly, this document focuses on the *political economy* of EFR. In this regard, it aims to provide a starting point for informing decisions about what reforms are most relevant to a given sector and country, and how the EFR process can be effectively designed and implemented.

While this paper concentrates on developing countries, there is much that industrialised countries can do – for example: reforming policies, such as fishing access agreements that could undermine developing countries' own

efforts to reach sustainability; introducing (or broadening) fiscal reforms domestically, such as energy or carbon taxes to help reduce climate change that particularly impacts on the developing world; and providing development assistance for EFR processes in partner countries.

Experience has taught us that there is no generally applicable blueprint for EFR. Rather, effective policies are sector specific and depend on the institutional and political context in which they are introduced, and are therefore best developed by countries themselves. We commit our agencies to support our developing country partners in the design and implementation of fiscal reforms that raise revenue, advance environmental sustainability and assist in reducing poverty.



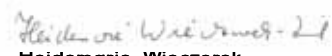
**Carsten Staur**  
State Secretary;  
Ambassador  
Denmark



**Athanassios Theodorakis**  
Acting Director General  
for Development and  
Humanitarian Aid  
European Commission (EC)



**Ritva Jolkkonen**  
Director General for  
Development Policy  
Ministry for Foreign  
Affairs of Finland



**Heidemarie Wieczorek-Zeul**  
Minister  
Federal Ministry for  
Economic Cooperation  
and Development,  
Germany



**Dr. Bernd Eisenblätter**  
Managing Director  
Deutsche Gesellschaft für  
Technische  
Zusammenarbeit (GTZ)  
Germany



**Maria Norrfalk**  
Director General  
Swedish International  
Development Cooperation  
Agency (Sida)



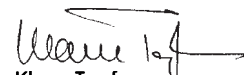
**Walter Fust**  
Swiss Agency for  
Development  
and Cooperation (SDC)



**Masood Ahmed**  
Director General  
Department for  
International Development  
(DFID)



**Olav Kjørven**  
Director, Energy and  
Environment Group  
Bureau for Development  
Policy  
United Nations  
Development Programme  
(UNDP)



**Klaus Töpfer**  
Executive Director  
United Nations  
Environment Programme  
(UNEP)



**Ian Johnson**  
Vice President  
Environmentally and  
Socially Sustainable  
Development  
The World Bank

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This report has been prepared by a team consisting of: Richard Boyd, Julian Harlow, Leo Horn and Paul Steele (DFID); Piet Klop (DGIS); Stephan Paulus, Jan Peter Schemmel, Johannes Scholl and Mattias Witt (GTZ); Mani Muthukumara and Jim Prust (IMF); Georg Caspary and Remi Paris (OECD).

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# Abbreviations

AAC	Annual Area Charge (in Cameroon)
ADB	Asian Development Bank
BMZ	German Ministry for Economic Cooperation and Development
CAC	Command and Control
CAP	Europe's Common Agricultural Policy
CEE	Central Eastern European
CFP	Common Fisheries Policy
DFID	Department for International Development
DIW	German Institute for Economic Research
DRC	Democratic Republic of Congo
DSM	Demand-side Management Measures
DWF	Distance Water Fleets
ECLAC	Economic Council for Latin America and the Caribbean
EF	Environmental funds
EFR	Environmental Fiscal Reform
EITI	Extractive Industries Transparency Initiative
EPB	Environmental Pollution Board in China
ESMAP	Energy Sector Management Assistance Programme from the World Bank
EU	European Union
FAO	Food and Agricultural Organisation
FFA	Fisheries Forum Agency
FLEG	Forest Law Enforcement Governance and Trade Process
GDP	Gross Domestic Product
GRT	Gross Registered Tonnage
GTZ	German Technical Cooperation
HIPC	Heavily Indebted Poor Countries
IBRD	World Bank
ICAO	International Civil Aviation Organisation
IEA	International Energy Agency
IFREMER	Institut Français de Recherche pour l'exploitation de la Mer
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
IUU	Illegal, unreported and unregulated fishing
LDC	Least Developed Countries
LEA	Local Environmental Agencies in China
LPG	Liquefied Petrol Gas
MBI	Market Based Instruments
MCS	Monitoring, Control and Surveillance
MDG	Millennium Development Goal

NGO	Non-Governmental Organisation
OECD	Organisation for Economic Cooperation and Development
OED	The World bank Operations Evaluation Department
PER	Public Expenditure Reviews
PLS	Pollution Levy System
PRS	Poverty Reduction Strategy
PURC	Public Utilities Regulatory Commission in Ghana
RED	Regional Electricity Distributors in South Africa
RGC	Royal Government of Cambodia
SEB	State Electricity Boards in India
TERI	The Energy and Resources Institute
UK	United Kingdom
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
US	United States
USAID	United States Agency for International Development
USD	United States Dollar
VAT	Value Added Tax
VATT	Finnish Government Institute for Economic Research
VED	Vehicle Excise Duty in the UK
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation

# Executive Summary

## Objectives, Scope and Audience

The international community has committed itself to the Millennium Development Goals (MDGs), including the overarching target of halving extreme poverty by the year 2015. To help achieve the MDGs, developing country governments need to mobilise revenue to invest in schools, healthcare, infrastructure and the environment. This is where Environmental Fiscal Reform (EFR) can play an important role. Indeed, the recent UN Summits on Financing for Development and on Sustainable Development in March and September 2002 respectively, recognised the potential contribution of EFR-related approaches. The latter stressed that poverty reduction and improved environmental management go hand-in-hand.

Despite the potential of EFR to raise revenue, improve environmental management and fight poverty its use is frequently delayed and constrained by political and institutional factors. Overcoming these factors requires thorough analysis of the political context, followed by effective management of the reforms as an inclusive political process. Accordingly, to assist governments in successfully adopting EFR, this report focuses on the *political economy* of EFR.

The report is intended for: *finance and environmental officials* in developing countries; *sector specialists* working in forestry, fisheries, energy, water, transport etc.; *civil society* groups and parts of the *private sector*; and *development agency staff*, who support developing country partners with fiscal or environmental policy.

## What Do We Mean By EFR and What Can It Do?

The term environmental fiscal reform (EFR) refers to: *a range of taxation or pricing instruments that can raise revenue, while simultaneously furthering environmental goals. This is achieved by providing economic incentives to correct market failure in the management of natural resources and the control of pollution.*

Broadly speaking, EFR can: 1) mobilise revenue for governments; 2) improve environmental management practices and conserve resources; and 3) reduce poverty. By encouraging more sustainable use of natural resources, and reducing pollution from energy use and industrial activities, EFR can address environmental problems that threaten the livelihoods of the poor. The revenues raised by EFR can also be used to finance poverty reduction measures. *EFR can therefore contribute to poverty reduction, and in turn, help achieve the Millennium Development Goals of "halving absolute poverty by the year 2015" and "reversing the loss of environmental resources".*

## The Instruments of EFR

EFR encompasses a wide range of taxation and pricing instruments, which can be used to address country- and sector-specific environmental and resource use issues, including:

*Taxes on natural resource use* (e.g. forestry and fisheries) - to reduce the inefficient exploitation of publicly owned or controlled natural resources

resulting from operators not paying a price that reflects the full value of the resources they extract.

*User charges or fees and subsidy reform* - to improve the provision and quality of basic services such as water and electricity, while providing incentives to reduce any unintentional environmental effects arising from their inefficient use.

*Environmentally related taxes* - to make polluters (industrial activities, motor vehicles, waste generators) pay for the “external costs” of their activities, and encourage them to reduce these activities to a level that is more socially desirable.

## Balancing the Objectives within a Comprehensive Approach

In some cases there are synergies between revenue mobilisation, improved environmental management and resource conservation, and poverty reduction, while in other cases trade-offs will arise.

Environmentally related taxes and similar price reforms are not always the most effective way for governments to raise revenue, nor are they necessarily the best approach to protecting the environment. *The value of EFR lies in its ability to make a contribution to both objectives at the same time.*

There will also be occasions where fiscal and environmental objectives will be in conflict with poverty reduction goals. Reform of subsidies and user charges are areas of EFR that can have a negative effect on the poor. But it is possible to soften undesirable distributional impacts through carefully designed instruments.

In recognition of these trade-offs, EFR should not be seen as a substitute for other approaches to

fiscal and environmental management. Rather, it should be used to augment existing approaches. *EFR should therefore be viewed as one part of a comprehensive mix of policies, combining fiscal, regulatory and other instruments to achieve sound economic and environmental management.*

## The Political Economy of EFR

Understanding the political context when designing and implementing EFR is absolutely crucial if the political and institutional challenges facing it are to be overcome.

A key step in analysing the political context involves identifying likely winners and losers. This will help with devising ways to build broad-based support for reform, and inform the design of compensatory or mitigation measures for the losers - if these are deemed necessary.

Equally important is the need to understand the perspectives and interests of affected stakeholders if they are to be effectively managed, and if coalitions in favour of reform are to develop. In the context of EFR there are a number of stakeholders, notably: poor and vulnerable groups, non-poor households, the private sector, civil society groups (NGOs, the media, academic groups etc.), politicians, bureaucrats (at all levels of government), development agencies and other international actors.

*The acceptance of EFR also depends crucially on widespread support for the proposed use of any revenues raised.*

## The EFR “Policy Cycle”

When implementing EFR, different issues will arise at each stage of the policy cycle. The perceptions, interests and importance of affected

stakeholders will also vary across the cycle. For EFR to “get off the ground” and be successful, it is vital that key issues are recognised and the interests of relevant stakeholders are considered at each stage of the cycle. Moreover, donors can play an important role at each stage.

### Agenda Setting Stage – Problem Definition

EFR must start with identifying and defining an issue – firstly, as a problem, and secondly, as a problem that – in the view of the general public – needs to be addressed. In addition to adequately framing the problem, a sound understanding of the issue(s) to be tackled is a precondition for successfully putting the topic on the policy agenda. Understanding an issue requires knowledge of its impacts – that is its economic, environmental and social consequences – and their causes. These impacts must be placed in the context of the many pressing issues facing a country, in order to establish the relative importance of the issue.

Establishing the relative importance of the issue must be based on a sound scientific basis if the attention of policy makers and the general public is to be captured, and claims over the severity of the issue are to be believed. Having access to robust data is vital for challenging adverse perceptions and overcoming opposition from vested interests. Donors can play an important role in this regard by supporting the work of universities and other research institutions, as well as international organisations as they develop the evidence basis for reform.

### Policy Development Stage – Defining the Options

The case for EFR needs to be developed along two lines, although these should not be thought of as separate processes. The mix of instruments to address the problem at hand needs to be identified and subjected to a rigorous assessment, taking account of existing socio-political and institutional conditions. At the same time political and public support for reform should be mobilised and strengthened.

Instruments should be designed in the light of the specific sector context and policy objective(s). Information on the success or failure of EFR in specific contexts in other countries can help. Donors have a role to play here by making such information available.

During instrument design it is also important that existing and planned interventions in other policy areas are taken into account, to ensure that the proposed mix of pricing or tax instruments are supportive of the government’s overall policy agenda and any other planned reforms. A reform process is likely to be more successful if it is integrated into other ongoing national processes (e.g. more general reforms to the tax system), or at least takes these into account. Comprehensive approaches to development (such as Poverty Reduction Strategies and sustainable development strategies) also provide opportunities to integrate EFR into country-led development plans. Medium-term expenditure reviews in particular, address issues closely related to EFR, including tax collection and pricing reforms.

In the context of environmentally related and natural resource taxes, it is generally simplest and most efficient to design new tax instruments within the context of existing regulatory and institutional frameworks.

Analysing the mix of instruments involves quantifying the expected fiscal, environmental and social benefits (notably for the poorest groups in society) relative to the impacts of existing policies and their beneficiaries. It also involves identifying potential winners and losers from the reform process, the extent of the gains and losses, and possible compensation measures, as well as the net fiscal, environmental and social impact of employing these measures. Donors can assist governments in developing the capacity required to undertake such analyses, and in identifying “win-win” options. They can also help

research groups and universities, NGOs and the media to participate in the assessment process.

#### Policy Advocacy Stage – Building Support

Defining a problem and proposing pricing or taxation instruments as a possible policy response is not enough. Political and public support for EFR must be secured when designing, analysing and weighing up the various options. Where corruption and patronage are serious problems, resistance to EFR will be particularly strong. In this case, building strong alliances is absolutely vital.

Public awareness campaigns based on accurate information, presented in a way that is easy to understand, and broad based consultation with affected stakeholders (including representatives of civil society, the private sector and vulnerable groups) can help build the necessary support for reform. Proponents of EFR should actively explore the potential for alliances with other, like-minded stakeholders. However, it should not be assumed that dialogue between stakeholders will lead to consensus – differences of opinion will often remain. Donors can encourage transparency, access to information, public participation, and accountability, which are all prerequisites for sound policy.

#### Decision-making and Implementation Stage

Some form of public announcement usually precedes the introduction of proposed reforms, preferably as far in advance of the instrument being introduced as possible, to give affected parties the time to effectively prepare and adapt to the proposed changes. Where adaptation is expected to be a lengthy and difficult process, it is often a good idea to phase-in the reforms gradually, in a programmed fashion. This will help mitigate the financial pain of those who stand to lose most from the reforms.

Donors can play an important role by helping to finance the transition costs of reform, which will

help overcome political resistance. Governments can also help by making strategic use of the revenue and compensation measures. For example, it may be worth considering the use of some of the revenue to compensate for any undesirable distributional impacts that may arise. Governments can also assist industry with transition costs by helping them to identify cost-effective abatement technologies or processes. This might involve disseminating information on the latest “clean” production technologies and associated financial benefits. Such measures will help foster support for the reforms.

#### Monitoring and Evaluation Stage

Government agencies responsible for administering the reforms will need the appropriate technical capacity in order to function as a credible monitoring and enforcement agency. Credibility is essential to sustain support for reform, and rebut criticisms from, for example, affected industries that have a direct interest in portraying the administering agency as incapable of doing its job. Environmental agencies must also be credible vis-à-vis the Ministry of Finance. This is particularly crucial when environmental agencies are entrusted with the collection and management of taxes or charges, and/or when the proceeds from these instruments are earmarked to these agencies for environmental purposes. Credibility concerns can be mitigated and greater public support fostered if some of the revenues are used to ensure a reliable flow of adequate funding for monitoring and enforcement activities.

Donors can play an important role in providing technical assistance to develop the capacity of those agencies responsible for monitoring and enforcement. EFR requires a long-term commitment from interested governments to design, build support for, implement, evaluate and refine EFR. Hence, donors also need to provide a long-term perspective in their support of such processes.

Evaluation is necessary to assess the effectiveness and efficiency of the instrument in meeting its stated objectives. This in turn helps establish whether there is room to improve the design and implementation of the instrument, both to help meet existing objectives and when applying the same instrument to similar problems in the future. It also generates information that can be made available to stakeholders, which provides a vehicle for public consultation and can enhance accountability and public support.

Again, donors can provide technical assistance to develop the necessary capacity to plan for, and undertake, evaluation exercises.

## Principles to Guide Donor Assistance

It is evident from the previous discussion that donors have an important role to play in helping developing country partners assess and realise the full potential of EFR. In fulfilling this role donors should:

*Emphasize country ownership and be sensitive to the local context* – First and foremost there must be in-country demand for EFR. Donors should encourage country ownership, but should not force the pace. Strong country ownership will facilitate the harmonisation of related activities across donors, which will shield countries from excessive donor influence, and possibly conflicting approaches to EFR.

Donors also need to be sensitive to the political challenges of implementing EFR, which will depend on specific local economic, environmental, social and cultural conditions. They should avoid imposing “blueprints” for reform. Rather, donors should focus on providing financial, technical, institutional and political assistance in support of a country’s own efforts.

*Be prepared to act opportunistically* – In a volatile political and economic setting, it is crucial to take advantage of windows of opportunity as they present themselves. A new government or political leader – especially, if it has the support of the populace – can be a catalyst for major policy shifts. Ongoing sector (e.g. in forestry, fisheries, agriculture) and utility reform processes (e.g. water, power) can also provide a launching pad for EFR, as can fiscal and environmental crises. Donors should be prepared to help proponents of reform seize such opportunities as and when they arise.

*Be pragmatic* – Textbook solutions will seldom be practical. In some occasions it may be necessary to deviate from standard fiscal practice in order to secure political and /or public support for important reforms. For instance – despite the clear problems associated with earmarking tax revenues – it may be necessary to allocate some portion of the tax to a particular use in order to progress the reforms. For similar reasons, it may also be necessary to consider the use of other compensatory measures, such as reduced rates of tax or targeted subsidies, given adequate safeguards and regular reviews.

*Strive for policy coherence* – Policy coherence on several dimensions is vital if donors support for EFR is to be credible, and if partner countries’ efforts to implement EFR are not to be undermined.

Donor governments should work towards alignment of their development and trade policies. For example, donors with export credit agencies should strive to ensure that export interests do not impair the signals for improved resource efficiency or emission reductions provided by EFR, or development policy objectives more generally. Consideration should also be given to policies in the agriculture and fishery sectors for example, which promote

activities that have the potential to undermine the objectives of EFR.

The alignment of donor policies with respect to international agreements and country-owned and led strategies, such as the MDGs,

sustainable development strategies, Poverty Reduction Strategies, Medium-term Expenditure Programmes and Sector-wide approaches is another way to improve the coherence of donors' efforts toward country-owned objectives.

# Introduction

## Scope and Objectives

The term environmental fiscal reform (EFR) means different things to different people.

*In this report, we will take EFR to mean: a range of taxation or pricing instruments that can raise revenue, while simultaneously furthering environmental goals. This is achieved by providing economic incentives to correct market failure in the management of natural resources and the control of pollution.*

By encouraging more sustainable use of natural resources, such as forests and fisheries, and by providing incentives to reduce pollution from energy use and industrial activities, EFR also addresses environmental problems that make a difference to the livelihoods of the poor. Indeed, because of the interdependence of environmental degradation and poverty, a sound environment is crucial to poverty reduction and sustainable growth, particularly in low-income countries (DFID, EC, UNDP and World Bank, 2002).

The revenue generated can also be directed, through programmes of targeted expenditure, to poverty reduction. For example, the revenue could be used to finance poor people's access to water, sanitation or energy services. Past experience suggests that the potential of EFR to raise revenue is one of the primary reasons why developing country governments and Ministries of Finance in particular, are likely to pursue it.

EFR is therefore concerned with a limited intersection of two large policy areas – fiscal policy and environmental policy. Despite being

limited, it is an increasingly significant area of development policy, because of the potential contribution EFR has to make to poverty reduction in developing countries. It is also an area that may not have received enough attention in the past, from both fiscal or environmental experts and their associated institutions.

Despite the potential of EFR to yield clear, fiscal, environmental and social benefits, it is frequently delayed and constrained by political and institutional factors. In the latter case, improved incentives for environmental management require an effective legal, regulatory and administrative framework. There are also groups in society that, for reasons of self-interest, could resist EFR. To assist governments in overcoming resistance to EFR, *this report concentrates on the political economy of the reform process*: It analyses the political context, outlines how winners and losers are identified and illustrates how an effective reform process is best designed and managed. This analysis is crucial if the political and institutional challenges facing EFR are to be overcome. Greater understanding of the political context of EFR will facilitate coalition building and the selection of strategic interventions in the reform process.

Overall, the report seeks to identify the fiscal, environmental and poverty reduction opportunities that EFR presents policy-makers. These are seen in relation to specific sectors and countries, the likely obstacles to pursuing these opportunities, and how these obstacles are most effectively managed.

With this narrow focus, there are many important areas of fiscal and environmental policy we do

not cover. In particular, on the environment side, we do not deal with the more general requisite legal and regulatory frameworks for the implementation and realisation of environmental policy objectives. Nor do we discuss other so-called “market-based instruments”, such as marketable permits or allowances that, like taxes, provide economic incentives to reduce environmental degradation, but, unlike taxes, are not generally designed to raise revenue<sup>1</sup>.

On the expenditure side, the discussion is limited to subsidy reform (the freeing up of financial resources through reform of existing subsidies) and the potential partial earmarking of revenue for environmental expenditures, such as paying for fishery management costs from the capture of fishery rents. This report does not have the scope to explore the integration of EFR into existing processes for budgetary analysis nor how EFR interacts with the appraisal of, for example, Poverty Reduction Support Credits, Programmatic and Sector Lending. Nonetheless, evaluation of how EFR fits with these budget-related tools should be part of the detailed design process of putting EFR into practice.

## Report Structure

The report is in three parts. Part One considers the benefits, instruments and political economy of EFR, while Part Two looks at the application of EFR to specific, key sectors in developing countries. Recommendations are presented in Part Three.

### Part One

Chapter 1 deals with the changing context for EFR.

Chapter 2 looks at the benefits of EFR and how the revenues raised can be used.

Chapter 3 identifies the different instruments of EFR.

Chapters 4 and 5 consider the political economy of EFR.

### Part Two

Chapters 6 to 11 explore how EFR can be applied in the forestry, fisheries, industrial, fossil fuel, power and water sectors with a focus on the political and institutional challenges.

The sectors covered in Part Two are based on what we consider offers the most scope for EFR in terms of revenue mobilisation, environmental improvement and poverty reduction – and the potential trade-offs between these objectives. There may be a good case for EFR in other areas, such as mining, solid waste management and transport more generally – for example, motor vehicle taxes and congestion-type charging – but our present scope leaves these areas for future consideration.

### Part Three

Chapter 12 draws conclusions and offers policy recommendations.

## Target Audience

The report is intended for:

- Finance officials in developing countries: to encourage them, when looking at options to raise revenue, to consider fiscal instruments that have the potential to simultaneously deliver environmental improvements and, in turn, economic and social development.
- *Environmental officials* in developing countries: who would like to use fiscal instruments to realise environmental improvements.
- *Sector specialists* working in forestry, fisheries, energy etc: who would like to understand how fiscal reforms could be used to encourage more sustainable resource use in their sector.
- *Civil society* groups (non-governmental organisations, academics etc.) and parts of the *private sector*, which could be influential in promoting EFR.

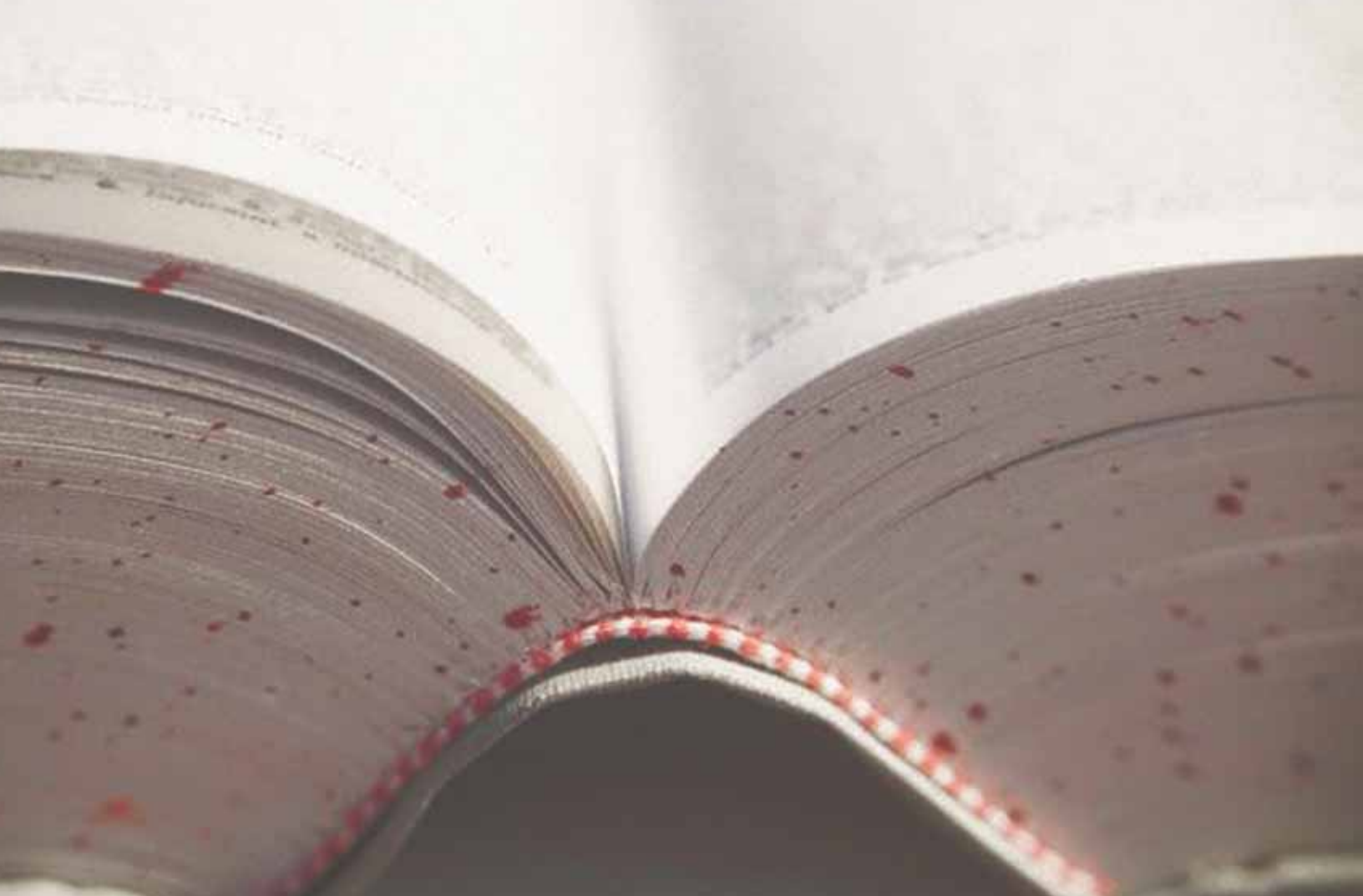
- *Development agency staff*, particularly those who support developing country partners with fiscal and, or environmental policy.

With such a varied audience, including many who are not experts in the relevant fiscal and environmental disciplines we have tried to write the report in non-technical language.

## Complementary Initiatives

With the issues of financing sustainable development and environmental fiscal reforms rising on the international agenda there are a number of other processes on related topics that are worth mentioning. These include work within bilateral agencies and UNEP. UNEP has, for instance, established a Working Group on

Economic Instruments that has produced a guide for policy makers in developing countries on the use of economic instruments for environmental policy making, including: environmental taxes, charges, pollution permits and deposit refund systems. This UNEP guide offers tools for a comprehensive assessment of the country context and conditions. It provides practical guidance on identifying when economic instruments may be most appropriate and discusses means to strengthen the support framework needed to introduce them (UNEP, 2004a). UNEP has also conducted a number of country projects assessing the potential for reform in the fisheries, energy and agriculture sector, as well as assisting countries to implement reform. These projects are country-driven and based on stakeholder consultations within the countries.



## Part 1 – The Political Economy of Environmental Fiscal Reform: A General Overview

# The Policy Context for Environmental Fiscal Reform

**T**he current policy framework for EFR is best understood in the context of the evolving global debate on international development policy. In particular it needs to be set against a background of economic and fiscal reform and the increased recognition of linkages between poverty and the environment.

## The Fiscal Context

Despite the potential environmental benefits, interest in EFR has historically arisen out of fiscal need, or more acutely, as a result of a fiscal crisis. For example, the debt crisis and deteriorating balance-of-payments position of many developing countries in the early 1980s led to “structural adjustment” in the economies of these countries, in an effort to restore macroeconomic stability. Those adjustments typically involved reforms to public expenditure and pricing and taxation policy, as governments sought to mobilise more revenue and improve the efficiency of public spending.

Reform of pricing policy, although not motivated by environmental objectives, has been the most significant driving force behind the removal of subsidies harmful to the environment. For example, subsidy reform has led to increases in the price of energy products, public water supply and agricultural inputs, such as pesticides. Both China and Russia increased energy prices during the 1990s, which yielded sizeable environmental benefits (Box 1 looks at the experience of China). However, in considering the total benefits of

price reforms it is important that the social (distributional) impacts are taken into account, and these impacts are usually more complex.

As part of the effort to mobilise revenue, the overall design and administration of the tax system has also come under scrutiny. In the past, many developing countries have had complex tax systems, with multiple tax bands for different goods and services, and many still do. Such systems, when administered by a relatively poorly paid public sector that lacks resources, sometimes lead to tax evasion and corruption. In response, an increasing number of developing countries have been introducing simpler, more transparent and broadly-based taxes, in which consumers or producers are responsible themselves for paying the correct amount of tax to the appropriate agency (say, through self-assessment returns). However, inefficiencies in the tax systems are still present.

“Structural adjustment” was often accompanied by the privatisation of many industries and increased trade liberalisation.

**Privatisation:** The last two decades have seen much more focus on the role of the private sector in development policy. However, private enterprises seek to recover the full cost of service provision, when a service may previously have been subsidised. As a result, in many countries, such as Bolivia and Ghana, increased private sector involvement in the provision of energy and water services has raised questions about the

## Box 1 – Energy Subsidy Reform in China

In the transition to a more market orientated economy, China removed price controls on coal, and encouraged the development of private coal mines, which now produce around 50 per cent of China's coal. Subsidy rates for coal, which account for 73 per cent of China's commercial needs, fell from 61 per cent in 1984 to 11 per cent in 1995. Subsidy reform and industrial restructuring has produced multiple benefits: Financial savings, energy savings, increased quality of coal, and reduced pollution. Energy intensity in China, once among the highest in the world, has been in steady decline since reforms started in 1978, dropping from 795 to 241 metric tons of oil equivalent per million international \$ by 1999. This has also had a major impact on China's greenhouse gas emissions. Efficiency gains in industry, resulting from technical change and structural shifts in the composition of the economy, have also played a major part in reducing the energy intensity of the economy.

Together with these reforms, a number of measures were used to address the social consequences of higher energy prices, which posed the gravest threat

for the rural poor of China, most of whom rely for a large part on biomass and coal for their energy supply. Short-term measures included income support to poor households (in the northern region) in the form of coal vouchers and other hardship initiatives. This was often supplemented by targeted interventions to reduce the cost of supply, such as drastic rationalisation of the supply chain (such as cutting out intermediaries). The poor have also benefited from widespread introduction of advanced stoves that are both more energy efficient and less polluting. In the medium-term measures are being put in place to reduce the dependence of households on solid fuels, by encouraging them to change to natural gas and other liquid fossil fuels. Switching from coal to renewable energy sources (in particular, solar energy, wind energy, hydropower and clean biomass technologies) was also encouraged. The rural poor are expected to be the main beneficiaries of the direct generation of employment opportunities in bio-energy related sectors.

Source: DFID (2000).

effect of higher prices on the poor and how the poor can be shielded from higher tariffs.

**Trade Liberalisation:** The emergence of the World Trade Organisation and the recent Doha Development Agenda has highlighted the issue of subsidies – particularly in the context of traded goods.

## The Environmental Context

The Earth Summit in Rio in 1992 drew attention to the dire state of the global environment: *"Humanity stands at a defining moment in history. We are confronted with a perpetuation of*

*disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well being"*. As part of a package of possible policy responses, the Rio Summit promoted the greater use of economic (incentive-based) approaches within environmental policy – in particular, the use of so-called "market-based instruments" (MBIs). The emphasis on economic approaches recognised that the environmental challenge was beyond the remit of environment ministries alone. In order to curb the environmentally damaging consumption and production patterns, fiscal policy had to play a role in support of traditional approaches based on direct regulation (so-called "command-and-control" approaches).

The Financing for Development conference in Monterrey, Mexico in 2001 reaffirmed the use of MBIs and subsidy reform as powerful and necessary tools for generating finance for sustainable development.

The 2002 World Summit for Sustainable Development (WSSD) in South Africa again highlighted the environmental problems facing the planet, with particular emphasis on the links between the state of the environment and poverty reduction. The Johannesburg Plan of Implementation adopted at the WSSD also referred to pricing and fiscal instruments for environmental management (see Box 2).

## The International Development Context

*“...the World Bank estimates that ... the additional foreign aid required to reach the Millennium Development Goals by 2015 is between 40 and US\$60 billion per year. This estimate is consistent with other agencies’ estimates of the costs of achieving individual goals, such as those for education and health. By itself, this additional aid will not be sufficient to attain the goals, as many countries will have to reform their policies and improve service delivery...”*

World Bank (2002)

The international development agenda is now strongly focused on poverty reduction, as demonstrated by the commitment of donors and developing countries alike to the Millennium Declaration of 2000. The global community identified eight Millennium Development Goals (MDGs), with the overarching goal to halve absolute poverty by 2015. Reversing the loss of environmental resources is another important target. The World Summit on Sustainable Development (WSSD) in 2002 reaffirmed the MDGs, and stressed how improved environmental management could help alleviate

### Box 2 — What Does the WSSD Plan of Implementation Say About EFR?

There are a few references in the WSSD Plan on the use of EFR in the context of water, energy and pollution – for example:

**19(b)** Continue to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the costs of pollution, with due regard to the public interest and without distorting international trade and investment.

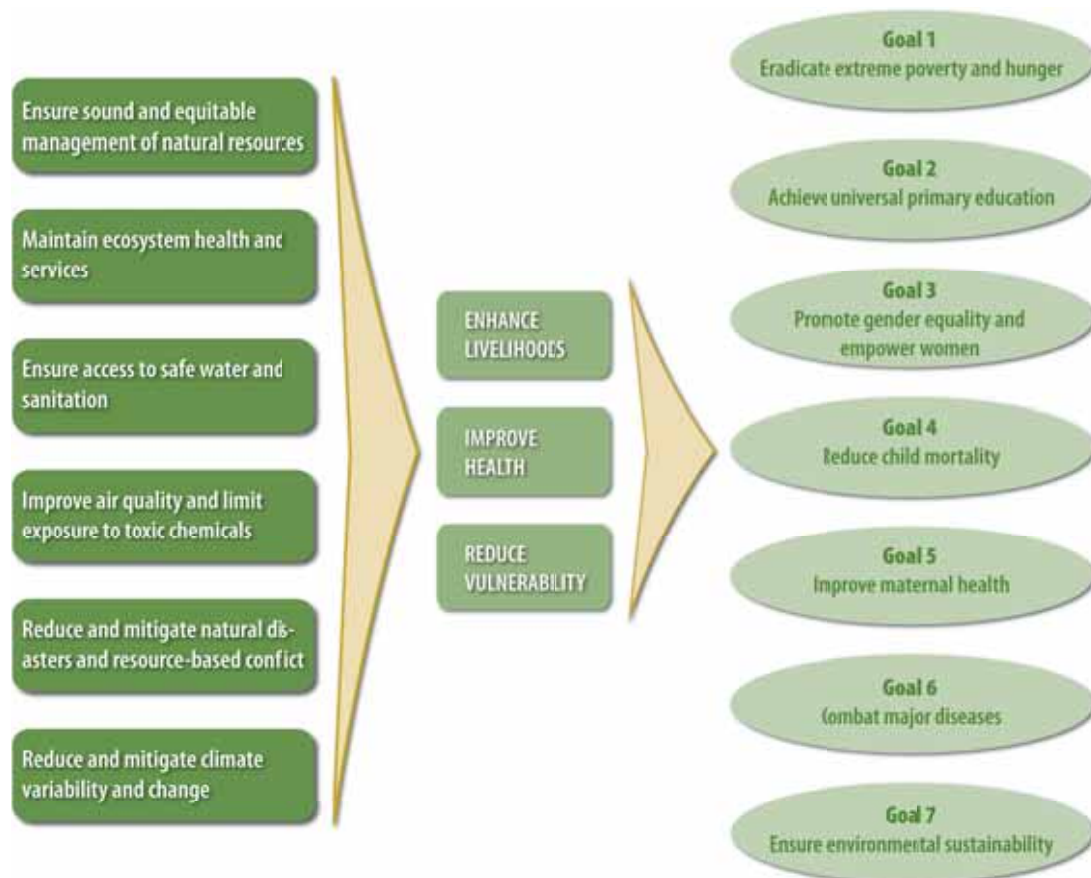
**26(b)** Employ the full range of policy instruments, including regulation, monitoring, voluntary measures, market and information-based tools, land-use management and cost recovery of water services, without cost recovery objectives becoming a barrier to access to safe water by poor people, and adopt an integrated water basin approach.

**40(k)** Employ market-based incentives for agricultural enterprises and farmers to monitor and manage water use and quality, inter alia, by applying such methods as small-scale irrigation and wastewater recycling and reuse.

poverty, for example, by improving access to sanitation as a cost-effective way to improve health.

The linkages between sound environmental management and poverty reduction, as captured by the MDGs, are illustrated in Figure 1.

While the goals of international development have been clarified, there has also been a growing awareness of the complexity of achieving them, and in particular the complex role of institutions and incentives – both formal and informal. Since the end of the Cold War, there has been a growing focus on the institutional and political issues of development, known as “good governance”.

**FIGURE 1****Links between Environmental Management, Poverty, and the Millennium Development Goals**

Source: DFID, EC, UNDP, and World Bank (2002).

This emphasis in turn has led to renewed interest in the role of the state, now widely seen to have a key role in identifying the right policies for poverty reduction and in financing investments for poverty reduction and sustainable development. In the late 1990s, the Poverty Reduction Strategy (PRS) process was launched in low-income countries to achieve good policies for poverty reduction and the right investments. This approach was supported by development agencies that were keen to move from scattered projects to a more country led, strategic framework for development assistance.

There is also growing recognition of the need to mainstream environmental issues into the PRS process, as many poor people depend on natural resources for their livelihoods. They are often therefore the most vulnerable to environmental degradation and pollution. The extent to which environmental issues are mainstreamed into the PRS process is mixed (Bojö et al, 2004). Nonetheless, the available evidence shows that as the process matures, environmental mainstreaming is improving. This is illustrated by the analysis of the poor's dependence on natural resources in Cambodia's PRS paper (see Box 3).

In a significant number of cases, the PRS country papers refer to EFR either for fiscal or environmental reasons.

Given the need, emerging from the PRS process, to implement investment plans, subject to the identified sector priorities, the budget process of developing countries has been receiving greater attention. Development agencies are providing growing support for management of public expenditure and, where appropriate, some donors are providing direct financial support to the government budget.

The debate about the role of the state has also begun to focus on decentralisation, which may create incentives for EFR. For example, the growing power of Provinces in South Africa has led them to search for additional sources of revenue, including the possible use of environmentally related taxes (OECD 2001 a). However, increased fragmentation, unclear responsibilities and inconsistency in standards, rules and regulations resulting from fiscal decentralisation can hinder the uptake of certain EFR measures.

## Implications for EFR

Within the multiple policy contexts discussed above, EFR has been receiving increased recognition as a tool that governments can implement along side other policy measures to help achieve fiscal, environmental poverty reduction objectives.

Environmentally related fiscal instruments have been increasingly used in OECD and middle-

### Box 3 — Environment in the Poverty Reduction Strategy of Cambodia

**“Sustainable natural resources management and conservation has become an integral part of [Royal Government of Cambodia] RGC’s strategy for sustainable economic growth and development. The RGC recognises that sustainable economic growth and development cannot be achieved without wise management and conservation of country’s renewable and non-renewable natural resources. Among other things, attention will be paid to improved management and conservation of fisheries and forest resources the impact of which on the poor are very significant.”**

Source: Cambodia Poverty Reduction Strategy (2003, p. 58).

income countries, but not been implemented to such an extent in low-income countries. Experience with such instruments in OECD countries is mixed, but there have been success stories (see, for example, Schlegelmilch 1999, EEA 1996 and 2000, OECD 2001 b and UNEP 2004a and b).

A large amount of useful analytical and conceptual work has also been undertaken in this area.<sup>2</sup> Such studies show that the implementation of EFR often meets political resistance and if its full potential is to be realised the political economy of the reform process must be fully appreciated as a precondition to successful implementation. Equally, it is analysis of experience with EFR thus far which will identify the most favourable conditions for successful implementation.



# The Benefits of Environmental Fiscal Reform

In this chapter we explore the fiscal, environmental and poverty reduction benefits of EFR in detail, examining cases in which benefits must be traded-off against one another, and how such trade-offs can be appropriately managed. In examining these trade-offs it will become evident that EFR is not always the most effective way for governments to raise revenue, nor is it necessarily in all cases the best approach to protecting the environment; the value of EFR lies in its ability to assist with meeting both objectives at the same time, and the ancillary poverty reduction benefits that accompany a better environment. Hence, EFR instruments need to be seen as *complementary* to regulatory approaches to environmental management, and as an integral part of a policy mix rather than “stand alone” measures.

As the benefits of EFR are inseparable from the use made of revenues arising from reform, we look at the main options for using the revenues.

## The Broad Objectives of Environmental Fiscal Reform

Broadly speaking, EFR can: 1) mobilise revenue for governments; 2) improve environmental management practices and conserve resources; and 3) reduce poverty. By encouraging more sustainable use of natural resources, and reducing pollution from energy use and industrial activities, EFR can address environmental problems that

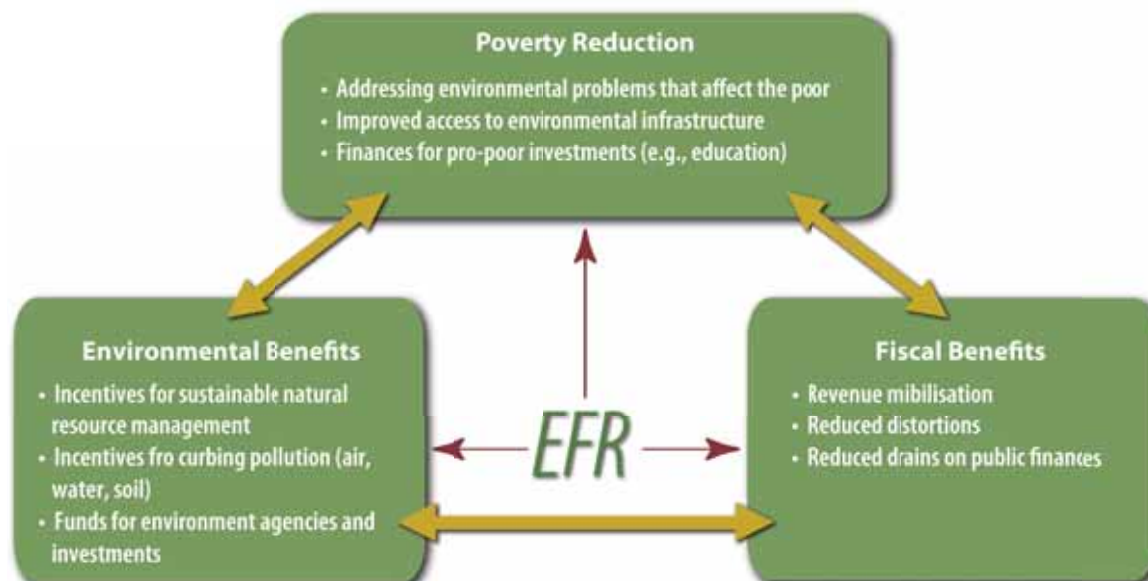
threaten the livelihoods of the poor. The revenues raised by EFR could also be used to finance poverty reduction measures.

These three benefits of EFR, as shown in Figure 2, often complement one another. The poor, for example, can be supported by improvements to the environment – such as in water and air quality – and by pro-poor investments (in health, education and access to sanitation services) financed by revenue raised through EFR. In some cases trade-offs between objectives may arise, for example, where reform raises the price of water or power consumed by the poor. Such impacts may be mitigated in the way that the reform package is designed, for instance by using tariff structures that protect low-income households.

### *Fiscal Benefits*

A primary goal of fiscal policy, especially in poor countries where public services are under-funded, is to raise revenue to finance government expenditure programmes. This revenue needs to be raised efficiently – with minimum distortion to the national economy – and at minimum administrative costs. While there are a number of conventional fiscal instruments that more or less fulfil these criteria, EFR opens the door to a new tax base, supplementing other revenue raising efforts.

Developing countries face formidable challenges in raising revenues through conventional fiscal instruments such as income or sales taxes – the

**FIGURE 2****The Benefits of Environmental Fiscal Reform**

main sources of tax in the OECD. In some developing countries many workers are employed in agriculture and the “informal sector”, where earnings fluctuate, are seasonal and generally paid in cash. This means that conventional income taxes are hard to collect. And few people buy from retailers who keep accurate records, so sales taxes, such as VAT, are also difficult to collect. The scope for taxing corporations is also limited, since the corporate sector is usually smaller than in OECD countries; and includes unprofitable state-owned enterprises that build up uncollected tax arrears, due to political obstacles. Unlike OECD countries, many developing countries rely on (trade) taxes on imports and exports for revenues but these are often inefficient, damaging to growth and incompatible with moves towards trade liberalisation (IMF, 2001).

Excise duties applied to energy products and taxes on natural resource extraction offer good potential for raising environmentally relevant tax revenue, but it is important to ensure that the potential for revenue does not create increased

pressure on the resource base. In the resource-rich Cameroon, for example, forestry taxes raised US\$50 million for the State in 2002 (see Box 28 below), while EU Access Agreements account for roughly 30 per cent of government revenues in Guinea Bissau (IFREMER, 1999). Yet there is evidence that in many places potential revenues are not being captured (Ivers et al, 2003 and Bostock and Cunningham, 2004). For example, it is estimated by Hoddes (2001) that in Cambodia up to US\$100 million is lost each year from uncollected forest taxes (only US\$13 million is actually collected).

The potential of EFR to raise revenue depends on many factors, including:

- The design of the instrument.
- How it is implemented and enforced, this in turn depending on administrative capacity, corruption, etc.
- How consumers and producers respond, as reflected by the elasticity of demand and supply.

EFR instruments can help governments move towards a more incentive-based market economy, reducing former inefficiencies. To realise this potential, it is important that EFR is supportive of general tax reform objectives and conforms to general principles of good taxation, such as “ability to pay”. Conversely, broader tax reforms can be made more supportive of environmental objectives – excise duties on petrol products, for example, are a key aspect of most tax systems. By levying different rates on different fuels to reflect their relative environmental benefits, consumers can be encouraged to shift to less polluting fuel sources.

### *Environmental Benefits*

In order to appreciate the environmental benefits of EFR it is first necessary to identify, in broad terms, some of the key environmental and resource use issues facing developing countries.

#### **Specific Environmental Issues**

The exploitation of publicly owned or controlled natural resources in developing countries is, in general, not appropriately priced. As a consequence the pattern of exploitation is typically economically and socially inefficient, with gains accruing to some (mostly private) parties, but with much greater net losses of wealth for society as a whole. Very often, the solution to this problem requires the simultaneous implementation of several policy options (see, for example, UNEP, 2004a). EFR can be part of the solution, by ensuring that – through the use of taxes, royalties, or other pricing instruments – the exploiters of the resource pay a price that reflects the full social value of the resources they extract.

When emissions pollute the atmosphere or watercourses, there is a cost to society as a whole, yet these costs are not usually borne by the polluter. Unsurprisingly the polluter tends not to take them into account when making decisions – and society tends not to be fully compensated

for these so-called “external costs”. Therefore, the polluter is likely to pollute to a socially undesirable level and so the total (financial plus external) costs of the polluting activity to society outweighs the total benefits. To discourage pollution above socially acceptable levels, the government can adopt a variety of policy options, including taxation and pricing instruments. These essentially make the polluter pay for the external costs they impose on society. Using economic instruments to this end represents a broader application of the “polluter pays principle”, as originally defined in the 1972 OECD Guiding Principles on the International Economic Aspects of Environmental Policies (see Box 4).

While some fiscal instruments can be used to address environmental problems, others, such as subsidies or tax breaks, can inadvertently cause environmentally damaging behaviour. For example, electricity subsidies may have been introduced for social reasons, but the unintentional side effect is the encouragement of

#### **Box 4 — The Polluter Pays Principle (PPP)**

**The principle to be used for allocating the costs of pollution prevention and control measures to encourage the rational use of scarce environmental resources and to avoid distortions in international trade and investment is the so-called “Polluter Pays Principle”. This means that the polluter should bear the expenses of carrying out those measures decided by public authorities to ensure that the environment is in an acceptable state. In other words, the costs of these measures should be reflected in the cost of goods and services, which cause pollution in production and/or consumption. Such measures should not be accompanied by subsidies that would create significant distortions in international trade and investment.**

**Source:** OECD – Guiding Principles Concerning the International Economic Aspects of Environmental Policy (adopted by the Council on 26 May 1972).

inefficient and excessive consumption, which raises the level of atmospheric pollution. Because subsidies are sometimes paid directly from the budget, the fiscal costs of these environmentally harmful subsidies are clear, strengthening the case for reform.

## Addressing These Environmental Issues

In the environmental policy arena the government decision-maker can choose from a variety of policy instruments to address these issues. In broad terms, government intervention can take two forms:

1. The introduction of environmentally related taxes or other economic instruments, such as marketable permits or allowances, user charges or fees, deposit-refund schemes or performance bonds. The government could also reform subsidies<sup>3</sup>.
2. The introduction of command-and-control approaches (regulations, norms, prohibitions and prescriptions), where the government sets an environmental target and commands producers/consumers to control their activities in order to meet that target.

These are complementary approaches. In most countries command-and-control approaches, however, are still the predominant instrument in environmental policy.

Command-and-control approaches mainly impose either technology-based standards (specifying the technology to be used in the production or treatment of pollution) or performance-based standards (establishing either emission or concentration limits for each pollution source). Performance-based standards require a specified limit, so in this case pollution must be measurable otherwise standards cannot be enforced. So, where pollution-measurement is impossible, technology-based standards are clearly more appropriate. However, economists

tend to prefer performance-based standards, since they do not specify the choice of technology. This small amount of flexibility, in theory, makes performance-based standards more cost-effective than technology-based standards (Oates, 1985). Even performance-based standards force all polluters to comply with the set environmental standard, independent of the control costs.

Economic instruments, by contrast, allow each polluter to respond to the price signal of the instrument in accordance with their control costs. The increased flexibility lowers the overall cost of meeting the government's target<sup>4</sup>. Furthermore, with environmentally related taxes, polluters are given an ongoing incentive to reduce emissions, whereas command-and-control approaches are fundamentally static in that once the target is reached there is no incentive for polluters to make further improvements. For example, when energy, water and raw materials, as well as solid, liquid or gas emissions are taxed, firms will often develop more efficient and new modes of production, transportation, housing, and energy use in order to reduce their tax bill in the long-run<sup>5</sup>.

Of course, in addition to providing incentives to cost-effectively meet environmental standards or conserve resources, instruments in the EFR "tool-kit" also generate revenue. These revenues could be used to cover the cost of monitoring and enforcement activities, or provide more general financial support to environment agencies, which are under-funded in many countries.

While we have highlighted the merits of economic instruments, in most cases both approaches can usefully be combined.

Table 1 summarises the environmental impact of specific instruments of EFR, and ways to promote positive environmental impacts (The sector

**Table 1** Environmental Performance of Selected EFR Instruments

TYPES OF INSTRUMENT	ENVIRONMENTAL IMPACT	DESIGN FEATURE TO INCREASE ENVIRONMENTAL BENEFITS
Timber rent taxes	Generally positive – incentives to harvest new areas reduced, although impact on harvesting methods unclear (unless revenues earmarked)	Partial earmarking of revenues for sustainable management
Fishery rents	Positive if it reduces entry to the fishery, but impacts on fishery techniques unclear (unless revenues earmarked)	Partial earmarking of revenues for fishery management
Irrigation water user fees	Limited – depending on link between fees and water usage (which is often low)	Volumetric pricing
Domestic water user fees	Positive – if user fees are volumetric (which they often are)	Volumetric pricing
Petroleum pricing	Mixed – depends on energy mix, access by the poor and elasticity of substitution. Positive if improves energy conservation, but negative if causes a shift to biomass	Higher pricing of more polluting fuels (e.g. high sulphur diesel and unleaded petrol), and higher pricing of diesel to petrol. Targeted subsidy if poor would shift back to biomass
Electricity pricing	Mixed – depends on energy mix, access by the poor and elasticity of substitution. Positive if improves conservation, but negative if causes a shift to biomass	Targeted subsidy if poor would shift back to biomass

overviews, in Part II of this report, offer more detail).

### Poverty Reduction Benefits

EFR can contribute to poverty reduction by both improving environmental quality and resource conservation (addressing environmental problems that matter to the livelihoods of the poor) and by raising revenue for the Treasury (providing finances for pro-poor investments).

It is normally the poor who rely most on the natural resource base for their livelihoods. As a result, they are extremely vulnerable to environmental shocks and stresses. This problem is made more acute because the poor seldom have the means to adapt to sudden changes or to create “safety nets”. Furthermore, environmental degradation and lack of resources often help spread disease and make poverty worse. Environmental risk factors contribute to at least 20 per cent of the total disease burden in the

developing world (DFID et al, 2002). This is highlighted in Zambia’s PRS Paper and Figure 1.

The urban poor are particularly affected by poor environmental services, such as inadequate or polluted water supplies, lack of sanitation and solid waste management systems and exposure to air pollution. Improving the environment can help reduce urban poverty. In rural areas the poor are heavily dependant upon natural resources (forests, land, water, animals) and tackling poverty here means improving people’s ability to derive livelihoods from a more sustainable natural resource base (Zambia Poverty Reduction Strategy, p. 117).

In addition, the revenue from EFR can be used, as an illustration, to improve access to water and energy services for the poor, but this does not happen automatically and it demands strong

## Box 5 — Innovative Price Reforms to Promote Improved Access of the Poor to Electricity in Argentina

In urban areas of Argentina, following privatisation, there were some users with low ability-to-pay that were disconnected – many of whom were urban slum dwellers that were illegally connected in the first place – the so-called “colgados” (hangers). Electricity losses of 27 per cent pre-privatisation were drastically reduced. But there was great anger over the impact on the poor and several court cases were brought on behalf of the colgados. With mounting media coverage and public pressure, the federal government, provincial government of Buenos Aires and two private distribution companies entered into a Four Year Framework Agreement. The companies were reimbursed for unpaid balances by illegally connected shantytowns, and subsidies were provided for establishing collective meters. In turn, companies agreed to waive any claims on unpaid bills since 1992 and to install 10,000 meters a month in low-income areas. As a result of the framework agreement, roughly 650,000 users were formally connected to the network.

Source: WRI (2002) and Chisari and Estache (1999).

pressure from excluded groups to ensure it takes place – as happened in Argentina during the 1990s (see Box 5).

## Trade-offs Between Different Objectives

In some cases there are synergies between revenue mobilisation, improved environmental management and resource conservation, and poverty reduction, while in other cases trade-offs will arise.

### *Fiscal Vis-à-vis Environmental Objectives*

#### **Revenue Mobilisation and Environmental Effectiveness**

A good revenue-raising tax is one that collects a lot of money, does not significantly distort behaviour, or imposes substantial burdens on taxpayers, and is simple to administer. In general, a revenue-raising tax therefore makes small per capita demands, but is levied over a broad tax base in order to raise large amounts. Consequently, revenue-raising taxes are usually applied to traded goods and services that have inelastic demand, ensuring fairly constant revenue streams.

By contrast, environmentally related taxes are designed to influence behaviour, so they are supposed to be noticed. A good environmentally related tax is one where the tax revenue tends to diminish over time<sup>6</sup>, is levied over a narrower tax base (such as polluting activities) and targets goods and services that have an elastic demand. As well as this, since the targeted good in the case of an emission tax is not traded, the tax can be more difficult to administer.

Furthermore, because revenue-raising measures like environmentally related taxes are *price-based* as opposed to *quantity-based* instruments, the policy-maker effectively relinquishes control over the environmental outcome. Indeed, the environmental outcome is uncertain, and depends on the response of consumers and producers to the price signal provided by the instrument. By contrast, the environmental outcome is more certain with quantity-based (command-and-control) approaches. For some environmental or resource management issues, it may be vital that a specific outcome is guaranteed (e.g. if an environmental impact is irreversible or has significant impacts on human health), in which case direct regulation may be the best instrument. However, quantity-based approaches tend not to raise revenue<sup>7</sup>.

Consequently, environmentally related taxes and similar price reforms are not the most effective way for governments to raise revenue, nor are they necessarily the best approach to protecting the environment. The two objectives of raising revenue and reducing pollution and resource depletion are inversely related, and trade-offs will be required<sup>8</sup>. The value of EFR lies in its ability to assist with meeting both objectives at the same time. This is illustrated by the road fuel taxes in the OECD, which contribute significantly to both fiscal and environmental objectives.

### Implementation Costs

Any charge on an environment related activity will require some monitoring of the activity in question to ensure each taxpayer pays the correct amount of tax. For example, a charge on timber extraction or on air emissions will require monitoring of the amount extracted or emitted. While monitoring is required of any tax (for example, collecting and auditing receipts for a sales tax), due to the environmental nature of EFR instruments – the fact that such taxes are levied on goods or services that are not typically traded – monitoring can be expensive and technologically intensive. For example, in the case of timber taxes, it will be necessary to monitor not just the value of timber, but also different timber species.

Monitoring systems are nevertheless necessary. They ensure the accuracy and equality of the burden of the tax or charge, which in turn defines its social acceptability. The accuracy and fairness of a tax instrument is also linked closely to enforcement issues (an enforcement regime must be in place to ensure that all parties comply with the requirements of the instrument).

Monitoring requirements and enforcement needs vary according to the choice and design of instrument. As a result, the corresponding implementation costs will also differ (Blackman and Harrington, 1999). In general, the more

flexibility polluters are given, the more information the government needs, in order to monitor how an instrument is performing. At the same time the less flexible the regime for polluters the higher their compliance costs will be. There is also evidence that tax evasion rises with the amount of discretion polluters are given (Havet and Donnan, 2002).

Hence, implementing EFR involves a range of trade-offs between monitoring requirements, enforcement needs and control costs imposed on polluters and assuring that the predicted amount of tax revenue is collected and the environmental objective is achieved.

In making these trade-offs, policy-makers must ensure that the implementation costs of a particular EFR instrument do not outweigh the cost savings of using that instrument as opposed to a command-and-control approach.

### Poverty Reduction in Relation to Fiscal and Environmental Objectives

Conflicts between the broad objectives of EFR are not restricted to fiscal versus environmental objectives. There will also be occasions where these two objectives are in conflict with poverty reduction goals. For example, increasing the price of polluting activities would raise revenue, reduce demand and decrease emissions, but would not necessarily be in the best interests of poor consumers. Maximising revenue (from forests or fisheries taxes) can harm the poorest producers and could even damage the resource base upon which they depend. (Box 6 outlines why the impact of EFR on low-income households is potentially regressive.)

The effect of subsidy reform on the poor depends on the way the reform is designed or the specific circumstances of a particular country. In particular, the impact of subsidy reform depends

## Box 6 — The Distributional Effects of EFR on the Poor

Low-income households can be vulnerable to EFR. This is because poorer households tend to spend a larger proportion of their budget on goods and services such as water or energy, which are directly affected by EFR. While the level of expenditures on these products is clearly the most important determinant of the distributional effects of the reform, it is also necessary to examine to what extent households are able to respond to changes in prices. If demand is less elastic (i.e. households are less responsive to changes in prices) for those goods that are consumed in greater proportion by lower-income households (i.e. food, energy), then the tax will be more regressive (in fiscal terms) than in cases where households respond more elastically. Furthermore, empirical studies have revealed differences between poorer and better off households in the degree of substitution possibilities that exists for particular environment-intensive goods (i.e. change their appliances, substitute other fuels, or increase insulation levels). In the event that the price elasticity of demand for energy services is lower for low-income households, then the regressive distributional effects of the tax will be even more pronounced than has usually been estimated.

Source: OECD (1994) and Johnstone and Alavalapati (1998).

on who currently benefits from it. Where the poor are not currently served by the subsidised service (i.e. do not have access to water, power or sanitation services) the removal or reform of the subsidy will generally be positive. However, this is often not the case for middle-income countries – in Central and Eastern Europe, Central Asia and Latin America. Here the population tends to have access to public distribution systems. In Poland in 1993, for example, it was estimated that increasing household energy tariffs to market levels (an increase of 80 per cent) would lower the income of the lowest income quintile by almost 6 per cent (Freund and Wallich, 1997).

Even when the poor are not directly affected by subsidy reform there may be indirect impacts. For example, in many countries, the cost of petroleum products affects the cost of public transport and the general cost of living. Removing subsidies on petroleum products would therefore raise these costs. Again, in designing the reform, consideration must be given to ways of cushioning these effects.

Other types of EFR may be less likely to disadvantage the poor. Natural resource rents on commercial resource extraction are generally

progressive, as the benefits of commercial natural resource extraction generally accrue to larger producers – often foreign owned. However, rent taxes on small-scale extraction such as permits fees for small-scale timber or fisheries can be regressive.

It is possible to soften undesirable distributional impacts of EFR through carefully designed compensation or mitigation measures. Mitigation involves designing EFR in such a way that undesirable effects do not take place. Compensation offers payments to particular groups, so that they are (at least partly) remunerated for the original loss of welfare.

One way of mitigating unwanted effects is to provide a tax-free threshold for essential use. Another is to introduce the tax progressively, with higher taxation on greater consumption. Mitigation can also occur to the extent that the tax base is narrowly defined, as opposed to a broad based tax or charge on products. Widespread forms of compensation include the use of the lump sum payment, calculated on the basis of average tax payments per households, and tax shifting – the reduction of other taxes (e.g. VAT).

There are cases where even a so-called targeted subsidy has been captured by a large share of the population – for example, the “lifeline tariffs” for electricity in Pakistan. There are however some successful examples of compensating subsidies for liquefied petrol gas (LPG) in Senegal and electricity in Chile (UNEP, 2003). These examples illustrate the necessity to target any subsidies carefully, and to monitor and evaluate their actual use. Care must also be exercised to minimise transaction costs when designing subsidies. There are several ways of influencing income distribution in society, and a targeted subsidy for a particular good or service may not be the most efficient option.

Table 2 summarises some of the possible impacts of EFR on the poor and how they can be mitigated.

To assess the extent to which EFR is pro-poor, a detailed analysis of the overall distributional

impact of the proposed reforms, with and without compensation or mitigation measures, is needed.

## Possible Uses of the Revenues from EFR

The distributional, macroeconomic and competitiveness impacts of EFR instruments cannot be evaluated without knowing what happens to the revenues. The environmental effectiveness of EFR instruments can also depend on how the revenues raised are used. The quantity of pollution emitted or the amount of resource extracted can depend on this. Unless they are carefully thought through, particular uses of the revenues may end up cancelling out the intended effects of EFR, or even worse, work against the desired objectives.

Generally speaking, the acceptance of EFR depends on widespread support for the proposed

**Table 2** Poverty Impacts and EFR

TYPE OF INSTRUMENT	POTENTIAL IMPACTS ON THE POOR	WAYS TO ENHANCE THE BENEFITS TO THE POOR
Rent taxes (minerals, forestry, fisheries)	Generally positive if rent taxes are on commercial operators and some revenues used to benefit poor	Ensure that poor not affected by commercial harvesting and revenues intended for poor are not lost through corruption, etc.
Petroleum excise taxes	Increased prices especially of diesel can increase cost of public transport and general cost of living – especially for remote communities	Improve transport infrastructure (possibly through non fuel subsidy)
Electricity user fees	Depends on extent to which poor are connected to grid – which is generally higher in urban areas	Targeted subsidies or preferential prices where poor are already well connected
Domestic water user fees	Depends on extent that poor are connected to infrastructure	Targeted subsidies where poor are already connected
Irrigation user fees	Depends on access of poor to irrigation	Targeted subsidies where poor are already connected
Increased prices for fertilizer and pesticides	Depends on access of poor for fertilisers and pesticides	Targeted subsidies where poor are already served

use of any revenues raised. Unfortunately, no single use of the revenues stands out as a clear winner; all have disadvantages. Therefore, a case by case evaluation of the possible uses of the revenues is important.

## The Options

There are a number of possibilities for using the revenue that governments raise through EFR. These include:

- The government could retain the revenue, and add it to other government revenue streams within the general budget.
- It could be used to pay for additional public spending. It might be added to other government revenue streams, from which the supplementary spending is financed, or “earmarked” for a special fund, separate from the rest of the budget, from which the supplementary spending is financed.
- It could be used to compensate for the distributive impact of the taxation or pricing measure – in the form of a financial transfer from government to individuals or businesses – or to ease the costs of transition.
- It could be used to support “ecological tax reform”, replacing (partially or wholly) existing taxes or social security contributions.

These options are *not* mutually exclusive.

## Retaining the Tax Revenue

If an environmentally related tax is introduced without simultaneously increasing public spending by an equivalent amount, the revenue raised will reduce the deficit or contribute to a budget surplus. This option essentially integrates EFR into the budgetary process and allows for the greatest flexibility over the use of the revenues through time. Hence, finance ministries tend to favour this option. The resulting economic benefits will be rather abstract or diffuse however, which will make it more difficult to gain public support

for proposed reforms. The public may perceive EFR as nothing more than a tax increase which will not help with its popularity.

## Spending Programmes

Revenue from the introduction of taxation or pricing instruments could be used to pay for additional public spending. For example, revenue could be used for general poverty reduction-related expenditures, such as on health or education, which may have no direct link with the environment. Or the revenue could be used to pay for additional environmental protection or resource management – to encourage more sustainable management practices. It could also be used to increase access of low-income households to utilities.

If revenues are to be used to pay for additional spending, one option is to put the revenues into the general budget fund, and to finance additional spending from here. An alternative is to “ earmark ” the revenues for specific uses, which creates a strict link between the revenue and the corresponding spending programme. Earmarking revenues from environmentally related taxes for environmental investments is typically the option favoured by environmental agencies.

Many finance agencies (and the public finance literature) oppose earmarking however. They argue that tax revenues tend to change over time, as will expenditure needs. Therefore, even if earmarking seems like a good idea today, it may not be so in the future. Moreover, during the budgeting process earmarking gives a priority to some kinds of spending relative to others. Consequently, the government loses flexibility in decision-making – once earmarking is in place, it is not easy to get rid of. Earmarking can also give rise to conflicting objectives – as there is a strict link between revenue and spending – any decision on one has implications for the other, and the situation becomes difficult to manage. There is also the danger that earmarking funds

for one government agency will set a precedent that leads others – education, trade and industry, etc. – to make claims for similar earmarked funds.

Despite these concerns there may be a case to partially earmark some of the revenue generated through EFR. For example, in countries where environmental agencies are under resourced, the problems associated with earmarking may be worth accepting in order to establish a reliable flow of adequate funding for environmental monitoring and enforcement activities. Not only might this provide incentives to enforce environmental standards and collect taxes or charges, it may also help with public acceptability. In some cases, as illustrated by the discussions surrounding the German Ecological Tax Reform process, the majority of people may want to see the revenue raised from environmentally related taxes at least partially used for environmental purposes.

The rationale for partial earmarking should be evaluated regularly to avoid misallocation of revenues, and other unintentional distortions. If earmarking leads to the establishment of “environmental funds”, these must be managed in accordance with internationally recognised principles for sound public expenditure management<sup>9</sup>.

It is worth noting that in some cases there may be legal obstacles to earmarking - it may not be permitted by a country's constitution or other piece of legislation, as it is in Chile (see Box 7).

### Compensation Options

When considering compensation options, the natural choice is to compensate those who suffer from pollution or resource depletion. This appears a fair option but compensating victims is problematic and inefficient in terms of resource allocation. For example, if victims of pollution are compensated, newcomers may settle in the

#### Box 7 — Constitutional Restrictions on Earmarking: Chile

UNEP has conducted a project with CIPMA (Centro de Investigacion y Planificacion del Medio Ambiente) to develop a Sustainability Fund for the mining sector in Chile. The proposed Fund would be dedicated to priority sustainability issues as defined by a regional participative process. The fund would serve to diversify production, integrate mining companies into the community and create a regional identity and to conserve water and biodiversity. It would be funded by voluntary or semi-voluntary contributions by the public sector and mining companies. However, the study revealed that there would be major difficulties in basing the fund on taxes. In particular, because any change in the tax system which includes the earmarking of tax receipts to regional objectives would require, as a minimum, a presidential decree or a change in the constitution. The prohibition of earmarking for general taxes in Art.19 of the Constitution is a significant obstacle to tax reform proposals, and means that, in each case, specific formulas have to be developed so as not to violate this constitutional article. Furthermore, the study revealed the preference of companies for voluntary contributions, and indicated that additional advantages would accrue if the system would permit the inclusion of contributions from sectors other than mining.

Source: UNEP (2003a).

polluted areas, in order to receive compensation. And as victims will have no incentive to avert the effects of pollution, the total environmental impacts may actually increase. From a practical perspective, transaction costs are also likely to be high, and given that pollution is more often than not a public good, it is difficult to know exactly who must be compensated, and by how much.

Industry, in general, will seriously oppose the introduction of tax instruments, but some form of financial compensation for the most adversely

affected industries (those subject to competition from firms not subject to similar taxes or charges in other countries) may lower opposition. Some of the revenue could be used to help affected firms adapt to the new tax regime. In China, for example, support for investment in pollution abatement in conjunction with emission taxes has proved effective in this regard. In addition to supporting investment in cost-effective pollution control, the revenue could also be used to fund more “generic” research and development to the benefit of industry as a whole.

There are various ways in which industry could be compensated, but regardless of the method selected, compensation should be designed in a way that does not encourage firms to pollute more. Specifically, the amount of compensation should be independent of the tax burden. For example, recycled revenue could target and support firms that are particularly active in reducing emissions, but should not be disbursed equally to all emitters – that is, it may be feasible to maintain revenue neutrality for the sector as a whole, but not for individual firms. Moreover, proposals for compensation should be subject to rigorous economic analysis, and time-bounded when used to reduce transition costs.

In some areas of EFR – for example, pricing reforms in the water and power sectors – there may be a case for compensatory cross subsidies to non-industry stakeholders in order to counter potentially regressive distributional effects on the poor.

### Reducing Existing Taxes

In recent years, there has been increased emphasis in OECD countries on fiscally neutral environmental taxes. These embrace the “double dividend” theory (see Box 8), which suggests that a fiscally neutral tax shift may yield environmental gains at (almost) no cost to the economy<sup>10</sup>. The central idea is to shift the burden of financing public services away from “taxes on goods”, such

### Box 8 – EFR and the Double Dividend Theory

In the OECD, one of the main arguments used for environmental taxes is that the revenues they generate can be used to lower other “distorting taxes”, such as labour and income taxes.

All taxes and social security contributions give rise to welfare losses. A reduction in existing taxes naturally decreases this loss. An environmentally related tax, by reducing pollution and associated effects on society, results in a welfare gain. If the revenue raised by the environmentally related tax is subsequently used to lower other taxes a second gain is *theoretically* possible; this is the so-called “double dividend”.

as investment and labour, towards “taxes on vice”, such as pollution. Shifting the tax burden in this way is often known as “ecological (or green) tax reform”.

Some OECD countries – such as Sweden, Denmark, Germany, the Netherlands, Norway and the UK – have experimented with fiscally neutral environmental tax reforms, where taxes on, for example energy, have been offset by reductions in personal income taxes and social security contributions, in the belief that this would stimulate employment. In the UK, for example, money raised from the Climate Change Levy (a tax on the business use of energy) is recycled back to business through a cut in social security contributions. In 1999 the German government increased taxes on electricity and mineral oil duties, with the additional revenue, again, used to reduce social security contributions<sup>11</sup>. The UK has even gone as far as producing a Statement of Intent on environmental taxation, which advocates fiscally neutral tax shifts (see Box 9).

Designing a new tax to be fiscally neutral may be one way of responding to the political and economic concerns likely to arise from its introduction. However, leaving aside the merits of the double dividend theory (which have been

### Box 9 — The UK Government's Statement of Intent on Environmental Taxation

The Government's central economic objectives are the promotion of high and sustainable levels of growth and high levels of employment. By that we mean that growth must be both stable and environmentally sustainable. Quality of growth matters; not just quantity.

Delivering sustainable growth is a task that falls across government. It will be a core feature of economic policy under this administration. The Treasury is committed to that goal.

How and what governments tax sends clear signals about the economic activities they believe should be encouraged or discouraged, and the values they wish to entrench in society. Just as work should be encouraged through the tax system, environmental pollution should be discouraged.

To that end, the Government will explore the scope for using the tax system to deliver environmental objectives - as one instrument, in combination with others like regulation and voluntary action. Over time, the Government will aim to reform the tax system to increase incentives to reduce environmental damage. That will shift the burden of tax from "goods" to "bads"; encourage innovation in meeting higher environmental standards; and deliver a more dynamic economy and a cleaner environment, to the benefit of everyone.

But environmental taxation must meet the general tests of good taxation. It must be well designed, to meet objectives without undesirable side effects; it must keep deadweight compliance costs to a minimum; distributional impact must be acceptable; and care must be had to implications for international competitiveness.

Where environmental taxes meet these tests, the Government will use them.

Source: Tax Measures to Help the Environment, UK HM Treasury, July 1997.

challenged by many), it is of much less relevance to developing countries, where income taxes are still relatively rare and tax revenue as a percentage of GDP is low<sup>12</sup>. Also, by definition, the direct gain to the Treasury from a fiscally neutral tax is zero. Fiscally neutral tax reform is thus counterproductive to our aim of using EFR to generate revenue for pro-poor investments. There are also practical problems to consider:

A common argument against fiscally neutral EFR flows from the very objective of environmentally related taxes. As the objective is to reduce pollution, the revenues will, in principle, decrease over time as the tax base erodes. (However, the revenue stream does not need to decline over time — the tax rate can always be raised or the tax base broadened.)

A second, related potential problem is the development of unforeseen abatement technologies, which will inevitably threaten tax

revenues. Indeed, a sudden advance in pollution abatement technology may decrease the tax base sharply, and cause a substantial reduction in revenues.

### Other Issues

Revenues may also need to be distributed between different levels of government. In the case of resource rents, there are often agreed divisions between central and state governments, and local communities. Where revenues from EFR are significant, the appropriate division is often the cause of much debate and potential conflict. In Papua New Guinea and Indonesia, for example, debates over mineral and forest revenues have led to much conflict between central and state governments. Allocating at least part of the revenues raised (particularly with regard to the exploitation of those natural resources which are difficult to control and monitor, such as forests) to the area where they

### Box 10 — Resource Profits as Unproductive Expenditure

Forests can be easily liquidated to fund political campaigns. This can be legal – for example, to pay for the costs of organising political rallies. In Kenya before the 2002 election, the Moi regime tried to expropriate almost 20 per cent of the national forest estate – with many assuming that this would be used for political patronage. There is a great deal of anecdotal evidence, from Nepal to Ghana and from Indonesia to central America, that relates peaks in deforestation with election years, as handing out concession or permits to log without due process is particularly evident in the run-up to elections. In more extreme cases, there is growing evidence that government and rebel groups competing for natural resources such as diamonds, forests, coffee or other valuable primary commodities often fuel civil wars.

Source: World Bank (2003).

originate can provide incentives to local tax collectors to ensure all revenues are collected. However, lack of (or insufficient) capacity to collect and administer revenues at a decentralised level needs to be taken into account.

Ignoring the complex issue of whether an investment is really pro-poor, there is also the more straightforward issue of ensuring that revenues are properly used and not diverted to “non-productive expenditures” (spending which does not produce positive benefits to the

economy – see Box 10) or poorly managed programmes. Such non-productive spending can include certain kinds of military spending or political patronage – which only benefits certain people or groups, often in exchange for some kind of political support. An example would be using receipts from timber harvesting to pay for electoral expenses.

Sound institutions and procedures to manage public expenditure are required. In this regard, in addition to improving the “supply side” of public service provision more effort is needed on the “demand side” – ensuring that there is public pressure for better services and fiscal accountability. Pressure can come from parliamentary bodies, like a Public Accounts Committee, or civil society more generally, through engagement in the budget process. Transparency can be improved by publishing budget details (the sources of revenue and how it is spent). This approach is being pursued in a growing number of countries, such as India and Uganda. In sector specific contexts, the Forest Law Enforcement, Governance and Trade (FLEGT) process has increased transparency and raised issues concerning the use of revenues from forestry (for more on FLEGT see Box 40).

The real difficulty arises when moving from transparency to accountability – where those exposed for poor financial management and corruption either change their behaviour or have to leave public office. Weak enforcement systems and rigged elections undermine this process.

# The Instruments and Scope of Environmental Fiscal Reform

**E**nvironmental fiscal reform (EFR) encompasses a wide range of taxation and pricing instruments, including taxes on the exploitation of natural resources, taxes or charges on water or air emissions, and the reform of water and energy subsidies. In this chapter we look at each of the main instruments in the EFR “tool-kit” and, where possible, examine the benefits specific to each instrument.

The chapter finishes by briefly considering the applicability of these instruments to developing countries.

## The Instruments of EFR

Some of the key environmental and resource use issues facing developing countries include: (1) the inefficient exploitation of publicly owned or controlled natural resources as a result of operators not paying a price that reflects the full social value of the resources they extract; (2) the use of financial resources to support the provision of specific services for social reasons, but with unintentional side effects due to inefficient and excessive consumption; and (3) the undertaking of polluting activities to a level that is socially undesirable since polluters generally do not pay for the “external costs” they impose on society as a whole.

EFR can help governments address these issues by using a wide spectrum of instruments. With respect to each issue, these instruments include:

- (1) Taxes on natural resource extraction;
- (2) User charges or fees and subsidy reform; and
- (3) Environmentally related taxes.

It is also possible to discourage resource depletion and environmental pollution through more general reforms of conventional taxes, such as sales taxes.

### Taxes on Natural Resource Extraction

*“As regards fishing, the Government’s strategy is to optimise the economic rent derived from the sector”*

(Mauritania PRS Paper, p. 21)

*“Mining and timber firms and other industries with potential to damage the environment must pay environmental taxes.”*

(Ghana PRS Paper, p. 92)

Most developing countries exploit natural resources, such as minerals, forest products, hydrocarbons and fish. Many developing countries depend more on the exploitation of such natural resources than do OECD countries. Particularly, forests and fisheries constitute an important source of livelihoods for the poor. Hence, it is critical for states to manage their natural resource base sustainably for continued revenue generation, and in order to ensure long-term growth and poverty reduction. The aforementioned natural resources represent national endowments, usually owned and regulated by the state, and therefore, it is

straightforward for the government to capture the growing economic rent from resource exploitation. Depending on property rights and external costs, there is a good economic case for the taxation of economic rent from resource extraction industries (see Box 11). Capturing the rent could be achieved, for example, by raising corporation taxes and/or royalty charges, or by auctioning concessions, or by taking an equity share in the production process.

### Box 11 – Natural Resource Rents

Economic rent from natural resource extraction means the amount of “super-normal” profit earned by a firm exploiting the resource. “Super-normal” is the amount of profit over and above a firm’s acceptable (or “normal”) return on capital. If firms are free to enter the sector, these “super-normal” profits will be driven to zero over time. However, when factors of production are fixed, as in resource extraction industries, economic rent will continue to be earned. This rent can be captured through carefully designed taxes without causing any distortions in resource allocation by the extraction industry.

Since the environmental link to taxing mineral extraction is less obvious and more complex we focus on the forestry and fishery sectors in this report. The fiscal benefits of taxing large-scale commercial extraction can be significant<sup>13</sup> and are already a considerable source of revenue in many low-income countries. For example, between 1993 and 1999, Mauritania received 15 per cent of total government revenue from European Community (EC) fishing fleets, Sao Tome 13 per cent and Guinea Bissau 30 per cent (IFREMER, 1999). In the case of forestry too, for countries such as Cameroon, taxes on forest products represent a large share of the total tax take. Even so, if a country chooses to, there is scope for further, increasing the source of revenue from these sectors, whether through taxes or charges of some kind. Indeed, this potential is recognised in Poverty Reduction Strategy papers

prepared by countries such as Ghana, Mauritania and Cambodia. The latter, as Box 12 illustrates, has been taking steps to raise timber royalty levels.

### Box 12 – Cambodian Forestry Taxes

A review of the forestry revenue system was underway in 2000 and compliance with this was included as a structural performance benchmark in the IMF Review. The 1999 budget raised royalty levels from 14 to 54 USD per cubic metre. Despite initial complaints by the industry, they are now paying the increased royalties, which has kept tax revenues from the forestry sector at 0.5 per cent of GDP even though the government has cancelled three concessions, sharply curtailed the activities of remaining concessions, restricted logging in protected areas, and improved the system of concessions management.

Source: IMF (2000).

In forestry and fisheries, environmental benefits depend on the type and target of the fiscal instrument. Increased rent taxes can pay for improved monitoring of and enforcement against illegal logging or fishing. By bringing operators within the tax system it can reduce illegal operations, which are often the ones that damage the environment most. And by making extraction less profitable, at least relative to pre-tax levels, it may reduce the incentive to “enter” the industry, and so curtail expansion of fishing or logging operations. For the state, the fact that a resource has become a more valuable source of revenue may increase incentives and the financial means to police it properly (UNEP, 2004b).

Private operators may face a different set of incentives, however. Higher taxes, by lowering profit margins, may encourage firms to reduce costs, which could reduce the funds available for more sustainable harvesting practices.

## User Charges and Fees

*“...another common measure in all four sub-sectors [energy, transport, water supply and communications] is tariff reform. The level and structure of tariffs is being revised to enable operating companies to become financially viable. Eventually, tariffs will be set to achieve full cost recovery. Affordability of services to the poor will be addressed either within the tariff structure or through separate targeted measures”*

(Tajikistan PRS Paper, p. 44)

User charges or fees are compulsory payments made by consumers (individuals or industry) for the provision of a service. User charges are therefore most applicable in the context of water and energy services, and the disposal of waste. For example, consumers of waste water services from a public or private utility could be asked to cover the cost of the collection and treatment infrastructure, and the cost of operating the infrastructure, through a two-part tariff: (a) a flat rate that is independent of volume, and (b) a charge per unit of discharge.

User charges are generally seen as distinct from taxes, in that they do not normally go to the

Treasury and become consolidated in the budget; instead they are used to finance the cost of providing a specific service. However, the distinction can sometimes be clouded. Box 13 clarifies the distinction between user charges and taxes.

If user charges do not recover the full cost of providing a service, a government may (as it has in India) have to provide significant subsidies or considerable expenditure. In the absence of government support, the under-pricing of electricity and water provision can create a vicious circle: a chronic shortage of funds for maintaining the infrastructure degrades service provision, which lowers willingness-to-pay and hence revenues, which further degrades the service, and so on. This circle is also known as a “low-level equilibrium trap” and, when faced by the water utility in Conakry, Guinea, a unique solution was devised (see Box 14).

By raising prices (in cases where costs are not fully recovered at present), or having a volumetric tariff structure that reflects the pollution load, user charges can have beneficial environmental effects. Charging for the provision of power or water will encourage more efficient use of these

### Box 13 — Taxes or User Charges?

Taxes are compulsory payments to the government (appearing as receipts in the budget) without the return of anything specific to the taxpayer. An environmentally related tax is defined as a compulsory, *unrequited* payment to government, levied on an environmentally relevant tax base (OECD, 2001b). The tax is unrequited insofar as paying it does not offer the taxpayer anything of similar value in return.

User charges or fees are payments for specific services. Like taxes, they are compulsory, but their purpose is to recover the cost (operating or capital, or both) of providing a service. The proceeds of charges do not therefore end up in the government’s general budget; rather, they end up with the service provider, whether they are in the public or private sector.

Note that these analytical distinctions are often not reflected in reality, and the terms are often used arbitrarily. This is not helped by the fact that the purpose of a given instrument can change over time. The term “levy” can also be used to cover taxes, fees, and charges.

In summary, the name, or stated purpose, of a given fiscal instrument is not necessarily an appropriate, universally applicable criterion for deciding whether or not it is “environmentally related” or whether it has features of a tax or of a charge.

### Box 14 — Avoiding the 'Low-level Equilibrium Trap': The Case of Conakry, Guinea

An innovative approach in the city of Conakry in the West African state of Guinea shows how creative financing can help break out of the vicious circle described above. In 1987, the government water utility functioned very poorly, and the quality of services in Conakry was low.

The government decided to attract the private sector, an approach that had worked well in the Ivory Coast. The problem was clear — no private company would be interested in a contract when revenues were only a fraction of the costs. To address this problem, the private operator was assured of sufficient revenues by a combination of (initially low, but rising) revenues from users and (initially high, but declining) subsidies from the government (largely paid out of credit from a development agency).

They used a time-bound, transparent "transition subsidy" to improve services, and then raised tariffs for the improved service.

Source: Briscoe (1999).

commodities, reducing the adverse environmental effects arising from their provision<sup>14</sup>. Charging for the treatment of effluent or waste products provides an incentive to reduce emissions or waste generation at source. However, for reasons of administrative simplicity, most tariffs do not yet include unit charges that are based on the pollution load.

The impact of higher user charges on the poor is ambiguous, and depends on the size of the price increase, their access to the service, and whether there are any compensating measures (wealth transfers) to protect low-income consumers. Often the poor, particularly in Africa and in rural areas, do not have formal access to electricity, water and waste services, and thus may not be so directly affected by price rises. Where the poor do not have formal access to the service, they will rely on other — often more expensive — strategies to secure water (from private vendors) and energy (such as purchasing charcoal or kerosene).

Even when the poor are connected to formal systems, they are often affected most by deteriorating services — the first group whose supply is rationed or disconnected — resulting from under-funding of the service provider.

In those cases where the introduction of user charges is predicted to adversely affect the poor,

time-bound well-targeted compensatory measures may be required — at least in the short-term. Some way of overcoming the initial transitional costs may be needed, as illustrated by the example of Conakry (see Box 14). This is not to say that using subsidies is not also problematic.

### Subsidy Reform

*"The fertilizer subsidy scheme has been streamlined so as to release funds for a targeted, voucher-based farm inputs support scheme for small producers"*

(Sri Lanka Poverty Reduction Strategy, p. 35)

There is much confusion surrounding the definition of a subsidy<sup>15</sup>. In the narrowest sense, a subsidy is a direct cash payment by some level of government to a producer or consumer. In a broader sense, subsidies comprise any "measures that keep prices for consumers below market levels, or for producers above market levels, or that reduce costs for consumers and producers" (OECD, 1998).

So, what do we mean by "measures"? According to UNEP (2003), a distinction can be made between those measures that have a *direct* effect on price or cost — for example, payments to producers or consumers, preferential loans, tax

rebates, credits or exemptions, price controls – and those that have an *indirect* effect on price or cost – for example, demand guarantees, market-access restrictions, public research and development, regulatory exemptions.

Clearly, some subsidies involve an explicit and transparent financial transfer from government to producers or consumers, such as a cash payment per unit of production or consumption, while other subsidies are hidden. In fact, governments like to hide subsidies (keep them “off-budget”) – primarily for political motives. Subsidies therefore tend to take the form of price controls where the provision of a good or service is priced at a level below the full cost of supplying it.

The economic analysis of explicit and hidden subsidies is similar insofar as they have comparable impacts on the allocation of resources. Most economists agree that subsidies introduce significant distortions into the economy, resulting in inefficiency such as the diversion of resources from more productive uses to less productive ones. Subsidy reform should mitigate these distortions. The extent to which reform will improve resource allocation depends on a number of factors. According to Steenblik (1998) some of the more important ones are:

- The price responsiveness of the subsidised activity.
- The form of the subsidy.
- The conditions attached to the subsidy.
- How they interact with other policies.

By definition, however, explicit and hidden subsidies are significantly different in terms of their effects on public finances. Reform of explicit subsidies will yield visible fiscal benefits, as these subsidies represent a large and often growing drain on public finances, depriving other sectors of the economy of budgetary resources. For example, Indonesia removed pesticide subsidies in

1986 and saved US\$100 million per year in the process (see Box 15).

### Box 15 — Removing Pesticide Subsidies in Indonesia

The available evidence indicates that excessive use of pesticides, fertilisers and other agricultural inputs damages the environment and, ultimately, reduces agricultural productivity. A classic example of such unintended consequences occurred in Indonesia, where overuse of pesticides wiped out the natural enemies of the brown rice planthopper, until then a minor pest. In what the Worldwatch Institute calls “a two-year feeding frenzy”, the bug ruined some US\$1.5 billion worth of rice, prompting the government in 1986 to cancel pesticide subsidies. The good news is that pesticide applications each season subsequently plunged to half of previous levels, and the treasury pocketed 100 million US\$ in former annual pesticide subsidy payments. Moreover, rice production grew by three million tonnes over the next four years. This was helped by a national programme of integrated pest management, which cost the government about 5 US\$ million a year.

Source: de Moor and Calamai (1997).

From a practical standpoint, explicit subsidies are far easier to identify and measure; the analysis of implicit subsidies often involves complex calculations and assumptions.

Subsidies, explicit or hidden, are harmful to the environment if they lead to higher levels of damage than would otherwise occur. For example, the provision of water or electricity at subsidised prices will in theory lead to over-consumption (consuming more than is economically efficient) of both goods. In turn, this will deplete scarce water resources and result in increased emissions of air pollutants (if the power source is fired by fossil fuels). The subsidisation of pesticides, fertilisers and fishing vessels are further examples of price support that could lead to

equally wasteful and environmentally harmful behaviour.

The environmental benefits of subsidy removal, together with the factors listed above, will depend on the environmental impacts of alternative technologies and products. The environmental benefits of Indonesia's shift to Integrated Pest Management (as illustrated in Box 1.5) are clear – but this is not always the case. For instance, the environmental benefits of fertiliser subsidy removal will depend on current levels of use, the effect that subsidies have on the wider availability of fertiliser, and trade-offs between intensification and extensification of land use (increasing the area cultivated – sometimes by clearing forests).

Subsidy reform must be consistent with other social objectives such as food security and in particular, must be in the interest of the poor. Although subsidies are often introduced by governments to benefit specific social groups the distributional effects do not always turn out as the policy-maker intended. For example, studies of price support for agricultural products have shown that only 20 per cent of the gross transfer normally reaches the target group. The remainder leaks away to other activities (Ross, 1996). There is also the proverbial 80:20 rule referred to by Steenblik (1998), where 80 per cent of support tends to go to 20 per cent of beneficiaries.

### *Environmentally Related Taxes or Charges*

Environmentally related taxes or charges can be differentiated between those that are:

- Based on actual emissions (where the tax directly targets the pollutant/effluent of interest).
- Based on either the inputs to, or outputs from, a polluting activity (where the tax indirectly targets the pollutant/effluent of interest).

The choice of a direct instrument or an indirect instrument depends on the specific application.

When the costs of observing, measuring and monitoring the actual emissions are high, indirect instruments are preferable. Variations in emission levels between sources, due to differences in plant age, processes, and raw material and energy use, will all serve to increase these costs. If, of course, it is not possible to measure emissions, then direct instruments are ruled out.

In broad terms, the effectiveness of an environmentally related tax is characterised by the extent to which the tax delivers a reduction in emissions, or the consumption of inputs or products. The magnitude of the reduction depends on the “price effect” of the tax; that is the response of the polluter to the economic incentive provided by the tax. The responsiveness of a polluter to a tax-induced price change is measured by what economists refer to as the “price elasticity of demand”, which can be established empirically (see, for example, OECD, 2000). Basically, the higher the price elasticity of demand, the bigger the response by polluters from a tax increase (and the greater the environmental effect of the tax, but the lower the amount of revenue raised). The concept of elasticity is explained in Box 1.6.

Retrospective evaluations of the environmental effectiveness of environmentally related taxes are rare (see, for example, OECD 2001b) – primarily due to the analytical difficulty of defining the counter-factual: what might have happened had the tax not been levied. This is a necessary step if one is to isolate the impact of the tax from other factors that influence consumption and production patterns.

### *Product and Input Taxes or Charges*

When the production, consumption or disposal of certain goods creates pollution, and monitoring the pollution is not possible or prohibitively costly,

### Box 16 — Measuring the "Price Effect" of Taxes

The own price elasticity of demand (supply) is a measure of the responsiveness of demand (supply) to a change in price: Defined as the percentage change of demand (supply) per percentage change of the price.

The own-price elasticity of demand reflects current preferences (consumer demand), technology (producer demand of intermediate goods), and availability of substitute goods. Since all these basic characteristics can change, especially in the long run, changes in prices have normally a larger impact in the long run than in the short run, i.e. the long-term elasticity is higher than the short-term one.

Inelastic demand is when the price elasticity is, in absolute terms, smaller than 1. This means that an  $x$  per cent increase in price would lead to a less than  $x$  per cent reduction in demand. However, behavioural impacts could still be significant. Cross-price elasticity of demand is a measure of the responsiveness of demand of one good to a change in price of another good. For example, the impact on demand for natural gas following an increase in the price of electricity will be higher than following a price increase for aviation fuel, as natural gas and electricity are in some situations substitute fuels, whereas natural gas and aviation fuel are not.

Source: OECD (2001b, p 100).

there are other options to taxing emissions. Environmental objectives can be achieved by taxing the inputs used to produce a product, or by taxing the product itself. However, since the tax does not specifically target the pollution causing the emissions, there is no incentive to stop polluting per se, only to reduce purchases indirectly linked to the emissions (see Box 17). In this regard, inputs or products are used as a proxy for the targeted pollutant, which reduces the environmental effectiveness of the instrument over a pure emission tax. One exception is where the product and the emissions are joint products. Here there is a directly proportional relationship

### Box 17 — Environmental Effectiveness of Indirect Tax Instruments

An indirect tax or charge can be levied on: (1) polluting substances contained in inputs (such as the sulphur content of coal), (2) on inputs to a polluting activity (e.g. coal used to fire power stations, pesticides applied to crops) and (3) on the final product linked to the pollution (such as petrol, motor vehicles, electricity).

In terms of environmental effectiveness, a tax on (1) is preferable. Consider the example of applying each tax in order to reduce sulphur emissions from a coal-fired power station. A tax on the final product, electricity, can reduce emission by reducing electricity demand and, in turn, electricity generation, but does not provide an incentive to reduce emissions per kWh. A tax on the polluting input, coal, will provide an incentive to reduce emission per kWh, but will not create an incentive to use low sulphur coal. A tax on the sulphur content of the coal however, will provide an incentive to use cleaner coal, thereby reducing emissions of sulphur per kWh.

None of the indirect tax options will create incentives for the installation of abatement equipment however, since stations with equipment will pay the same unit tax as those without it.

Source: Blackman and Harrington (1999).

between the two and the environmental objective can be achieved by using either a product or emission tax.

Before considering the introduction of indirect tax instruments, policy makers should first remove any subsidies on the production or consumption of the targeted input or product. The presence of subsidies will weaken the incentive effects of the tax.

The potential fiscal benefits from product and input taxes can be significant. In OECD countries, taxes levied on fuels and motor vehicles, for example, comprise around 90 per cent of the

total revenue from environmentally related taxes (OECD, 2001b, p. 55). However, some developing countries still have relatively low tax rates, or tax exemptions, for fuels (see Box 18), such as diesel and kerosene, and for key agricultural inputs, such as pesticides and fertilisers.

### **Box 18 — Potential Fiscal Gains from Petroleum Product Taxation in Russia and Central Asia**

There is considerable scope for increased taxation of petroleum products in all Baltic states, Russia, and other former Soviet Union countries. Downstream taxation of oil products accounted for only about 0.4 to 0.5 per cent of GDP during 1993 to 1995 in Russia, Kazakhstan, and Turkmenistan. In Azerbaijan revenues were about 1.5 per cent of GDP. In the Baltics, revenue ranged from 0.9 to 3 per cent of GDP. These relatively low levels of revenues are caused partly by the infrastructure constraints and by monopoly power in oil transportation. Additional reasons are include an inappropriate tax structure (for upstream oil production and downstream sale of oil-based products) and weak tax administration systems.

There is scope for increasing excise duties on gasoline and diesel further. Improved regulation and increased efficiency of tax administration, including political will to collect taxes from large producers, can increase revenues. Increasing excise duties on gasoline and diesel, by 0.07 US\$ per litre to 0.15 US\$ per litre, could increase revenues by an estimated 0.5 to 1.5 percent of GDP in most of these countries. A co-ordinated approach would be required however to prevent arbitrage between the various countries.

Source: Gray (1998).

Furthermore, the application of tax differentials can enhance the environmental performance of an input or product tax. For example, by varying the tax rate according to the environmental characteristics of a fuel, producers and consumers can be encouraged to switch fuels – using a cleaner fuel as opposed to a dirtier one. Thailand, like many OECD countries, has used differential tax rates to promote unleaded petrol, while in China indirect taxes are used to encourage switching from high to low sulphur coal.

Taxing inputs such as energy can be strongly opposed by industry (out of fears over international competitiveness). This is why in many OECD countries there are tax exemptions for industry and agriculture, with households bearing a large part of the tax burden. To the extent that this happens in developing countries, particular attention should be paid to the impacts on poor households.

### **Emission Taxes or Charges**

Emission taxes or charges (on solid, liquid or gaseous discharges) can be thought of as an add-on fee to be paid in some proportion to the amount of pollution generated in the process of producing and providing goods and services. Emission taxes include fees levied on emissions to air, discharges to water bodies or treatment works, or disposal to land.

Emission taxes have long been the standard form of price-based instruments advocated by economists to achieve an environmental target, since they eliminate the wedge between private and socially efficient prices. In its purist form, an emission tax would be applied to each unit of emission at a rate equal to the monetary value of the marginal damage (external costs) at the efficient level of emissions<sup>16</sup>. However, this form of emission tax is rarely implemented in practice – not least because of the difficulties in valuing the environmental impacts of the emissions. Instead,

While we have already looked at the environmental effectiveness of indirect tax instruments it is worth adding that environmental benefits of such taxes depend both on the absolute level, and the relative price levels of substitutes to the taxed input or product.

### Box 19 — Colombian Pollution Charge System

Colombia's charge on water pollution has been successful in generating funds for environmental activities, in addition to providing incentives for reducing water pollution. Each region sets its own pollution reduction goals, imposes national base charges, and tracks discharges for six months. The charge is applied progressively over five years, with six-monthly increases by pre-established amounts until the regional environmental quality is achieved. Central to the program has been the successful collaboration between the Agencies and local businesses and communities. Since its inception, the pollution tax has become a source of substantial revenues for cash strapped environmental authorities. Between 1997 and 2000 the environmental authorities collected 17.9 billion pesos (US\$15 million). Over the same period, total disbursements from the national budget to the 14 environmental authorities that have been levying the tax amounted to just 8.7 billion pesos (US\$6 million). To put the charge in context however, it still only raised less than half a percent of total government tax revenues.

Source: ECLAC/UNDP (2001).

emission taxes are typically used to meet some predefined emission level or concentration standard at least cost. Emission taxes or charges have been used in several developing countries, including China and Colombia.

In addition to introducing new environmentally related taxes, existing environmental charges or taxes can be restructured to benefit the environment and possibly raise more revenue. Several examples have already been identified above:

- Existing taxes could be differentiated to favour clean products over dirty ones; and
- Existing tax bases could be modified to better target policy objectives — e.g. taxing the sulphur content of coal as opposed to elec-

tricity generation (if mitigating acidifying emissions was the objective), or taxing the carbon content of fuel as opposed to the energy content (if mitigating greenhouse gas emissions was the objective).

Some transition economies — including Poland (see Box 20) — are considering EFR in the context of reform to existing charges or taxes.

### *Reforms to General Taxation*

Taxation systems throughout the world traditionally tax work, income, savings, and value added. For the most part, leisure and consumption, resource depletion and pollution are untaxed and, in some cases, even subsidised.

We have already discussed the use of EFR to tax the exploitation of natural resources and generation of environmental pollution, as well as the reform of harmful subsidies. We have also talked about shifting the tax burden from work, income and savings towards resource depletion and pollution. In theory, this would increase incentives for the former and reduce incentives for the latter. The result would be more sustainable economic growth.

However, it is also possible to discourage resource depletion and environmental pollution by directly reforming more conventional taxes, such as Value Added Tax (VAT), excise duties, corporation tax and trade tariffs. This type of reform is being considered in the recent Georgia PRS.

The conventional tax that is high on the fiscal reform agenda of many developing countries is VAT, or similar sales taxes. Its design has often been faulty, its coverage incomplete, and its implementation patchy. EFR could build on existing reforms to VAT by, for example, putting an end to exemptions for, and the zero-rating of, environmentally harmful goods, such as fertilisers

## Box 20 — Reform of Environmental Taxation in Poland

Poland already had an established system of environmental taxation by the 1970s — primarily taxing emissions from large point sources. In common with other centrally planned economies the taxes were mainly designed to raise revenue rather than meet any specific environmental objective. For example, coal (a relatively dirty fossil fuel) accounts for much of Poland's energy generation, but is not subject to the charging regime.

The tax regime is based on the so-called "permit/charge/non-compliance fee model" which employs an emission charge in conjunction with a permitting system. Within this two-tiered structure a base charge is applied to all emissions below the permitted level and a penalty rate, often ten to twenty times higher than the base charge, is applied to pollution above the permitted level (the non-compliance fee). Such tax systems are complex, which creates monitoring problems.

The revenues are earmarked for central, provincial and local level environmental funds. In 1999 the charges provided 0.26 per cent of GDP and 1.3 per cent of state tax revenue. Collection rates were high — reaching well over 90 per cent.

Despite significant improvements over the last ten years, the pollution, energy and resource intensity of the Polish economy is still higher than most OECD countries. Revenues for the environmental funds have declined as a result — and as a consequence of slower rates of economic growth. This growing gap in financial resources for environmental investments makes it unlikely that the target expenditures required for EU accession will be met.

To address these challenges the government is considering modifications to the charging system. These modifications include the unification of the charges (making the charge independent of the environment user) and the implementation of a lump-sum tax for households that discharge sewage directly into water bodies or the soil. Following the "Second National Environmental Policy" the government is also considering simplifications of the pricing regimes for the water and waste sector — to reduce the number of pollutants covered and to introduce specific product charges.

Source: World Bank (2003).

and pesticides. In other cases, there could be a case for zero-rating (or applying a lower rate of VAT) to innovative energy and water saving technologies, to encourage market penetration.

Indirect taxes and excise duties still tend to be driven by fiscal concerns however, and possible environmental gains are overlooked. South Africa, for example, is considering an electricity tax at local government level, primarily for fiscal reasons, but the proposed design of the tax does not accurately reflect environmental considerations (Morden, 2003). Even so, if the proposed tax raises the price of electricity to consumers there may be some environmental gains in the form of reduced demand.

It is also possible to employ EFR within the corporation tax system to encourage the take-up of energy and water saving technologies. For example, accelerated depreciation allowances (sometimes known as enhanced capital allowances) could be introduced, which permit industries to write-off the investment cost of innovative "clean" technologies against taxable income in the first or second year of the investment.

Trade tariffs can also be restructured to incorporate environmental considerations. For example, in China, several types of hi-tech equipment for environmental protection have been added to the list of projects that can benefit from interim rates of duty as governed by

the Imported Commodity Duty Guidelines, including: the natural-gas-driven 5.9 litre combustion engine, wind-force electric generating equipment and their spare and component parts, as well as equipment used in recovery of alkali from the boilers during treatment of sewerage emitted by the paper mills. This will serve to encourage greater use of these “clean” technologies.

### *Applicability of EFR Instruments to Developing Countries*

The core requirement for EFR is a well functioning tax system and the ability to accurately monitor, at reasonable cost, the environmentally sensitive activities being targeted. However, given that natural resource endowments, environmental pollution problems, tax systems and administrative capacity vary widely across countries, different aspects of EFR are more suitable for some countries than others. Equally, within a country, aspects of EFR will be applicable to some sectors and not others. The political and legal environment and other “cultural” factors will also be unique to each country.

It is therefore not possible to devise a simple blue print for EFR that would apply across the board (see UNEP, 2004a). Nonetheless, the following generalisation can be made:

- Taxes to capture the rent from the exploitation of natural resource (forests and fisheries) will be most relevant to resource-rich countries, of which many are low-income countries.
- Subsidy reform will be applicable across most countries, but particularly energy producers, and where the energy company is state-owned, in which cases subsidies are often high.
- Like subsidies, user charges or fees will be applicable across most countries, are particu-

larly relevant to the provision of energy, water and sanitation services, and need to be designed cautiously to protect the poor.

- Product and input taxes or charges will be applicable across most countries.
- Emission taxes or charges will be most relevant to middle-income developing countries, where pollution from industrial activities in particular has become a problem, and, equally important, the administration of the tax is possible.

In Part Two of this report, we elaborate on the application of the instruments of EFR in different sectors.

While the focus of this report is the experience of developing countries with EFR (South-South lesson learning), there are valuable lessons to be learned from South-North comparisons.

With regard to industrialised countries, major reviews<sup>17</sup> have identified the following opportunities for EFR in OECD countries:

- The potential exists for petroleum product taxes in many countries, which would help address air pollution problems and greenhouse gas emissions.
- Agricultural subsidy reform is also possible in many countries, which could help reduce some of the environmentally negative aspects of agriculture intensification.
- There is also potential for reforms of the tax system more generally to make it more supportive of the environment.

The political challenges of EFR in OECD countries are equally problematic, presenting obstacles to reform. There may be something to learn from the approaches adopted by OECD countries in overcoming resistance to EFR.



# The Acceptability of Environmental Fiscal Reform

In the environmental policy arena taxation and pricing instruments have advantages compared to command-and-control approaches. In achieving a specific objective to safeguard environmental quality or conserve resources, the cost to society as a whole will tend to be lower with such economic-based instruments than with direct regulations. In addition, economic-based instruments are more efficient in the long term at preventing environmental pollution or resource depletion than regulations. Most importantly, taxation and pricing measures raise revenue.

There have been many successful applications of EFR, and examples from developing countries are highlighted throughout this report. So why are the tools of EFR not more widespread?

There has often been a tendency in policy papers to focus on what needs to be done - rather than on how to help make it happen. While calls for EFR are not new, it remains, in the majority of cases, unimplemented. Sometimes the absence of reform in development policy areas is attributed to "lack of political will", or "lack of capacity" and resources to implement policy. But what do these generic terms mean and how can we better understand the policy process in order to improve the acceptability and active pursuit of EFR?

## The Political Context

One of the reasons for weak implementation has been a separation of the question of what should

be done from the process of how it should be done. Understanding how to undertake policy reform imposes constraints on what reforms can be implemented - by defining the political space available and hence the possible reform options (see UNEP, 2004a). For example, the proposal to decrease fertiliser subsidies in India has to be seen in the context of what is politically possible. Given the differing interests and strengths of the various stakeholders it is essential to handle the multiple objectives of EFR and their potential trade-offs through an inclusive political process that facilitates coalitions for reform. This requires an understanding of politics - from how the budget process works to the links between corruption and natural resource rents. Understanding the political and budget context is vital because often what has happened is that advocates of EFR have approached it as a separate exercise - without embedding it into the budget, the ongoing political debate and policy choices. Furthermore, it is crucial to consider which groups in society are - or perceive themselves to be - winners or losers of the reform process.

Determining the right balance between the broad objectives of EFR is also a key to success. This requires the environment and development community to actively engage with:

- The Ministry of Finance - which will be mostly concerned with revenue streams, synergy with broader tax reform efforts and administrative simplicity?

- The political process, where the relative weight of each objective is ultimately agreed.

Determining the right balance between objectives and the “rules of engagement” for the environment and development community will vary across countries, and often involve discussion in the media, inter-ministerial and cabinet meetings, parliamentary debates over the budget and back-room lobbying.

### *Analysing the Political Context*

Many of the policy recommendations directed towards developing countries are predicated upon a particular conception of government and role of the state. In most modern democracies political power is institutionalised and based on the rule of law. These systems generally rest on a neutral bureaucracy recruited on merit, an independent judiciary, universal approaches to the protection of property rights and services and electoral processes as the basis for government legitimacy.

However, in many developing countries, especially low-income ones, political power and political systems are more informal, personalised and patronage – or client-based. While there are, of course, exceptions and much variation, these different systems are the context in which policy choices are made. For example, countries like Indonesia, where forest revenues have been used as a source of political patronage<sup>18</sup>, will face certain obstacles to changing the way profits from natural resource extraction are gathered and distributed. However, the example of Cameroon shows that political will and increased involvement of external observers and civil society can overcome those obstacles (Ndjanyou and Majerowicz, 2004). In Indian states, where some wealthier farming groups exert significant influence on the political agenda, increasing electricity prices in order to

stop over-use of groundwater faces many obstacles.

There is a vast body of literature on the political economy of policy reform in developing countries. It is worth highlighting some of the issues that affect the chances of success of EFR. One vital question is who stands to win and who stands to lose.

### *Identifying Winners and Losers*

All reform processes create (actual and perceived) winners and losers, through different transmission channels (see Box 2.1). In EFR, the main effects will be the direct and indirect environmental, social and economic effects of any price changes. But as highlighted in Chapter 2, how revenues are used will have its own set of impacts. Consideration of both the direct and indirect price effects, and the impacts of redistributing the revenues, allow us to identify the net or actual effects of EFR.

It is important to identify winners and losers in order: (a) to anticipate the incidence of costs and benefits from a proposed reform; (b) to inform the design of compensatory or mitigation measures for the losers; and (c) to devise ways of building broad-based support for reform, which will help ensure the reforms are successfully implemented.

There are many approaches to assessing the distribution of costs and benefits to different stakeholders, and in anticipating their responses – from technocratic to participatory approaches (see, for example, World Bank, 2001). Often, several approaches can be combined for greater effect. Even the more participatory approaches require value judgements about which stakeholders are most important and why. Each country and each sector is unique, and the key winners and losers can only be identified within a specific country or sector context.

## Box 21 — Transmission Channels for the Effects of EFR

There are essentially five different ways or transmission channels through which the main stakeholders in EFR could be affected:

1. *Prices* determine real household incomes, directly through effects on consumption (for example, if households are to pay more for energy) and indirectly through effects on production (for instance, if industries pay more for water and these additional costs are passed on to consumers in the form of higher commodity prices).
2. *Employment*, both informal and formal, provides the main source of household income. Some policies may increase or decrease the demand for labour, which will affect wages and employment opportunities.
3. *Access to goods and services* affects welfare, (particularly access to energy, water and sanitation services). If, for example, energy prices rise, and this lead to improved access by the poor to power supplies, then this is a significant positive impact for that group.
4. *Assets* (which can be financial, physical, natural, human or social) can have their value changed by reforms. Noise pollution, for example, may reduce property prices.
5. *Transfer payments*, either to public or private entities, can affect households indirectly. So, if energy prices are increased thereby removing the need for government transfer payments, government resources are freed up for other spending programmes, which could potentially yield higher economic benefits.

There are sophisticated economic techniques for modelling impacts through these transmission channels, but these methods require considerable data, time and human resources, so their use is constrained in many low-income countries.

Source: World Bank (2001).

“Perceptions” are also vital, since someone’s perceptions can be highly influenced by their personal starting point and what they hear from others, particularly from the media. Often stakeholders are only aware of the most direct or visible impacts, and as a result there is a tendency to focus on these, even if the less direct and longer-term impacts may be more significant. Since relatively small and unrepresentative, but well organised, interest groups can have a disproportionate influence on policy development - even in democratic systems - their perceptions might dominate the debate and decisions even if the reforms benefit a broad, but less well organised, majority of the population.

The way policies are implemented- and how people accommodate and respond to reforms – will also affect their longer-term effects and who turns out to be the winners and the losers. The

speed and sequencing of reform will also crucially affect the distribution of gains and losses from EFR.

### Key Stakeholders and Their Interests

In the context of EFR, there are a number of stakeholders, notably:

- Poor and vulnerable groups (disaggregated by gender, locations, ethnicity etc.).
- Non-poor households.
- The private sector.
- Civil society groups (NGOs, media, academic groups etc.).
- Politicians (such as key Ministers, Members of Parliament, political parties).
- Bureaucrats at all levels of government.
- Development agencies and international actors.

### Poor and Vulnerable Groups

In the context of development policy this is the key group, as EFR should have a clear pro-poor orientation in achieving its fiscal and environmental objectives.

The impacts of EFR on this group depend on the type of instrument adopted. Generally, the introduction of resource taxes, emission taxes and some reforms to the general tax system will have limited direct impacts on the poor. (There may be indirect effects, but these are difficult to identify and quantify.) Our focus here is on EFR instruments that have a more direct impact on the poor, such as user charges for energy and water services, and on taxes on items such as inputs to agriculture. A wealth of experience now exists on such reforms, but their effects on the poor remain controversial, complex and very circumstantial.

Although subsidies are often justified *ex ante* on social grounds, they are often poorly targeted

### Box 22 — Impacts on the Poor of Liquefied Petrol Gas (LPG) Subsidies in India

India subsidises small cylinders of LPG. Initially, this led to large distortions in energy markets as well as rationing, so that in 2000 12 million households were on the official waiting list for subsidised LPG and unofficially 30 million were waiting to be supplied. However, according to the Ministry of Petroleum ([www.nic.in](http://www.nic.in)), significant expansion in refinery capacity over the last few years has eliminated the waiting list.

A 1994 survey of households in Hyderabad showed that 63 per cent of the (value of the) subsidy went to the richest 40 per cent of households. By contrast, only 17 per cent of the (value of the) subsidy went to the poorest 40 per cent of households. The poor, for whom the subsidy was designed, do not usually use LPG for cooking.

Source: UNEP (2003a) and ESMAP (2000 and 2001) for the survey results.

and end up benefiting the better off (see Box 22). In Poland and Hungary, it has been shown that subsidies benefit the rich much more than the poor (Freund and Wallich, 1995 and Newberry, 1995)

Contrary to common perceptions, the poor do not necessarily suffer from higher user charges, as they may not even have access to (publicly or privately supplied) energy, water or sanitation services. They may even benefit, if higher user charges are applied to more well-off groups, or are used to finance the extension of the network into poorer areas. However, there are cases where the poor will be hurt by price increases or when subsidies are removed. In Sri Lanka, for example, fuel represents a major cost for poor fishermen, and therefore this group will be more negatively affected by energy price rises.

The poor are not a homogenous group; differences include gender, location (such as urban versus rural), ethnicity and employment. Thus different groups will face different effects. In Bulgaria, electricity costs account for a large share of the budget of elderly people, so price rise would further eat into their budget (WRI, 2002). The poor also differ in their ability to organise themselves politically, and thereby influence the policy process. Poorer households are also subject to manipulation by others in the political system, in order to support their own demands. For example, wealthier farmers may encourage poor farmers to push for subsidised agricultural inputs even though the wealthier farmers capture most of the benefits.

### Non-poor Households

Often the better off households have greater power and influence on fiscal policy due to their higher level of education and better access to the political arena. They will be keen to maintain their economic privileges (such as various subsidies) and resist a greater tax burden.

In many cases black marketers and smugglers are relatively well off. They have an interest in maintaining steep price differences between countries, so as to profit from smuggling, as in the case of petrol smuggling from Nigeria to other regions of West Africa and the smuggling of subsidised fertiliser from India to her neighbours. Box 23 illustrates similar contraband traffic between Belarus and Poland.

However, non-poor households can be supportive of EFR. It is often the better educated and more environmentally aware urban middle class that put environmental issues on the political agenda in the first place.

### **Box 23 — Fuel Imports Undermine Transport Policy of Government in Poland**

In 2002 the Polish Fuel Distributors Association told the Polish Government of the extent of fuel smuggling between Belarus and Poland. It estimated an annual tax loss €570 million. Hauliers had enlarged their normal 200 litre capacity tank up to 1,500 litres and were selling the cheaper Belarus fuel (with a diesel price of 36 US cents compared with 68 US cents per litre in Poland) all over eastern Poland. The Polish government was urged to introduce a decree limiting tank size to the European limit of 200 litres, with effect from 1 January 2003. This unpaid tax revenue would have been sufficient to construct 160 km of new motorways each year. Budgetary expenditure on roads in Poland was only US\$582 million (in 1997 prices), out of which 40 per cent was paid by foreign sources.

Source: GTZ (2003, p. 78).

### **The Private Sector**

Most EFR measures will affect the private sector. Like the poor, this is not a homogenous group but includes the informal sector, small and medium - scale enterprises, large indigenous enterprises and foreign investors. It is crucial when engaging in a pro-poor EFR processes to also analyse the

effects of the envisaged policy package on those businesses typically owned by the poor.

In general, industry will be most affected by instruments that increase the costs of production, in cases where these cost increases cannot be passed in full, to either suppliers or consumers. Their main concern relates to fears about potential losses of competitiveness. However, these fears are not necessarily well founded. Taxes or charges may impose short-term costs, but may also spur more environmentally and economically efficient production and innovation in the longer-term. Moreover, except for a few industries, EFR-induced cost increases are rather small relative to the total costs of production (OECD, 2001b). Some industries might even benefit from, and hence support, EFR processes in the short-term – such as investors in a liberalised energy market and companies producing or selling energy efficient (or other environmentally friendly) technologies. Still, threats from parts of industry of relocating to another country, closure or mass dismissals of the workforce are a powerful argument used by the private sector that catches the eye of politicians (as illustrated in the South Africa example shown in Box 24).

In general, larger firms have very good access to politicians and can therefore influence or even

### **Box 24 — Private Sector Resistance to Price Reforms in South Africa**

South Africa, whose economic path has favoured large-scale industries in certain sectors, faces strong opposition to altering prices (such as raising low energy prices), which affect the costs of production for these industries. Indeed South Africa has made cheap electricity part of its comparative advantage – despite the environmental and other cost this might entail. Given South Africa's 30 per cent unemployment in 2002, threats by the private sector of industrial closure are politically very hard to resist.

Source: Morden (2003).

stop policies at an early stage of formulation. By contrast, smaller businesses are usually less well organised and have less influence on the policy making process.

The ability to cope with the consequences of EFR will depend on the type of private sector business affected. Larger companies tend to find it easier to mobilise the necessary know-how and funds to invest in more efficient production processes. Small and medium sized enterprises (SME) however, tend to find it more difficult to set aside funds, even though it might pay-off in the medium-term. SMEs might therefore need access to special consultancy services and other forms of support to kick-start a change towards more efficient production processes, which in turn would reduce the cost of EFR.

#### Civil Society

Civil society, which includes pressure groups, trade unions, professional and religious groups, will have a significant influence on the policy-making process. But it is worth noting that the degree to which civil society is organised varies significantly from country to country, and as a result, so will its influence. Civil society groups' interests in, and position on EFR, will also tend to differ depending on their constituency.

Labels (such as NGO) and the names of particular organisations can be misleading: sometimes the name will neither adequately reflect the orientation and character of the group (for example an NGO which appears to be a pressure group, might in reality actually be more of a consultancy firm) nor the strength of the backing from within society. There is nonetheless a growing tendency by foreign actors (including international NGOs, donors and foreign corporations) to co-operate with civil society groups.

environmental awareness, exposing corruption and presenting the case for specific winners and losers from proposed reforms. Clearly, how they present reforms to the public is vital. In many countries government has strong control over the media.

Academia and relevant research bodies can also provide important analytical inputs and help design EFR measures that are effective, efficient and fair. Moreover, the endorsement of a particular reform by a well-respected research institution or academic can be influential. However, participation and influence of civil society will also depend on the scope for voicing independent positions, which is often restricted by government.

#### Politicians

In countries where power is relatively informal and personalised, politicians may have far more influence than government bureaucrats. We use the term "politician" here to include the heads of the Executive (for instance the President), Members of Parliament and political parties, and other key political leaders. Politicians may be reluctant to support difficult EFR measures, such as raising prices and taxes, if for example they think these will offend key supporters. In some cases, where corruption is common, they may be paid-off by the private sector, or have business interests themselves, that would be threatened by some EFR measures, such as subsidy reforms, resource or product taxes.

Often politicians will find it difficult to support policies that only pay-off in the long-term (often the case with environmental policies), since they will be more concerned with the immediate electoral cycle. Being at the centre of power, the interests of the politicians, or their perception of what would be best for the country, are crucial to EFR.

A newly elected head of government may be willing to demonstrate to the electorate that

Depending on the country, the media can also play a key role in the policy debate, creating

corruption and protection of the interests of a vocal minority will not be tolerated, especially if they succeeded a corrupt and dishonoured government. In this case, the new government might be more open to far-reaching, previously controversial, forms of EFR.

### Government Administration

In the context of EFR, key bureaucrats reside in the government departments, agencies or ministries responsible for: financial management of the economy (such as the Ministry of Finance), management and protection of the environment, management of the natural resource base (forestry and fisheries, in particular) and issues relating to energy, transport, industry and trade.

The Ministry of Finance will primarily be concerned with the following aspects of EFR: its integration within the existing fiscal framework, its revenue raising potential and its administrative feasibility. Normally, however finance ministries will not fully engage other relevant ministries on the environmental and resource conservation benefits of EFR, although there are exceptions. China's Ministry of Finance has already implemented some EFR measures with an environmental rationale, while South Africa's Treasury is considering EFR (Morden, 2003).

The Environment Ministry or analogous agency is generally the newest and weakest member of government, although they may be relatively well funded by donor assistance. Often this ministry relies heavily on command-and-control approaches to environmental problems, is somewhat distrustful of the private sector and exploiters of natural resources, and may lack the economic and fiscal skills to engage fully with the Ministry of Finance on debates about EFR. Depending on where the revenues from EFR would go, environment agencies themselves may not even be particularly strong proponents of EFR.

Natural resource ministries (such as forestry and fishery) may face conflicts of interest between their role to promote production and the need to use resources sustainably, with sustainability often regarded as less important. Thus, the very guardian of a resource may resist EFR designed to provide economic incentives for more sustainability.

Ministries responsible for energy or electricity, water, agriculture, trade and industry will generally want to maintain their own power base in the bureaucracy, and may be closely allied with the key interest groups of their constituency (for instance farmers in the case of agriculture departments, and the private sector in the case of the trade and industry departments) which may make some forms of EFR difficult.

Many countries are federal, or have strongly devolved administrations (China, South Africa and Brazil are examples). This may raise key questions as to which tier of government has control over natural resources, or has the power to raise revenues and set tax rates or tax bases.

A growing number of countries are decentralizing functions - whether to the provincial, state or local level. While more tasks are being devolved financial resources are often not, leaving decentralised structures with inadequate resources to undertake their tasks. This has created a great interest in raising funds locally - also through EFR - without relying on inadequate or unreliable transfers from central government. Such is the case with the pollution levy system in China (see Box 25). However, in many countries, outside the capital, administrative bodies have limited capacities to design and implement EFR, and limited political influence.

### Development Agencies and Other International Actors

The development community is now, more than ever, harmonised around the Millennium Development Goals (MDGs), and providing

### Box 25 — China's Pollution Levy System (PLS) as a Source of Revenue for State Governments

China's pollution levy system was introduced in 1982. Central government sets the level and structure of the levy, but responsibility for collecting the charges is with the local Environmental Pollution Boards (EPBs). Charges were initially imposed on emissions of 113 substances, but as capacity has built up over the years, this has been expanded to nearly 200. As a result, PLS revenues have increased steadily and in 2000 reached 5.8 billion RMB, collected from about 25 per cent of Chinese industrial enterprises.

Despite the comparatively impressive overall performance of the PLS, important weaknesses have been identified. Firstly, levy rates have not been indexed to prices, and so have failed to keep pace with inflation. The incentives were also weak: Given that the size of the levy generally ended up being much lower than incremental pollution costs, polluters tended to pay the charges rather than invest in abatement. Moreover, the tax base only comprised industrial sources. Enforcement has also proved difficult given that EPBs do not have sufficient capacity to assure all sources within their jurisdiction. Finally, as EPBs get the revenue from the levies, they face a trade-off between encouraging pollution abatement, which would reduce emissions but also reduce revenue.

In order to address these weaknesses, the State council has announced major changes to the PLS, which will come in to effect from July 1, 2003. These include extension of the levy to cover small private enterprises that were previously exempt and shifting payment of levies and charges to the main local budget rather than the EPBs. Shifting the revenues to the main state budget is a major change.

Source: Zhong and Horn (2003).

technical assistance and financing to countries to achieve these goals. Donor agencies are playing a key role, contributing to the improvement of public expenditure management, and supporting poverty reduction strategies. They have also been actively engaged with country partners in favour of EFR in the fields of water, energy and forestry.

While development agencies often present themselves as neutral providers of advice, they have their own institutional bias, priorities and obligations, which will influence, for example, the identification of projects for investment and financial support. In many low-income countries such agencies play a key role in affecting the policy debate. In striving to serve many different countries, there also is a danger that donor agencies provide policy advice that essentially, assumes that one size fits all. There is also a natural tendency – especially for bilateral donors – to base their advice on their own country experience, rather than international best practice. This can lead to countries ending up

with a strange hybrid of different approaches. This tendency is now countered by donor agencies developing a greater awareness of the country context through increased emphasis on “country ownership”, by decentralising their offices and employing more national staff.

Even where agencies present international best practice, their visibility and power affects the way their advice is taken. To caricature the situation, in some countries advice from the IMF is often seen as key by the Ministry of Finance, while for grassroots organisations the fact that the IMF is advocating a particular option is enough to discredit it. In other cases, it is convenient for the government to blame an external agency for forcing it to impose an unpopular policy, which it would have had to implement anyway.

Some donors (often with export credit guarantee departments) may have ulterior motives for their policy advice. They may for example, encourage heavy infrastructure contracts, which would be

undermined if the focus was instead on greater resource efficiency and demand management, as encouraged through EFR.

Then again, donor agencies are only one part of their respective governments, often linked to ministries for foreign affairs. Agriculture ministries and ministries for trade and industry will have an

interest in increased rents or exports for national companies, which might conflict with developing country interests and undermine EFR efforts. For example, industrialized countries' fishing agreements have often undermined attempts by developing countries to maximise rents from their offshore fisheries, as illustrated in Box 26.

### Box 26 — EU Fishing Agreements in West Africa

While recent EU agreements are generally more favourable to West Africa, they still fall short of the demands of developing countries to receive sufficient revenues and safeguard their future fish harvests. The EU also resists other measures, such as banning the sale in EU markets of juvenile fish and shrimps, which would reduce the damaging effects their removal has in developing country waters.

Recent agreements vary widely in terms of compensation payments (from about €11,000 to €346,000 per boat), the amount earmarked for the local industry and fishery management (from 19 to 41 per cent), and environmental rules, such as catch limits (IEEP, 2000) — generally reflecting the ability of each country to bargain with the EU.

The EU is in a dilemma; as one third of the fish in EU markets is estimated to come from access agreements with developing countries, and jobs in economically deprived areas, such as parts of Spain, depend on these. There are also powerful private sector interests involved in lobbying the EC to maximise EU benefits over developing country interests.

Morocco was the toughest negotiator — deciding to boycott EU access agreements and shift to negotiating with individual vessels — despite threats that some EU trade might be cut off as punishment. Senegal and Mauritania continue with EU agreements but, with very rich fisheries and hard bargaining, receive some of the largest EU payments. In 2001 both countries, as well as Guinea Bissau banned EU fishing and sought to increase regional co-operation on fishery management. In June 2002, Senegal signed a new agreement with the EU worth €4 million more a year. It also increased Senegalese crew on EU vessels from 33 to 50 per cent. In terms of managing the resource, 18 per cent of the revenues were earmarked for fishery management; there was also a reduction in the demersal fishery quota, a ban on pelagic fishing, a reduction in the area for EU fishing and a two-month biological rest period. The Senegalese fishing minister felt he had achieved his aim of “not selling out Senegal's marine resources”, but deplored the EU's lack of will to “compensate correctly”.

Source: Africa on line at ([www.africaonline.com](http://www.africaonline.com), 2003).



# Managing the Environmental Fiscal Reform Process

**H**ow can the constituencies for reform be strengthened by the way the EFR process is managed? Careful and inclusive management of the process will reduce opposition to EFR, and therefore increase its acceptability.

## Sensitivity to the Problem and Country Context

Situating reforms within a country-specific context, and understanding the key internal and underlying drivers of policy change, will determine how best to manage the reform process.<sup>19</sup>

### *Culture and Socio-political Context*

Understanding a country's culture and history is vital, since these factors will influence the political-institutional context, legal systems and the assignment and protection of property rights. In Tunisia, for example (as in many other countries), water pricing policies will have to take into consideration the notion of water as a non-economic good, which is deeply rooted in Tunisian culture. In the European Union, reform of agricultural subsidies has proved extremely difficult due to the power of the farming lobby, whose influence is based on historical and cultural factors. Despite their relatively small number, farmers retain a powerful position in some European societies, where a strong attachment to the land and the peasantry is stressed. In addition, governments might include small farmers in their political power base.

Cultural factors will also influence the instrument choice. For example, in the US and the UK, the market rules most resource allocation decisions. By contrast, in Eastern Europe and parts of Asia, cultural and social factors are as important as the market in allocating resources. Cultural attitudes towards the market will influence the choice between a market-based instrument and regulations for managing the environment.

Further aspects opening up or limiting options for EFR are related to the broader socio-political context - such as the structure of the economy (including the concentration of key sectors and the dependency on certain energy resources) or the characteristics of the polity (e.g. system of governance, distribution of competencies and the degree of institutionalised participation in decision-making etc.).

### *Events*

Often policy change does not come about through deliberate government choices, but is imposed in the wake of unanticipated events as varied as economic shocks or other crises, like natural disasters. It may also come from civil society initiatives, which might include the private sector, policy think tanks, the media and international agencies.

A fiscal crisis, for example, can provide a major impetus for financial reforms. In Ghana, a power crisis caused by a major drought helped persuade consumers that there was a need to accept higher prices to allow investments in non-

hydro power stations (Edjekumhene and Dubash, 2002). International events have likewise often shaped environmental awareness and calls for reform. These can be sudden disasters, such as Chernobyl or Bhopal, or more planned positive events such as the UN summits on environment and sustainable development in Stockholm 1972, Rio 1992 and Johannesburg 2002.

Depending on the severity of the crisis, fast action may be required, but this can limit dialogue. In cases where an immediate response is not required, there are opportunities for carefully managing the process.

### *Political Motives and Calendar*

It is often assumed that both the political participants (such as ministers or parliament) and the bureaucracy make decisions in the “public interest”. Thus, the government will implement a policy reform if it is considered to be efficient (the reform increases social welfare). This is rarely the case in western democracies, and for various reasons, is less likely to be true in many low-income countries. As emphasised in Chapter 4, interests and motives within government differ. In addition, other stakeholders and the media often play an important role in setting the political agenda.

Ahead of elections, the government in power will normally refrain from unpopular reforms (such as increases in taxes). New governments, especially if they have a powerful mandate, may be more willing to take risks and embark upon multi-year reforms, particularly if first results are expected to become visible before the next elections.

In general, it is important to make use of any substantive or temporal windows of opportunity for EFR.

### *International Institutions*

In a world with ever-expanding international trade and an increasing awareness of the trans-

boundary or even global consequences of many environmental problems, EFR needs to consider the existing network of international regulations and institutions. The rules of the World Trade Organisation (WTO), for example, restrain a growing number of countries from using border tax adjustments related to production processes. The general thrust of thousands of bilateral aviation service agreements prevents states from levying taxes on kerosene for international air transport (WBGU, 2002). On the other hand, the Clean Development Mechanism and Joint Implementation, under the Kyoto Protocol of the United Nations Framework Convention on Climate Change, provide governments with additional options for using economic instruments in the field of energy, forests and land use.

## *Building Coalitions*

### *Dialogue*

Promoting dialogue between key stakeholders will generate information on their situation, opinions and demands. Dialogue can also help to form political alliances and get political majorities, in cases where legislation must be voted through parliament (UNEP, 2004).

It is essential to include the poor and other groups often excluded from political process in the dialogue, in order to ensure any reform is designed with pro-poor concerns in mind.

The consultation process itself may contribute to public support for EFR. Involving parties in the design of EFR instruments and the monitoring regimes will see further levels of public support for the reforms. However, it should not be assumed that dialogue will lead to consensus – differences of opinion between stakeholders will often remain. Leadership is crucial in these situations, as illustrated in the case of reforming the price of unleaded petrol in Thailand (see Box 27). Indeed a constructive, objective lead

dialogue may be facilitated by locating the steering function for the process within a single administrative entity – an agency that has the authority to rally different ministries and agencies around the issue at hand. However, depending on the design of the dialogue, there also is a danger that vested interests will misuse the participatory approach to slow down and disturb the reform process.

### *Winners and Losers*

It is essential to consider carefully who gains and who loses from a specific measure, and how to

#### **Box 27 — Coalition Building in Thailand: Phasing Out Unleaded Petrol through Price Reform**

In 1991 the Government of Thailand – pressed by concerns about the harmful effects of lead pollution on the population and the environment – embarked on an ambitious programme to phase out the use of leaded petrol. This was a complex task, affecting many sectors. However, the Thai policy makers managed to surmount obstacles to reform and successfully completed the process in four and a half years, one year ahead of schedule.

A crucial success factor was reliance on fiscal incentives to favour unleaded over leaded petrol. To encourage the switch to unleaded, the pump price was set at US\$0.012 per litre less than that of leaded.

This policy was introduced with a collaborative approach involving key stakeholders, including government agencies, representatives of oil companies, and automobile manufacturers. Success was also crucially dependent on governmental institutions taking vigorous leadership and managing all steps of the process, including setting target dates for implementing key actions and continual monitoring and follow-up evaluation.

Source: Sayeg (1998).

manage perceptions. Sometimes stakeholders will not be aware of any or all of the potential costs and benefits, or may be influenced by the media or other sources of information. Having a clear institutional map of potential “drivers of change” can help identify potential allies. The analysis should build in flexibility, as losers and winners often change through time. So, for example, an energy price rise may have significant negative impacts for one social group in the short-term (say, because the availability of cost-effective energy efficiency measures was poor), but could have longer-term benefits, because increased investment in energy efficient technologies began to make more cost-effective measures available. In some cases, it could even be the same household that experiences these changing impacts. How people trade-off effects that accrue at different points in time of course matters in these circumstances. However, it is generally assumed that households prefer benefits now rather than later – and the poorer they are, the greater the preference for benefits today.

### *Vested Interests*

Corruption and patronage is a feature of some political systems – particularly in the context of natural resource use (where rent-seeking behaviour is likely) – that has already been highlighted. Even in more open democratic systems, relatively small and unrepresentative – but well organised – interest groups can exert considerable influence over policy. When they stand to lose, such groups can be highly effective in undermining reforms, even if these are supported by a broad majority of stakeholders. For example, large industries benefiting from free disposal of waste to waterways are well represented politically and often have ample means to impede reform efforts. Also, industry will, as a rule, lobby strongly against tax increases. Conversely, many people affected by water pollution, are spread throughout all sectors of society and are not easily mobilised around the issue. Powerful urban interest groups often prevent energy price rises. Indeed, tariff

increases have provoked protests in Argentina, India, Indonesia, Ghana and South Africa. In another example in Ghana, a long-term contract for power with a giant aluminium smelter has been a sticking point in reforming fuel prices (WRI, 2002).

### *Powerful Stakeholders*

It is vital to make strategic alliances with powerful stakeholders, and equally between groups who may initially be suspicious of one another. In Indonesia, attempts by the ADB to facilitate dialogue with civil society over electricity price rises and reforms were hampered by the refusal of some of those involved to participate (Seymour and Sari, 2002). Similarly, a recent analysis of forestry sector reform found that it was often important for vocal NGOs to work closely with the World Bank, even though they may not be natural allies (WRI, 2002).

In different countries different participants can lead the reform process; for example, forestry EFR was driven by the Ministry of Finance (in Cameroon), by civil society organisations (in Cambodia) and development agencies (in Indonesia).

### *Opportunities for Coalitions*

There may be more points of leverage and opportunities for building coalitions than initially evident. Many participants who appear monolithic are in fact far from homogeneous. This is most obvious in government where different ministries have different lobbies and different agendas. This can be true within the same agency. For example, the Ministry of Energy may have a division in charge of maintaining a healthy coal sector and, at the same time, a division entrusted with promoting renewable energy. Each division is likely to have opposing views on EFR. For similar reasons, there will be private sector enterprises (energy intensive industries) that would favour EFR aimed at

promoting energy efficiency, while other enterprises (energy suppliers) will not.

### *Political Champions*

There will be times when a forceful personality will be able either to facilitate or constrain reforms. A newly elected or appointed political leader, especially one who is well supported, can be the catalyst for major policy shifts. However, in the context of EFR, endurance is crucial, as EFR conceptualisation to operation (before relevant laws and/or regulations can be passed) can take several years. Therefore, it is important to identify political champions (be they individuals or institutions) who have the steadfastness to lead the process through ups and downs.

### *Technical Skills*

A key ingredient for successful EFR is a natural resource or environmental agency that understands fiscal issues, and a Ministry of Finance that understands the importance of environmental ones. In many countries, however, neither ministry will have officials (such as environmental economists) who have both fiscal and environmental expertise.

One of the problems is simply a lack of the right personnel in each institution. Very few natural resource or environment agencies employ trained economists, and very few Ministries of Finance employ trained environmental professionals. This situation needs to be addressed if inter-ministerial support for EFR is to be realised.

## *Strategic and Opportunistic Intervention*

In addition to building coalitions, there are many other steps that can be taken to advance EFR. For instance, by providing information and

evidence of EFR in other countries, effective dissemination and advocacy, integrating EFR into key policies and budgetary procedures and careful timing and sequencing of EFR measures. Of particular importance is the integration of EFR with Poverty Reduction Strategies (or equivalent) and the budget process. These steps should be taken strategically while maintaining some degree of flexibility, in order to take advantage of opportunities presented by an evolving political process.

### *Challenging Perceptions*

Those who feel they either have something to gain or lose by the changes often generate debate over the impacts of EFR. Stakeholders will line up as proponents or opponents of EFR based on these perceptions, whether or not they are true reflections of the actual total cost (which will include some indirect and hidden costs and benefits that affected parties may not even be aware of).

Inevitably, subjectivity – including inherent biases and media representations – influences the policy debate. This is particularly the case in those countries where the gathering of data and the capacity for evaluation of information is weak. It also takes place where there are not well-established opportunities to challenge stakeholders' perceptions.

Favourable conditions for challenging perceptions of EFR exist in political systems where:

- There is a broad array of research and policy institutes, and civil society groups operating in the fields of environmental and social policy.
- Where these organisations engage in the public debate, provide additional data and varying perspectives on environmental problems and potential EFR solutions.

In nearly every country there are cases where powerful interest groups (such as industry) may

deliberately exaggerate the negative impacts of reform in order to promote their agenda. There are also instances where reforms are thought to be anti-poor, even though they are not. Good quality evidence developed by impartial research and policy institutions, and disseminated to all interested parties is therefore important. For example, Ghana may be losing as much as US\$37 million per year in public revenue due to a combination of uncontrolled illegal logging, poor royalty collection and outdated fees (SGS, 2003). The government could use this information to rally support for reforms.

### *Mobilising the Public*

Some environmental problems mobilise the public, while others do not excite its attention. There are a number of reasons, for the differing responses, including:

- Whether the effects of the problem are visible (urban air pollution is, but groundwater pollution is not) and whether they have obvious links to human health.
- Whether the problem is immediate (water scarcity is, but global warming is not).
- Whether the effects can be clearly linked to a certain source.
- Whether there are easy technological fixes (such as substitutes) to the problem at hand.

Depending on the answers to such questions, information and consultation campaigns (as in the case of electricity price rises in Ghana – see Box 28) can generate public interest that is supportive of EFR. The public, of course, can also be mobilised to oppose specific EFR measures.

### *Key Policies, Sector Reform and Decentralisation*

One way to facilitate the implementation of EFR is to link it with other key policy processes, such as the Poverty Reduction Strategies (or their

equivalents) and to the budget. This is happening in several countries, but there is much more that could be done.

### **Box 28 — Mobilising Public Support for Electricity Price Rises in Ghana**

When the Ministry of Mines and Energy in Ghana attempted to raise energy prices by 300 per cent, in May 1997, it was met with uproar. The president personally intervened to roll back the increase. As an alternative, parliament was summoned to set up a Public Utilities Regulatory Commission (PURC) in late 1997, which a year later was able to pass the same price increase with much less popular dissent. PURC staff partly attributes this to a concerted public consultation — including workshops, public forums and a media campaign — prior to raising tariffs. The key aim was to persuade consumers that the revenues generated by the price rise would be used to increase access to the poor.

Source: Edjekumhene and Dubash (2002).

Improving the efficiency of national tax systems has increasingly been recognised as central to the development process. Reliable and predictable tax revenue can offset the unpredictability of aid, can counter dependency and can enhance accountability. Many countries are investigating reforms to their general tax system, which provides an opportunity for bringing EFR into the overall budget process.

Also, many countries are undertaking reforms in the water and power sectors, with changes to institutional structure and pricing regimes (see Box 29), but few have thought through the environmental effects of these reforms (WRI, 2002). Similarly, many countries are reviewing their forestry concession and management process (Gray, 2002). These sector reforms provide an opportunity for EFR. Moreover, EFR should be an integral part of the design process, given the significant environmental and resource issues involved.

During the last twenty years fiscal decentralisation — understood as the devolution of taxing and spending powers from the central government to sub-national levels of government — has become an important element of fiscal reform in many developing and transition countries. China, Brazil,

### **Box 29 — Linking Electricity Sector Reforms with EFR: The Case of South Africa**

South Africa is in the process of reforming its electricity sector with the intention of progressively opening up markets to competition. At present, electricity is distributed by the state-owned power utility (Eskom) and over 200 different local governments. Eskom generates over 90 per cent and directly supplies large industrial users (accounting for over 40 per cent of total consumption in South Africa), while local government principally supplies the domestic and small-scale commercial sectors. It is intended for most of the current distributors to be absorbed into six Regional Electricity Distributors. However, Eskom will continue to supply electricity directly to the very large users.

Currently, some of the larger municipalities generate substantial revenues on electricity sales. This is likely to be lost through the planned reforms. How local government should be compensated is a key issue. Proposals have been made for a decentralised levy on electricity sales to the domestic and small-scale commercial sectors. Although this arrangement would essentially maintain the status quo, it has been criticised for its insensitivity towards environmental and equity issues. An alternative option under consideration is to replace the current local government electricity tax with either a nationally administered fossil fuel input tax (such as a tax per tonne of coal burnt) or a consumption tax on all end users (per kWh consumed). Both of these alternatives seek a more environmentally informed approach and give greater consideration to equity issues. If implemented, it would be likely that local governments would be compensated through transfers from central government.

Source: Morden (2003) and Harlow (2003).

Argentina, Mexico, South Africa, Russia and Poland are all examples. Decentralisation has given rise to a number of questions particularly relevant to EFR:

- Which tier of government shall be responsible for what functions?
- Which level will be responsible for the administration of revenues and expenditures?
- How will revenues be shared between the administrative levels?

The devolution of government functions to provincial, state or local level has important implications for control over natural resources and the ability of government to raise revenue through environmental taxes, charges and fees. Sub-national entities generally have a strong interest not only in raising funds to reduce their reliance on inadequate or unreliable transfers from central government – but also in saving the environment. *These bodies might therefore be more supportive of EFR.* Such interests, of course, assume sub-national governments have the authority and financial means to respond to local or regional preferences for environmental goods and services.

## Policy Windows, the Policy Cycle and Stakeholders

Policy development and implementation is not a linear process – rarely is a new problem placed on the political agenda and then taken through the full policy cycle of agenda setting, option development, decision-making, implementation, monitoring and revision (as shown in Figure 3). In reality most problems are known already and, depending on circumstances and politics, they are either high or low on the agenda. The same is true for many of the policy options available to tackle these problems. In this very volatile policy-making environment, it is important to be able to create or sense the opening up of policy opportunities and to be prepared rapidly to intervene when they present themselves.

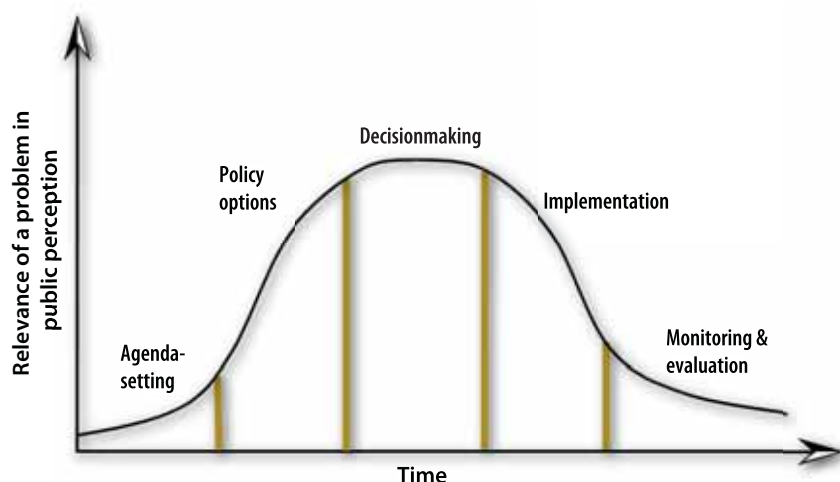
At different stages of the policy cycle, different stakeholders are more important than at others – for example, civil society and the media can be crucial for agenda setting, while option development may involve bureaucrats and experts, and, to a lesser extent, representatives from civil society.

Decision-making involves parliament, different ministries, industry and vested interests, while implementation will primarily be the responsibility of central and sub-national government. Monitoring and revision will engage a range of stakeholders, including those who actually face the policy measures.

We look at how EFR is integrated into the policy cycle in more depth in Chapter 12.

FIGURE 3

The Stages of the Policy Cycle





## Part 2 – Environmental Fiscal Reform in Key Sectors

### Scope of Sector Analysis

We now turn to consider the applicability of EFR to specific sectors in developing countries. Here we focus on the political and institutional challenges likely to arise when pursuing EFR, and ways of overcoming these challenges.

The coverage of these sectors results from a review of what offers the most scope for EFR in revenue mobilisation, environmental improvement and poverty reduction, and the potential trade-offs between these objectives. We have grouped these sectors to reflect the nature of the problem that EFR seeks to tackle and the specific instruments most likely to be employed<sup>20</sup>. The groupings are<sup>21</sup>:

- *Natural resources*: in resource extraction sectors EFR is about capturing the resource rents. This will provide the government with more revenues to invest (in protecting or enhancing the resource base, for instance, or the economy more generally) and ensure that extractors face the full social cost of their activities, which should lead to more efficient and sustainable use of the resource. Our focus is on forestry and fisheries sectors.
- *Pollution*: here EFR seeks to apply the Polluter Pays Principle by making industry or households pay for the environmental damages that result from their activities. The taxation instruments of EFR provide polluters with economic incentives to reduce emissions in a cost-effective manner, while raising tax revenues in the process. (We consider the application of EFR to the industrial sector and the use of fossil fuels, primarily in the transport sector.)
- *Power and water services*: The application of EFR in the context of supplying power and water service to industry or households is primarily about recovering – through user charges or subsidy reform – the financial (operating and capital) cost of providing these services. The additional revenue allows for extension of services to the poor as well as improvements in service quality and reliability.

# Natural Resources – Commercial-Scale Forestry

*“Research, revise and amend policies on standard price norms in caring for protected forests, afforestation and protective forest management.”*

Vietnam Poverty Reduction Strategy, 2003

## Introduction

**F**orests have multiple uses and multiple users. Forest management is about managing revenue generation and collection, the subsistence of poor people, private sector profits and environmental services. The use of fiscal instruments is complex because of the range of participants – some with powerful vested interests. And for them to be effective they must be linked to strong regulations and concession management. Reform success stories illustrate that the key factor is in building strategic partnerships between as many pro-reform stakeholders as possible.

We concentrate here on taxing rents from commercial timber extraction in forest rich countries and regions such as West and Central Africa, South East Asia and parts of Latin America. These rents can be very large, so there is a big prize for capturing rent successfully. While we do not focus on forest poor countries where rent is not a significant source of potential revenue, nevertheless, forests are still very important to the poor in these countries.

## Key Features of the Forestry Sector

Forests are formally under state ownership in most countries and represent a major natural and capital resource in many countries of the world, which is frequently undervalued. They provide:

- Goods and services critical to poor people's livelihoods.
- Environmental services which underpin broader economic growth – for example in sustaining soil and water resources.
- An important source of government revenue.
- A resource base for value adding export industries, which generate jobs and incomes.

Well-functioning systems for forest management are essential prerequisites to ensure the long-term sustainable provision of forest goods and services to the economy and society. The main challenge of forest policy is to reconcile the multiple functions of forests. A first step is to distinguish between forests which can be used for timber extraction, and those which are too fragile, depleted or otherwise degraded – or those on which many landless poor depend – and which should be protected from commercial-scale logging<sup>22</sup>. Moreover, in many countries, the conversion of at least some forest to other land uses, such as agriculture, is also inevitable if the needs and requirements of growing populations

and economies are to be met. However, the evidence from many parts of the world is of forest resources being lost or degraded at an unsustainable rate, with little return in terms of growth, poverty eradication or government revenues.

Timber, the most visible of all forest products, provides the raw material for many industries – generating significant employment and exports in many countries; particularly in South East Asia, West and central Africa and parts of Latin America. However, timber extraction is taking place at an unsustainable pace, and destroys forests. Moreover, the rents accrue mostly to the private sector, with limited benefits for society at large. Estimates suggest that states collect a small share of the potential rents from forests – between 10 and 30 per cent in selected forest-rich countries (Gray, 2002).

We concentrate here on issues concerning commercial scale timber extraction. So the policies and instruments we discuss are relevant for forest-rich countries and regions such as those listed above, where there is significant potential for revenue collection and improved management<sup>23</sup>. We are not covering community-scale operations, because they raise significantly different issues and are not as significant potential sources of revenue.

## EFR in the Forest Sector: Instruments and Policies

There are several ways to get rents from timber extraction (see Box 30 for Cameroon's approach). They include:

- "Stumpage taxes" levied on timber harvested – either by value or volume – or on timber exported.
- Charges per hectare of concession, taxes on corporate profits or income taxes.

- State participation in the industry.
- Auctions of timber concessions combined with deposit-refunding systems.

All of these instruments are often used in combination.

Stumpage taxes are very widespread and most open to corruption. For administrative simplicity and cost-effectiveness, it may be better to collect timber taxes at the point where they are loaded onto a boat or at the gate of the processing plant, rather than in the forest. (If the processing sector is characterised by many small saw mills however, this might be difficult to administer.) This also keeps the functions of revenue collection distinct from those of monitoring and enforcing logging rules, thereby reducing the scope for corruption.

Log export taxes have the advantage of administrative simplicity and ease of enforcement, but by making domestic timber relatively cheaper, they also can discourage efficiency in domestic processing industries (Ivers et al, 2003).

Charges based on the area of forest concessions have the advantage of discouraging operators from seeking excessively large concessions. However, these are not widely used and generate little revenue – less than 5 per cent of total forestry revenues – although Cameroon now receives a large share of its total revenue from those charges, and Bolivia is also now using them more.

In other cases however, taxes set at an appropriate level can contribute to sustainable logging by:

- Raising the profile and attention paid to sound forest management by the government – in order to sustain future revenues.

### Box 30 — Forestry Reform and Impacts in Cameroon

The forest sector in Cameroon contributes significantly to the economy, and is the country's largest non-public sector employer and non-oil export earner. The country exports the highest volume and value of wood of all African countries. It also possesses the continent's greatest wood processing capacity, 3 million cubic meters.

As in other countries in the sub-region, the forests of Cameroon have often represented a means through which political elites distributed privileges, mobilised and rewarded political support, and enriched themselves at the expense of the nation. Until well into the nineties Cameroon's forests were part of a well-organised clientele: sector institutions, such as the Forest Department, operated as gate-keepers of harvesting rights, while Ministerial-level and higher authorities had direct relations with the timber industry and other vested interest groups.

Corruption, while extending to other sectors of the economy, was particularly damaging in the forest sector: not only did it divert much needed public resources it also demoralised civil society, discouraged high quality investors from locating in Cameroon, and undermined the confidence of citizens in the state and its political system.

Due to increased international pressure, Cameroon decided in 1998 to use the forest sector to set an example of the Government's willingness and capacity to break with past corrupt practices and improve its international image. Governance and

transparency reforms were introduced, including: participation of independent observers in bid evaluation and concession award commissioning; participation of independent observers in control operations in the field; creation of a system of guarantees to ensure that forest taxes are paid in full and in a timely manner; and public availability of records of crimes committed against forest as a public property.

The success of these interventions to date has been measured through many direct and indirect indicators, of which a few relate to tax and fiscal issues: for example, (a) over US\$7 million in fines have been paid, or are being paid, against charges of illegal logging, plus a court case pending where the Government expects payments estimated at over US\$20 million from a company involved in criminal forest activities; and (b) over a 90 percent recovery rate for forest fees and taxes.

Thanks to these recent reforms the contribution of the forest sector to the economy has grown steadily. From 1994 to 2002 the number of processing units increased from 38 to 70 units, and direct employment from 20,000 to an estimated 90,000. Fiscal revenues to the State and to local governing bodies rose from about US\$5 million to US\$50 million per annum, and from close to zero to US\$9 million per annum, respectively. The wood processing industry is expected to further expand towards secondary processing thanks to improvements in the overall investment climate.

Sources: WB Staff Assessments and Aide-memoires, Forest Department of Cameroon — 2004 Planification des Concessions Forestieres, Revenue Department of Cameroon — 2004 Programme de Securization des Recettes Forestieres.

- Reducing illegal logging activities if the desire for higher tax receipts encourages government to bring illegal activities within the tax system. This may also lead to improved environmental compliance and with so much illegal activity, this can be key.
- Generating revenue to strengthen environmental monitoring and enforcement (through partial earmarking).
- Reducing incentives to obtain logging concessions — by reducing the economic rent to logging firms and reducing over-investment in

the sector. In some cases — less attractive concessions — this might work already, with very low tax rates as seems to have occurred in Bolivia, where existing low area logging charges led to the abandonment of many concessions (Hardner and Rice, 2003).

An International Workshop on Reform of Forest Fiscal Systems was convened in Washington DC, in October 2003. Participants discussed, among other things, the right mix of fiscal instruments

and how revenues should be allocated. Key conclusions include Ivers et al (2003):

- The right mix of instruments varies from country to country. Ideally the mix of should be economically efficient, administratively feasible, and supportive of broader social and environmental objectives.
- Frequently employed instruments include an area tax, stumpage tax and export taxes. Clear policy objectives, clear roles and stakeholder dialogue help minimise inconsistencies between different instruments.
- Collected forest fees should be allocated to support objectives such as sustainable forest management, good governance, poverty reduction and environmental conservation. Decisions on resource allocation should be based on clear criteria and transparent processes. Earmarking funds should only be for a specific, targeted use and only for a certain period of time.

### *Past Experience with Fiscal Instruments*

Estimating the true level of economic rent from timber extraction, and thus estimating the right amount of tax to collect, is not straightforward for three reasons:

- The cost of forest management (which includes the cost of logging and the costs of managing the entire concession, including immature stocks) varies according to the degree to which the operator abides by the logging rules. Thus a logger abiding by the rules will generally face higher costs<sup>24</sup>. This seems to be the case in Cambodia (McKenny, 2002).
- The costs of sustainable harvesting are highly location-specific. A tax set at an equal level for all, may risk penalising good practices and pose special challenges to those operating in more fragile environments, which require more careful techniques.

- The costs of sustainable logging include a significant share of fixed costs, which do not fluctuate much, while export prices of logs can fluctuate significantly. A decline in export prices, and therefore revenues, cannot be matched by a proportional reduction in costs. Even if no logging takes place in a given period, the forest has to be managed and the immature stock has to be protected and maintained.

If, therefore, the risk of overestimating the actual profits generated by forest exploitation and of over-taxing is considered high, it is preferable to tax the profits of logging firms rather than the timber volume or value. This can be complemented with auction mechanisms, refundable guarantee bonds, eco-labelling approaches and other safeguards.

For bonds the underlying principle is that concessionaires post a bond before harvesting, which will be refunded if they comply with the rules. While this may improve environmental standards, revenue generation is low, and only a few countries, such as Costa Rica and Sarawak state in Malaysia, have tried this approach.

The success of an auctioning mechanism requires a competitive environment to prevent collusion (a problem in some countries) between larger timber firms. There is some evidence of successful auctions in Peninsular Malaysia, which have generated up to US\$16,000 per hectare and bonus bids of up to five times forest legislated fees (Gray, 2002). Unless monitoring and enforcement systems are perfect, in some situations overtaxing can exacerbate incentives for unsustainable logging (Leruth, Paris and Ruzicka, 2001).

It is therefore very hard to predict, theoretically, the potential synergies or trade-offs between fiscal instruments and sustainable logging. The

answer can only be determined empirically from actual country experience.

Given appropriate policies, regulations, technologies and management systems, timber extraction, revenues and the long-term sustainability of forests can be compatible. Improving forest management regimes is a priority both to improving revenue for the state and for ensuring long-term sustainability. Fiscal instruments can play an important supporting role in this respect, complementing regulatory approaches. However, there are some general requirements and institutional structures necessary for a successful EFR process in the forest sector. The most important ones include:

- The conditions governing access and use, and the respective rights and responsibilities of stakeholders, need to be clearly defined.
- Stakeholders must have access to information on the value and volume of goods and services being provided by forests.
- A functioning set of supporting legal and regulatory arrangements must exist. These must correspond to the institutional capacities of the country concerned in order to allow actual enforcement.

Within the “commercial forests” estate, ensuring sustainable logging implies imposing a set of rules on private sector logging firms. Thus, leases over timberlands usually prescribe selective logging and a variety of qualitative and quantitative regulations aimed at preserving the long-term productivity of the forest. However, at the same time, forest leases tend to be “short-term” compared to the growing period of trees, which spans decades. Hence, for the concessionaries, the incentives to restrain short-term profits for the sake of long-term sustainability, and so to abide to the leases, are very weak. Which is why enforcing regulations is a critical challenge of forest management. Recent international attention on illegal logging has shown the true

extent of the problem and the huge costs to countries – particularly the poorest in those countries – from failures in forest governance. The result is lost government revenues, livelihood assets and domestic processing opportunities along with environmental damage. The ongoing Forest Law Enforcement and Governance (FLEG) process has also raised awareness of the political dimension of these issues and corresponding challenges.

The fiscal challenge is to maximise revenue whilst creating sufficient incentives for private sector investment that meets environmental standards. This requires collecting the right amount of tax, choosing the right fiscal instruments (reforming the package of instruments to make them simpler) and improving tax collection. Up to 90 per cent of timber harvested in some countries is illegal and no tax at all is paid. (Gray, 2002). The final challenge is how to distribute the revenue.

## Affected Stakeholders: Perspectives and Interests

### *The Poor*

The poor often reside in or near forests, relying on them for ecological services and other goods and services. Following the formal award of the forest in which they live to commercial operators they are often displaced. In some countries, community forests are encroached upon or illegally logged. In many others, powerful timber merchants find ways to “hijack” the social forestry system through bribes and threats (Richards et al, 2003). Forest dwelling poor communities will generally benefit from more transparent and rigorously enforced policies, and the containment of patronage based concession awards. However, logging and timber processing can also provide benefits to poorer households through employment. Logging is one of the largest sources of formal employment in parts of the northern Democratic Republic of Congo.

## Politicians

In many countries forest concessions are used by elite groups for finance and influence. Many concessions are awarded to cronies with little attention paid to sustainability. Sometimes, control over timber is in the hands of rebel groups, and timber profits finance violent conflict. In Cambodia, the main political parties are said to have both relied on funds from illegal forestry for their election campaigning expenses (Global Witness, 2002). In Indonesia and the Philippines, many large forest operators were closely associated with the dictatorial regimes of Suharto and Marcos, respectively. Given the pervasiveness of the problem, addressing corruption in forestry requires a willingness to address corruption in society as a whole. In Indonesia the collapse of the Suharto regime provided suitable conditions for reforms to eventually take place. In 2002, in response to major international and national pressure, the Government of Cambodia cancelled two forest concessions for poor performance – the first time such a step had been taken (Global Witness, 2003).

## Investors

Domestic and foreign investors in the harvesting and processing industry range from the capital intensive, skilled and generally environmentally sound operators to small-scale, “fly by night” operations. In some countries, such as those in Central Africa, large foreign investors dominate the industry, while in other countries, such as Indonesia, domestic firms are the main players.

Major companies – domestic or foreign – can negotiate special tax agreements worth millions of dollars in avoided taxes and can collude to undermine reforms, such as auctioned concessions, which aim to increase competition. In some cases those companies, which were penalised by their lack of political connection welcome reform and increased competition, as

occurred in Indonesia following the collapse of the Suharto regime.

Domestic processing industries generally favour log export bans or taxes as they artificially lower domestic prices below world market levels thereby stimulating the domestic industry. They also resist increased taxes on log inputs, as the industry did successfully in the mid-1990s in Cameroon (Essama-Nssah and Gockowski, 2000).

One critical concern of large-scale investors is the stability of the concession regime. Unpredictable and frequently changing regimes (including changes in taxation levels and the introduction of new charges) are a powerful disincentive to long-term investment in sustainable forestry. In an industry where rotations period span decades, the risk of not being able to profit from an investment when it finally bears fruit is extremely high. This is a major challenge in Cambodia (McKenny, 2002).

## Government Administration

The key government agencies are the Ministry of Forestry or Natural Resources and the Ministry of Finance. Ministries of Forestry face the huge challenge of regulating a geographically dispersed resource with limited staff and transport support – and policing a far better resourced private timber industry. On top of this forestry ministries also have to handle the conflicting tasks of protecting the resource base, on the one hand, and increasing timber output, on the other. They often share government-wide weaknesses of low pay, lack of accountability and hence corruption. Ministries of Forestry or Natural Resources stand to gain from EFR if they are provided with some share of the revenue – for example, through partial earmarking for monitoring and enforcement. In this case they will tend to be more supportive of EFR.

The type of fiscal instruments used also influence the scope for evasion or corruption. Volume-based levies, which require log measurement at the forest-gate, encourage corruption among those charged with measuring, leading to the under-reporting of harvests. Forestry officials often depend on the concessionaire for transport and accommodation, and are obviously vulnerable to persuasion, pressure or bribery (Gray, 2002). Moving away from such discretion-based payment systems to area fees or measurement at the point of embarkation or processing plant can reduce opportunities for corruption. Unsurprisingly, those who benefit from the current system may resist such changes.

To avoid bribery and corruption a well-ordered institutional framework is essential.

The Ministry of Finance will focus on the rents from the forests sector, and may be more prone to pressure from donors for reform through delayed release of structural adjustment credits. At the same time, finance ministries generally lack the capacity to analyse the complex issues associated with sustainable forest management.

### *Development Agencies and the International Community*

Development agencies, in particular the World Bank, and to some extent the IMF, along with certain bilateral agencies, have pushed forestry reform processes in certain countries. Reform has been promoted with the “carrot” of projects that stimulate change in the forestry sector, and also the “stick” of holding up payments of World Bank and IMF structural adjustment credits to governments. However, donors have not always considered the political complexities of reform, and consultation has been weak (Essama-Nssah and Gockowski, 2000). Sometimes, when it has threatened the commercial interest of their

citizens, donor countries have played an ambivalent role in the reform process.

### *Civil Society*

Both international and domestic NGOs have been powerful advocates for change, putting pressure on governments and development agencies to hold governments to account. Often international NGOs have opened up political space for national NGOs and development agencies to engage in this area.

## *Managing the Reform Process: Key Points*

**Coalition building** – There are reform success stories. Reviews of reform processes in several countries indicate that the key issue is to identify and engage as many different pro-reform actors as possible (WRI, 2000). This will ensure a stronger coalition for change. However, this also requires overcoming the tensions between different groups. So, while some in the private sector, government, civil society and the donor community favour reform, they may have quite different motives and misunderstand or be suspicious of the motives of others – even those who support reform. For example, domestic NGOs favouring reform in Indonesia were suspicious of the World Bank, even when it was pushing for change. This requires effective partnerships to be formed across these different groups through frequent dialogue (WRI, 2000).

**Disseminating information** – Reliable qualitative and quantitative information on the social costs of unsustainable forest management and the amounts of revenue being foregone (and the uses to which that revenue could be put) should be collected and disseminated. This information is vital for raising awareness with key stakeholders and the general public, and getting their support for fiscal reforms. For example, in forest-rich

countries that traditionally export timber products, pointing out that poor resource management has led to an increasing need to import timber from abroad can be a persuasive argument.

**Linking with other relevant reforms** – A reform process might be more successful if it is integrated into other ongoing national processes, or at least takes these into account. In many countries reforms to national forest programmes are under way. Within these programmes multi-stakeholder dialogues take place and country specific financing strategies are developed. Also, at the

international level, EFR should take account of ongoing processes in settings like the United Nations Forum on Forests (UNFF), which established an ad-hoc expert group on finance and the transfer of environmentally sound technologies<sup>25</sup>.

**Building a competent forestry agency** – It is critical that political and commercial vested interests view the agency responsible for forestry management as competent and credible – particularly if they are to be influenced and resistance to reform overcome.



# Natural Resources – Commercial Fisheries

*“The primary objective [of the growth and macroeconomic stability policy] will be to ensure full mobilisation of domestic revenue ... non-tax revenue will increase largely as a result of fishing fees and fines.”*

Mauritania Poverty Reduction Strategy

## Introduction

Fisheries are a source of protein and livelihoods for many poor people, revenue for cash strapped governments and profits for distant water fishing fleets. They are also a fragile natural resource. The focus here is on access agreements between low-income countries and distant water fleets. These agreements mostly apply to coastal nations in West and Southern Africa, and island nations in the Pacific and Indian Ocean who could generate significant revenue from these resources.

## Key Features of the Fisheries Sector

Fish are critically important to the developing world not merely as a source of food for millions but because of the large economic benefits from employment, export income and tax revenue. Over 95 per cent of the world's 38 million fishermen live in developing countries and consumption of fish is often the only source of animal protein for many coastal, rural communities which are where most people in the developing world live.

About 75 per cent of the world's fishing stocks are “fully fished”, “over-fished”, “depleted” or recovering slowly from depletion (FAO, 2000). A stock is described as “fully-fished” if it is exploited at its maximum long-term sustainable yield. A stock is described as “over-fished” because it could yield more fish in the future if the current catch levels (which include immature fish which could still grow if given a chance) was reduced. The fact that many stocks are “over-fished” suggests a significant scope for improved fisheries management in many countries. Falling stocks directly threaten the livelihoods of many fishing communities through declining catches and increases in the price in local market places, which may put this source of protein out of reach for low-income consumers.

Key factors behind the over-fishing of stocks include the direct and indirect government subsidies that encourage it, radical advances in fish harvesting technology and larger fishing fleets (see UNEP, 2002a). Pressures on high seas fisheries have accordingly increased in recent years – both from OECD and non-OECD countries. For example, fishing pressure in West Africa has increased significantly since the 1960s from EU, Russian and Asian fleets.

Fisheries are an open access activity and can be situated in the high seas, coastal or inland. They can be commercial (large-scale) or artisanal<sup>26</sup>. In the absence of effective regulation, the open access nature of fisheries means that the financial benefit generated by fishing goes to the

private sector, without compensation to society at large. It also means that fishers have no incentive to restrict their fishing to sustainable levels, since they do not, individually, derive any direct benefits from doing so. In combination with appropriate management measures, the imposition of levies on the volume caught can help reduce fishing efforts, while generating revenues to compensate the owners of the resource – the country whose fishing stocks are being exploited.

Here we concentrate on offshore commercial fisheries operating in developing countries' waters, which raise important issues relating to poverty reduction, resource management and rent extraction, and also provide important opportunities for fiscal reform.

### Access Agreements

Access Agreements are often negotiated between developing countries and foreign fishing fleets (known as distant water fleets, or DWFs for short) – from the EU, the Far East, the US or Russia.

The EU, for example, has fisheries Access Agreements with developing countries, aiming to secure access to their stocks and waters for fleets of EU Member States, some of which have very large fleets that obtain significant shares of their catch from the waters of non-EU Member States (OECD-DAC, 2002).

Some of the developing countries that have entered into Access Agreements are among the poorest and least developed, such as Angola, Guinea Bissau, Mauritania, Mozambique, Sao Tome and Senegal. These agreements provide significant financial resources (see Table 3). It is estimated that EU agreements provide as much as 30 per cent of total government revenues in Guinea Bissau, 15 per cent in Mauritania (up to 30 per cent by 2001) and 13 per cent in Sao

Tome (IFREMER, 1999). However, in most cases, the amount of revenue received by the government only represents a small share of the total resource rent (Van Santen, 2001).

There are, however, major concerns about DWFs over-fishing and undermining the fishery resource base, and conflicting with indigenous, primarily small scale, fishing. There are claims that Access Agreements can lead to overexploitation of certain species, endangering food security and creating major poverty concern in some countries (Manning, 2001).

As a result Access Agreements have come under increased scrutiny by developing countries, NGOs and within the EU, with reforms under discussion. At the same time developing countries too have become more assertive in expressing their concerns over preserving fish stocks and developing their national fisheries sectors.

Access Agreements can be granted in return for financial compensation by the country of the DWF. The fiscal mechanisms include:

- Payment of a lump-sum financial compensation by the DWF country through access agreements.
- License fees from private ship-owners that may be levied on catch (tonnes caught) and/or effort (i.e. gross registered tonnage).

Access agreements often include other provisions such as:

- Preferential access to DWF country markets at reduced rates of customs duty.
- Joint-venture agreements.
- Requirements to include a certain proportion of domestic workers in the crews of the DWF vessels.
- Controlling access to the fishery resource.
- Compliance monitoring.

Table 3

## Fisheries in Small Developing Countries

COUNTRY	FISHING CONTRIBUTION TO GDP, %	PRODUCTION OF FISH FOR DIRECT HUMAN CONSUMPTION (TONNES LIVE WEIGHT EQUIVALENT)	ESTIMATED EMPLOYMENT IN FISHERIES, PRIMARY SECTOR	DEVELOPMENT PROSPECTS OF FISHERIES SECTOR
KIRIBATI	21.5 (2000)	16,000 (year 1999)	1,131 (year 1999)	Development of inshore resources limited because of small area of land, reef, and lagoon. Would not be able to support large fisheries. Already high levels of exploitation near population centres. Possible long-term potential for certain aquaculture ventures. Skipjack tuna stocks under-exploited and capable of withstanding increased fishing effort.
SAO TOMÉ-ET-PRINCIPE	n/a	3,000 (year 1994)	2,900 (approx., year 1994)	Weak potential for increase (excluding large pelagics). Sardines might still be best option for increased catch.
MOZAMBIQUE	n/a	115,000 (1997)	7,000 (approx., 1997)	Further development of shrimp and lobster fisheries only with caution. Further production increase to be reached through better utilisation of by-catch. High potential of small pelagic fish, but too far from the coast (~100 km) to be exploited by small-scale sector. Potential for development of inland fisheries
ANGOLA	n/a	137,000 (1996)	85,000 (estimated)	Additional potential, for total employment of 10,000 – 15,000 fishers.
MAURITANIA	5.6 (1999)	Production of artisanal fisheries: 80,000 (year 2000) but only 29,000 for national consumption The total catches (industrial and artisanal fisheries) in 2002: 755,000 metric tons	30,000 <sup>27</sup> (of which 12,000 direct artisanal employees and 3,600 employees of commercial fisheries). 86 per cent of total are Mauriticians.	Potential for expansion for pelagic resources, clams and fish on continental slopes.
MARSHALL ISLANDS	3.8 (1999)	3,244 (1999)	370 plus 4,700 in subsistence fisheries	Little evidence of commercial viability of coastal fisheries. Considerable potential for increase in skipjack catch. Slight additional potential in long-line fisheries.
MALDIVES	11.1 (1995)	103,000 (1996)	22,000 full-time, 5,000 part-time (figures do not distinguish between primary and others)	So far almost exclusively exploitation of skipjack tuna. Considerable extension potential of pelagic fisheries to other tuna species. Reef fish and demersal species could also sustain increases in exploitation.
FIJI	2.3 (1999)	36,400 (1999)	6,250 (1999)	Potential for increase from offshore areas, especially tuna. Limited scope for increasing production from inshore and coastal areas.
SENEGAL	n/a	383,000 (1996)	60,400, of which 3350 fishermen	n/a

Sources: FAO (2004), IMROP (forthcoming) and JICA, MPEM, CNROP (2002).

Notes: This table draws on the FAO Country Profiles database; the selection of countries and data has been a subjective judgement. The choice of countries was to a large extent influenced by data availability. The table is presented: to indicate the current importance of the fisheries sector for a number of developing countries and to give an indication of the potential for future development prospects of the fisheries sector in those countries.

Access Agreements are also often subsidised by the DWF countries, whose fleet benefits from the fishing rights.

The negotiation of Access Agreements is linked to the broader challenge of securing and enforcing property rights to restrict open access to fisheries. These broader challenges include:

- The difficulties for very poor countries, for technological, administrative and other reasons of effectively monitoring access by foreign boats and enforcing restrictions to fishing.
- The difficulty in accurately monitoring fish stocks which are very mobile. Moreover, fisheries can collapse suddenly, often without prior changes in catch indicators. So it is very difficult to determine the limits to be placed on catch and the price to charge.
- Even though DWF (or their governments) are in theory charged higher fees than local fishermen, companies may in practice be able to evade such provisions through creative accounting, joint ventures with local firms or by other means.

## Affected Stakeholders: Perspectives and Interests

### *Artisanal Fishing Communities*

Subsistence fishers are often among “the poorest of the poor”. For certain fish species, there is a direct link between the volumes caught offshore by commercial vessels and remaining stocks caught in the coastal zone. This can lead to conflict between coastal artisanal fishers and domestic and foreign commercial fleets.

Small-scale fishers are politically marginalized, and typically have little influence on the negotiating of Access Agreements, so they get only limited benefits through employment or

compensation. They often feel disadvantaged and suffer from the long-term exploitation of fish stocks. There are exceptions, such as Mauritania, which is seeking to promote its own small-scale fishing sector. (With no fishing tradition, Mauritania has relied mainly to date on offering access to foreigners to exploit the resource).

### *Domestic Commercial Fishers*

Although subsistence and commercial fishermen often compete directly with each other, both have a common interest in limiting the fishing opportunities provided to DWFs through Access Agreements, for instance by restricting access to particular species, use of certain methods and zones. Namibia is an example where a commercial domestic industry has been built up through strong policies to limit access by DWFs (see Box 31). Other countries have tried to use joint ventures to develop the domestic industry, for example, in the South Pacific and Argentina.

### *Distant Water Fleets*

The main DWFs originate from the EU<sup>28</sup>, the Far East, the US and Russia. The inherent incentives to fish beyond catch limits and under-report their catch are compounded by policies in many DWF countries of subsidising their fleets, fuelling over-investment in fishing capacity. On top of this, the incentives for DWFs to sustain fish stocks in a given area are low, since they can – in principle – move to other countries if the stocks of one area are fished out. Therefore, DWF fleets have a clear interest in lobbying for increased access, notably when the price of access is paid by public authorities (such as the EC).

### *Distant Water Fleet Countries*

The EU has fishery agreements with 20 developing countries – over half in West Africa – under the Common Fisheries Policy (CFP). For the EU, these agreements account for 20 per cent of fisheries production, providing livelihoods for 8,000 fishermen, and triple that in ancillary jobs.

### Box 31 — Economic and Environmental Benefits of Fiscal Instruments: the case of Namibia

Prior to Namibian independence in 1990 access was largely uncontrolled and coastal waters were massively over-fished (primarily by European and Eastern bloc fleets). The newly elected government instituted a new policy, legal and management framework to effectively manage its fisheries and develop a domestic industry. Quota fees – based on total allowable catch for major species – and license fees were introduced with fishing rights biased to Namibian vessels. The authorities swiftly used these powers – in 1991, 11 Spanish trawlers and one Congolese trawler were prosecuted for illegal fishing – which sent out a strong signal, and illegal, unreported and unregulated (IUU) fishing has declined drastically over the years. By-catch fees complemented this, and a Marine Resources Fund levy was imposed per ton of landed catch to finance fisheries research and training. As a result, the sector is now more than 90 per cent Namibian owned, contributed about US\$220 million to GDP in 2000 and was valued at US\$354 million in 2001. The indirect benefits have also been substantial: processing plants – of which none existed before 1990 – have burgeoned and employment grown. The government has a state-of-the-art monitoring, control and surveillance (MCS) system, with an integrated programme of inspection and patrols at sea (on board observers), on land (monitoring of port landings) and in the air (via satellite). These investments were expensive, but commensurate with the value of the sector. In fact the ratio of MCS costs to value of landed catch has declined from an annual average of 6 per cent over 1994-1997 to under 4 per cent in 1999, reflecting an increasing value of landed catch.

Source: Nichols (2003).

Under pressure from developing countries and NGOs, the EU fisheries council shifted in 2002 to so-called “Partnership Agreements”, which are intended to be more environmentally and socially beneficial (see Box 32).

Fishery activities are very important for many regional economies, and some DWF countries (like Spain and Portugal) are quite dependent on access to foreign fisheries.

### Government Administration

Government fisheries departments are often under funded and staffed because of the low political priority given to fishery policy. They frequently operate under the Ministry of Agriculture, which may have conflicting objectives (such as boosting fish production and exports). Their authority to monitor and control the industry gives rise to rent-seeking opportunities, making corruption a concern, but this has been less well documented and confronted than in the forestry sector (FAO, 1983).

Fisheries agreements are usually partly negotiated by the Ministry of Finance, particularly during the final stages. Given the significant revenue opportunities – tensions may exist between the fishing department’s concern about the resource and effective management and monitoring, on the one hand, and the Ministry of Finance’s need for revenue on the other. There may also be a lack of understanding

### Box 32 — EU Partnership Agreements

Partnership Agreements are intended to contribute to responsible fishing in the interest of all parties involved: They are meant to protect the interests of the EU DWF and ensure that conditions are in place to achieve sustainable fisheries in partner countries. To facilitate this, the Partnership Agreements widen the scope of the financial compensation paid to developing countries for access to waters under their jurisdiction. Payments are now to be regarded as investment in sustainable fisheries policy – not just compensation for access rights to fisheries.

Source: CEC (2002b).

– or interest – in the Ministry of Finance about the complexity of issues in fisheries. Other policy objectives such as securing overall food security and employment opportunities by expanding domestic fleets may also complicate the policy debate.

### Box 33 – EU Fishing Agreements with Mauritania

Mauritania has a very rich fishery, particularly of cephalopods. By 1999, fishery revenues from the agreement with the EC were about 3 per cent of GDP (about 15 per cent of total revenues). In 1999-2001 the fish catch partly recovered from its 1997-98 troughs, which came as a result of over-fishing of cephalopods and full fishing of demersal fish in the mid 1990s. However, the cephalopods catch in 2001 was close to its estimated potential yield of 30 kilo tonnes per year. In July 2001, Mauritania and the European Union ratified a new protocol for five years – with financial compensation of €430 million, as compared to €267 million under the previous agreement. This will raise fishery revenues to about 8 per cent of GDP and close to 30 per cent of total revenues – with some earmarked for developing the local fishery sector and enhanced control and surveillance of fishery activities.

Source: UNEP (forthcoming).

## Managing the Reform Process: Key Points

**Strengthening state bargaining power** – Crucial to the successful negotiation of Access Agreements is the strengthening of individual states' bargaining power. A key factor in this is making sure DWF nations are not able to access fisheries elsewhere with similar characteristics at better terms. To this end, regional co-operation can be important. The islands of the South Pacific, which share a very rich tuna fishery, are excellent examples (see Box 33). By forming a joint Fisheries Forum Agency (FFA) in 1987 they have been able to negotiate increasingly favourable

### Box 34 – A Regional Strategy to Impose Access Fees: The Forum Fisheries Agency of the Pacific

By forming a joint Fisheries Forum Agency in 1987 islands of the South Pacific have been able to negotiate increased rent collection, particularly through a treaty with the US. From 1988 to 1993, the average funds paid to the Pacific Island Parties were approximately US\$12 million a year – US\$10 million from the US Government and US\$2 million from the US Tuna Fishing Industry. During the extension of the treaty from 1993 to 2003, the total payments were increased to US\$18 million a year – US\$14 million from the US Government and US\$4 million from the US Tuna Fishing Industry. In addition to the US\$4 million, US industry is meeting the full cost of the observer placement and training, which aims for observer coverage of 20 per cent of all trips taken by the vessels covered by the Treaty.

Source: IFREMER (1999) and UNEP (2002a).

agreements with increased rent collection; particularly through a treaty with the US.

West Africa has started to set up a similar type of arrangement, but it is harder to agree co-operative strategies for the different demersal fisheries in West Africa than pelagic tuna, which is the main focus of the FFA Access Agreements.

An alternative approach is for countries to negotiate with individual fishing companies rather than governments (this has been the negotiating strategy employed by Morocco), but it also has problems since Access Agreements can, if they work properly, provide a more regulated framework.

Namibia has pulled out of Access Agreements altogether, but has tough rent taxes on its own commercial domestic fishery. This strategy, which requires strong administrative capacity and a

domestic private sector able to invest in fisheries, is also being pursued in South Africa.

**Policy coherence** — Another stumbling block in negotiations for Access Agreements is the lack of clarity and coordination in the policy process. It is important, therefore, to first raise the profile of these issues, and secondly enhance inter-ministerial co-operation. Countries need to have a clear fisheries policy and then ensure that Access Agreements fit within this framework. There is also work to be done in DWF home countries in this respect: The fisheries policies of some DWF countries contradict the objectives of their development co-operation policies. Pointing out these contradictions can foster reform. For example, the recent DAC Peer Review of Spain encourages Spain “to consider how to prevent

domestic interests from taking precedence over development co-operation objectives when debating the Common Fisheries Policy as well as fisheries agreements in the European Council” (OECD-DAC, 2002). Similar arguments are likely to apply to many other DAC Member countries with DWF fleets.

**Adequate resources for fishery management** —

The use to which revenues are put is also important. Countries need to recognise - as Namibia has done - that (partially) earmarking funds for investment in upgrading administrative capacity is a worthwhile investment in generating greater returns from the resource. Enforcing fishing rules requires sophisticated and therefore expensive equipment, as well as skilled people to operate it.



# Pollution – Industrial Activities

## Introduction

Industrial pollution often receives the most attention, as it is one of the most visible sources of environmental problems. The responsibility of managing these emissions often falls on the environmental agency. However, pollution from households, the “informal” sector, agriculture, motor vehicles etc. may also be widespread, but tends to be less visible, with no clear agency responsible for regulating emissions. For example in Colombo, Sri Lanka, untreated household waste and agriculture nutrient run-off was shown to cause more water pollution than industrial point sources (except for a few hotspots) (Steele and Hassen, 1998). However, tackling industrial pollution may be a more cost-effective way of reducing overall levels of pollution due to the lower administrative costs of targeting a few, large point sources of polluting emissions. Tackling informal, “small-scale” industry emissions may call for approaches other than EFR.

In this chapter we therefore focus on air and water emissions from formal industrial-scale activities. While pollution from such activities is not necessarily the most pressing environmental problem in developing countries – although it is an increasing concern in some (such as China, India, Thailand and Brazil) – it has a high profile and is often easier to regulate than environmental threats in other sectors. The challenge is twofold: to encourage industries to find cost-effective ways to abate polluting emissions by providing economic incentives, and to move from controlling end of pipe emissions to investment in production technologies and processes which are inherently less polluting.

The regulatory approach can be augmented by environmentally related charges or taxes. And in some countries notably in Central and Eastern Europe, the revenue potential is considerable and often earmarked for expenditure on environmental themes.

## Key Features of Industrial Pollution

In many developing countries emissions from industrial activities lead to water and air pollution, as well as land contamination. These in turn impose significant costs on society – often on the poorest households – in terms of adverse effects on human health, and the degradation of physical and natural resources. Emissions degrade bodies of water, land and coastal fisheries upon all of which the poor depend for their livelihoods. Water pollution also increases the cost of operating water supply systems (for example, increased purification may be required).

Political challenges to EFR generally arise from concern within industry about the pressure on production costs of taxation and pricing instruments, and hence their competitiveness. Of course, it is in the interest of industry to exaggerate this concern. Acceptance and implementation of EFR can be assisted through careful design of the reform. This might be by choosing the right instrument(s), setting the charges or taxes at an appropriate level, using reduced rates or exemptions to alleviate concerns over competitiveness and encouraging the up-take of “clean” technologies, and using the revenues to promote wider public acceptance.

## EFR in the Context of Industrial Pollution

Traditional approaches to controlling industrial emissions have focused on direct regulation – either in the form of technology-based or performance-based standards. For example, firms are required to keep emissions below a pre-determined level or face sanctions, usually in the form of fines or, in more extreme cases, factory closure. More recently there has been a shift towards the use of so-called “market-based” or “economic” instruments. These, in theory, reduce the cost of complying with environmental standards and actively reward pollution prevention and abatement efforts. However, with economic instruments – in contrast to direct regulation – the environmental outcome is more uncertain. The relative merits of both types of approaches are discussed in more detail in Chapter 2. Direct regulation and economic instruments are not mutually exclusive, and a good case can often be made for using them in tandem.

Environmentally related taxes are a good example of economic instruments. Taxes on:

- Emissions (actual or estimated) that cause adverse impacts – either directly or indirectly (through food) on human health or the natural environment.
- Products whose use or disposal<sup>29</sup> is linked to pollution (such as excise tax on gasoline).
- Inputs to products whose use is linked to pollution (such as tax on phosphate in detergents).
- Instruments such as these have been introduced in many developed and some developing countries (see below).

There are a whole range of other fiscal instruments that can be used to manage industrial emissions, including: User charges to recover the

costs of treating emissions (notably, effluent discharges – see the South African example in Box 35). And more general:

- Tax incentives for investment in emission control (such as accelerated depreciation provisions for approved “clean” technologies).
- Preferential tax rates for equipment and production methods that save energy and reduce pollution, including lower duties on imported equipment.

### Box 35 – Taxation of Water Effluent in South Africa

**Water is scarce in South Africa. In an attempt to improve the quality of the country's water resources, the South African Government, led by the Department of Water Affairs and Forestry, has proposed a levy on water effluent as part of its evolving water pricing strategy. It is envisaged that the Waste Water Discharge Charge System will apply to all registered point source emissions into watercourses. The proposed system has both a cost recovery and revenue raising component and a deterrent component. The intention is to heavily penalise effluent loads over a certain concentration. Some of the revenues will probably be used for remediation purposes.**

*Source: Morden (2003).*

We focus here on emission taxes or charges, which make the polluter (in this case industry) pay for the external costs they impose on society. In doing so, these instruments can help improve environmental quality by providing economic incentives to actively reduce emissions or waste generation. Taxes and charges also generate revenue, which can be used to support environmental monitoring and enforcement activities<sup>30</sup> or finance other government needs.

It should be noted that introducing emission taxes, for example, is often easier where complementary regulatory regimes already exist

(as when emissions levels are already monitored as part of an emission ceiling regulation), and the administrative requirements of the new tax can build upon those of the regulatory regime. Indeed, in cases where activities are not currently subject to any environmental regulations, it is sometimes advisable to introduce regulations first, and emission taxes later. This will allow targeted activities time to adapt to a “culture” in which emissions need to be managed.

In the short term, however, industrial pollution control will often compete with the needs of economic growth, international competitiveness and employment generation. Trade-offs between these issues must be taken into account in policy design.

### *Previous Experience with Emission Taxes*

As mentioned above, the conventional approach to managing industrial emissions was to regulate activities by making firms keep emissions below a pre-determined level. From the 1990s onwards however, there has been increasing use of emission taxes, particularly in OECD countries. Significantly, there has also been substantial experimentation with economic instruments in many central and eastern European countries (see Box 34), in Latin America and the Caribbean, as well as East Asia. There have been some notable successes, for example, in China, the Philippines and Colombia (World Bank, 2000). However, in most of these countries the instruments were introduced mainly to raise revenue — reducing pollution was a secondary objective.

### *Affected Stakeholders: Perspectives and Interests*

It is important to harness strong public support in addressing industrial emissions and associated

#### **Box 36 — Environmental Funds in Central and Eastern European (CEE) Countries CEE countries**

have experienced high levels of industrial pollution over the past couple of decades, creating large-scale environmental problems. For these countries the first priority was to mobilise the financial and physical resources needed for cleanup. Environmental Funds (EFs) have served as the main mechanism for achieving this.

The EFs faced serious constraints in raising finances from domestic markets because these were typically dysfunctional and underdeveloped. Unsolved collateral issues, high transactions costs, and insufficient information further limited access to financing. They managed to attract some international capital, but these accounted for less than 10 per cent of required total environmental expenditures in key CEE countries. By far the main source of funding for EFs came from environmental taxes and fees. The most money has been attracted by environmental funds in Poland. This was due to the fact that Poland has many specialized and regional environmental funds, as well as one large national fund. The latter collected and disbursed roughly the equivalent of US\$300 million to US\$500 million per year during the 1990s. However, other countries' EFs (like some Newly Independent States) have been less successful.

These taxes were initially set below a theoretically optimal level to reflect marginal external costs. This was because high pollution levels meant that the damage costs of pollution were high, and it would not have been feasible — from a political and social point of view — to set taxes at a level that fully reflected these costs, since this would have driven many firms to insolvency. While the immediate objective was to raise revenue, there is evidence from CEE countries that even at low levels these taxes have had some beneficial effect on incentives.

Source: Sterner (2003).

pollution in order to overcome industry's typically strong resistance to change. Broad public awareness of the health hazards from industrial pollution and of the role industries can play in tackling this pollution is a critical first step. Serious accidents such as the Bhopal disaster have helped make more people more aware. Public pressure invariably plays a key role in forging the necessary political will to tackle industry about the pollution it causes.

### *The Poor*

The poor suffer disproportionately from air and water pollution for example in the form of respiratory and water-borne diseases. They often live in the most contaminated areas, such as the vicinity of waste disposal sites and work in the most hazardous industries. However, air pollution and polluted water may not be the direct result of industrial activity, but the consequence of lack of "clean" energy sources and sanitation. The poor may also fail to benefit from the formal employment that larger industries normally provide. And those that do benefit may perceive the imposition of taxes on their employers as a threat to their jobs. Thus industrial pollution control can be a divisive issue for poor groups - those who are exposed to industrial pollution, versus those who are employed by the polluting industries.

### *The Non-poor*

In contrast to low-income groups, relatively better-off households tend to be more aware of the health and environmental impacts of industrial pollution, despite being less at risk. Being more aware - this group has put increased pressure on governments to address industrial pollution in many countries.

### *Industry*

Industries will generally resist anything that increases costs of production believing it will

reduce competitiveness and adversely influence trade. Indeed, emission taxes are often vigorously opposed on the grounds that they will lead to a loss of export markets and an increase in imports (Cropper and Oates, 1992).

Yet according to several surveys there is little evidence to support the theory that differences in environmental regulations between competing jurisdictions results in a loss of competitiveness and a migration of firms to less stringent jurisdictions (for example, Jaffe et al, 1995, Repetto, 1995 and Xu, 1999, and others cited in OECD, 2001b). Firms reduce emissions by using inputs more efficiently, often ultimately reduce production costs.

Even if the competitiveness of targeted industries is judged a real economic (or political) concern, taxes can be designed to alleviate these fears, although this usually involves weakening the environmental effectiveness of the instrument.

Medium and small-scale industries, as opposed to larger ones, generally face more difficulties in adjusting to emission taxes and other forms of environmentally related constraints. They generally have less access to the know-how necessary to adopt cleaner production methods (they might also be simply unaware of "clean" technologies and their benefits), nor do they have the necessary finance. In some cases, compensatory measures may be needed to facilitate adjustment.

Revenues can be (partially) recycled back to firms to support their efforts to reduce emissions. But in doing so it is important that the revenue is not recycled in such a way that it counteracts the tax incentive to reduce emissions.

### *Government Administration*

Environmental agencies have the main responsibilities for monitoring the environmental

performance of firms and enforcing regulations. They can exert influence on industry, both through formal and informal channels, and by disseminating information to other key stakeholders, who in turn will pressure industry. The experience of China demonstrates that local environmental agencies have greater bargaining power with respect to industry when the social impact of industrial emissions are high, but they have less when regulating industries in serious financial difficulties.

Environmental agencies, which are familiar with regulatory approaches, are sometimes averse to economic instruments<sup>31</sup>. This can change significantly if the revenues from such instruments are partially earmarked to fund monitoring and enforcement. However, the Finance Ministry is more likely to be interested in tax instruments where the revenue is allocated to the general budget, rather than earmarked for specific environmental uses. They are also more likely to favour taxes administered by fiscal agencies, as opposed to environmental agencies.

### Civil Society

Civil society groups are often at the forefront of initiatives to control industrial pollution. Women's groups, in particular, have often been instrumental in raising awareness of the health impacts, notably on children, and have been powerful agents for change. The ability of citizens to litigate to recover damages from pollution can be a significant financial and public relations incentive to make firms avoid causing damage.

### Development Agencies

In the case of trans-boundary pollution (such as sulphur dioxide from China causing acid rain in Japan and Korea), donors may have an immediate interest in helping developing countries partners tackle the issue of industrial emissions. This may include technical co-operation

and programmes to accelerate the dissemination of cleaner production processes. They may also be keen to expand export markets for the environmental technology industry.

## Managing the Reform Process: Key Points

**Raising public awareness** – Industry will vigorously oppose increases to its tax burden. To overcome this resistance, pro-reformers within government must have a strong political will, and public pressure plays a key role in building this will. Raising awareness of industrial emissions and associated (health and environmental) hazards – through the public disclosure of such information – will encourage the public to lobby for reform. The information should be published in a way that is easy for everyone to understand.

In some countries, publishing information on environmental indicators for individual firms has proved successful in putting pressure on them to improve performance. A rating system for polluters in Indonesia, for example, has significantly improved performance, and been popular with the public. Similar approaches are operating in the Philippines and Colombia (World Bank, 2000).

**Capacity of the regulatory agency** – The agency responsible for monitoring and enforcing the tax must have access to reliable information on a regular basis, including data on emission flows by source and their impacts on, for example, air and water quality. Not only must the agency have the capacity to collect such information, it must also be able to verify its accuracy to minimise the scope for misreporting.

Taxes must be backed-up by sanctions of some kind, where a polluter exceeds a discharge standard or fails to comply with the rules of the tax regime. Enforcement will only work if

regulators can identify violators and if sanctions are upheld by the judicial system. Therefore regulatory agencies must have the capacity to impose sanctions, as well as monitor performance.

In general, industry will be more accepting of a new tax if it is confident that the regulatory agency has the capacity to treat all taxpayers fairly. Firms should be confident that competitors will not gain competitive advantage by cheating the system (and getting away with it). The credibility of the environmental agency is vital to this end.

The type and scope of the tax or charge must, therefore, match the institutional capacity to implement it. This generally means defining a tax base (and the collection points within that base) that minimises the number of firms that must be monitored (for instance, in cases of taxing inputs, using the providers of the inputs rather than the users as collection points). In addition, given the potential for limited capacity, it is advisable to start by focussing on a few highly critical issues, where visible success can be achieved in order to build support for future reforms. To fulfil all the above requirements it might also be worthwhile considering the partial earmarking of some of the revenues from taxes to the environmental monitoring agency.

#### **Combining taxes with direct regulation –**

Following on from the previous point, it is generally simplest and most efficient to develop new tax instruments within the context of existing regulatory and institutional frameworks. Indeed, the introduction of pollution charges can be seen as an important means – if not the only means – for introducing some added efficiency to existing regulatory mechanisms.

Maintaining or reinforcing certain regulatory mechanisms may be particularly important if the

introduction of pollution taxes is to be achieved gradually (see below).

#### **Setting rates and pre-announcing reforms –**

When pollution charges or taxes are set too low – compared with marginal abatement costs – firms will generally prefer to pay them rather than try to prevent or reduce emissions. The tax therefore operates primarily as a revenue-raising mechanism with little direct emission-reduction benefits. However, low initial tax rates help establish the principle that industries should pay for emissions and associated pollution. This allows experimentation with new instruments paving the way for progressively higher tax rates and the emergence of lower cost abatement technologies.

If the intention is to gradually raise tax rates, it is important to consult industry on the schedule of increases. Does it provide industry sufficient time to adapt? The introduction of sulphur dioxide taxes in China provides an example of such a gradual approach.

The pre-announcement of new taxes, or of changes either to the existing tax rate or to the tax base (for example, capturing more industrial sectors or pollutants), is vital in getting industry to buy in to the arrangement. This is particularly important when the targeted industry has few emission abatement options (for example, it may take three years to install the most cost-effective technology or process) or substitution possibilities in the short-term.

#### **Helping industry adjust to the tax regime –**

In addition to the design features listed above, governments can assist industry with transition costs by helping them to identify cost-effective abatement technologies or processes. This might involve disseminating information on the latest “clean” production technologies, and – in particular – the financial benefits that can result

from improved energy or resource efficiency. Some of the tax revenue could be used to this end.

Some part of the revenue could also be used to support initial start-up costs, or other initiatives to

help reduce transition costs. More generally, consulting industry on proposals for the use of revenues will help bring them on board.



# Pollution — Fossil Fuels

*“The Law on the special social protection of certain categories of population, that eliminated non-targeted energy subsidies, communal services and limited energy privileges to eleven categories representing the most vulnerable segments of society, is likely to have a beneficial effect on government finances and improve significantly the efficiency and targeting of the government’s social assistance program.”*

Moldova Interim Poverty Reduction Strategy (2002)

## Introduction

Energy is vital to development and transport is essential for the economy. At the same time transport — with few exceptions — is still based on the use of fossil fuels. Fossil fuels are also used for cooking and lighting (kerosene), heating (heavy and light fuel oil), pumping water (diesel) and many other uses, particularly where electricity is not available. With continuously increasing energy consumption, air pollution in developing countries, particularly in cities, is on the rise resulting in a growing incidence of respiratory diseases. We therefore focus on EFR in the fossil fuel sector in this chapter, with a particular emphasis on fuel pricing in transport.

## Key Features of the Fuel Sector

Fuel consumption in developing countries is growing by an average of 6 per cent a year, which is about six times the rate in OECD countries. The type of fuel used in many parts of Asia is among the most polluting in the world

(GTZ, 1999). Developing countries also use the most pollution-intensive vehicles, such as diesel vehicles, two-stroke engines and petrol vehicles without catalytic converters. Fuel consumption is a major cause of indoor and outdoor air pollution. Pollution “hot-spots” — such as the cities of Mumbai, Jakarta and Mexico City — are growing in number and intensity. Fossil fuel use also contributes significantly to CO<sub>2</sub> emissions. The share of the transport sector in total global CO<sub>2</sub> emissions already amounts to about 25 per cent, and is rising.

Fuel prices are modified in most countries, but there is a lot of variation. In the majority of countries, petroleum products are taxed, but there are those — often oil producing countries — which provide substantial subsidies, selling petroleum to domestic consumers at below market prices (GTZ, 2001). These include, for example, states in the former Soviet Union, Iran, Yemen, Venezuela, Nigeria and Indonesia (see Box 37). Petroleum importers — like India and China — also subsidise fuels, although these policies have been revised in recent years. Some countries, such as Togo and Niger — have lowered fuel taxes in the last decade.

Even within countries, different types of fossil fuel receive different fiscal treatment (as in Kenya, see Figure 4). While it is common to tax motor fuels, there are subsidies, tax exemptions or refunds for other types of fossil fuel: heavy and light fuel oil (such as those used for heating), kerosene (used for cooking in many developing countries or as an airline fuel), coal and coke.

In general, no clear global trend can be established for fuel taxation.

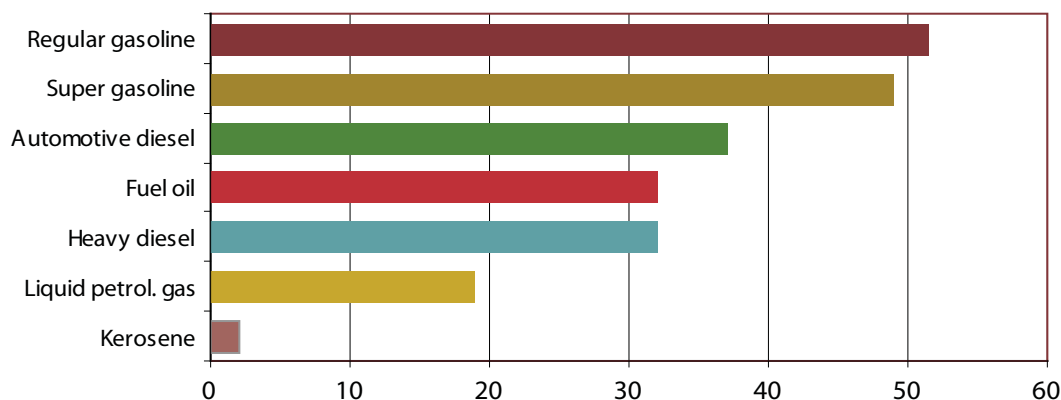
### Box 37 — Fuel Subsidies in Indonesia and the Islamic Republic of Iran

In Indonesia, the government directly subsidises oil prices, which are among the lowest in South-East Asia. These subsidies, which currently absorb more than 10 per cent of the state budget, result in large economic, environmental and social costs. A recent government review of the subsidy policy concluded that eliminating subsidies would reduce government expenditure, increase foreign exchange earnings and reduce environmental damage, particularly from airborne emissions of particulate matter and lead. The net economic cost of the subsidies applied to kerosene, automotive diesel, industrial diesel, motor gasoline and heavy fuel oil amounted to almost \$US4 billion in 2002. It is projected that between 2000 and 2005 a total of \$US36 billion would be spent on oil subsidies if they are left unchanged. In addition, the value of lost foreign exchange earnings caused by lower exports would reach \$US16 billion.

In Iran petroleum prices are only about 10 per cent of world prices - the subsidies to petroleum products amount to more than 18 per cent of GDP. Such subsidies encourage excessive (and wasteful) energy consumption, and result in substantial foregone foreign exchange earnings. Removal of these subsidies would release vast resources that could be redirected toward environmental, social, and other expenditures underpinning sustainable development. It is estimated that subsidy reforms would yield welfare gains equivalent to about 19 percent of the GDP.

Sources: UNEP (2003) and World Development Report (2003).

**FIGURE 4** The Share of Taxation in the Retail Price of Petroleum Products in Nairobi, Kenya



Source: GTZ (2001, p.64).

## EFR in the Fossil Fuel Sector

Taxes on petrol and diesel fuel accounted for around 64 per cent of total environmentally related tax revenues in the 21 OECD member countries in 1995 (OECD, 2001). In some OECD countries fuel taxes have become the third-largest source of tax-revenues. Fuel taxes also reached

more than 30 per cent of all tax revenues in countries like Albania, Madagascar and Bulgaria. In addition, fuel taxes have stimulated rapid progress in the fuel efficiency of motor vehicles.

The high levels of fuel taxes in some countries are often the result of steady tax increases over the last few decades. Germany, for example, has

followed a systematic policy of fuel tax increases over the past 40 years. Applied diesel tax rates rose from 4 US cents per litre in 1956 to 44 cents per litre in 2002 and petrol tax from 14 US cents per litre in 1956 to 69 cents per litre in 2002. During the same period German total tax revenues from these fuels rose from US\$0.4 to 42 billion per annum in real terms (ARAL Aktiengesellschaft 2003).

Fossil fuels in developing countries are generally lightly taxed. Countries like Venezuela, Iran, Indonesia, Egypt, Tunisia and Malaysia paid - partly indirect - subsidies for motor fuels in the range of 2 to 8 per cent of all their tax revenues (Metschies, 2003). According to IMF, UNEP and World Bank (2002): *“For the developing world as a whole, the net effect on the public budget from phasing out subsidies to gasoline and diesel could reach US\$18 billion. Moreover, if countries with low taxes on those fuels were to increase them to the average level in their respective region, the net effect would add to some US\$71 billion”*. Hence, in many countries, ending the under pricing of fuel could free-up considerable fiscal resources, reduce wasteful energy use and associated emissions, and in turn offer considerable potential for poverty reduction.

For diesel motor fuel prices, four different categories of countries may be identified (according to Metschies, 2003; see also Figure 5):

- Category I - (prices at the highly taxed EU and Japan level) - the EU countries, Japan, and other countries in which the per litre tax on fuel ranges from 30 to 90 US cents per litre diesel. Super petrol taxation ranges between 40 and 115 US cents per litre. (Resulting pump price: 65 - 120 US cents per litre diesel and 76 - 147 US cents per litre super petrol).
- Category II - (prices between US and minimum EU level - countries that occupy the range between low-taxed and highly taxed

price policies (pump price: 40 - 63 US cents per litre diesel and 41 - 75 US cents per litre super petrol).

- Category III - (prices at or below US level) - the US and other countries that pursue a low-price policy (pump price: 31 - 39 US cents per litre diesel and 32 - 40 US cents per litre super petrol).
- Category IV - (subsidised fuel) - these are the oil subsidising and producing countries, in which fuel is available for less than the market price (excluding fuel tax) of 31 US cents per litre of diesel and 32 US cents per litre of super petrol.

Different motor fuels are also taxed differently. In most countries diesel fuel - which is more polluting - is sold more cheaply than petrol. In this regard higher product taxes on diesel would have a positive effect on local air quality. The current preferential tax treatment of diesel is based on concerns about competitiveness (diesel is used in mining and agriculture and for goods transportation by truck) and distributional impacts (public transport relies on diesel fuel). Changing the tax treatment of diesel will inevitably involve trade-offs between social and environmental objectives.

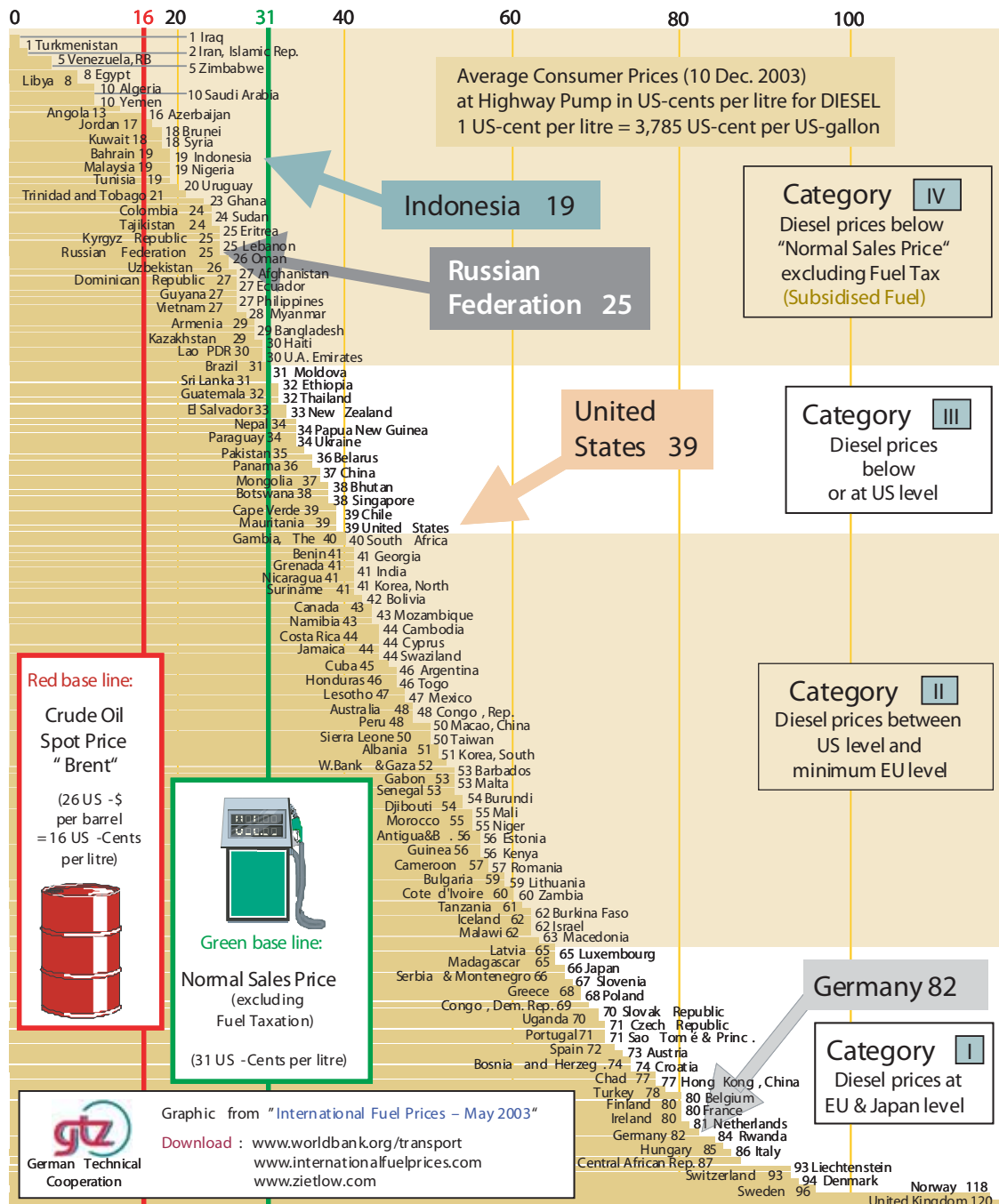
Empirical evidence indicates that fuel taxes can represent a reliable, high volume source of revenue, essentially because demand is relatively inelastic and the tax base is relatively large (OECD, 2001b). Therefore raising fuel prices can provide significant revenues, save energy and reduce harmful emissions, and - if done appropriately - can be progressive. Table 4 demonstrates some estimates of potential revenues resulting from a 1 US cent tax increase per litre of transport fuels for selected countries.

### Realising the Potential Benefits of Price Reforms

**Combining fiscal and regulatory instruments to enhance the environmental benefits** – Fuel taxes

**FIGURE 5**

# Diesel Prices in 165 Countries (as of 10 December 2002)



Notes: The "Red Base Line" represents the world market price for crude oil (North Sea Brent) at Rotterdam port on 10<sup>th</sup> December 2002. This price was by chance roughly the average crude oil price during the year 2002.

The "Green Base Line" represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation.

This green line also applies to oil producing countries: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Source: Metschies (2003, p.58).

**Table 4** Potential State Revenues for a Fuel Price Increase of 1 US Cent Per Litre

COUNTRY	FUEL CONSUMPTION BY MOTOR VEHICLES IN 1996				ANNUAL POTENTIAL REVENUE [US\$ MILLION]
	PETROL	DIESEL	PETROL	DIESEL	
	[1,000 TONS]		[MILLION LITRE]		
Africa					
Benin	30	78	40.0	91.7	1.3
Burkina Faso	70	50	93.3	58.8	1.5
Kenya	380	498	506.7	585.9	10.9
Morocco	333	1,469	443.5	1,727.7	21.7
America					
Bolivia	413	393	551.0	462.5	10.1
Mexico	20,700	10,900	27,600.0	12,823.5	404.2
Asia					
Japan	38,967	37,004	51,955.7	43,534.1	954.9
Korea, South	7,748	11,511	10,331.1	13,542.2	238.7
Thailand	3,860	9,050	5,146.7	10,647.1	157.9
Azerbaijan	601	560	801.3	658.8	14.4
Yemen	979	607	1,304.7	714.0	20.2
Europe					
Germany	28,373	22,780	37,830.0	26,800.0	646.3
The Netherlands	5,309	5,070	7,078.4	5,964.2	130.4
Sweden	5,523	1,636	7,364.2	1,925.2	92.9

Source: GTZ (2001).

on final demand may not be the ideal instrument to address air pollution impacts. Apart from CO<sub>2</sub>, most emissions (such as SO<sub>2</sub> and NO<sub>x</sub>) are only loosely linked to fuel consumption per se. Therefore product taxes may only have limited environmental benefits. Additional instruments will be needed. Fuel taxes can reduce overall fuel demand and thereby overall emissions but will not make “dirty” fuel “cleaner”, as we discussed in Chapter 3. Regulations specifying the chemical content of fuels – for example, maximum concentrations of sulphur – may be needed. These are implemented at the level of the refinery, and can be supported by differential taxation in favour of the “cleaner” fuel. Setting standards on vehicle maintenance programmes can also be useful in countries with sufficient administrative capacity.

#### Reducing administrative complexity and cost –

Excise duties on fossil fuels are among the policy measures easiest to levy, especially if they are collected at the few distribution centres (refineries or entry points in the case of imported fuels). It is then the responsibility of the industry to recover the cost of the tax from the potentially millions of final consumers – the tax will be reflected (in full) in the price paid by consumers.

**Tackling sources of non-compliance** – If fuel price levels of neighbouring countries differ significantly, smuggling of fuel may become a problem, and can undermine the new incentive structure. Between 20-50 per cent of fuel consumed in Benin, Togo, Ghana, Burkina Faso, Mali, Niger, northern Cameroon and Chad is of

non-taxed origin – mostly smuggled from Nigeria (GTZ 2001). Diesel prices in Chad are four times as high as in neighbouring Nigeria. As borders may be difficult to control, the only solution is regional co-operation and harmonization of pricing policies.

In many developing countries kerosene is used for cooking by low-income households and is therefore often exempted from taxation. If kerosene prices are very low and if, due to tax, prices of other petroleum products are considerably higher, kerosene is often used to substitute both diesel and petrol as a transport fuel. Fuel adulteration results in higher emissions, worse vehicular performance, and may erode the tax base. Likewise, if kerosene is too expensive and fuel wood readily available, households will switch to the latter for cooking, encouraging deforestation.

## Affected Stakeholders: Perspectives and Interests

### *The Poor*

Poorer households tend to spend a higher share of their income on fuel (heating, cooking, mobility etc) than average. Subsidised fuel prices often serve as a substitute for a social safety net. However this is inefficient and costly. Targeted subsidies to the poor, and the partial earmarking of revenues for investments in the public transport sector, could be more appropriate in addressing social exclusion.

Impacts of fuel price increases will depend on the country concerned – their structures and the responsiveness of fuel demand to price changes. Kerosene price increases, for example, may have negative effects on poor households. Although low-income households also use liquefied petrol gas (LPG), it is often primarily the better-off households who use it for cooking and water heating and so benefit from LPG subsidies.

Higher taxes on automotive diesel will probably raise prices for public transport, but also affect diesel car owners. The rural poor who often do not have as much access to modern fuels and rely more on biomass for cooking will likely be less affected by price increases. Targeted, time bounded subsidies for fuels used particularly by the poor might be an option to help poor gain access to modern fuels, such as liquefied petrol gas (or electricity).

In general transport policies are more progressive than energy policies, mainly because transport environmental controls affect the rich relatively more than do energy environmental controls. Controls on private transport have a relatively smaller effect on the lower income groups than do controls on public transport (Markandya and Streimikiene, 2003).

### *Government Administration*

Fuel taxes are usually introduced for fiscal reasons. Because of their high revenue potential and administrative simplicity they are generally supported by the Ministries of Finance. In countries struggling with high inflation rates however, there is a fear that rising fuel prices will intensify inflation.

Other departments, like those responsible for economic development, transport, energy and industry are often linked with the interests of related industries, and therefore tend to oppose price reforms – particularly if they involve tax increases. Ministries of Environment seldom get involved in these debates. Moreover, in developing countries such ministries are often weak, and therefore not able to robustly argue the environmental case for economic instruments.

### *Politicians*

Politicians face pressure “from the street”. In many countries, popular discontent (especially from the urban middle classes) has forced the revision – or

even the cancellation – of planned tax increases or subsidy reform. This is particularly acute in oil-producing countries where petroleum products have historically being subsidised thereby creating entrenched patterns of dependence, in such cases, cheap fuel is almost considered a right. For example in Indonesia (see Box 36) popular discontent forced the state to revise proposed hikes in petrol prices in 1998.

Consumers in oil importing countries are likely to have a greater appreciation of the scarcity value of petroleum products, and therefore be more open to paying higher prices.

### Box 38 — The Difficulties of Fuel Price Hikes in Indonesia

Indonesia was among the countries hit hardest by the Asian financial and economic crisis. One of the conditions within the subsequent IMF adjustment programme demanded the phasing out of fuel subsidies in Indonesia by 1999. When in May 1998 prices for petroleum products rose by over two-thirds, widespread and violent protests forced the government to revise the increases. While there is no doubt that energy subsidies are a major drain on the government budget, the issue is politically highly sensitive.

Source: IEA (1999).

### Upstream and Downstream Petroleum Industry

Due to their economic and political power – not least in situations where there is limited competition between few producers and sellers – petroleum companies are a very influential lobbying group in many countries. Invariably they vehemently oppose higher fuel taxes. But petroleum companies are also accused of taking advantage of raised taxes by hiding price increases behind them.

Moreover, if border tax adjustments are properly applied, tax increases should not lead to loss of

international competitiveness for the industry. Given the features of the chronically undersupplied world market for crude oil, a possible small decrease in domestic demand is not very likely to affect the profit margins of petroleum companies.

### Energy-intensive Industry

Clearly, the more energy-intensive an industry, the greater the impact an increase in the price of fuel has on total production costs. This may result in competitive disadvantages for the industry if: (a) substitute energy inputs are limited in the short-run, (b) the industry is subject to international competition, and/or (c) trade measures like border tax adjustments cannot be applied due to international rules. On the back of these concerns energy-intensive industry often lobbies, with great success, for relief from price increases.

### Other Industry

The effect of higher fuel prices on the wider industry depends on the structure and consumption patterns of the economy. Where cheap fuel is traditionally consumed by industry, or affects production and consumption patterns, there will be strong resistance to price rises. This will be the case where, for example, car producers build vehicles with high petrol consumption, where gas stations sell large amounts of petrol, and where out-of-town shopping centres profit from people owning cars and petrol being cheap. Employees of these businesses share the same interests – jobs and wages depend on the companies' profits. People may live far away from their jobs. An increase of fuel taxes is very likely to be heavily opposed by businesses and households.

In countries where fuel prices have been high for a long time, further tax increases might face less severe opposition. Businesses have already structurally adapted to the high level of fuel taxation. Some of them might even depend on

them – the market shares of the small, fuel-efficient vehicles built by some firms depend on high fuel prices. The public transport sector and rail cargo enterprises are also likely to benefit from high fuel taxes.

It is often argued that if fuel prices rise, so will all other prices in the economy, because transportation and agriculture costs more. However the share of transportation in the final (cost) price of most goods is typically small. Fuels consumed in agriculture are also often exempt from fuel taxes.

## Managing the Reform Process: Key Points

Given that most people experiencing fuel price increases will see it in a negative light, reforms must be carefully designed in order to foster support and/or ease political resistance. The following points will help to these ends.

**Phased and sequenced reforms** – The more time that people have to adapt to higher fuel prices, the lower will be the perceived cost of adjustment. Sudden price hikes should be avoided as we illustrated in Box 36). We discussed the merits of “gradual” approaches to implementation in previous chapters.

**Building public awareness and using the revenues** – Earmarking part of the revenues for social (and environmental purposes) is a proven way of promoting widespread acceptance of tax increases. Partial earmarking for investment in the public transport sector and to support targeted compensatory measures for the poor may mitigate negative impacts on low-income households. Investments in urban planning can help reduce the long-term need for transport and fuel demand. Information campaigns telling people how to drive in such a way as to conserve energy and reduce costs in the process, for example, will also help. Increased awareness of the health impacts of energy-related (air) pollution will also build support for price reforms.

Fuel taxes will yield high levels of revenue that may be used to fund more general poverty reduction programmes. The contribution of fuel taxes to such programmes should be advertised.

**Capitalising on opportunities** – In countries that import petroleum products, a foreign exchange crisis can often increase public awareness of the true costs of subsidised fuel. This in turn can increase the acceptability of price reforms. Declining world oil prices also provides a window of opportunity for introducing taxes or reducing subsidies, since it is possible to keep retail prices constant.

# The Provision of Power Services

## Introduction

In this chapter we consider the potential role of EFR within another vital component of the energy sector – the generation and distribution of electricity and provision of power services. Electricity is used for lighting, communication, motive power, pumping water in agriculture and – in urban areas – for cooking and refrigeration. Access to electricity is essential for poverty alleviation and a precondition for achieving the Millennium Goals. Today 1.6 billion people or 27 per cent of the world population still do not have access to electricity – 99 per cent of these people live in developing countries, 80 per cent of them in rural areas. In many African countries, not even 10 per cent of the population have access to electricity (Johansson and Goldemberg, 2002).

Subsidies are widespread in the power sector of developing countries – government intervention lowers the cost of electricity generation and/or distribution, raises the price received by generators, and/or lowers the price paid by end-users. Our focus is on the role of subsidies, and the potential that lies in their reduction. By potential we mean the contribution that subsidy reform can make to increasing access of the poor to electricity and improving the efficiency of the existing power system.

## Key Features of the Power Sector

The main share of the world's electricity (approximately 80 per cent) is generated through the combustion of fossil fuels, such as oil, coal and

natural gas. In most countries the price of fossil fuels and electricity is subject to government intervention – prices are subsidised (mainly for social and/or political reasons) and/or is taxed (mainly for fiscal and/or environmental reasons). It is worth recalling that not all government interventions have a direct effect on prices. The government can implement measures that have an indirect effect on price or cost – for example market access restrictions, demand guarantees and mandated deployment rates.

As mentioned in Chapter 9, different energy commodities usually receive different fiscal treatment. The electricity sector is no exception and in most countries there are a wide range of subsidies and cross-subsidies within the sector. According to IMF, UNEP and World Bank (2002), for 1999: *“the developing world subsidized electricity at a rate of 4 per cent for a total subsidy of US\$102 billion, or 2 per cent of the developing world's GDP. A large share of this amount is attributable to countries of the former Soviet Union, where access to electricity is widespread and subsidies amount to almost 14 percent of GDP. In Sub-Saharan Africa, where access to electricity is low, and Latin America and the Caribbean, where the sector has been reformed, subsidies account for around 9 percent of total subsidies.”*

In developing countries most subsidies in this sector target consumers, usually through price controls that hold retail prices below the full cost of supply. In contrast, most subsidies in OECD countries target producers, usually in the form of direct payments or support for research and development (UNEP, 2003a).

In general the subsidisation of electricity encourages overuse – (in other words, using more than is economically efficient) – and therefore wasting a scarce resource. Moreover, because most electricity is produced by burning fossil fuels, this form of price subsidy causes more pollution, adversely affecting local air quality and further contributing to global warming. Besides these environmental costs, subsidies mean there is also a financial price to pay. As well as the overall cost of the subsidy programme – uncollected tax revenue or the loss of income to the electricity provider – which can be a constant drain on the government budget, there are also administration and transaction costs to consider. Administration costs can be significant, especially in preventing “cheating” when the subsidy scheme involves cash transfers to producers and/or consumers.

The economic impacts of subsidies are not restricted to direct financial effects on the national treasury – subsidies can hinder development indirectly. If prices do not cover the full cost, electricity producers and/or suppliers may not have enough income to replace and modernize (and so improve the efficiency of) older equipment or to open up new markets, for example, through extension of the power grid. Producers may not even earn enough to cover running costs, never mind the fixed costs. In these cases, power outages often occur and low-consumption households are usually the first to be disconnected. This works against the underlying social objective, because low consumption households also tend to be the poorest. These people may eventually have to fall back on traditional energy sources, such as charcoal or wood, to meet their needs.

In principle, subsidies targeted at low-income households may have a role to play in alleviating poverty and promoting social development. However as we have just stressed, broad-based subsidies can have overall negative economic and environmental impacts, and if they are

poorly targeted will not achieve poverty reduction goals. There is therefore scope for carefully designed EFR in the power sector that potentially yields economic and environmental gains, while ensuring the provision of power to the poor.

## EFR in the Power Sector

There is no generally applicable, off-the-shelf “model” for EFR in the power sector. Reform will be country specific, with each government making trade-offs between the economic, environmental and social impacts of EFR, as well as between those producers/consumers that stand to win or lose. As an illustration, the experiences of India and South Africa in the power sector are summarised in Box 39 and Box 40, respectively.

Nonetheless certain lessons, general good practice guidelines, and criteria for subsidy reform programmes (in the context of EFR) have emerged from both OECD and non-OECD country experiences (UNEP 2003a):

- Subsidies that accrue to all producers and consumers regardless of their income will not deliver pro-poor development cost-effectively. It is easier to target specific user groups (poor households) when the subsidised energy product is supplied through a fixed distribution network, such as the power grid. Targeting is more difficult in the case of energy products that can be traded in an open market. The design of the subsidy itself can also influence its ability to target. For example capacity subsidies (subsidising the fixed monthly cost of maintaining a connection to the grid for those households subscribing to the lowest capacity) are often more effective at targeting the poor than commodity subsidies (subsidising the tariff which households pay for a fixed amount of electricity). This is because consumption can be determined as much by household size as income, but the two are not mutually exclusive.

Sometimes it may be necessary to combine capacity subsidies with commodity subsidies for the lowest consumption threshold.

- Subsidies or taxes should not undermine incentives for suppliers to provide, or for consumers to use, electricity efficiently. For consumers the smaller the subsidy, the greater the incentive to conserve. For producers it is important that the burden of price support for consumers does not fall on generators or they might find it difficult to supply a reliable service or increase the capacity and/or efficiency of the generating and/or supply network. Similarly, the cross-subsidisation of consumer prices should be avoided, since this will undermine the competitiveness of industry. This means that where price support for small, poor consumers is deemed necessary, it should be financed from the national treasury.
- Subsidies should be justified by a thorough analysis of the associated costs and benefits. As circumstances change, analysis should be ongoing. It may be the case however, that the expertise to conduct the analysis may be lacking. In these cases there is a role for building the necessary capacity and housing it in the right institutions.
- In evaluating the impacts of reform on electricity supply and consumption, it is important (as stressed above) to consider the interactions between subsidies and the tax system across the energy sector as a whole. What matters is the overall net economic and environmental impact of the reform. It is therefore important to make a distinction between gross subsidies and net subsidies (adjusted for tax), since taxes will reduce the impact of subsidies on price, just as subsidies will reduce the impact of taxes on price.
- The amount of subsidy or tax should be affordable to the national treasury or power provider. Equally, it must be possible to administer the reform without incurring excessive costs. This will involve balancing estimated revenue effects with administration costs and assurance efforts.

- Subsidy programmes should have limited duration, preferably set at the outset, so consumers and producers do not get “locked-in” to the subsidies and the cost of the programme does not spiral out of control.

### Box 39 — Expanding the Distribution of Electricity in South Africa

In 1991, only 33 per cent of households in South Africa had access to electricity. By 2003 this had risen to close to 70 per cent. Yearly connection rates have averaged around 450,000 over the last 10 years. Until 2002 the electrification programme was funded by the state utility (Eskom) and local governments. However since Eskom became a taxable entity, the programme has received “on-budget” funding. This route was chosen in favour of deepening cross-subsidies in the electricity pricing system, and is in line with the National Electricity Regulator’s broad policy goal of making electricity prices more reflective of supply costs.

Source: Eunomia Research and Consulting (2003).

Other factors to consider when formulating price or subsidy reforms in the power sector include:

**Policy coherence and double taxation** – EFR in the power sector must be coherent with general objectives or policies for the energy sector as a whole. To structure, orientate, and co-ordinate policies for the energy sector, many countries design energy development strategies. Such strategies focus on: (1) Improving access to energy supplies, for example the extension of the provision of power services, and the distribution network for kerosene or liquefied petrol gas. (2) Making these energy supplies affordable by increasing the efficiency of the supply chain (production/generation, distribution and end-use) and/or introducing appropriate pricing regimes. They also address the liberalisation of electricity markets, improving performance of state-owned enterprises and issues of energy security.

Given the predominance of fossil fuels in the generating mix, EFR in the power sector must consider pricing policies for fuel inputs to generation and the distribution of the electrical output. As such, it is important that EFR (particularly “downstream”, or after power has been generated) takes into account the existing (or reformed) tax treatment of those fossil fuels used to fire power stations. Situations may arise in which reform to the tax treatment of liquid, solid or gaseous fuels partially offsets the economic, environmental and/or social objectives underlying EFR. It is also possible that uncoordinated EFR in different parts of the energy sector could result in the double taxation of certain energy products. For example, if a “downstream” tax is introduced to encourage businesses to use energy more efficiently, and the tax is levied on electricity, coal and gas, then it is necessary to exempt the coal and gas used to generate electricity, since electricity itself is taxed. Failing to do so would result in businesses being effectively taxed twice for their use of electricity.

**Using subsidies for environmental gains** - It should be noted that the role of EFR, as its name

suggests, is to reform. It does not necessarily advocate the abolition of all subsidies. Carefully designed and time-limited subsidies may have a role to play in encouraging the uptake of renewable energy technologies (such as wind turbines), with possible local employment benefits as well as clear environmental benefits. Likewise, subsidies (in the form of tax differentials) can be used to encourage generators to switch fuel (for example, tax differentials in favour of low sulphur or low carbon fuels). The use of subsidies to these ends should be justified by rigorous cost-benefit analyses.

**Prices guided by environmental impacts** – Even where electricity is priced at full (financial) cost-recovery levels, there is still a “purist” economic case for raising the price further. If resources are to be allocated efficiently then consumers should pay the full social cost – including the uncompensated environmental costs – of the generation and distribution of their electricity. However even this line of argument, which is most relevant to market economies, would cap price increases. Therefore EFR in the power sector

#### Box 40 – Subsidy Reform in the Indian Power Sector

Energy subsidies have a long tradition in India. From 1977 onwards, in many states electricity has been provided to farmers and households at highly subsidised rates. Tariffs on electricity for agricultural purposes had, in particular, become a political instrument to win farmers as a vote bloc, with free power supply to agricultural consumers also existing in some states. According to a Planning Commission of India report, electricity subsidies accounted for US\$7.9 billion annually in 2000-01; that is 1.9 per cent of GDP. The average level of cost recovery of the state electricity boards amounted to only 70 per cent in the year 2000-01.

Although average electricity tariffs have increased significantly over the past few years, agriculture and the domestic sector continue to get electricity at subsidised rates, still placing a heavy burden on some state budgets. Despite the fact that the need for reform is no longer questioned, a lack of consensus hampers the reform process. Subsidy removal is still met with strong political resistance. As a result, the reform of the Indian Power Sector proceeds steadily, albeit slowly.

A recent UNEP/IEA funded case study of electricity subsidies concluded that they hold back investment in the power sector, which is a major constraint on economic development. The study also estimates that removing the subsidies would reduce demand in the long-run by about 34 per cent, leading to a reduction in carbon dioxide emissions of 99 Mt C.

Sources: Gol (2001), UNEP (2003a), WRI (2002), IEA (1999), Datt, Garg and Narang (2003), IEA (2002).

should not be seen as advocating a principle of “the higher the better”, even where reform is steered by the “ecological and social truth” of electricity use<sup>32</sup>.

## Affected Stakeholders: Perspectives and Interests

Although electricity subsidies can impose high costs on the economy, potentially lead to environmental harm, and do not always benefit those groups that need support, they are not easily reformed or removed. Subsidies in the power sector are typically characterised by “lock-in” situations, where economic structures, production and consumption patterns adapt to low prices over time, and therefore become resistant to change. Short-term adjustment costs of policy reform therefore tend to be relatively high. Subsidies also induce rent-seeking behaviour, and recipients tend to vigorously defend these rents, building up strong lobbying power in the process. One recent example of this was the demonstrations in parts of India in 2000 following the announcement of plans to raise electricity prices. Moreover, the position of those who stand to lose from reform often goes unopposed. It is easy to understand why. The cost of reform per capita to those individuals currently benefiting from subsidies significantly outweighs the benefits per capita of reform to society as a whole (who bear the burden of the current subsidy regime). The latter group therefore have little incentive to lobby for reform, whereas the former have an interest in arguing for maintaining the status quo. In addition, given that subsidies are an easy way for governments to foster political support, governments themselves contribute to the “lock-in” situation.

As a result, EFR requires strong political will, driven by internal pressure or external forces (such as an economic crisis or donor pressure) to push through subsidy reform.

### Box 41 — The Challenge of Providing Free-basic Services to Poor Households in South Africa

In 2000 the government announced its intention to provide free basic electricity, water and sanitation services to poor households. Each poor household was to receive 50 kWh of free electricity per month. Local governments mainly provided funding, with limited additional funds provided by the national government from 2003. One of the major obstacles in rolling out the programme was how best to target the subsidy to the poor. Consumer registration, threshold consumption levels and self-targeting through current limitations have been proposed as possible options. Because local governments determine which households receive the subsidy, there are significant variations between jurisdictions about the way it is implemented.

Recognising that approximately 30 per cent of (mainly rural) households have no access to electricity, the government zero-rated kerosene for VAT purposes in 2001. There are some doubts over the effectiveness of this measure and concerns about whether the benefits have been passed onto end users through lower prices. In response, the Department of Minerals and Energy has recently set a maximum retail price for kerosene but concerns remain about how well this price cap can be enforced. There have been suggestions that the policy should be reviewed.

Source: PDC (2003).

Subsidy reform in the power sector will affect different stakeholders in different ways, and its effects are largely country specific. That said, certain general observations can be made.

### The Poor

In many developing countries the rural, and sometimes even the urban poor, are not connected to the electricity grid. This means that many poor households might not be directly affected by subsidy reform. Equally, these households are not benefiting from the existing

subsidy regime, regardless of whether that is one of the objectives. Even when households currently appear to pay nothing directly for electricity, alternative ways of obtaining similar energy services give rise to opportunity costs – the collection of wood for example, involves time and labour costs. Low-income households may actually be willing to pay for the financially more expensive, but healthier and less labour intensive public supply. This, however, will not be an option for subsistence households.

In summary, electricity subsidies implemented for social reasons are usually not well targeted at the poor. Indeed, relatively better-off households primarily benefit from low (subsidised) electricity prices and potentially lose from subsidy reform. However if price increases lead to improvements in service reliability, all connected households will benefit. In general, subsidy reform should be implemented with measures that minimise the financial impact on households, particularly the poorest. This should include programmes to increase the efficiency of household applications, which can lead to bill decreases even if the price rises, and programmes of welfare payments to protect the poorest.

### Politicians

The granting of subsidies is a relatively easy instrument for getting support from the populace. By granting subsidies to certain sectors (like mining or agriculture), politicians can win key “vote blocs” (from miners or farmers). For this reason, it may prove difficult to convince some politicians to give up one of the most powerful sources of political patronage. And although all these activities are cost-effective for the state, they require a lot of action which can initially make them less appealing to politicians than other measures.

### Government Administration

It is in the interests of the national treasury to narrowly define target groups for subsidies, since

this will reduce the programme cost as well as the administration costs. Hence, the Ministry of Finance is likely to be an important advocate of subsidy reform in order to relieve public budgets. Subsidy reform will free up public resources which can be used to support other, better-targeted expenditures. However as mentioned above, special (compensation) programmes for the poor or other actors significantly burdened by higher prices, may need to be implemented.

### Industry

To offset subsidies to some consumers (primarily households), commercial consumers are sometimes charged significantly higher tariffs. In India for example, the average tariff for industry amounted to 2.9 Rupees per kWh in 1997/98, compared to 1.3 Rupees per kWh for households and 0.3 Rupees per kWh for agriculture. Average costs were 2.3 Rupees per kWh, which means that industry partly financed government subsidy policies (IEA, 1999). Some enterprises even switched to auto-production of electricity due to these high electricity tariffs. Sectors that bear a disproportionate share of the costs of subsidies will naturally support reform.

Reliability and quality of service can be even more important to business than the price of electricity. Frequent power outages hinder economic growth because, for example, orders may be delayed, refrigerated items may spoil and computer data lost. In such cases improvements in energy service provision will help gain widespread support for subsidy reform in the medium term among the private sector.

Higher electricity prices will have a disproportionately large affect on energy-intensive industry such as steel, paper, cement, chemicals and aluminium. These industries therefore have a strong incentive to oppose reform that will result in a price increase. Additionally, these industries may make significant

contributions to the national economy, which will influence the political will for reform. But it is still possible to design subsidy reform that protects the competitiveness of energy-intensive industries - mitigating resistance - and still yields improvements in energy efficiency. For example, by making careful use of reduced rates, exemptions and so on, in combination with negotiated agreements to use energy more efficiently. However when considering such compensatory measures the government must make sure that protecting the position of these industries is commensurate with the costs of diverting funds to a limited set of industries.

### Civil Society

Civil society is ambivalent about price rises. Environment NGOs in particular, will support renewable energy production through the partial earmarking of tax revenues, or the granting of targeted and time-limited subsidies or tax differentials. However they may be sceptical about EFR if it is undertaken in a context of energy privatisation. There are cases where privatisation has not been complemented by a strict social, ecological and economic regulatory framework, with negative results. They may also favour decentralised renewable energy sources over expansion of the power-grid. In some cases this strategy is also more cost-effective.

## Managing the Reform Process: Key Points

Even in cases where clear economic, environmental and social benefits could be realised for the nation as a whole, EFR requires strong political will. The approaches outlined below are useful in mitigating resistance.

**Build a case around problems with the existing service** – Subsidies and cross-subsidies are usually economically unstable, though by contrast

they tend to be highly stable politically. Therefore pressure for reform often has its roots in economic problems that eventually transform into political pressure. As explained above, subsidies induce excessive demand yet raise insufficient funds to maintain the infrastructure. This in turn leads to poor quality energy services, like frequent power outages, which may foster consumers' support for reforms. It may also contribute to a local or national fiscal crisis that gives creditors the opportunity to stimulate reforms.

**Publicise the case for reform** – To actively build up political pressure, a coherent, evidence-based case for reform - including the analysis of the economic, environmental and social benefits of reform - should be made available to the general public. For instance, consumers need to know why their village only receives electricity once a week. The case should clearly identify the overall benefits of EFR with respect to the economy as a whole, identifying who loses (and by how much) and who wins (and by how much).

**Phase in the reforms gradually** – EFR should be implemented gradually, in a programmed fashion. Given the "lock-in" scenario described earlier, this will mitigate the financial pain of those who stand to lose most from the reform. Gradualism also gives potential losers time to adapt in the short-term. Converting "off-budget" subsidies to "on-budget" subsidies helps make the case for reform more transparent, and is often a good transitional step to further price reforms. (It is also a good way of publicising the cost of the existing pricing regime - see above.)

Clearly, the larger the reform, and the bigger the likely economic and social effects, the more gradual the pace of reform should be. However even here there are trade-offs to be made, since slowing down the pace of reform will result in additional administration costs, and delay realisation of the full net benefits.

**Make strategic use of the revenue** – If introducing a tax or modifying a subsidy reduces the real income of a specific consumer group (poor households, for instance), compensatory measures could be introduced to directly raise real income levels – direct support is likely to be more effective in any case. Even if the latter is not a primary objective of the reform, it may be the price that the government has to pay to get public “buy-in” for the policy. The extent to which a government can support the real incomes of those (poorest) households affected by the reform, depends on the institutional capacity and network for distributing payments to those households.

The problem of access to electricity for rural communities has already been highlighted. Earmarking some of the revenues for rural energy supply programmes promotes poverty reduction, which will foster public acceptance.

Some of the revenue could also be used to support demand-side management (DSM) measures. Like investment in rural electrification, DSM measures<sup>33</sup> have high potential to foster widespread support.



# The Provision of Water Services

*“Water consumption in the country has dramatically increased due to extremely low prices for water and consequent lack of incentives for consumers to save it, and a lack of effective mechanisms of water resource utilisation and management”*

Tajikistan Poverty Reduction Strategy (2002)

## Introduction

Improving access to safe water is among the key dimensions of the global fight against poverty, figuring prominently among the Millennium Development Goals. In exploring the scope for EFR in the provision of water services, we focus on the political economy of water, but recognise that non-price measures are as critical in water policy reforms. Broader issues, such as the control of water pollution in upstream watersheds, the exploitation of non-renewable sources, or the allocation between agriculture, industry and urban uses, can be mentioned only in passing. The pricing of water services should not be considered in isolation from these other issues.

Water pricing is politically controversial, but often vital in generating sufficient revenues to maintain the system and extend the provision of water services – particularly to rural areas or urban slums where many poor households lack formal water supplies. Charging for water can also encourage more efficient use of this scarce resource. As with all pricing reforms, the poor may be adversely affected. There are many ways of avoiding this however, including through the use of targeted subsidies.

In general, water pricing is relevant to a wide range of situations and can be considered by countries at various stages of development.

## Key Features of the Water Services Sector

The management of water resources is inherently political due to the numerous competing claims made on it by different sections of society, from farmers and industrialists to households and planners. In many countries, water is culturally and religiously symbolic. Safe water is: (a) a social good to which every human being is entitled to have access by virtue of their basic rights, (b) a public good because of the benefits it provides in the form of food security and public health, and (c) an economic good which bears a price, reflecting the willingness-to-pay among different users.

In many countries, growing scarcity of water against a background of increasing demand magnifies the political nature of water management. In developing countries over the last 50 years water use in agriculture has increased twofold, while worldwide industrial use has increased six-fold. The expenditure required to develop the infrastructure for a water system is large, as are the funds required to cover the day-to-day operation and maintenance of the system. In practice, only very small portions of these costs are recovered from those who benefit from the services the system provides. As a result, subsidies to the water sector represent an enormous drain on public budgets. In developing countries like India and Egypt, for example, subsidies on water utility delivery tariffs have been estimated at

US\$4,000 and US\$713 million per annum (Pagiola et al, 2002). But growing water scarcity, rapidly deteriorating infrastructure, and declining coverage and quality of water services, are leading many governments to consider increasing cost recovery on supplying water services.

## EFR in the Water Services Sector

### *Objectives of Price Reform*

Reform of water pricing policies has several objectives, including:

- Improving the efficiency of using and allocating water, and encouraging water conservation.
- Cost recovery to cover infrastructure and recurring costs, and to ease strains on the public budget.
- Increasing coverage and access to water services.

Water pricing policy may arbitrate between these different objectives by discriminating between different uses, or by transferring income between sectors through cross-subsidisation.

Given that access to piped drinking water is largely confined to the richest households in many developing countries, there is a high potential for fiscal, environmental and pro-poor benefits. The potential benefits of reducing water subsidies include:

- Providing the financial resources to reverse the deterioration of infrastructure and expand services to poor communities.
- Reducing strains on the public budget.
- Reducing waste of water and preserving the resource for the future.

Pricing reform means more than moving towards the theoretical ideal of economic pricing of water

to reflect the full costs of its use, and ultimately to encourage an efficient allocation between competing uses. Basing reform on purely economic efficiency criteria is doomed to failure, not simply because of administrative and institutional barriers, but because of political resistance by user groups.

With respect to drinking water, a key issue concerns the line of accountability between water-supply companies, water users and public authorities. Water pricing can play an important role in reducing the financial dependence of water supply companies on public authorities, while encouraging water users to play an active role in monitoring the quality of services provided by the water company, and to demand “value for their money”<sup>34</sup>. Thus water pricing can only be a part of a broader package of institutional reform.

The effectiveness of water pricing policy depends on the pricing methods chosen, the sector affected, and the institutional context specific to the location. Water pricing may be based on volumetric charges or fees (charging in proportion to volumes consumed, possibly differentiated by household income) or on flat rate charge or fee<sup>35</sup>. Volumetric pricing is more conducive to creating incentives for efficient allocation and use, since it effectively implements the principle of marginal cost pricing. Given that there are significant economies of scale in the provision of water services (due to the large fixed costs), big consumers such as industry and agriculture may be charged cheaper bulk water rates.

Key institutional elements of water pricing reform include:

- The separation of commercial operations from regulatory functions (for example, an independent water pricing agency and regulatory body).

- Financially autonomous agencies to supply water, which implies tariff levels that allow a degree of self-financing.
- Clearly defined water rights.
- Transfers of management to user organisations or the private sector on a commercial basis.

Setting up such institutions incurs costs, and these must be balanced against the benefits of reform.

### *Past Experience with Water Pricing*

Water pricing is not a new phenomenon. For example, prior to World War II in India and Pakistan – which now provide some of the largest subsidies – users paid almost the full costs of water services. In the post-war period however, most governments set out to invest in huge irrigation schemes to increase food production, which farmers often could not afford (Dinar and Subramaniam, 1997). Water services therefore came to be heavily subsidised. However with growing water scarcity, deteriorating coverage and quality of water services, and growing strains on the government budget, water pricing is being reviewed in many countries. It nonetheless remains heavily subsidised<sup>36</sup>.

## Affected Stakeholders: Perspectives and Interests

### *The Poor*

Among the poor, it is important to distinguish between different sub-groups, as the issues may be quite different for these different groups. For the urban poor, water quality and sanitation (access to clean drinking water and servicing by sewerage systems) is an important dimension to consider. The poor – urban and rural – who are not involved in agricultural production also have an interest in low food prices, which often involves subsidised irrigation water supply<sup>37</sup>. With regard to drinking water, poor people spend

proportionately far more of their income on water than richer groups. This is because households who do not have access to water supply services often have to rely on informal water vendors who charge prices many times higher than piped water rates. In addition water from informal sources is often of low quality, which results in sickness. Even if people survive illness, medical costs are an extra burden. As a consequence the poor stand to gain considerably from the expansion of water supply and sanitation services made possible by improved cost recovery. However proposals for increased cost recovery of water are often politically controversial, and there is a widespread perception that their effect will be regressive.

In the context of informal urban settlements, one of the key barriers to obtaining and paying for water services may relate to insecurity of land tenure rather than general willingness or ability-to-pay for water. This has to be recognised and addressed. Providing security of tenure can significantly increase the willingness of households to invest in the necessary infrastructure to obtain water services and to pay for them.

### *The Non-poor*

Non-poor households are often the main benefactors of under-priced water since they have better access to subsidised water services. They also represent the group that will be confronted with higher bills if prices rise, and are therefore likely to oppose reform.

### *The Private Sector*

The informal private sector – water vendors – has a clear interest in maintenance of poor and unequal access, because their livelihood depends on the opportunities this generates. However, the large commercial water supply sector – often international water companies – while keen to invest in new markets, have come to appreciate

the high risks involved. Typically therefore, private sector companies will seek some form of cost-sharing and risk-sharing arrangement as a minimal condition for entry. It is now common for government or donors to provide initial funds, as well as provide risk protection in the form of guarantees. The profit-motive implies that the private sector will have a tendency to concentrate on the most profitable part of a country's water system to the detriment of poor and isolated regions.

### Politicians

The interests of local and national level politicians may be quite different. At the local level politicians may seek to increase constituency support and build political power by opposing water price rises. At the national level however, politicians must also balance the interests of different sectors, and international pressure from donor communities.

### Government Administration

The Ministry of Finance has a clear interest in subsidy reform: under-pricing of water places a huge drain on public finances, which deprives other sectors of the economy of resources. The fiscal burden may also be substantial. In developing countries, in terms of drinking water alone, subsidies in a selection of 26 developing countries are conservatively estimated at about US\$8 billion per year (Pagiola et al, 2000). However they may be faced with opposition from the Ministry of Industry and the Ministry of Agriculture, who may be captured by the interests of their sectors in keeping water prices low.

The picture that emerges from the process of water pricing reform in many countries is one of poor coordination between ministries. Often, bureaucratic disputes and administrative complexity may slow or block reforms.

For the authorities responsible for water supply, the shift from directly providing water infrastructure and services towards regulating services provided by private or public utilities and monitoring performance is very significant, and may be resisted as a result of bureaucratic inertia. Reform may also be perceived as a loss of control, power and authority. Bureaucratic inertia alone may be a strong force slowing or blocking reform processes, and it may take strong political momentum to push administrative changes.

## Managing the Reform Process: Key Points

**Publicise the costs of the status quo** – As with other subsidy reforms, it is important that the costs of the existing pricing regime (and therefore the benefits of pricing reform), as well as problems with service delivery and coverage, be made visible. This will foster willingness for reform. Quantification of the various subsidies and other support measures in the sector, and their impact on national budgets, is essential. The economic and environmental benefits of improved water supply and sanitation management - in terms of improved water quality and service reliability, and the resulting health benefits - must be emphasised. When hidden subsidies are to be replaced by explicit subsidies targeted at the poorest, this must also be made clear and transparent.

Making public the level of service discrepancy between providers in a given city or region, ("benchmarking") can also encourage providers to improve their performance with regard to prices, coverage and efficiency, and help individual consumers and associations in their efforts to demand better service.

**Make effective use of compensation measures for the poor** – When significant parts of the

population have no access to water services, subsidising investment in the infrastructure needed to expand access, will be more effective than subsidising the water itself. Such subsidies are effectively self-targeting.

For those poorer parts of the population that have access to water services, increased cost recovery might pose challenges. This can generally be addressed explicitly through targeted subsidies, such as lower tariffs for the first few units consumed. When poor households share water connections however, such tariff structures may effectively push them towards the high consumption-high tariff range. One way around this is to employ “geographic targeting”, where an entire area known to comprise mainly of poor households receives subsidised services. The approach can also minimise the cost of managing the subsidy, while minimising the chance that the non-poor will “capture” the benefits.

**Start simple** — In the short-term it would be unfeasible and undesirable to apply water-pricing reform indiscriminately. While increasing prices for industry is administratively simple, charging many small-scale farmers and households for water is complex and administratively expensive. Therefore while volumetric pricing should be followed as the general principle since it provides incentives to conserve use, this may be impracticable in some cases since it requires installation of meters which may be prohibitively expensive (at least for the poor), especially when population density is low. This means that, depending on the circumstances, flat rate pricing which is easier and cheaper to implement and administer — and still capable of

achieving full cost recovery — may emerge as the best practical solution for addressing small scale and dispersed users. (But recognise that it is less effective at promoting conservation.)

**Start slowly** — The pace that water tariffs are increased towards full cost recovery levels should be gradual. At first, the tariffs could be set to recover operation and maintenance costs, and raised gradually to recover capital investments and infrastructure renewals. In time, the tariffs could be increased further to internalize the environmental costs of providing water services.

**Establish a strong regulator** — A strong regulator is required to ensure that the water utilities are accountable to the public, and to protect consumers in case the utilities try to abuse their monopoly position. The establishment of such a credible regulator is a precondition to reform. Development agencies can play a role to this end by providing technical and administrative assistance in setting up legislative and monitoring systems, and by brokering a fair deal with powerful private sector actors.

**Improving service quality and willingness-to-pay** — In terms of implementing water pricing, an important issue relates to the strong links between quality of the service and success in collecting water bills. When service is poor, many consumers will feel justified in delaying or avoiding paying their water bills, further undermining the system’s ability to improve quality. Conversely, improved service is generally followed by higher rates of collection. Until the quality of service can actually be improved and consumers have noticed it, the transition period can be difficult.



## Part 3 – What Should Be Done and How to Achieve It

# Summary and Recommendations

## Introduction

In this report we identified the fiscal, environmental and poverty reduction opportunities that environmental fiscal reforms (EFR) present policy-makers. These opportunities were considered in relation to specific sectors and countries, and in each case, likely obstacles to pursuing these opportunities were outlined, and the most effective measures for managing the obstacles were identified. The main conclusions are summarised below. We also consider how EFR can be integrated into the “policy cycle” and the important roles that donors can play at each stage of the cycle, as we move from “what should be done” to “how to achieve it”.

## EFR Can Support Fiscal, Environmental and Poverty Reduction Goals

### *What Do We Mean By EFR and What Can It Do*

The term environmental fiscal reform (EFR) refers to: a range of taxation or pricing instruments that can raise revenue, while simultaneously furthering environmental goals. This is achieved by providing economic incentives to correct market failure in the management of natural resources and the control of pollution.

Broadly speaking, EFR can: 1) mobilise revenue for governments; 2) improve environmental management practices and conserve resources;

and 3) reduce poverty. By encouraging more sustainable use of natural resources, and reducing pollution from energy use and industrial activities, EFR can address environmental problems that threaten the livelihoods of the poor. The revenues raised by EFR can also be used to finance poverty reduction measures. EFR can therefore contribute to poverty reduction, and in turn, help achieve the Millennium Development Goals of “halving absolute poverty by the year 2015” and “reversing the loss of environmental resources”.

### *The Instruments of EFR*

EFR encompasses a wide range of taxation and pricing instruments, which can be used to address specific environmental and resource use issues facing developing countries. These include:

- *Taxes on natural resource use* (e.g. forestry and fisheries) - to reduce the inefficient exploitation of publicly owned or controlled natural resources which results from operators not paying a price that reflects the full value of the resources they extract.
- *User charges or fees and subsidy reform* - to improve the provision and quality of basic services, such as water and electricity, while providing incentives to reduce any unintentional environmental effects arising from their inefficient use.
- *Environmentally related taxes* - to make polluters (industrial activities, motor vehicles, waste generators) pay for the “external costs” of their activities and encourage them to reduce these activities to a level that is more socially desirable.

## Balancing the Objectives Within a Comprehensive Approach

In some cases there are synergies between revenue mobilisation, improved environmental management and resource conservation, and poverty reduction, while in other cases trade-offs will arise.

Environmentally related taxes and similar price reforms are not necessarily the most effective way for governments to raise revenue, nor are they necessarily the best approach to protecting the environment. *The value of EFR lies in its ability to make a contribution to both objectives at the same time.*

EFR also involves a range of trade-offs between on the one hand, monitoring requirements, enforcement needs and control costs imposed on polluters, and on the other, assuring that the predicted amount of revenue is collected and the environmental objective is achieved.

There will also be occasions where fiscal and environmental objectives will be in conflict with poverty reduction goals. Subsidy reform and increasing user charges are areas of EFR that can have a negative effect on the poor. But it is possible to soften undesirable distributional impacts through carefully designed compensation or mitigation measures (see below).

In recognition of these trade-offs, *EFR should not be seen as a substitute for other approaches to fiscal and environmental management.* Rather, it should be used to augment existing approaches. EFR should therefore be viewed as one part of a comprehensive mix of policies combining fiscal, regulatory and other instruments to achieve sound economic and environmental management.

## Using the Revenues

A government can choose from a range of options for using the revenue raised through EFR. In the context of EFR however, it should be noted that some people would want to see the revenue raised used for environmental purposes. Despite the significant problems associated with earmarking revenues, consideration could be given to allocating some of the revenue for environmental agencies, which are typically under resourced, in order to establish a reliable flow of adequate funding for environmental monitoring and enforcement activities. This would also help with public acceptability of proposed reforms.

For similar reasons, it may also be worth considering using some of the revenue to compensate for any undesirable distributional impacts that may arise – or to ease the costs of transition for losers of proposed reforms.

Generally speaking, the acceptance of EFR depends on widespread support for the proposed use of any revenues raised.

## The Political Economy of EFR

Despite the potential of EFR to yield fiscal, environmental and poverty reduction benefits, it is frequently delayed and constrained by political, social and institutional factors. These include - for example, the openness and responsiveness of the political system to “good governance” issues like transparency and participation. Improving incentives for environmental management also requires an effective legal, regulatory and administrative framework. There are also groups in society that, for reasons of self-interest, are likely to resist EFR. *Understanding the political context when designing and implementing EFR is*

*therefore absolutely crucial if the political and institutional challenges facing it are to be overcome.*

A key step in analysing the political context involves identifying likely winners and losers in order to: (a) anticipate the incidence of costs and benefits from a proposed reform; (b) inform the design of compensatory or mitigation measures for the losers; and (c) devise ways of building broad-based support for reform, which will help ensure the reforms are successfully implemented.

Equally important is the need to understand the perspectives and interests of affected stakeholders. The differing interests and strengths of the various stakeholders need to be appreciated if they are to be effectively managed over the EFR policy cycle (see below), and if coalitions in favour of reform are to be encouraged. In the context of EFR, there are a number of stakeholders, notably: poor and vulnerable groups, non-poor households, the private sector, civil society groups (NGOs, the media, academic groups etc.), politicians,

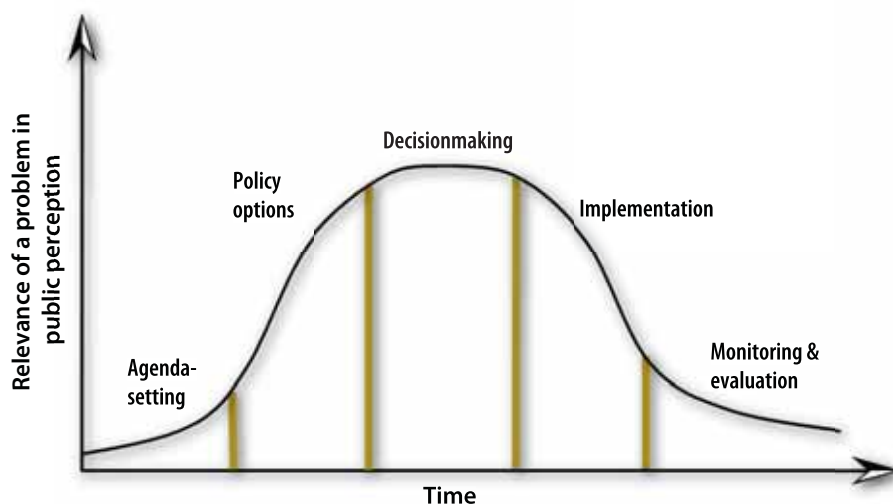
bureaucrats at all levels of government, development agencies and other international actors.

## Integrating EFR into the “Policy Cycle”

Policy development and implementation involves a number of inter-related stages, including: agenda setting, option development, decision-making, implementation, monitoring and evaluation. Together, these stages form the “policy cycle”, as shown in Figure 6<sup>38</sup>.

When implementing EFR different issues will arise at each stage of the policy cycle. The perceptions and interests of affected stakeholders will also vary across the cycle. Various stakeholders will be more important at some stages than at others. For EFR to “get off the ground” and be successful, it is vital that - throughout the policy cycle – key issues are recognised and the interests of relevant stakeholders are considered. We will now look at how this is done, as well as

**FIGURE 6** The Stages of the Policy Cycle



highlighting the important role that donors can play at each stage.

### *Agenda Setting Stage – Problem Definition*

Formulating the problem represents a critical stage for the policy maker and other relevant stakeholders. Before embarking on the decision-making process, it is first essential to understand the reasons why the problem is being placed on the agenda, the policy makers' objective(s), and the wider context of the problem at hand.

EFR must therefore start with a sound understanding of the issue(s) to be tackled – whether, in addition to the need to mobilise revenue, the issue is the inefficient exploitation of publicly owned natural resources, the unintentional side effects of energy or water subsidies, or socially undesirable levels of polluting activities. The nature of the issue and how it arises will affect the approach taken to decision-making and the associated analysis.

Understanding an issue requires knowledge of its impacts – that is its economic, environmental and social consequences – and their causes. These impacts must be placed in the context of the many pressing issues facing a country, in order to establish the relative importance of the issue. The potential of an issue to mobilise political support will depend on the answer to questions like: Are the impacts of the status quo highly visible and immediate? Can these impacts be linked to specific causes, and can these causes be managed? Can direct regulation, as well as pricing or taxation instruments, be used to manage the causes?

Comparing environmental standards and health status with the performance of similar countries can also raise the profile of the issue within a country. Donors can facilitate such comparisons

by helping with the provision of relevant information (as they already do through a variety of international organisations).

Establishing the relative importance of the issue must be based on a sound scientific basis if the attention of policy makers and the general public is to be captured, and claims over the severity of the issue are to be believed. Having access to robust data is vital for challenging adverse perceptions and overcoming opposition from vested interests. It may be necessary to challenge the perceptions of some stakeholders on the status quo. Again, donors can play an important role in this regard by supporting the work of universities and other research institutions, as well as international organisations, as they develop the evidence basis for reform.

In terms of disseminating the information and raising public awareness, the media can play an important role.

Finally, in a changing political and economic environment, it is crucial to take advantages of windows of opportunity when they arise. For example, ongoing sector (e.g. in forestry, fisheries, agriculture) and utility reform processes (e.g. water, power) can provide a launching pad for EFR. A change in government can also act as a catalyst for major shifts in policy. Partners and donors should recognise this and be prepared to act opportunistically, throwing their support behind any emerging political and public enthusiasm for reform in these contexts.

### *Policy Development Stage – Defining the Options and Building Support*

The case for EFR needs to be developed along two lines, (although these should not be thought of as separate processes). The mix of policy options (fiscal and non-fiscal) to address the problem at hand needs to be identified and

subjected to a rigorous assessment, taking account of existing socio-political and institutional conditions. At the same time political and public support for reform – and in particular for any emerging pricing or taxation instrument – should be mobilised and strengthened. Coalition building should not be left to the decision-making stage. They should be built when designing, analysing and weighing up the various reform options.

### Designing and Analysing the Instrument Mix

Assessment of the mix of policy options must establish whether EFR instruments represent the most suitable policy response. If the primary objective is to mobilise revenue, the EFR instrument must be compared with other ways of raising revenue; if the primary objective is environmental protection or resource

conservation, the instrument must be compared to other measures for meeting these objectives.

Using taxes to capture natural resource rents involves an entirely different type of reform to implementing user charges to recover the costs of providing water or energy services. Reforming the pricing of utility services is also different to providing economic incentives to reduce pollution through environmentally related charges/taxes. Instrument selection should hence be discussed and designed in the light of the specific sector context and policy objective(s). Information on the success or failure of EFR in specific contexts in other countries can help with instrument design. Donors have a role to play here by making available information on the experiences of OECD countries in pursuing specific reforms and, even more relevant, developing countries facing

## Box 42 – The Forest Law Enforcement Governance and Trade Process and The Extractive Industries Transparency Initiative

Illegal logging and the associated trade in illegal timber is the cause of considerable environmental damage in developing countries, and deprives rural communities that depend on forest products for a living. Governments in developing countries are also estimated to lose about US\$12-18 billion annually in revenue.

In April 2002, the European Commission hosted an international workshop to discuss how the European Union (EU) could combat illegal logging and the associated trade in illegally harvested timber. At the World Summit on Sustainable Development (WSSD) in 2002, the European Commission made a strong commitment to these ends, and the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan was subsequently adopted in May 2003.

This Action Plan sets out a range of measures to increase the capacity of developing and emerging market countries to control illegal logging, while reducing trade in illegal timber products between these countries and the EU.

The Extractive Industries Transparency Initiative (EITI) was launched at the WSSD. The Initiative is grounded in a shared belief that the prudent use of natural resource wealth has the potential to provide the basis for sustainable economic growth and development. A number of factors can make the sustainable management of natural resources particularly difficult, including the unusually large size of the revenues in relation to national income, price volatility and their finite nature. The objective of the Initiative is to encourage governments, publicly traded, private and state-owned extractive companies, international organisations, NGOs and others with an interest in the extractives sector (oil, gas and mining) to work together voluntarily to develop a framework to promote transparency of payments and revenues in countries heavily dependent on the natural resources.

Source: EITI ([eititransparency.org](http://eititransparency.org)) and Briefing Paper 1 What is FLEGT? ([europa.eu.int/comm/development/body/theme/forest/initiative/briefing\\_sheets\\_en.html](http://europa.eu.int/comm/development/body/theme/forest/initiative/briefing_sheets_en.html)).

similar environmental, fiscal, regulatory, institutional and political challenges in the context of EFR. Several relevant forums for information exchange already exist, for example on the transparency of extractive industries (Extractive Industries Transparency Initiative - EITI) and on illegal logging (Forest Law Enforcement Governance and Trade Process - FLEGT). The International Tax Dialogue proposed at the Financing for Development Conference may also provide a suitable forum for “north-south” and “south-south” learning.

During policy formulation it is important that existing and planned interventions in other policy areas are taken into account, to ensure that the proposed mix of pricing or tax instruments are supportive of the government’s overall policy agenda and any other planned reforms. A reform process is likely to be more successful if it is integrated into other ongoing national processes (e.g. more general reforms to the tax system), or at least takes these into account. Comprehensive approaches to development (such as Poverty Reduction Strategies) also provide opportunities to integrate EFR into country-led development plans. Medium-term expenditure reviews in particular, address issues closely related to EFR, including tax collection and pricing reforms. Integrating EFR into existing policy and institutional frameworks is essential to ensure “policy coherence” across government. EFR measures not only need to be designed to be feasible and cost-effective, they also need to be designed in such a way that the integrity of the national budgetary system is maintained.

In the context of environmentally related and natural resource taxes, it is generally simplest and most efficient to develop new tax instruments within the context of existing regulatory and institutional frameworks. The introduction of tax instruments is one way of introducing some added efficiency to existing regulatory mechanisms.

Analysing the mix of instruments involves quantifying the expected fiscal, environmental and social benefits, notably for the poorest groups in society. The analysis must be made relative to the impacts of existing policies and their beneficiaries. It also involves identifying potential winners and losers from reform, the extent of the gains and losses, and possible compensation measures as well as the net fiscal, environmental and social impact of employing these measures. In the interests of policy coherence at a national level, examination of how the revenue from EFR can be collected and distributed must take account of the entire fiscal system of the country.

Donors can support development of the capacity required to undertake such analyses, notably in relation to the measurement of hidden subsidies and the quantification of related fiscal, environmental and social impacts. They can also help research groups and universities, NGOs and the media to participate in the assessment of proposed reforms, particularly in relation to their impacts on disadvantaged groups and on the environment. Through their support to Poverty Reduction Strategies and Sector-wide approaches, donors can contribute to integrated and coherent reforms, and help ensure that available “win-win” opportunities are not missed.

### Building Coalitions

Defining a problem and proposing pricing or taxation instruments as a possible policy response is not enough. Political and public support for EFR must be secured, which often requires active advocacy. Where corruption and patronage are serious problems, for example in sectors where rent-seeking behaviour is dominant, resistance to EFR will be particularly strong. In this case, building strong alliances is absolutely vital.

Public awareness campaigns based on accurate information presented in a way that is easy to understand, and broad based consultation with

affected stakeholders (including representatives of civil society, the private sector and vulnerable groups) can help build the necessary support for reform. Dialogue can also help to form political alliances and gain political majorities where new legislation is required. During consultation, coalitions of different stakeholders in support of reform can emerge. Proponents of EFR should actively explore the potential for alliances with other, like-minded stakeholders. To this end pro-reformers should seek to identify the winners and losers of different policy options in advance of any official ex ante evaluation of the mix of instruments.

However, it should not be assumed that dialogue with stakeholders will lead to consensus – differences of opinion will often remain. Proponents of reform should be prepared for opponents to present their own analysis, which may show contrasting results.

Donors can encourage transparency, access to information concerning public finances, public participation, and accountability, all of which are prerequisites for sound policy development and, more generally, “good governance”. Donors can also support those government departments (such as the Ministry of Finance or Environment) who favour reform to overcome bureaucratic inertia or resistance from ministries or agencies hostile to reform.

### *Decision making and Implementation Stage*

Some form of public announcement usually precedes the introduction of proposed reforms. It is often advisable to make this announcement as far in advance of the instrument being introduced as possible, to give affected parties the time to effectively prepare and adapt to the proposed changes. Where adaptation is expected to be a lengthy and difficult process, it is often a good idea to phase-in the reforms gradually to reduce

the transition costs. These simple strategies to reduce transition costs can help build political support and keep the reform process on track, as firms which have undertaken investments in anticipation of proposed reforms will want to “stay the course” to see those investments pay-off.

Governments could provide more direct assistance to industry by helping them to identify cost-effective abatement technologies or processes. This might involve disseminating information on the latest “clean” production technologies and associated financial benefits. In the context of subsidy reform in the water or power sector, earmarking some of the revenues for rural supply programmes (that promote poverty reduction) or in support of demand-side management measures (that reduces costs) may foster wider public acceptance.

Donors can play an important role by helping to finance the transitional costs of reform in order to protect the poor from negative impacts, and to soften the transition costs. (Both of which will help overcome political resistance.) This also extends to the provision of technical support to help affected consumers and producers adjust to change (e.g. disseminating information on “cleaner” production techniques).

When it comes to implementing reform measures, there will be some shift in focus from the ministry responsible for initiating and co-ordinating EFR (e.g. the Ministry of Environment or the Ministry of Finance) to the sector who will be more involved with administering the reform measures, such as Ministries of Natural Resources, Fisheries, Forestry, Mining & Energy and/or Agriculture. These institutions will need the appropriate technical capacity in order to function as a credible monitoring and enforcement agency.

Credibility is essential to sustain support for reform, and rebut criticisms from, for example, affected industries that have a direct interest in

portraying the administering agency as incapable of doing its job. Environmental agencies must also be credible vis-à-vis the Ministry of Finance – for example, they must conform to existing rules and principles for public expenditure management. This is particularly crucial when environmental agencies are entrusted with the collection and management of taxes or charges, and/or when the proceeds from these instruments are earmarked to the agencies for environmental purposes.

There may be a role for civil society in monitoring the implementation of reforms, particularly when government administration is under-resourced. In this case, civil society groups can provide a complementary “policing” service to ensure that the reforms are appropriately administered.

Donors can play an important role in providing technical assistance to develop the capacity of those agencies responsible for administering reforms, including building up the capacity of environmental agencies with respect to, for example, budgeting and public expenditure management. Fiscal authorities may also need to strengthen their capacity in various areas. The capacity of fiscal authorities to collect and administer existing taxes (including capacity for compliance, monitoring and enforcement) may also need to be enhanced for proposals for fiscal reforms to be credible.

EFR requires that a long-term commitment from interested governments to design, build support for, implement, evaluate and refine EFR. Donors also need to provide a long-term perspective in their support to such processes.

### *Monitoring and Evaluation Stage*

According to OECD (1997) evaluation serves several purposes. First, it is important to assess the

policy process itself, to see if – following the political decision to proceed – the chosen instrument has been correctly implemented. Many things can go wrong along the road to implementation. Second, the effectiveness and efficiency of the instrument in meeting its stated objectives must be assessed. This brings us to the third function of evaluation – establishing whether there is room to improve the design and implementation of the instrument, both to help meet existing objectives and when applying the same instrument to similar problems in the future.

Ex post evaluation can help build up a knowledge base to inform further decisions, or later reforms. For example: How have producers responded to the price rise? Has the instrument delivered the desired change in emissions, or does the tax rate need to increase further?

Not only does evaluation help identify unexpected and perverse impacts of EFR, which serve as a basis for revising the instrument design, implementation and/or objectives, it also generates information that can be made available to stakeholders – for example publishing the amount of revenue raised by EFR and how it has been spent. This provides a vehicle for public consultation, which can enhance accountability and public support.

Of course evaluation requires information. This means that key data and influential factors must be monitored on a continuous basis, which requires a reliable and credible monitoring agency be established (see above). As well as performing a “policing” role during implementation, civil society can play an important role in monitoring the economic, environmental and social impacts of reform, and even with the collection of basic data, including the tax itself. Donors can help the regulatory agency and stakeholders develop the necessary capacity for monitoring and evaluation activities.

## Principles to Guide Donor Assistance

It is evident from the previous discussion that donors have an important role to play in helping developing country partners assess and realise the full potential of EFR. In fulfilling this role donors should:

*Emphasize country ownership and be sensitive to the local context* - First and foremost, there must be in-country ("home-grown") demand for EFR. Donors should encourage country ownership, but should not force the pace. Strong country ownership will facilitate the harmonisation of related activities across donors, which will shield countries from excessive donor influence, and possible conflicting approaches to EFR.

Donors also need to be sensitive to the political challenges of implementing EFR, which will depend on specific local economic, environmental, social and cultural conditions. They should avoid imposing "blueprints" for reform. Rather, donors should focus on providing financial, technical, institutional and political assistance in support of a country's own efforts.

*Be prepared to act opportunistically* - In a volatile political and economic setting, it is crucial to take advantage of windows of opportunity as they present themselves. A new government or political leader - especially if it has the support of the populace - can be a catalyst for major policy shifts. Fiscal and environmental crises can also provide a window for reforms. Donors should be prepared to help proponents of reform seize such opportunities as and when they arise.

*Be pragmatic* - Textbook solutions will seldom be practical. On some occasions it may be necessary to deviate from standard fiscal

practice in order to secure political and /or public support for important reforms. For instance - despite the clear problems associated with earmarking tax revenues - it may be necessary to allocate some portion of the tax to a particular use in order to progress the reforms. For similar reasons, it may also be necessary to consider the use of other compensatory measures, such as reduced rates of tax or targeted subsidies, given adequate safeguards.

*Strive to for policy coherence* - Policy coherence on several dimensions is vital if donors' support for EFR is to be credible, and if partner countries' efforts to implement EFR are not to be undermined.

Donor governments should work towards alignment of their development and trade policies. For example, donors with export credit agencies should strive to ensure that export interests do not impair the signals for improved resource efficiency or emission reductions provided by EFR, or development policy objectives more generally. Consideration should also be given to policies in the agriculture and the fishery sector for example, which promote activities that have the potential to undermine the objectives of EFR.

The alignment of donor policies with respect to international agreements and instruments for development co-operation, such as the MDGs, Poverty Reduction Strategies and on-budget support is another way to improve the coherence of donors' efforts toward country-owned objectives. Donors should thus ensure that EFR is linked to, and integrated with, their support to the PRS process, Medium-term Expenditure Reviews and Sector-wide approaches.

# Notes

1. It should be noted that if permits/allowances are auctioned by government they will generate revenue, and many of the arguments used here in favour of taxation and pricing instruments apply equally to permits/allowances. In practice, however, tradable permits/allowances are initially given away for free (so-called "grandfathering"), and therefore generate no revenue.
2. More general aspects of EFR in a developing country context have been widely studied by, for example, Eskeland and Jimenez (1992), OECD (1993), Cruz, Munasinghe and Warford (1997), Blackman and Harrington (1999), and more recently by the IMF, UNEP and World Bank (2002). EFR in the context of specific sectors has also received much attention – see IEA (1999), UNEP (2002a) or UNEP (2003) for the energy sector, Gray (2002) for forestry and Dinar and Subramanian (1997) for water. The literature has also looked at the experience of EFR in specific countries – see, for example, Florig et al (1995) or OECD (1997 and 1999) for China, Huber et al (1996) for Latin America, and TERI (2002) and Datt et al (2003) for India.
3. Subsidies are, in effect, negative taxes and, in theory, can provide economic incentives to address environmental problems. However, subsidies can, and often do, promote the inefficient use of resources and unsustainable environmental practices. Moreover, unlike taxes, which raise money for the treasury, subsidies represent a financial burden. We therefore consider subsidies as a distinct category of instruments in this report.
4. The economic gains from using a policy instrument that ensures the efficient allocation of emission reduction efforts between polluters can be substantial compared to the "equal abatement" rule that frequently results from conventional command-and-control regulation (OECD 1997, UNEP 2004).
5. The advantages of using economic incentives to manage the environment vis-à-vis command-and-control approaches have been widely discussed in the economic literature. See Faure and Ubachs (2003) for a recent review of this literature.
6. Indeed, revenue might approach zero over time. While there are a few cases of this happening – for example, the tax on plastic bags in Ireland – in practice, it is extremely rare. In most cases, the tax rate set by government is generally too low and demand too high (and/or price inelastic), to lead to a complete curtailing of demand for the targeted product or service.
7. The exception is auctioned (marketable) allowances/permits, which are a quantity-based economic instrument capable of raising revenue.
8. This trade-off is nicely summed up by Blackman and Harrington (1998, pp. 3-4): "*If demand for gasoline is inelastic (i.e. price increases have little effect on demand), then the tax will generate revenue, but not significantly reduce gasoline consumption or vehicular emissions. If demand for gasoline is elastic (i.e. price increases significantly curtail demand), the tax will generate relatively little revenue, but will reduce gasoline consumption and (presumably) vehicular emissions.*"
9. For example, OECD (2003) provides specific guidance in this regard – including checklists for assessing performance with respect to

- environmental effectiveness, fiscal prudence and management efficiency.
10. A brief review of OECD country experience with the “double dividend” theory and “ecological tax reform” is provided in OECD (2001b, pp. 35-40).
  11. In 1999 the German parliament agreed to introduce a “Law on the Introduction of Environmental Tax Reform”, which made provisions to: (a) raise taxes on gas and oil products; (b) raise taxes on electricity; and (c) reduce social security contributions. Contributions of both employee and employer to public pension funds were lowered significantly, thus reducing the cost of labour. The reform is to be phased in through 2005 - with tax rates increased and pension contributions decreased each year. The introduction of the law was preceded by fierce political debates. Potential losers - including energy-intensive industries, as well as employers' associations and labour unions - resisted its introduction, while labour-intensive sectors - notably, the service industries - were more open to reform.
  12. There are a few exceptions, such as South Africa, where tax revenues at 25 per cent of GDP are considerable, although still below the OECD average. So, in South Africa, there is some discussion of using environmental taxes to lower payroll taxes.
  13. Taxes on small-scale resource extraction, such as subsistence fishing or wood collection generate much less revenue, are more costly to collect and can be regressive - so we do not cover them here.
  14. As we discuss below, if the environmental objective is to reduce sulphur emissions, directly targeting those emissions with a sulphur tax will be more effective at reducing sulphur emissions than raising the price of electricity. However, in some cases it may be more practical to tax final demand.
  15. See Steenblik (1995) for a brief overview of definitions used by inter-governmental organisations.
  16. The efficient level of emissions is defined by the point where the external cost of emitting an additional unit is equal to the cost of preventing that additional unit from being emitted.
  17. See, for example, OECD (2001b) that describes the use of environmentally related taxes in OECD countries and presents growing evidence of their environmental effectiveness. It also identifies obstacles to the broader use of such taxes and suggests measures that can be taken to overcome them.
  18. See, for example, CIFOR (2004).
  19. In answering this question we draw on elements of the environmental capacity model developed by Janicke (1997). See also UNEP (2004a).
  20. In looking at EFR in this way, we are not suggesting that more comprehensive reforms across (sectors) groupings are not possible. For example, power services may be priced below cost-recovery levels (providing a case for user charges or subsidy reform), but power generation also produces emissions that cause air pollution (providing a case for emission taxes).
  21. There may be a good case for EFR in sectors other than those listed below, such as mining, solid waste management and transport (such as motor vehicle taxes and congestion-type charging), but due to limited resources these areas have been left for future consideration.
  22. Countries that have signed the UN Convention on Biodiversity must also take into account the protection of “biodiversity hot spots”.
  23. We are not covering community-scale operations, because they raise significantly different issues and are not as significant potential sources of revenue.
  24. Certain techniques (for example reduced-impact logging) can minimize the negative effects of logging and protect biodiversity.

However, these techniques require high levels of know-how and skills and, given current timber prices, are less profitable than the standard techniques.

25. Further information can be obtained from (<http://www.un.org/esa/forests/adhoc-finance.html>).
26. The FAO ([www.fao.org/fi/glossary/default.asp](http://www.fao.org/fi/glossary/default.asp)) defines artisanal fisheries as "traditional fisheries involving fishing households (as opposed to commercial companies), using relative small amounts of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumptions".
27. Within the EU, the most important fishing fleets are, in descending order, Spain, Italy, Portugal and France (Source: CEC, 2002a)
28. In this case, it is important to consider whether disposal is taxed directly, otherwise double taxation may be a problem.
29. Tax receipts constitute a major potential source of additional money for often under-funded environmental authorities with the responsibility for monitoring environmental performance and enforcing regulations. However, the dangers of earmarking funds, which are discussed in Chapter 2, need to be borne in mind.
30. With economic instruments that use price signals to change behaviour there is always uncertainty over the final outcome. In some cases – depending on the possible consequences of the emissions – some degree of uncertainty may be acceptable, while in other cases, it is not. In the latter case, the regulator may like to jointly apply command-and-control approaches so as not to completely relinquish control over the environmental outcome.
31. In Chapter 2 we discussed the use of environmentally-related taxes to make polluters pay for the environmental damage of their activities, and made a distinction between direct and indirect tax instruments. You will have noticed that taxing electricity is an indirect approach to addressing the pollution associated with generating electricity; the direct approach would involve taxing the emissions. The relative merits of both approaches were reviewed in Chapter 2.
32. Consumers actually demand energy services – such as lighting, cooking, heating and mobility – and not energy itself. DSM mainly refers to making the same service possible with less energy consumption and therefore lower costs for final users. Often, the cheapest and most effective way to improve the cost and reliability of energy services is to improve end-use equipment, not the rest of the electricity system. Examples include the provision of more efficient or more advanced cooking stoves (LPG stoves (efficiency around 65 per cent) instead of kerosene stoves (efficiency around 50 per cent)), urban planning (reducing the need for transport) and measures aimed at reducing the underreporting of consumption or theft and improved tariff collection. DSM measures are like investments – with the government re-investing revenues raised by EFR to improve energy efficiency rather than having to finance energy prices.
33. World Bank (2003) explores these issues in depth, so they are therefore not expanded upon here.
34. Flat rate pricing may include output pricing (fee charged for each unit of output produced by water users), input pricing (users charged for water use through a tax on inputs), and area pricing (charges applied on a per unit area basis).
35. For example, developing countries spend an estimated US\$10 to US\$15 billion per year on irrigation, yet cost recovery is only about 13 per cent in Pakistan, 25 per cent in China and 10 per cent in the Philippines (Pagiola et al, 2000 and Briscoe, 1999). A global assessment of providing water services to the domestic sector found that more than half of

developing countries imposed tariffs that were less than the total cost of providing the service (WHO and UNICEF, 2000).

36. In addition, for subsistence farmers involved in agricultural production (who bear part or all of the costs of production) water is an essential requirement on which they depend for household food security. For households that produce for their own consumption, and rely on agricultural surplus for income, the effects of water price rises would be ambiguous and would depend on the effect this has on (i) land value, (ii) overall agricultural output, (iii) responsiveness of food prices to changes in output (if output declines, prices rise, and hence income from every given quantity sold

rises). Although for comprehensive water pricing reform these irrigation related interests need to be considered, we will focus in this section only on the drinking water part of water pricing reforms.

37. The policy cycle is not a linear process as suggested by the figure. It is in fact *circular*, allowing the performance of previous decisions to be evaluated, and decisions to be revisited through time, in light of new information. It is also *iterative*, allowing the policy issue(s), option formulation and assessment, and success criteria to be refined as a result of previous analyses, prior to any decision being implemented.

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