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Development of Market Based Instruments for Environmental Management in Sri Lanka

Ministry of Environment and Natural Resources
Sri Lanka

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May 2008



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DEVELOPMENT OF MARKET BASED INSTRUMENTS FOR ENVIRONMENTAL MANAGEMENT IN SRI LANKA

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MESSAGE OF THE MINISTER OF ENVIRONMENT AND NATURAL RESOURCES

Unsustainable production and consumption patterns aiming at unlimited economic growth create grave imbalances of the stability of the ecosystem worldwide moving away from sustainable development. The traditional understanding was that the free market and competition are the conditions that will lead to optimal use of limited resources, thus heralding the era of high economic growth, high consumption and the high use of limited resources as observed in the subsequent development of the industrialized countries. The needs of the voiceless such as the poor and discriminated people, the flora and fauna and other natural living and non living environment, and the future generation have not been given thought in the economic development process. Thus concerted efforts are needed to ensure that future development is sustainable by keeping production and consumption patterns within the carrying capacity of the ecosystem for the benefit of the present and future generations. This can only be achieved by internalizing the full value of natural capital within the cost benefit equation of economic development.

It is necessary to consider how economies can grow and prosper to maintain a decent standard of living, while reducing use of energy and materials, and the production of environmentally harmful products. Unsustainable production and consumption demands unlimited resources from the planet and the ecosystem is no longer able to support unlimited demands on it. We therefore need to consider different ways of living, working and travelling to reduce our impact on the environment. One way of achieving this objective is to follow a simple lifestyle with a vision to minimize the ecological footprint of each individual.

In the light of globalization and business oriented marketing systems, use of Market Based Instruments (MBIs) is another important approach to address this challenge. It encompasses a broad array of policy tools such as, pollution taxes, permits, deposits, environmental conservation levies, subsidy reforms, userfees etc, which can be used to provide economic incentives to change the behavioral patterns towards more sustainable production and consumption practices. It also generates funds that can be used to bridge the gap of essential financial needs in effective management of pollution and natural resources.

The study undertaken by my ministry to develop MBIs for environmental management is our timely response to this current need and we have already taken steps to establish an Environmental Conservation Levy based on the recommendations of this study. In this context, I would like to express my sincere gratitude for the financial and technical support provided by the United Nations Environment Program/Global Program of Action (UNEP/GPA) to carry out this project.

With this policy response, we reaffirm the commitment of the Government of Sri Lanka towards a healthy environment to all in a manner which is sustainable.

Patali Champika Ranawake M.P

Minister of Environment and Natural Resources

PREFACE

Currently Sri Lanka enforces a Command and Control (CAC) type of compliance program to manage the environment. Enforcement is based on legislation that stipulates compliance or controls in terms of standards or other indicators. Enforcement of such regulations has been weak due to lack of institutional capacity, including financial resources as well as manpower capacity. Poor infrastructure facilities for waste management such as inadequate treatment and lack of final disposal facilities have hampered enforcement and pollution management.

Use of Market based Instruments (MBIs) is one of the possibilities explored for changing behavior through economic incentives for reducing pollution and for improving efficiency of natural resource management. It would also help to raise revenue for environmental investments required for reducing the negative impact on the ecosystems as well as for promoting environment friendly economic development.

Currently Sri Lanka uses MBIs for environmental management in a very limited way. This report is an outcome of a study initiated by the Ministry of Environment and Natural Resources to review the existing policies and regulations for environmental management and MBIs presently in use and develop new MBIs that can be used to enhance funding available for natural resources management and to reduce pollution of environment through economic incentives. Financial and technical assistance was provided by the United Nations Environment Program/Global Program of Action (UNEP/GPA).

The study has proposed several measures including the revision of existing MBIs as well as developing new MBIs that could be applied to enhance revenues and increase funding required for improved environmental management. The Government of Sri Lanka has already taken steps to establish an Environmental Conservation Levy in line with the recommendations made by the study.

I take this opportunity to express our sincere gratitude to UNEP/GPA for the valuable contribution given by providing financial assistance for this project. Technical assistance provided by UNEP/GPA is also highly appreciated. I wish to mention with gratitude the facilitation provided by the South Asian Cooperative Environmental Program for securing of funds from UNEP. I also wish to thank the officials of the Ministry, National Coordinators, National Experts and Steering Committee members who worked tirelessly to carry out the study and prepare the report in a manner that can be used as a tool in sustainable development of the country more effectively.

M A R D Jayathilake
Secretary
Ministry of Environment and Natural Resources

FOREWORD

The study of “Development of Market Based Instruments for Environmental Management in Sri Lanka” is a team effort involving national, regional and international collaboration. The United Nations Environment Program/Global Program of Action (UNEP/GPA) provided financial and technical assistance for the study. The South Asia Cooperative Environmental Program provided administrative assistance by securing funds from UNEP/GPA, and the Ministry of Environment and Natural Resources of Sri Lanka implemented the project.

A team of National Experts contributed to provide thematic national reports under eight sectors namely: Agriculture, Coastal management, Energy, Fishery, Tourism, Transport, Water and Waste. The draft national reports prepared by the national experts were reviewed at two National Stakeholder Workshops and finalized with the valuable inputs of the national stakeholders, and the international consultant provided by UNEP/GPA. Based on those thematic national reports, this report was drafted by the national consultant and the international consultant, and finalized by the Ministry of Environment and Natural Resources. The report was written under the guidance of a steering committee comprised of key ministries and other related organizations.

This report is an outcome of a concerted efforts of and valuable contributions from many institutions, groups and individuals. We would like to record our sincere gratitude to all those who contributed to complete the study and finalize the report.

The Minister of Environment and Natural Resources transformed the recommendations of this report into meaningful action within a very short period of time by making arrangements to establishing an Environmental Conservation Levy in Sri Lanka. This breakthrough would certainly be among the very important and timely steps taken to internalize the externalities in the path of sustainable development.

L P Batuwitige

Director/Environment (Project Director)
Ministry of Environment and Natural Resources

ACKNOWLEDGEMENTS

We would like to extend our sincere gratitude to all those who contributed to complete the study and finalize the report. Among those special mention need to be made on the contribution provided by the following.

We offer our grateful thanks to Dr Anjan Datta and Dr Ulrik Weuder of UNEP/GPA for their valuable contribution given to commission this study and the financial and technical assistance provided. Also, we would like to extend our sincere gratitude to Mr Mahboob Elahi, the former Director General, Dr A.A Boaz the present Director General, Mr Prasnatha Dias Abegunawardena Interim Coordinator and Ms Jacintha Thisera Administrative Officer of SACEP for their administrative support.

It is with deep appreciation that we record the valuable assistance given by Dr Stefan Speck, the International Consultant and Dr Fuard Marikkar, the National Consultant for reviewing the national reports and drafting of the report. The valuable services rendered by Mr Upali Peiris as the national consultant at the initial stage by coordinating activities of the study is also mentioned with high appreciation. We would like to place on record with deep appreciation the contribution given by the national experts; Mr. R Wijayatilleke (Agriculture), Dr Fuard Marikkar (Tourism), Dr Tilak Siyambalapitiya (Energy), Dr Don Jayaweera (Transport), Dr V U Rathnayake (Water and Waste), Dr Ranjan Piyadasa (Coastal Management), and Mr Antan Wimalarathne (Fishery). Also we offer our appreciation for the valuable guidance given by the Steering Committee.

The continuous facilitation and guidance provided by Mr M A R D Jayathilake, the Secretary of the Ministry of Environment and Natural Resources is recorded with deep gratitude. Special mention need to be made on the directions and valuable guidance provided by Mr W R M S Wickramasinghe, Additional Secretary of the ministry.

We would like to place on record the leadership provided by Hon Partalee Champika Ranawake, the Minister of Environment and Natural Resources by translating the recommendations into action within a very short period.

The staff of the Pollution Management Division of the ministry assisted to carry out the study in various ways. Our thanks are due to all of them with special emphasis on Ms Chandani Panditharathe, Assistant Director, Ms Hemamali Herath, Research Assistant and Ms Muditha Manamperi, Programme Assistant.

L P Batuwitige
Director/Environment (Project Director)
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TABLE OF CONTENTS

<i>MESSAGE FROM THE HONOURABLE MINISTER OF ENVIRONMENT AND NATURAL RESOURCES</i>	V
<i>PREFACE</i>	VI
<i>FORWARD</i>	VII
<i>ACKNOWLEDGEMENT</i>	VIII
<i>TABLE OF CONTENTS</i>	IX
<i>LIST OF TABLES</i>	XI
<i>LIST OF FIGURES</i>	XII
<i>LIST OF BOXES</i>	XII
<i>EXCECUTIVE SUMMARY</i>	XIII
01 Introduction	01
1.1 Objective of the report	1
1.2 Rationale for study	2
1.3 Market based instruments and the rationale for their use in environmental policy	4
1.4 Types of economic instruments in environmental management	6
1.5 Voluntary Instruments	7
1.5.1 Economic instruments using existing markets	8
1.5.2 Economic instrument - creating new markets	11
1.6 Conclusion	12
02 Review of International Experience with Environmental Taxes	14
2.1 Overview of the use of environmental taxes	14
2.2 Environmental taxes in the field of energy	17
2.2.1 Emissions to air - air pollution taxes	18
2.3 Environmental taxes in the field of transport	18
2.4 Environmental taxes in the field of water	19
2.4.1 Water abstraction tax	19
2.4.2 Water pollution tax	20
2.5 Environmental taxes in the field of solid waste	20
2.6 Environmental taxes in other environmental domains	24
2.7 Lessons learned regarding the use of environmental taxes	25
03 Sri Lanka - political, economic and institutional background	28

04 The current status and use of Market Based Instruments in Sri Lanka and Recommendations	32
4.1 Energy	33
4.1.1 Current situation - petroleum products	34
4.1.2 Current situation - electricity	40
4.1.3 Recommendations - energy sector	50
4.2 Transport	57
4.2.1 Current situation - transport	58
4.2.2 Recommendations - transport sector	61
4.3 Water	64
4.3.1 Current situation- water	67
4.3.2 Recommendations - water sector	74
4.4 Solid Waste	78
4.4.1 Current situation - solid waste	78
4.4.2 Recommendations - solid waste sector	81
4.5 Agriculture and Lands	85
4.5.1 Current situation - agricultureand lands	85
4.5.2 Recommendations - agriculture and lands sector	91
4.6 Fishery and Coastal Management	95
4.6.1 Current situation - fishery and coastal management	96
4.6.2 Recommendations - fishery and coastal management sector	99
4.7 Tourism	101
4.7.1 Current situation - tourism	102
4.7.2 Recommendations - tourism sector	105
05 Conclusion	108
5.1 Revenues of environmental taxes in Sri Lanka	110
5.2 Subsidy reform	114
5.3 Earmarking of tax revenues and environmental funds	121
06 Summary of Recommendations	123
6.1 Short term proposals for MBIs and policies for immediate implementation	124
6.2 Medium-term proposals for MBIs and policies for implementation within a five year time frame.	125
6.3 Long-term proposals for implementation within a ten to twenty year time frame	126
6.4 Revenue estimates of some short-term proposals	126
07 References	127

LIST OF TABLES

Table 3 - 1	Economic performance of Sri Lanka	29
Table 3 - 2	Government Fiscal Operations	30
Table 4 - 1	Development of petroleum product prices (2000-2006)	35
Table 4 - 2	Summary of price composition and taxes on petroleum products	36
Table 4 - 3	Structure of taxes on crude oil and petroleum products (May 2006)	37
Table 4 - 4	Overview of evolution of fuel prices and tax	38
Table 4 - 5	Quantity consumed and prices of petroleum products - 2000 and 2006	38
Table 4 - 6	World crude oil prices compared with local fuel prices	39
Table 4 - 7	Comparison of petrol and diesel prices in Sri Lanka and India	40
Table 4 - 8	Average tariff and cost of production of electricity	41
Table 4 - 9	Electricity tariffs - from February 1, 2007	43
Table 4 - 10	Comparison of electricity prices in selected Asian countries and Australia	46
Table 4 - 11	Development of electricity tariffs (1985-2004)	47
Table 4 - 12	Purchase price from small power producer	48
Table 4 - 13	Estimates of revenue from introducing a cess on diesel in Sri Lanka	52
Table 4 - 14	Revenue implications of an increase in variable and fixed tariff of the CEB	55
Table 4 - 15	Excise (special duty) scheme with regard to the import of vehicles	58
Table 4 - 16	Luxury motor vehicle tax	60
Table 4 - 17	Water tariff for domestic consumers as of March 2005	68
Table 4 - 18	Water bill of domestic consumers	69
Table 4 - 19	Water tariff for non-domestic consumers (as of March 2005)	70
Table 4 - 20	Costs of fertiliser subsidy programme	87
Table 4 - 21	Paddy yields versus urea application	88
Table 4 - 22	Use of fertilisers in Asia	89
Table 4 - 23	Suggested cess rates for hazardous chemicals	93
Table 4 - 24	Export of Gemstones	94
Table 4 - 25	Collection of Royalties	95
Table 4 - 26	Annual Fish Production in Sri Lanka	96
Table 4 - 27	Annual license fee / renewal fees in the context of fishing operations	98
Table 4 - 28	Permit fee for Constructions in the Coastal Zone	98

Table 4 - 29	National level taxes and levies in tourism sector	103
Table 4 - 30	Government Revenue from Tourism 2000-2005	104
Table 5 - 1	Overview of revenues generated by environment taxes in Sri Lanka	111
Table 5 - 2	Environmental subsidies	112
Table 5 - 3	Estimated fuel budget shares by income quintiles	116
Table 6 - 1	Estimates of revenue from selected short-term proposals (Year 2008)	126

LIST OF FIGURES

Figure 1 - 1	Types of economic instruments in environmental management	7
Figure 4 - 1	Evolution of the international oil price	34
Figure 4 - 2	Evolution of electricity tariffs and costs of generation	41

LIST OF BOXES

Box 2 - 1	An overview of environmental taxes and charges	15
Box 2 - 2	The UK's fuel duty escalator	17
Box 2 - 3	London's congestion charge	19
Box 2 - 4	Waste policy recommendation in Kenya	22
Box 2 - 5	The Irish plastic bag levy	23
Box 4 - 1	Output-based subsidies for water consumption	67
Box 4 - 2	Traditional property rights in the Sri Lankan fishery sector	97
Box 5 - 1	The welfare costs of subsidies	113
Box 5 - 2	Extracts from different reports highlighting the problems and drawbacks of providing subsidies	118
Box 5 - 3	Key criteria for the provision of subsidy programmes	119
Box 5 - 4	St Petersburg Guidelines on Environmental Funds:	122

Development of Market Based Instruments for Environmental Management in Sri Lanka

Executive Summary

Introduction

This report, *'Development of Market Based Instruments for Environmental Management in Sri Lanka'*, aims to provide a coherent overview of the current use of market based instruments (MBIs) in Sri Lanka. In addition, it makes suggestions of how existing ones may be revised to become more effective in terms of achieving environmental and fiscal objectives and recommends the introduction of new environmental taxes and charges.

The underlying premises for undertaking the study were to gain broader understanding of the current system as it is decisive, for the continued integrity of environment and fiscal policy, that MBIs are working and being implemented in a clearly established framework and that their development, where appropriate, is well perceived.

Over the last decade, the use of MBIs, in particular of environmental taxes, has grown across the world as an increasing number of countries seek to reform their fiscal and environmental policies by making the two mutually reinforcing. Taxes, via their impact on market prices, send out signals that could have a significant impact on the behaviour of economic agents. The study reveals that environmental taxes are being applied in Sri Lanka and that the introduction of new environmental taxes in a number of different sectors is under political discussion, perhaps most notably in the water sector through Central Environmental Authority's load based licence fee proposal in the field of wastewater.

This report is the outcome of the project *'Assistance to evaluating the potential of market based instruments for the medium to long-term implementation of the Sri Lanka NPA'* funded by the United Nations Environmental Programme (UNEP)/GPA Coordination Office in The Hague, the Netherlands and SACEP) and implemented by a team of researchers comprising of national and international experts in the field of MBIs. Thematic reviews of the application of MBIs in eight sectors (agriculture, coastal zone management, energy, fishery, transport, tourism, water and waste) were undertaken by the national experts. The information and data collected and presented in these reviews provided the basis for this report.

Day-to-day coordination of the project was done by a national project coordinator assisted by an international consultant and the overall project management was carried out by the Director/Environment of the Ministry of Environment and Natural Resources of Sri Lanka.

Definition - what do we understand under environmental taxes

Environmental taxes are one of the wide ranging types of market based instruments used in environmental policy. In the economic literature a generally accepted definition of the term 'environmental taxes' does not exist. During recent years some progress has been made in getting a common understanding and nowadays the most widely used definition is based on the rationale to

define an environmental tax through the tax base. This report follows this approach meaning that an environmental tax is

a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment.

The significance of having a widely accepted definition is therefore so significant because the tax base is considered as 'the only objective basis for identifying environmental taxes for the purpose of international comparisons'. Consequently, this means that the actual name of the tax, the underlying purpose and rationale as well as the motivation for implementing such a tax is not taken into account. The definitions used in this study reflect the specific approach supported by international bodies such as the OECD and the European Commission.

The current application of environmental taxes and charges in Sri Lanka

One of the project's objectives is to provide analytical information on the current application of environmental taxes in Sri Lanka. Thematic reviews analysing different economic sectors were undertaken to collect relevant data and information describing the current situation. The main findings of these reviews are:

- Environmental taxes are being applied in the energy sector (energy taxes are levied on transport fuels and kerosene) and in the transport sector a whole range of different taxes is used: import and excise taxes, a cess on the imports of vehicles, a luxury motor vehicle tax and annual revenue licence fee. The taxes in these sectors are important in terms of their revenue generating potential as the revenues from them amounted to around 10 percent of total tax revenues.
- Tariffs levied on the consumption of electricity and water are based on an increasing block tariff scheme and the provision of waste and sanitation services are not subject to user charges. However, proposals for the implementation of wastewater user charges and user fees for the collection and environmentally safe disposal of waste have been made and are actively being considered for implementation.
- The analysis of the current system of electricity and water pricing shows that the revenues generated from economic instruments in the different areas (such as water supply, electricity) do not cover financial costs of providing the relevant services meaning that the losses of the provider which are regularly state-owned companies have to be covered via the national budget.
- The use of environmental taxes is rather limited in other sectors, such as fishery, tourism, waste and agriculture.
- Different subsidy schemes were or are still in place. During the years 2004 and 2005 the Government of Sri Lanka provided large subsidies in the field of fuel and fertilisers in particular as a consequence of the rapid increase of the world oil market price. These two environmental subsidy programmes almost exceeded the revenues generated from taxes levied on energy products and in the transport sector. In 2006 the Government abolished the fuel subsidy scheme leading to a sharp increase in the regulated prices of petroleum products.

- Several proposals for the introduction of new environmental taxes are under political review and discussion including the implementation of user charges for waste and sanitation.

The analysis undertaken also reveals that there are several factors limiting the efficacy of economic instruments in Sri Lanka. These factors are varied ranging from deficiencies with regard to the design of environmental taxes and tariffs to the aspects of the institutional, administrative, regulatory and political framework including the following:

- Political priority given to environmental projects and the environment in general seems to be rather low although the political strategies are established by the Government of Sri Lanka in the fields of water and waste addressing the relevant issues. The transposition of these strategies and policies into practice seems to be slow and therefore it is not too surprising that the success of economic instruments is rather limited as they can only work effectively when clear environmental objectives have been established and framework requirements are implemented.
- The proper functioning of all policy measures and instruments - being either regulatory (command and control measures) or market based instruments - requiring that adequate monitoring and enforcement mechanisms are in place which is currently not completely the case in Sri Lanka. The main reasons are limited human capacity, lack of technical equipment and willingness to address underlying institutional shortcomings and weaknesses.

The revenue side of environmental taxes

From the fiscal perspective, some environmental taxes are capable of generating significant amounts of revenue. This particular aspect of taxes, i.e. the revenue generating potential of environmental taxes, is also of great interest as an objective of the study is to assess the role of MBIs to generate funds for long term financially sustainable environmental investments. During recent years this aspect attracts increased attention in both in developed and developing countries and is discussed under the concept of environmental fiscal reform (EFR) worldwide. Although the notion behind the concept of an EFR is the same in developed and developing countries - as the OECD states in a recent report: "Environmental fiscal reform" (EFR) refers to a range of taxation and pricing measures which can raise fiscal revenues while furthering environmental goals' - the exact design of this policy measure clearly depends on the actual economic, social and political situation in the relevant countries.

The discussion and potential significance surrounding EFR in the context of developing countries, such as Sri Lanka, is reflected in a recent report published by the World Bank:

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.

When assessing environmental tax revenue another but related aspect has to be addressed. Adhering to public policy principles environmental tax revenues should - like any other tax revenues - in principle accrue to the national fiscus and be allocated to priority spending needs through the normal

budgetary process. Nevertheless, deviation from this rather strict principle are widespread in reality: international experience shows that the earmarking of environmental tax revenues is practised in many countries often in the form of establishing some extra-budgetary funds, such as environmental funds, or specific energy and /or water funds. Examples of earmarking revenues is nothing new in the case of Sri Lanka as the country launched cess type taxes (cess for tea export and a cess for the import of vehicles).

The study further reveals that Sri Lanka is facing huge challenges with regard to financing environmental infrastructure, in particular in the water sector. International experience shows that the largest part of the necessary funds has to be met by domestic funds and an environmental fund may be able to contribute to these investment expenditure with its own financial resources generated via environmental taxes as can be observed in many countries worldwide.

A lack of domestic funding for capital investments in environmental infrastructure can be compensated to some extent by international funding, operating and maintenance costs plus capital costs must be met by domestic resources. Therefore it is necessary that user charges / tariffs are set in accordance with the full cost recovery principle as otherwise the other sources, quite often the state budget as it is also the case in Sri Lanka, has to cover the losses.

Conditions necessary for the proper functioning of environmental taxes - the proper regulatory and institutional framework has to be in place

- From the beginning it must be clearly stated that market based instruments are not a substitute for regulatory / command and control measures. The mix of both policy approaches provides the best outcome.
- A precondition for the functioning of environmental taxes and MBIs in general is to ensure that a proper environmental management is on place.
- Having a proper functioning administrative and regulatory framework and capacity in place is decisive for the actual implementation, enforcement and monitoring of economic instruments and only then the advantages attributed to them compared to regulatory measures can be expected to occur.

Recommendations

Environmental taxes are not a panacea - they are a subset of different MBIs and their usefulness for addressing specific environmental problems can be limited. Therefore, political decision makers may dismiss the idea to use environmental taxes as other policy instruments including the more traditional command and control measures may be a better choice in a specific situation.

The analysis reveals that the value of environmental taxes for the Sri Lankan environmental and fiscal policy could be enhanced. Given the existing political, economical and social circumstances of Sri Lanka, a certain number of environmental taxes have been identified as possible instruments to be implemented. In addition, other policy measures closely related to their successful implementation are also being addressed:

- To increase the tax rates levied on diesel fuel gradually so that the large tax differential between the transport fuels will diminish over time. In addition, the price regulation of petroleum products should be abolished.
- Indexation of all taxes so that their real value will not be eroded because of inflation, i.e. the real value of them will remain constant.
- Re-designing the electricity and water supply tariffs and increase the rates with the long-run aim of establishing tariffs in accordance with the full cost recovery principle but by maintaining social considerations in their design.
- The design of environmental taxes and user charges for water, wastewater and waste should not be driven by social concerns as a more effective policy to mitigate the poor is to provide direct subsidies to them as it is already the case in Sri Lanka (see the Dole and Samuradhi programmes).
- Swift introduction of the already proposed user charges for the collection and disposal of wastes and for wastewater service respectively.
- The introduction of a water effluent tax - a proposal for such an environmental tax has already been made by the Central Environmental Authority - and a water extraction tax for groundwater and surface water.
- Following international experience when introducing new environmental taxes: they should be implemented gradually after a 'pre-announcement' period so that a possible economic turmoil - as a consequence of the introduction - is reduced and economic actors can adapt to the new situation in advance. The tax rates should be rather low at the launch of the new environmental tax but it should already be stated that the rates will increase over time reaching the final pre-determined rate in due course.
- High on the political agenda should be a critical and detailed review of the current system of subsidies with the aim of abolishing or re-designing them when there is a clear need to maintain them. However, the granting of subsidies should only be done considering the following criteria: subsidies should be well-targeted, efficient, soundly based, practical, transparent and limited in time.
- Consideration should be given to the establishment of appropriate institutions with responsibility for monitoring, regulation and enforcement in the environmental sphere. It may be considered to increase financial support to strengthen the institutional framework in which environmental taxes are working.
- The earmarking of revenues for specific purposes respectively investment programmes may be appropriate as it is proposed in the context of implementing a cess on transport fuel.
- An environmental fund should be established in the Ministry of Environment and Natural Resources to administer the revenue earmarked for environmental management from the various taxes, charges and revenues from MBIs that is expected to accrue by the implementation of the recommended proposals in this report.
- Cost based prices for all products and services in the long-run, i.e. all external costs have to be internalised into the prices.

Chapter

1

INTRODUCTION

The use of market based instruments in environmental policy has become widespread in many countries in the world during recent decades. However, many countries are still facing major challenges in coordinating their environmental and fiscal policies in order to make them more coherent and mutually reinforcing. The main aim of this report is to evaluate the current use of market based instruments (MBIs) in Sri Lanka and their potential role in any future environmental policy. The study does not attempt to analyse the future environmental challenges in Sri Lanka but rather focuses on the potential of raising fiscal revenues by MBIs while fostering environmental goals.

1.1 OBJECTIVE OF THE REPORT

The main aim of this study is to provide a background analysis of the application of market based instruments (MBIs) and assess its role in generating revenue for sustainable environmental improvements in Sri Lanka.

The specific objectives of this report are:

- To provide an objective analysis of the current application of market based instruments in environmental policy in Sri Lanka and to assess main factors hampering their effectiveness; and
- To assess the role of MBIs in generating funds for long-term financially sustainable environmental investments.

The main focus of the study would be on already existing MBIs and how they should be revised or reformulated to become more effective, and any new MBIs that could be introduced considering the political, economic and social situation in Sri Lanka.

The report is structured as follows. The first chapter discusses the rationale for carrying out the study and provides an explanation of the various definitions and concepts linked to economic instruments in general and more specifically with regard to environmental taxes and charges. Details of the instruments, the rationale for using these instruments, and what could be achieved by using them are provided in this section.

The second chapter discusses in detail the use of environmental taxes for environmental policy based on international experience. The next two chapters briefly review the current political and economic situation in Sri Lanka and the application of environmental taxes and MBIs in the different economic sectors of Sri Lanka. The main focus lies on environmental taxes and charges and their role in environmental policy of Sri Lanka. Apart from assessing the current situation an assessment is made of the potential role MBIs could be playing in Sri Lankan environmental policy based on the findings of their current use and international best practice.

Conclusions are presented in the final section of the report.

The information presented in this report was compiled by a team of national experts who were commissioned to prepare sectoral reports by gathering relevant information on the current use of MBIs and by drawing up recommendations on the future role MBIs in Sri Lanka.

1.2 RATIONALE FOR STUDY

Market based instruments (MBIs), have been used as an important tool in environmental policy in developed and developing countries. MBIs, encourage behaviour change through market signals rather than through explicit directives regarding pollution control levels or methods or command and control (CAC) instruments and generate revenue which can be used for financing environmental investments. There is general agreement that significant financial resources are necessary to achieve the economic, environmental and social objectives of sustainable development, including the reduction of extreme poverty by half by year 2015. These objectives established at the 1992 Earth Summit in Rio de Janeiro and reaffirmed in the Millennium Development Goals (MDGs) and at the World Summit on Sustainable Development in Johannesburg in 2002, can be achieved largely through mobilization of domestic resources and is thus one of the major challenges for developing countries. The focus of this report is to assess what role market based instruments could play in reversing the current trend of environmental deterioration and in protecting the environment in the context of the Sri Lanka National Programmes of Action.

The revenue generating effect of market based instruments could create additional financial resources to be used by governments for concrete actions for protecting the environment (World Bank, 2002). This concept is also termed as, environmental fiscal reform (EFR), which refers to a range of taxation and pricing measures to raise fiscal revenues while furthering environmental goals (OECD, 2005, p.12). The design of this policy measure depends on the actual economic, social and political situation in the respective countries.

The rationale of this concept is that the burden of taxes should fall more on 'bads (i.e. environmental pollution)' than 'goods (labour)' thereby price signals are given to consumers and producers to influence and change their behaviour. Furthermore this policy measure ensures that while the total tax burden remains constant, as it is the case in several European countries where EFR has been implemented in the past, it is distributed more equitably from an environmental and sustainable development perspective. An additional economic benefit from the reduction of labour taxes may be increased employment. The revenue generating capacity of environmental taxes should be

emphasized in the context of implementing EFR or ETR (environmental tax reform)¹ in discussing the potential of this concept for developing countries as stated in a recent report (World Bank, 2005, p.ii):

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.

Although unemployment is a major issue in developing countries, such as Sri Lanka, the concept of an EFR in meeting other major challenges of developing countries may be even higher on the political agenda. To achieve the MDGs countries have to increase their spending on health care and education and to invest in environmental infrastructure, such as the water supply and sanitation. These environmental infrastructure investments are essential for achieving the MDGs while they can contribute to poverty reduction at the same time as the poor are the most affected by environmental problems. One of the main differences between the two EFR approaches is that while in developed countries the focus is on keeping the total tax burden constant, in developing countries the priority is the revenue raising potential of environmental taxes. Revenues generated by environmental taxes in developing countries may therefore be spent to support poverty reduction efforts as well as to boost environmental investments such as improving access to water, sanitation and energy services.

International experiences show that revenues raised by environmental taxes may be an important resource for environmental investments (Speck et al., 2001). Subsidies are contradictory to the concept of an EFR as scarce revenues within the national budgets have to be allocated for granting such subsidies, reducing funding needed for environmental investments. Many studies (World Bank and IMF) show that the poor are not the main beneficiaries of subsidies supposedly granted for alleviating the burden of the poor (Komives et al., 2005, Coady et al., 2006 and Lueth et al., 2006). In Sri Lanka too, several such subsidies in the field of environment to assist or to protect the poor, may not be achieving the underlying policy objectives. Subsidies can waste scarce budget resources which could be used in a more effective and targeted way. It is necessary to understand the nature and impact of current subsidies in order to assess the overall impact of the use of MBIs in Sri Lanka and to determine whether revenues generated by environmental taxes are above that of the total amount of subsidies paid out.

¹ See for a more detailed discussion on the principles behind these concepts: EEA, 2005, Chapter 4.

Other preconditions for the proper functioning of MBIs such as, institutional and regulatory requirements and political willingness are clearly hampering the effectiveness of environmental regulations in all countries but are considered as greater hindrances in developing countries as compared to industrialised countries². There is agreement that without a proper working institutional and regulatory framework in place, MBIs will not be able to achieve their objectives. The use of market based instrument can, as an additional benefit, improve and strengthen the institutional capacity and provide supplementary information for environmental policy management. This report provides some recommendations on revising the currently applied MBIs and for introducing new MBIs. However, economic instruments are not a panacea for all environmental problems as some advisors are promising. Such problems cannot be resolved with lower institutional and human resource requirements than regulatory command-and-control measures as suggested by Bell: 'a glittering and ultimately incorrect promise in countries with small and under-funded ministries (Bell, 2002)³'.

Theoretical analysis shows that MBIs have an advantage over command-and-control regulations because they are more flexible and can lead to a cost-effective solution. Nevertheless MBIs need not always fulfil their full potential as the actual design of MBIs can obviously hamper their effectiveness. A prerequisite for ensuring that MBIs are working properly and can achieve the underlying policy objective is that environmental regulations are adhered to and that environmental enforcement agencies are present and not too weak. The introduction of new MBIs must go hand-in-hand with strengthening the institutional capacity of environmental agencies as these agencies are often lacking staff as well as personal capacity and equipment to ensure adequate monitoring. But the foremost precondition regarding the introduction of any new MBIs and revision of the current system - including an extended revision of the subsidy schemes-is the support of the entire government.

1.3 MARKET BASED INSTRUMENTS AND THE RATIONALE FOR THEIR USE IN ENVIRONMENTAL POLICY⁴

A comprehensive definition of economic instruments is a rather complex task because of the diverse set of policy measures comprising them. Generally, market based instruments encourage changes to the behaviour of economic actors through market signals rather than through direct regulations or directives. Market based instruments increase efficiency in resource use by decreasing total demand and reducing environmental damage and may also generate revenue. These two aims can at times be mutually exclusive. For example, a tax that is high enough to create an incentive for polluters to stop polluting would not generate much revenue since polluters would rather reduce pollution than pay the tax.

² See for example: World Bank, 1998: Part II Implementing Policies in Practice and in particular the section: Pollution Charges: Lessons from Implementation. Blackman and Harrington, 1999, and Söderholm, 2003.

³ Bell (2002) discusses in more detail developing countries may face when introducing economic instruments without having the necessary institutions in place.

⁴ This section is based on Speck and Özdemiroğlu, 2004. See also UNEP, 2004a, OECD, 2001 and 2006 and Panayotou 1994.

The main reasons for many environmental problems can be linked to two fundamental causes:

- **Policy failure** arises from government policies that provide perverse incentives which encourage overexploitation of resources and excessive amount of waste and other emissions. Such failure also results from subsidies put in place to enhance the competitiveness of certain products, processes, economic sectors, or regions. Such subsidies taken together with the prevailing taxation regime (unintentionally) discriminate against sound environmental practices. Environmentally damaging subsidies are prevalent in the water and electricity pricing regimes, which prevent full cost recovery. Recommending new economic instruments to reduce pollution, while such environmentally damaging subsidies are still in place cannot be an efficient policy. Removing so-called *perverse subsidies*, however, is not going to be easy - considering the political, economic and social implications.
- **Market failure**, on the other hand, refers to the lack of actual markets for certain environmental goods or services and/or the failure of conventional markets to consider the environmental impacts of man-made goods and services or exploitation of natural resources. In other words, prices in actual markets generally do not reflect the 'true' or 'full' cost of producing the goods and services, leading again to overexploitation of natural resources and excessive amounts of waste and other pollution. The environmental impacts, therefore, are external to the market mechanism, and are often referred to as 'externalities'. The economic rationale for using market based instruments therefore lies in their ability to correct such market failures in a cost-effective way.

Market based instruments, have been introduced as one way to implement the Polluter Pays Principle (PPP), which has become widely accepted as the general framework for internalising environmental externalities. Policy makers showed a growing interest in market based instrument for environmental policy during the 1980s, as traditional regulatory environmental policy, failed to address new environmental pressures and the resulting high level of environmental damage. International experience suggests the economic instruments, as opposed to 'command-and-control' (CAC) regulations, are more flexible and cost-effective in attaining environmental objectives (OECD, 2001 and EEA, 2005). However, market based instruments can only be effective with a well functioning institutional and regulatory framework⁵ in place. (World Bank, 1998, p. 166):

In a country where environmental regulations are not enforced and environmental agencies are weak, economic instruments are not of much help either. Introducing pollution charges should go along with improving the overall environmental policy framework and strengthening the institutional capacities of environmental agencies.

An early indication of this change in environmental policy was also the emphasis given to economic instruments in environmental policy by the report of the World Commission for Environment and Development in 1987. Furthermore, the Rio Declaration on Environment and Development (1992) discussed economic instruments, and in particular the Principle 16 states:

⁵ See Söderholm 2003 for more information analysing the relation between economic instruments and the institutional framework.

National authorities should endeavour 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 cost of pollution, with due regard to the public interest and without distorting international trade and investment.

The interest in implementing market based instrument became an essential part of policy to combat environmental pollution, such as climate change and water pollution, in many European countries as well as many developing countries and countries undergoing transition to market economy.

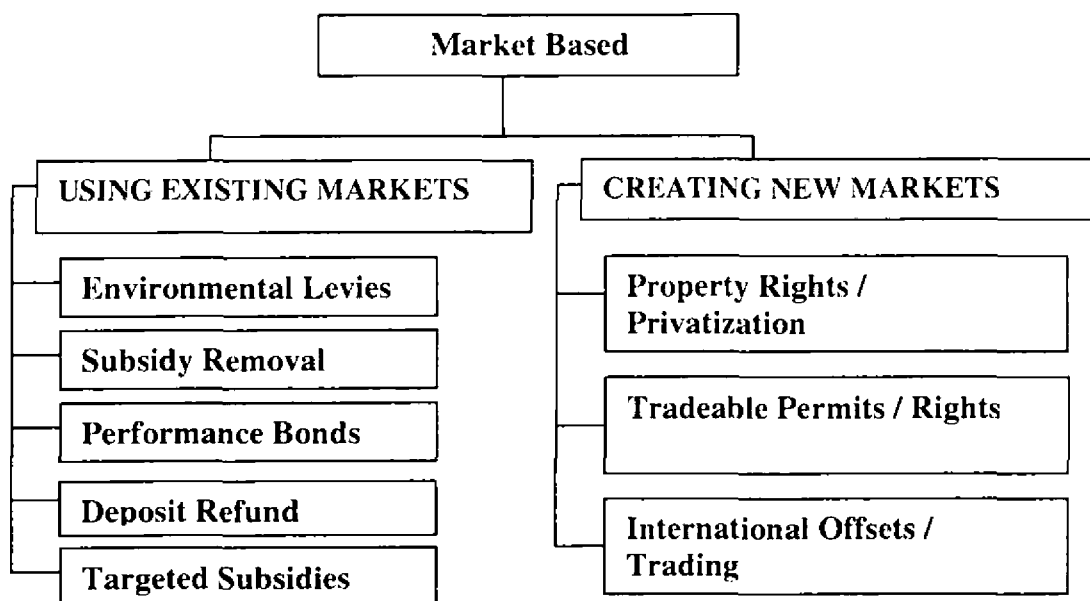
1.4 TYPES OF ECONOMIC INSTRUMENTS IN ENVIRONMENTAL MANAGEMENT

Market based instruments comprise a broad group of policy instruments, that rely on market price mechanisms to internalise costs and provide financial incentives to economic actors. While theoretical treatments often consider market based instruments as alternatives or substitutes to regulatory (CAC) instruments, the margin between the two is sometimes very narrow. Many of the most effective examples of achieving environmental policy targets illustrate that regulatory and economic instruments are interrelated and complementary and the use of market based economic instruments is not an effective policy tool in the case of several kinds of environmental impacts⁶. The most common economic instruments in use today as seen in Figure 1, fall into one of two categories:

- Instruments that *use the existing markets* to move towards free market prices on the one hand (by removing or reducing subsidies and perverse incentives, i.e. policy failures) and to move beyond free market prices (by addressing market failure) on the other. The main focus of this report is on the use of MBIs in existing markets, as analysed further in the following sections.
- Instruments that *create new markets* are a relatively new approach to solving environmental problems. These instruments affect prices indirectly by designing an institutional and regulatory framework addressing current shortcomings and failures in environmental policy – through measures such as defining property rights, privatising and decentralizing, establishing tradable permits and rights, and creating international offsets.

⁶ For example, economic instruments may not be appropriate in areas such as hazardous wastes, or concentrated “hot spot” pollution areas that pose a risk to public health.

Figure 1-1 Types of economic instruments in environmental management



In addition to these economic instruments, voluntary approaches have increasingly been used (e.g. the UK government negotiated a voluntary agreement with pesticide producers and farmers). There are many different types of voluntary approaches, which can be usefully classified into the following three broad categories as shown below:

1.5 VOLUNTARY INSTRUMENTS

a) Unilateral Commitments

Individual firms, or groups of firms set up environmental improvement programmes without any external involvement and communicate these to their stakeholders

b) Public Voluntary Scheme

Public bodies develop general schemes that define minimum standards of performance, and individual firms decide whether to join (eco-labelling is an example for this type of economic instrument);

c) Voluntary or Negotiated Agreements

Government interacts with firms (either individually or collectively) to agree a performance target (or targets) and to define the commitments and/or obligations of both sides.

1.5.1 Economic instruments using existing markets

1. *Environmental Levies*

An environmental levy is an accepted synonym collectively covering the different instruments of environmental taxes, charges and fees (OECD, 2001). A generally accepted definition of the term 'environmental levy' (taxes, charges and fees) does not exist in current literature. It is based on varying concepts of the role and purpose of these instruments in practice and can be used to reflect the additional costs to others (externalities or external costs) that are created by the use of resources. Economic instruments belonging to this group are generally more common today, for example, environmental levies based on emissions, inputs and outputs, and falling into the groups of environmental taxes, charges or fees.

An environmental tax can be defined as 'a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment' (OECD, 1997). Taxes are defined as: compulsory, unrequited payments to general government, unrequited in the sense that benefits provided by government to taxpayers are not normally in proportion to their payments.

An environmental charge or fee can be defined as a compulsory requited payment to either general government or to bodies outside general government, such as for instance an environmental fund or a water management board' (OECD, 2001).

A major advantage of taxes is the price signal indicating to economic actors, i.e. producers and consumers, to change their behaviour. These price signals are the rationale for the theoretical advantage of taxes, indicating the possibility of realising static and dynamic efficiency gains.

Environmental pollution leads to damages, such as to impacts on human health, damage to ecosystems, and damage to the built environment. These damages can be of considerable economic significance, but they are typically not reflected in market prices and their consequences are usually borne by society as a whole rather than the polluter. Taxes can be used to internalise these damages or external costs into the market price of goods and services. The economic literature offers two concepts to internalise externalities, i.e. the external costs, through the application of a tax (EEA, 2005):

- The tax is set at the level of internalising all environmental costs (i.e. the costs of environmental damage, externalities, external costs) into the price. To guarantee that this goal is achieved the tax rate must be equal to the marginal social costs and the marginal benefit from emitting an additional unit of pollution. This approach is referred in the literature as a Pigouvian tax after Pigou who developed the rationale for environmental taxation (Pigou, 1932);

- The tax rates are set on a level, which is estimated to be sufficient to achieve a given environmental objective (this approach can be traced back to Baumol, 1972 and Baumol and Oates, 1971).

As environmental concerns received greater attention, environmental taxes were recognised by public policy makers for their potential to simultaneously address environmental concerns, finance public services, raise public revenues and potentially replace other taxes. Today, a commonly used classification of taxes and charges distinguishes between three types, based on their function in public/environmental policy.

- **Revenue-raising taxes:** Taxes which may influence behaviour but still yield substantial revenues over and above that required for related environmental services or regulation. This type of taxes deliver environmental benefits and yield fiscal revenues as discussed above. Probably the most well-known examples of this type are excise taxes levied on transport fuels, such as petrol and diesel.
- **Incentive taxes:** Taxes which are levied with the objective of changing environmentally damaging behaviour without the intention to raise revenues. The success of such a tax may be judged by the extent to which initial revenues fall as behaviour changes. For example, an incentive tax on plastic bag in Ireland reduced usage of plastic bags by 90%, so on after its introduction in 2002. (EEA, 2005). However, an incentive tax can only be effective if the actual tax rate is so high that the consumer of the taxable product changes the behaviour.
- **Cost-recovery charges or user charges/fees or tariffs:** In this case those making use of the environment contribute to or cover the cost. This type of economic instruments recognises that many individuals as well as the economic sectors receive important benefits from the use of the environment, but may pay very little or nothing for this right, often leading to poor levels of service or overuse of the resource. The introduction of user charges is one way to capture part of this benefit, improve levels of management and service, and share the benefits from exploiting natural resources. For example, user charges are imposed to finance public provision of water and wastewater services to cover the costs of collection and environmental safe disposal of wastes. The level of a cost-recovery charge is determined by the service it is intended to deliver and revenues are used to finance collective services, e.g. water supply, wastewater and waste collection. This type is of great relevance for this report as discussed below and special attention will also be given to the discussion between user charges and the granting of subsidies in the context of Sri Lankan environmental policy.

These three types of environmental taxes / charges are not mutually exclusive: a cost-recovery charge may have incentive effects, for example to encourage the rational use of water, an incentive tax may raise revenues, and revenue-raising tax may be partially used to finance related environmental purposes.

Cost-recovery user charges must resemble pure market prices for a good or service, and play an important role both as a financing tool for public services, i.e. recovering the full-costs of delivering the service and incentive instruments that reduce environmental pressures.

In practice, the design of overall tax regimes and the environmental concerns being addressed tend to influence which of these functions is primarily being served. Moreover, the type of instruments selected may also determine their impact on broader public policies. There is a general tendency to earmark water related charges for water management policies. The revenues raised by these taxes levied on water abstraction or on water pollution are either used for financing administration costs of the entities which are responsible for water management issues or for supporting water related investment projects, such as the construction of wastewater treatment plants.

2. Subsidy removal or reduction

Elimination of subsidies is a policy reform, which normally results in reduced environmental impacts (from reduced use of the previously subsidised resources or services) and monetary savings to the governments. Subsidy removal, however, is only a first but a rather difficult step. As discussed later in this report, the issue of reversing the trend of granting subsidies (granted to many levels of society in Sri Lanka) is central when assessing market based instruments in Sri Lanka.

The definition of "subsidy" varies and therefore some confusion may arise when analysing subsidies. For example, the OECD defines a subsidy as 'any measure that keeps prices for consumers below market levels, or for producers above market levels or that reduces costs for consumers and producers (OECD, 1998)'. The definition used by the International Energy Agency (IEA) when assessing energy subsidies is, any government action that lowers the cost of energy production, raises the price received by energy producers or lowers the price paid by energy consumers. Subsidies can be granted in different ways and can be summarised as any form of financial assistance to polluters or users of natural resources for environmental protection: e.g. grants, soft loans, tax breaks, i.e. tax exemption and tax relief, and accelerated depreciation

Subsidies can be considered as "double edged" as they can be environmentally harmful (but socially and economically acceptable) or environmental friendly (social and economical aspects are not considered to the same degree)⁷.

Other economic instruments using existing markets that are worth mentioning include **performance bonds** and **deposit-refund systems**, or **targeted subsidies**, where an explicit subsidy is offered to achieve a socially desirable outcome.

3. Performance bonds

Performance bonds are payments to authorities made prior to an activity that is potentially environmentally harmful. Potential polluters have to post a bond prior to production which will be forfeited if pollution control is insufficient. These bonds are refunded if environmental regulations are met, and retained if they are not. These are used less frequently than other economic instruments, due to difficulties in monitoring environmental damage and legal restrictions in setting up contracts. Performance bonds have been applied mainly where there is a clear potential for environmental damage, such as surface mining. Australia, Norway, Sweden, Canada and the US use slightly different variations of these instruments in controlling environmentally harmful production (Markandya and Perlet, 2002).

⁷ See for a more detailed discussion and appraisal of the provision of subsidies: UNEP, 2004b.

4. *Deposit refund schemes*

Under this scheme a deposit is paid upon the purchase of potentially polluting products. This deposit is refunded if the product or its residues are returned for disposal and recycling, thereby avoiding pollution. This is a type of environmental instrument which is designed to encourage recycling, and/or to cover the costs of environmentally sound waste disposal. These systems provide incentives to prevent pollution, and reward good behaviour. Deposit refund systems are often applied to widely-used products such as beverage containers, bottles, etc.

5. *Targeted subsidies*

In this case an explicit subsidy is offered to achieve a socially desirable outcome. Although these go against the general trend of subsidy removal and polluters pay principle, there are cases when such subsidies may be justified

1.5.2 Economic instrument – creating new markets

The second group of economic instruments, i.e. those that *create new markets*, involves defining property rights, privatising and decentralizing, establishing tradable permits and rights, and creating international offsets.

1. *Establishing property rights, privatisation and decentralization*

These instruments can play an important role in moving many aspects of environmental management out of the state sector, which is often starved for capital, and into more commercial operations where there is strong incentive both to generate revenue and to make investments that will increase revenue in the future. Water and sanitation works are typical examples of these.

2. *Tradable permits and rights*

This requires the creation of an explicit market in environmental resources, encouraging efficient use and fostering the recognition that these resources are scarce and valuable. For the tradable permits to function well, first, the permit must actually create a property right. Second, the question of initial allocations of permits must be handled equitably. Finally, there must be no artificial obstructions to trading permits.

3. *International offset systems*

This extends the notion of a market for environmental resources across country boundaries, permitting firms and institutions to meet environmental objectives by purchasing abatement from the cheapest sources on the globe. Carbon offsets and joint implementation projects are examples of this and can be of interest in Sri Lanka in the context of the Kyoto Protocol in the medium- term. Debt for nature or environment swaps can also be characterised as a form of such international offset systems. The concept behind this approach is to reduce the debt burden of a country by making an agreement between the indebted country and the creditor countries. This deal grants the possibility to write off some of the debt on the condition that the released funds are used to achieve predetermined environmental goals.

To date, the experience with economic instruments belonging to this second group is not extensive as compared to the instruments discussed earlier. One of the main issues for the proper functioning of these latter instruments is to have enough institutional and regulatory capacity in place. It can therefore be recorded that the scope of any reform process with regard to existing MBIs and suggestions for the potential role of new ones has to be consistent with the countries' institutional capacity.

It must be made clear from the beginning of the report that MBIs in environmental policy must not be implemented in an *ad hoc* or ill-founded manner as such an approach may contradict the goals aimed to be achieved with their application. A gradual reform process to be implemented over a longer time period must be considered as being more successful compared to *ad hoc* approaches as the often lagging institutional capacity can thereby be improved.

1.6 CONCLUSION

This overview shed light on a broad and varied set of policy instruments in environmental policy. Market based instruments have been applied in different countries and in a number of different sectors. Most common are environmental taxes and charges but also any form of subsidies can be found in developed and developing countries as it is the case in Sri Lanka. A more detailed discussion on the use of environmental taxes follows in the next section.

Some environmental taxes have the potential to raise significant amounts of revenue (OECD, 2001 and EEA, 2005). This is particularly the case for goods or services which are being relatively price inelastic, i.e. the quantity demanded is not very sensitive to changes in price. Taxing price inelastic goods and services is seen as good tax practice in the finance literature as the allocation of resources is not being excessively influenced. This result of the revenue raising potential of environmental taxes is *insofar of great interest as the revenues could then be used for the different purposes as highlighted in the 2005 report by the World Bank and quoted above.*

However, the question of how to use the revenues generated is of crucial interest as discussed in a report analysing the use of market based instruments. In general, four different ways of revenue allocation, which are not necessarily mutually exclusive, can be thought of:

1. Revenues accrue to the Treasury and are allocated to priority spending needs through the normal budgetary process;
2. Revenues accrue to the Treasury and are used as part of a tax-shifting exercise to reduce the marginal tax rates of other distortionary taxes such as imposed on labour;
3. Revenues are 'earmarked' or 'hypothecated' or 'ring-fenced' for spending on specific environmental programmes; and
4. Revenues accrue to the Treasury but there is some form of 'agreement' that spending on environmental programmes will be increased through 'on-budget' channels.

The second and third options are rather interesting in the context of the discussion on EFR. The second option is in particular the one attracting much attention in developed countries in Europe, such as the UK, Germany, Denmark and the Netherlands, which have followed this approach in recent years (Speck, 2007). This policy option may be of some interest for developing countries but what is more relevant is option 3. In contrast to 'tax-shifting' policy referred to in option 2, earmarking revenues from environmental taxes for spending on specific environmental programmes (option 3) is promoted by some interest groups. However, earmarking (or hypothecating) tax revenues does not generally constitute sound fiscal management practice; an assertion heavily supported by international best practice. Despite these arguments, earmarking of tax revenues for environment purposes is practised in some countries, particularly in the transition countries of Central and Eastern Europe.

Whilst focusing on the possible benefits of market based instruments, it is important not to polarise between these types of a policy instrument and regulatory. CAC measures. MBIs and CAC measures are crucial tools of government policy and have a critical role to play in ensuring markets function as efficiently and effectively as possible.

Chapter

2

REVIEW OF INTERNATIONAL EXPERIENCE WITH ENVIRONMENTAL TAXES

The aims of this chapter are to provide an overview of the international experience regarding the application of environmental taxes and charges in environmental policy⁸. Environmental taxes and charges are particular forms of market based or economic instruments that have matured considerably during the last decades. They have been increasingly implemented during the 1980s and 90s and continue to be so in this decade in many countries but in particular in all European countries (OECD 2001 and 2006, IDB 2003a and 2003b, and EEA, 2005).

2.1 OVERVIEW OF THE USE OF ENVIRONMENTAL TAXES

In the economic literature a generally accepted definition of the term 'environmental taxes' does not really exist. During recent years some progress has been made in getting a common understanding and nowadays the most widely used definition is based on the rationale to define an environmental tax through the tax base. This report follows this approach meaning that an environmental tax is a *tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment* (OECD, 1997 and Eurostat, 2001). The significance of having a widely accepted definition is because the tax base is considered as *'the only objective basis for identifying environmental taxes for the purpose of international comparisons'* (ibida, p.9). But this also means that the actual name of the tax, the underlying purpose and rationale as well as the motivation for implementing such a tax is not taken into account.

Environmental taxes are regularly distinguished between four main categories which is largely done for analytical reasons:

- *Energy taxes (including CO₂ tax):* covering all taxes levied on energy products including electricity.
- *Transport taxes:* including taxes associated with the use and ownership of motor vehicles.
- *Pollution taxes:* taxes on all measured or estimated emission to air and water are part of this group as well as taxes levied on the management of solid waste and on noise.
- *Resource taxes:* taxes levied on water consumption and mining are part of this group

⁸ This section of the report is based on Eunomia et al., 2003, EEA, 2005 (Chapter 3) and Nordic Council of Minister, 2006.

Environmental taxes and charges⁹ are still the most widely used market based instruments for environmental policy, despite the recent 'enthusiasm' for trading schemes as in particular discussed in the context of the worldwide debate regarding climate change (Kyoto Protocol). They have generally been implemented for environmental and / or fiscal reasons, meaning that they are either introduced to offer incentives to reduce pollution levels, the consumption of polluting products or natural resources use by changing behaviour of economic actors or to generate revenues. It is often argued that environmental taxes are cost effective, encourage efficiency, create dynamic incentives and hence encourage innovation (OECD, 2001 and 2006). One of the main advantages of them is that they are especially useful for addressing environmental challenges from diffuse pollution sources.

The increased use of environmental taxes is closely associated with the increasing support for the polluter pays principle (PPP). The PPP requires in its wider sense that external costs, such as environmental ones, are "internalised" and that the prices of goods and services are reflecting these costs. The extent to which the PPP really is supported depends upon the design of the instrument and the breadth of exemptions from the tax or charge (EEA, 2005).

Box 2-1 An overview of environmental taxes and charges

- *Energy taxes:* Covering all taxes levied on energy products used as motor fuels, heating fuels or energy products used for stationary purposes. This type of an environmental tax is in use since many decades and all over the world (for example Norway introduced a tax on petrol already in 1931).
- *CO₂ taxes:* The first CO₂ taxes have been implemented in Scandinavian countries in the 1990s and nowadays are in use in many European countries, such as Finland, Denmark, Estonia, Finland, the Netherlands, Norway, Poland, Slovenia, Sweden, and in the UK. It must however be stated that the term CO₂ tax is used in a very broad sense talking into account that a CO₂ tax is regularly an additional tax levied on some uses of some energy carriers and not actually levied on CO₂ emissions.
- *Air pollution taxes:* Taxes on different air pollutants are in place in European countries such as a tax on NO_x in France, Italy, and Sweden and SO₂ taxes are in place in Denmark, France, Norway, Sweden, and Switzerland. More comprehensive, multi-pollutant systems of air pollution taxes and charges have been implemented in many European economies in transition, such as Czech Republic, Estonia, Latvia, Lithuania, Poland. This type of an environmental charge is also in place in Russia where more than 200 different air pollutants are subject to a pollution charge. China also makes use of this instrument.
- *Vehicle taxation:* A wide range of fiscal instruments is applied to road transport in many countries. The instruments can broadly be categorised, as one-off taxes on vehicles, such as sales, import and registration taxes, and annual circulation tax which have to be paid recurrently.

⁹ The difference made between the term 'tax' and 'charge' is largely made for the reason that a tax is a compulsory and unrequited payment to the general government as compared to a charge which is a compulsory and requited payment to general government or to bodies outside general government, such as environmental funds or a water management boards.

- *Water:* The most applied instrument in the water sector worldwide is user charges for the supply of water and respectively for sanitation, i.e. user charge for wastewater. The charge base of user charges can be rather different but the majority is levied on the amount of water actually consumed. In addition, different tariff schemes are applied, i.e. either a flat rate system can be used or the user charge consists of a fixed and a variable component. Furthermore, the user charge rate can be set in accordance with the water consumed, i.e. so called increasing block tariffs; water abstraction tax and charges do exist and are levied on the water actually abstracted. The rate can be differentiated between surface and ground water and also between different uses; the last environmental tax to be applied in the water sector is a waste water tax / charge – sometimes also called effluent charges. This type of an economic instrument is not as widespread in Europe. Effluent taxes are also implemented in some Asian countries, such as China, Malaysia and the Philippines.
- *Waste:* The objective of user charges for waste is to cover the costs of collection and safe disposal of waste. Apart from user charges waste taxes (landfill or incinerator taxes) are implemented in several European countries
- *Other products, i.e. waste related product taxes:* Taxes and charges are applied to several products which all could have a negative impact on the environment if they are not disposed in a proper way. For example, batteries may be levied with such a product tax as well as plastic carrier bags, disposable containers, tyres, CFCs and/or halogens, disposable cameras. Instead of introducing a tax on these products some countries are making use of deposit refund schemes for products, such as disposable containers.
- *Agriculture:* The number of economic instruments in the agricultural sector is rather limited: Taxes/charges exist on pesticides as well as on fertilisers. There are no specific environmental taxes and charges currently in use dealing with soil conservation.
- *Fisheries:* while not strictly speaking an environmental charge, there are economic instruments addressing fisheries. The EU pays access charges on behalf of its long distance fleet for access to the fisheries resources of some third countries. In some cases these countries will also levy additional charges directly from the boat owners. These charges may be flat rates or linked to actual catches levels. The levying of charges from recreational fishers is common throughout the EU.
- *Others:* Taxes levied on the extraction of natural resources, such as sand, gravel, crushed rock, etc. are implemented in several European countries.

For further information regarding the use of environmental taxes and charges see for example: the 'OECD/EEA database on environmentally related taxes' at <http://www.oecd.org/env/tax-database>, OECD, 2001, IDB, 2003a and 2003b, EEA, 2005, Nordic Council of Ministers, 2006.

2.2 ENVIRONMENTAL TAXES IN THE FIELD OF ENERGY

Energy taxes are the probably most significant environmental taxes in many respects as they are levied on a whole range of different energy products and are generating the largest amount of revenues, in particular from the taxes levied on motor fuels. It can be argued that in the past fiscal considerations have been the main motivations for implementing them. In recent years the rationale for implementing new ones changed as environmental concerns became more important, in particular in the context of the climate change discussion.

The most common form of energy taxation is to tax transport fuels. Apart from fiscal considerations motor fuels taxes can provide an incentive to purchase more efficient vehicles and to travel less, leading to a more environmentally-benign behaviour as it can be recorded for several European countries. Probably the worldwide most interesting example of a gradual increase in petrol and diesel taxes can be found in the UK (see Box 2.2).

Box 2-2 The UK's fuel duty escalator

The high tax rates for petrol and diesel in the UK relative to other EU-15 countries were accentuated as a result of the so-called 'fuel duty escalator' under which the price of fuel rose by a fixed percentage above the rate of inflation for seven years in the 1990s. When it was introduced by the then centre-right government in 1993, the fuel duty escalator was presented as a measure to reduce transport's greenhouse gas emissions. Initially it increased fuel duty by 3 per cent above the rate of inflation, but when the current centre-left government came to power in 1997, it increased the escalator to 5 and then to 6 per cent above the rate of inflation. Interestingly, the impact of the escalator was not to increase prices significantly, rather to prevent them from decreasing as its period of operation, initially, coincided with a declining price of crude oil. However, the escalator was abandoned prior to the fuel tax protests in 2000, in anticipation of potential high prices caused by the strong increases in the price of crude oil. Subsequent fuel tax rises in the UK have been no higher than inflation.

Source: EEA, 2005

The experience of Sweden and the Netherlands is also worthwhile to be mentioned as these countries have indexed the tax rates meaning that the real value of the tax remains at least constant. This is in particular very important in countries with high inflation as without regular increases in the tax rates the environmental as well as the fiscal motivation for launching any environmental tax will be diminished.

The system of energy taxation is not limited to transport fuels as can be seen in the European context as all EU member states are obliged to levy a tax on all energy products including electricity (see for a more detailed discussion: EEA, 2005, Chapter 3).

Tax level differentiation

The differentiation of the tax level based on environmental consideration is a tool regularly applied in the field of energy taxation. One of the earliest examples was the differentiation between leaded and unleaded petrol thereby encouraging the use of a cleaner fuel. Nowadays tax rate differentiation

is still applied in many European countries and tax rates levied on transport fuels are differentiated according to environmental criteria, for instance in favour of low sulphur fuels or for the promotion of bio-fuels.

2.2.1 Emissions to air – air pollution taxes

Air pollution taxes, such as CO₂, SO₂ or NO_x taxes, are still not in widespread use although quite comprehensive and complex system of pollution taxes – sometimes with a large number of taxable air pollutants – are in place in countries of Eastern Europe, Caucasus and Central Asia. A central feature of the pollution charge system is that a set of pollutant-specific basic tax rates apply to discharges within established limits, whereas a much higher rate applies to discharges exceeding the limits

2.3 ENVIRONMENTAL TAXES IN THE FIELD OF TRANSPORT

A wide range of market based instruments can be applied in the transport sector. The instruments can broadly be categorised, as follows:

- Taxes on vehicles, including sales, import and registration taxes,
- Annual circulation taxes.

The same findings can be stated in the context of transport taxes as it was done regarding taxes levied on transport fuels. Originally they have been launched as a means to raise revenues but nowadays environmental considerations are playing a major role in the design of these taxes. One-off taxes, such as sales, import and registration taxes, are often based on the price, i.e. some form of *ad-valorem taxes*, and annual circulation taxes were based on factors such as engine capacity, power, weight and number of axles. However, a rethink is recognisable in Europe as countries, such as the UK starting in 2001, is now setting annual circulation taxes in relation to the vehicle's CO₂ emissions. Denmark re-designed its annual car tax in 1997 and the tax base is now the fuel consumption which can be seen as a proxy of CO₂ emissions.

The latest development in terms of launching MBIs in the transport sector is to levy charges on the use of roads, i.e. charges for the use of the road infrastructure. Two European countries, Austria and Germany, introduced quite recently comprehensive infrastructure charging schemes for commercial vehicles. Furthermore, some form of road charges can in particular be found in major cities, such as Singapore and London. The London congestion charge scheme must be described as one of the success stories of MBIs (see Box 2.3).

Box 2-3 London's congestion charge

A congestion charge was introduced in central London on 17 February 2003. The principal aim of the scheme was not environmental, but to reduce traffic congestion in and around the charging zone. It was noted that on average vehicle spent half their time in queues, and that the average speed was only 15km/hour. It was also expected to raise revenues to improve transport in London more generally. Vehicles entering central London, or those parked on the capital's streets, on weekdays during the day (07:00 to 18:30), are subject to a £5 daily charge, which can be paid electronically. The charging zone covers 22km² in the heart of the capital within the inner ring road. Certain vehicles, eg taxis, motorcycles, buses and alternatively-fuelled vehicles, are exempt from the charge, while some users, eg residents and the disabled, benefit from discounts.

A recent review of the charging system undertaken by Transport for London found that congestion within the charging zone has reduced by 30 per cent and that the volume of traffic has reduced by 15 per cent and there was no sign of significant adverse traffic effects outside of the zone. Bus services in the zone have improved and public transport, more generally, has coped with the displaced car users, although some users dispute this. The evidence suggests that the charge has had little direct negative impact on business, but has had benefits in terms of environmental amenity and reduced traffic emissions.

Note also that the London Mayor – Ken Livingston – committed to scrapping the scheme if it was clear that it was not working after 6 months. It is still operational and there is currently a consultation whether the scheme should be extended covering more or less double the area of the charging zone.

Source: EEA, 2005

2.4 ENVIRONMENTAL TAXES IN THE FIELD OF WATER

Different types of environmental taxes and charges may be launched in the water sector. One of the key purposes for their introduction is to provide an incentive for the sustainable use of water resources, and thereby supporting the achievement of the environmental objectives. Water prices, also called user charge for water supply and / or wastewater, should aim to allocate the costs of providing these services to the three main water users (household, industry and agriculture). The rationale of water pricing is linked to the full cost recovery principle meaning that the full costs, such as operation and maintenance (O&M) costs as well as capital and environmental costs, should be covered by the user charges. This policy approach is based on the overall environmental policy goal of 'getting the prices right', i.e. the internalisation of external costs. The complete transposition of this principle is still a major challenge in reality. In the context of developing countries water prices should at least cover O&M costs as well as capital costs.

2.4.1 Water abstraction tax

Water abstraction taxes are launched in several countries and they are generally used in combination with licensing and permit systems. One of the policy objectives and reasons for launching them is to reduce the wastage of water. The actual design of them differs considerably as

they can be levied either on the abstraction of groundwater or surface water or on both. Furthermore, international experience shows that tax rates are differentiated according to the use of water, for example, for cooling purposes, drinking water, etc. The design of them can differ as they can either be levied on the amount of water actually abstracted or levied on the quantity for which an abstraction permit has been given.

2.4.2 Water pollution tax

A rather common instrument in countries, such as Germany, Denmark, Philippines, Malaysia and China, is water pollution taxes, also called water effluent taxes, wastewater taxes or trade effluent taxes. They are also regularly linked to permits and water standards and aiming to regulate discharges of effluents into natural waters. Large differences can exist in the actual design and tax rates. For example, the underlying approach of how to calculate the tax liability may differ as well as the number of pollutants actually subject to the tax. The actual tax liability is often determined in relation to the quantity of the discharge, usually including pollutants, such as chemical and biological oxygen demand, heavy metals, suspended solids, nutrients (nitrogen and phosphorous), as well as the total volume of the discharge. These instruments can fulfil environmental as well as fiscal benefits, as experience from some European countries reveals. On the one hand they can provide an incentive to reduce water pollution as well as the revenues generated from these taxes can be used to fund water-related investments.

2.5 ENVIRONMENTAL TAXES IN THE FIELD OF SOLID WASTE

There exists a whole range of different tax -based instruments all implemented with the aim to influence waste management behaviour. The instruments introduced in many countries can be classified as follows:

1. Differential charging of waste producers, including households (also termed variable charging, unit pricing, pay-as-you-throw, direct charging etc.);
2. Product taxes (designed to reduce use of the product) and levies used in the context of extended producer responsibility schemes (taxes on batteries, packaging taxes, plastic bag tax, etc.);
3. Deposit refund schemes (the most common schemes are the ones levied on bottles); and
4. Disposal taxes (on landfill or other residual waste treatment facilities).

Charging schemes

There are great differences in how waste collection systems are funded varying from place to place and across countries. In some countries, flat rate charges are paid by citizens, which are used to fund the provision of collection and treatment / disposal services. Frequently, these charges are levied without any reference to waste generation and the level of use of the service. For example, many South African municipalities are levying a waste user charge which is based upon the size of the house.

Differential charging, also called pay-as-you-throw, or direct charging, attracts more and more attention as this scheme overcomes this shortcoming and in addition it provides incentives for households to behave in a sound manner. Typically, the effect is to reduce overall waste generation and to increase the proportion of waste collected which is suitable for recycling and composting. However, there may also potential downside as it can encourage fly-tipping.

Differential charging schemes is used to encourage the separation of materials at source by waste producers. Typically, this approach is adopted where convenient services for separate collection of materials (dry recyclables, materials that can be composted, plastics, etc.) exist or are being implemented. The approach involves levying different levels of charge depending upon whether the waste which is collected has been separated (for recycling or composting) or not. The collection costs of the latter are higher. In other words, the less waste enters the residual waste bin, the smaller is the fee.

A whole range of different charging schemes can be applied and they can be classified as follows (Eunomia et al., 2003):

- Pay-per-bin schemes, in which customers either subscribe to a service, usually on the basis of a specific size of bin, or number of bins, or they pay a fee based on the size of bin and / or the frequency with which it is emptied;
- Pay-per-bag schemes, in which citizens purchase clearly identifiable bags from outlets, with different rates charged for bags for different materials, and of different sizes;
- Tag or sticker schemes are those in which tags or stickers are placed on the bag or bin to show the appropriate fee has been paid;
- Hybrid schemes, where a fixed level of service is provided and the consumer pays for levels of service above the basic level;
- Weight-based schemes, in which usually, bins identifiable through computer chips are weighed on the vehicle and software is used to record information about the household and the bin weight. This is then processed to invoice the household. Other examples include systems, where a whole vehicle load is weighed, and an average weight is calculated for the round.

Product taxes

Other possible MBIs to be introduced in the field of waste policy are product levies, such as packaging taxes, taxes levied on batteries, plastic bag tax, tax on tyres, etc. Product levies are mainly used to minimise the use of the product concerned. International experiences with this type of an economic instruments are rather promising in countries, such as Denmark and in particular in

Ireland where the application of this instrument led to a 90 percent reduction of the use of plastic bags there (EEA, 2005). The revenues generated from this levy may be earmarked and the funds to be used for subsidising environmentally friendly investments.

A recent UNEP report (2005) studies the generation of solid waste in Kenya as solid waste is becoming an increasing environmental and public health problem in particular in developing countries. The focus of the report was to develop an environmental policy package addressing a specific solid waste problem, namely plastic bags. The main recommendations are presented in Box 2.4.

Box 2-4 Waste policy recommendation in Kenya

The report proposes an environmental policy package comprising seven instruments to manage plastic bag waste, to be introduced gradually over a two to three year period:

1. A ban on plastic shopping bags that are less than 30 microns in thickness
2. Consumer awareness and anti-littering campaign
3. Promotion of voluntary schemes such as a national code of practice for retailers
4. A plastic bag levy collected from suppliers
5. Support for development of environmentally-friendly alternative bags
6. Support for development of an effective plastic bags recycling system
7. Support for development of a managed disposal system to cater for the plastic bags that will enter the waste stream irrespective of the measures taken.

The key economic instrument proposed in the package is the plastic bag levy, from which the funds raised would be earmarked to support development of environmentally-friendly alternative bags, an effective plastic bag recycling system and a well-managed disposal system. Positive effects are expected to be seen in job creation in alternative environmentally friendly industries (cotton or sisal) and in recycling and waste disposal activities.

Source: UNEP, 2005

One of the most notable success stories with regard to the implementation of product taxes is the Plastic Bag Levy introduced in Ireland in 2002.

Box 2-5 The Irish plastic bag levy

Prior to the introduction of this levy, some 1.2 billion bags annually were provided free of charge to Irish consumers (approx. 325 bags per person per year). They were a highly visible component of litter and had negative impacts on habitats and wildlife. The possibility of an Irish plastic bag levy has been on the political agenda since 1994 and the levy was finally introduced in March 2002 as a point of sale charge. The levy was fixed at EUR 0.15 per bag, on the basis that it would be sufficiently high to give most consumers pause for thought, and stimulate them to avoid paying by bringing their own 'permanent' reusable shopping bags with them. There was no attempt to identify the marginal external costs and determine the optimum level of tax. Retailers report a reduction of over 90% in the consumption of disposable plastic bags since the levy's introduction amounting to around 1 billion plastic bags avoided.

Revenues of around 9 million EUR were raised from the plastic bag levy and are assigned to a new Environment Fund. The revenues are ring fenced in the Environment Fund, to be used for a variety of purposes such as to defray the costs of administration; to support and promote any programmes established for the prevention or reduction of waste and research and development in the waste area. The costs to government are modest. Furthermore, retailers are facing lower costs because they do not have to purchase the plastic bags which were provided free of charge. The commitment of a Minister at Cabinet level was crucial for the success of this scheme ensuring that the various arms of government collaborated, so that the proposal went from concept to successful execution.

The Irish plastic bag levy is an example of an environmental levy which is working. The design of the levy is simple and transparent and immediate environmental benefits are discernible because there is less litter in the streets. Own bags can easily be used as substitutes for plastic bags and this option is also responsible for the success. The experiences gained in Ireland with the plastic bag levy have led several other countries and regions, such as Australia, the UK, and New York City, to discuss the introduction of such a levy.

Source: EEA, 2005

Deposit-refund schemes

The aim of deposit-refund schemes is also to reduce the amount of waste generated thereby reducing littering. The principle behind a deposit-refund system is fairly straightforward. A charge is levied on a potentially harmful product at the point of sale. The charge may apply all along the supply chain, e.g. manufacturer-wholesaler-retailer-consumer, or just between the retailer and the consumer. When the product has reached the end of its useful life, the consumer can then claim a refund by returning the product to the relevant point. One of the most interesting aspects about deposit-refund schemes are that they are a preventative instrument, that is, the charge (deposit) is paid in advance of any harm occurring. They, therefore, reward good environmental behaviour, rather than penalising bad behaviour.

International experience shows that this MBI reduces the generation of waste. The indirect but nevertheless quite interesting effect of deposit-refund schemes is the creation of an 'informal' job market of mainly poor people as they have the possibility to earn some extra money by collecting and returning empty plastic bottles. This is for example the case in Croatia where a deposit-refund scheme for plastic bottles has been introduced in 2005. Deposit-refund schemes for returnable glass

bottles have been in place in most Latin American countries due to the predominance of the beverage and beer packaging system. Refund payments for aluminium cans, due to the high value-added from recycling and the expanding use of such containers, are now increasing considerably in Brazil and Venezuela (IDB, 2003a).

Waste disposal taxes

Disposal levies are also a type of an economic instrument to be implemented in the waste sector and their use is increasingly widespread, in particular in developed countries. Most such taxes are applied only to landfill, though in countries, such as Denmark, the taxes are applied to incineration as well. The vast majority of waste taxes are directed straight into the general budget. Some South American countries, such as Bolivia and Venezuela, have introduced waste-volume and landfill levies. However, the Venezuelan case clarified the importance of having a strong institutional capacity for monitoring waste volumes as well as to restrict illegal waste dumping (Huber et al., 1998).

2.6 ENVIRONMENTAL TAXES IN OTHER ENVIRONMENTAL DOMAINS

The purposes for introducing natural resource taxes, such as taxes on the extraction of sand, gravel, etc., are manifold: on the one hand they may restrict the exploitation of certain natural resources by reducing the demand for these resources and on the other hand they can improve the competitive situation of alternative materials, such as crushed rocks and recycled materials, thus increasing the use of them and simultaneously encourage the conservation of the taxed natural resource.

Another economic sector with limited use of environmental taxes is agriculture. Although the rationale of implementing MBIs is rather obvious and based on environmental considerations, not many countries introduced taxes on pesticides and fertilisers. The Scandinavian countries, Sweden, Denmark, Finland and Norway, are the forerunner in launching such taxes. However, the actual structure of these taxes differs between countries and tax exemptions are basic elements of the national design schemes (Nordic Council of Ministers, 2006). However, taxation systems have been recently reformed so that the tax rates are differentiated according to health and environmental effects of the taxable products. For example the Norwegian pesticides tax consists of a control tax and an environmental tax. The purpose of the former is to generate revenues covering the costs of the administering national body.

In this context it is worthwhile to mention that general sales taxes in the form of value added taxes (VAT) do not fall into the category of environmentally related taxes. Although this tax may have the same effect as environmental taxes, in particular when VAT rates are differentiated according to environmental considerations, the main rationale for implementing them is a pure fiscal one directed towards raising revenue.

2.7 LESSONS LEARNED REGARDING THE USE OF ENVIRONMENTAL TAXES

Although regulatory measures (command-and-control CAC policies) are still the mostly used method in environmental policy, environmental taxes acquired a greater stake during the last decade throughout the world. Environmental taxes have often been seen as potential substitutes for regulatory measures. This view changed over time and they are now perceived as complementary tools to command-and-control policies leading to the widely accepted standpoint that a policy package of regulation and market-based instruments may be required to achieve environmental objectives cost-effectively.

During recent years studies have been undertaken to assess the environmental effectiveness of environmental taxes focusing on the experiences gained with them in Europe as European countries are the forerunner in implementing them and because environmental policy in general became more significant than in other regions of the world. However, the number of empirical studies is still very low and in particular studies which are assessing the use of environmental taxes in developing countries. The reasons for the absence of such studies are based largely on a general lack of policy evaluation and the methodological difficulties and complexities associated with performing these assessments. Furthermore, data availability is an obvious factor limiting the efforts to conduct such evaluation studies. Nevertheless, some studies have been carried out and the empirical evidences of them provide some answers to the question whether environmental taxes are environmental effective (source: EEA, 2005, p.71-72):

Energy and CO₂ taxes:

- Norway – CO₂ tax: the carbon taxes contributed to only 2 percent reduction of CO₂ emissions because of the generous tax treatment of energy/carbon intensive economic sectors. This relatively small effect relates to extensive tax exemptions and relatively inelastic demand in the sectors in which the tax is actually implemented.
- Germany – energy tax: increased petrol and diesel prices due to the introduction of energy taxes led to a decrease in the sale of petrol and diesel between 1999 and 2003: consumption of petrol fell by around 15% between 1998 and 2003 and diesel consumption increased between 1998 and 2001 but fell slightly since then. During this period the energy tax levied on petrol increased by around 31% and by 48% for diesel. Other reasons for this development are efficient, more reserved driving habits and overall mileage reductions as well as lower specific mileage fuel consumption of new vehicles. It is noteworthy to state that the introduction of the energy tax came along with an increase in the world market price of oil resulting to a further increase in the pump price of petrol and diesel.

Air pollution charges:

- Sweden - NOx charge: the special design of the NOx charge is worthwhile to mention as apart from the reduction of NOx emissions the special refund mechanism results that the charge payers as a group do not incur a financial burden.

Waste taxes:

- Denmark - landfill taxes: the introduction of the landfill tax led to a reduction in the total amount of taxed waste and an increase in the reuse of building and construction materials.
- UK landfill tax: the introduction of the tax improved overall data availability. Furthermore, design change and a simultaneous increase in tax rates was put into practice because the landfill tax when introduced did not affect household waste arising as it provided no incentives for them to change their behaviour.

Water taxes:

- Netherlands – effluent charges: Water pollution by 14 industries which were responsible for 90% of water pollution decreased by 90% between 1969 and 1975 and by a further 20% by 1980. Half of this reduction was attributable to the effluent charge and accompanied measures.
- Denmark – tax on tap water: a 26% reduction in total water consumption by households took place between 1989 and 1998; half of the reduction only occurred after the inception of the tax illustrating the fact that the announcement of the introduction of an economic instrument can affect behaviour.

Product taxes:

- Ireland – plastic bag levy: a reduction of around 90 per cent of the consumption of carrier bags after the levy was introduced.

Agricultural taxes:

- Sweden – pesticides tax: a noticeable reduction of the sale of pesticides partly the result of the introduction of the pesticides tax.

Apart from the positive results of these empirical studies it can be further be claimed that environmental taxes are successful instruments in achieving environmental policy objectives as the sheer number of them increased steadily (OECD, 2001 and 2006). This development occurred although political decision makers are almost consistently criticised when new environmental taxes are being launched.

International experiences clearly illustrate that some crucial aspects are decisive for the effectiveness of environmental levies and thereby guaranteeing that the public acceptance is at least partly existent. Probably the key finding is that the introduction of any new environmental tax has to be announced well in advance so that major economic disturbances can be avoided. Furthermore, the tax rates should be gradually increased over time meaning that at the beginning only a fraction of the final tax rate will be levied. For example, the German electricity tax and the Danish tax on tap water were both introduced over a five year period. Furthermore, it is important to have accompanying measures in place raising the awareness of the citizens, such as information leaflets or TV spots.

Indexation of tax rates is definitely of highest significance for countries with high inflation rates but should also be considered in countries with lower inflation rates when tax rates are kept constant for a longer time period. For example, some Eastern European countries experienced inflation rates of up to more than 100% per year during the 1990s therefore cumulating to a situation that the real value of environmental taxes has been drastically reduced because of the lack of indexing the nominal rates to the high inflation rates.

However, the main and most crucial finding is that the effectiveness of environmental taxes – but also other market based instruments, such as trading regimes and subsidies - decisively depends on the functioning of the political, institutional and regulatory framework meaning that the existence of strong institutions is a necessary condition. Furthermore, monitoring and enforcing environmental compliance must also be guaranteed because otherwise the incentive as well as the revenue generating effect of environmental taxes is further eroded.

One of the striking results is that countries based on experiences gained worldwide design environmental taxes more closely to the environmental problem which is being addressed. For example, more countries are adopting a waste charging strategy at the household level where the charges set on the basis of indicators, such as bin size, weight of the bin and frequency of collection. Transfer of knowledge between countries of the use of environmental taxes for environmental policy can therefore be rather attractive and in particular advantageous for those countries which do not possess experiences with them. However, a direct transfer of knowledge is definitely the way forward as country-specific circumstances must be taken into account during the planning and design phase of any instruments.

Chapter

3

SRI LANKA – POLITICAL, ECONOMIC AND INSTITUTIONAL BACKGROUND

Sri Lanka is an island in the Indian Ocean lying 29 km off the coast of India located 7 degrees north of the Equator. The country has a total area of 65,610 km² comprising 62,705 km² of land area and 2,905 km² of inland waters. The Island's topography is diverse with elevations rising from sea level up to 2,500 meters in the central hills. Average annual rainfall in 2005 was 1,706 mm spread over 93 rainy days. However, differences in the annual rainfall do exist between regions resulting that water resources are scarce in those regions which are located in dry zone in low lying areas of the country, where annual rainfall can be as little as 750 mm. The supply of drinking water highly depends on groundwater and on reservoir storage in these regions. Temperatures range from 24.4° to 31.7° C in the lowlands to 17.1° to 26.3° C in the cooler highlands.

The country's population was estimated at 19.7 million in 2005 with an average density of about 310 persons per km² but with great disparities between regions. Population density is much greater in the south-western and northern areas, where the majority of Sri Lankans live. Of the total population, about 4 million or 21 percent live in urban areas and about 15 million or 79 percent in rural areas. Annual population growth is around 1.1 percent and is regarded as one of the lowest among the developing countries. Owing to its success in regulating population growth, the population is expected to stabilize at around 25 million in the year 2040. The breakdown of population by gender reveals that 51 percent are female and 49 percent are male. The population comprises a number of ethnic groups: Sinhalese 74 percent, Tamil 18 percent and Muslims 7 percent. The remaining 1 percent consists of smaller ethnic groups such as Burghers and Malays.

Overall life expectancy is 71 years for men and 77 years for women leading to an average life expectancy considerably higher than in most developing countries. Despite sustained government efforts to introduce various poverty reduction programmes such as direct income transfers and subsidies, about 22.7 percent of the country's population were classified as poor¹⁰.

Sri Lanka has experienced modest economic growth since independence in 1948. The gross domestic product (GDP) has grown at an annual rate of about 3 percent since 1948. The relatively slow growth of the population helped to create a greater per capita gain despite the modest growth of the economy. In 2003 annual per capita income was US\$ 950, this increased to US\$ 1,030 in 2004 and to US\$ 1,355 in 2006. In terms of GDP and export earnings, the significance of

¹⁰ The poverty headcount is quoted from Department of Census and Statistics, Government of Sri Lanka, 2002: Poverty Statistics/Indicators for Sri Lanka (based on the 2002 Household Income and Expenditure Survey) as cited in ADB, 2005.

agriculture relative to manufactured goods declined substantially after 1977. The contribution of agriculture to the country's GDP declined from 40 percent in 1977 to 19 percent in 2003. The contribution of manufacturing rose from 12 percent in 1977 to 16 percent in the late 1980s, where it remained through the 1990s; in 2003 it stood at 15.5 percent. Sri Lanka's most dynamic sector now is the service sector, which according to the Central Bank recoded the highest contribution of 78 percent to the overall GDP growth in the fourth quarter of 2004.

The country was heavily affected by the Tsunami in December 2004 and despite the devastating human costs and huge number of casualties the economic development remained broadly on trend (ADB, 2006a). Table 3.1 shows some basic information on the development of Sri Lanka.

Table 3-1 Economic performance of Sri Lanka

	1990	1995	2001	2002	2003	2004	2005	2006
Total population; million as of July 1	16.267	17.28	18.732	19.007	19.252	19.462	19.668	19.886
GDP at market prices (mill Rs)	317,904	662,384	1,407,398	1,581,885	1,761,161	2,029,365	2,365,593	2,801,828
GDP per capita (current prices - Rs per capita)	19,543	38,332	75,133	83,226	91,479	104,273	120,276	140,894
Exchange rate (Rs per USD - average of period)	40.063	51.252	89.383	95.662	96.521	101.194	100.498	103.96
GDP per capita (current prices - USD per capita)	488	748	841	870	948	1,030	1,197	1,355
Consumer price index (Colombo - 1995=100)		100	176	193	205	220	246	280

Note: 2006 – provisional; Source: Central Bank of Sri Lanka – different publication and author's own calculation

During the last years Sri Lanka economy grew quite considerable by a rate of 6 percent in 2005 and even by 8 percent in the first half of 2006. The eight percent growth rate must at least be retained so that the aim of alleviating poverty, reducing unemployment and to raise the standard of living on a sustainable basis can be achieved (Central Bank of Sri Lanka, 2005).

One of the challenges Sri Lanka is facing is the overall budget deficit of almost 9 percent of GDP as presented in Table 3.2. During 2005 inflation was subdued (annual average inflation in 2005 was 11.6 percent) but rose again during 2006.

Table 3-2 Government Fiscal Operations

	1990	1995	2001	2002	2003	2004	2005	2006 (proj.)
Total tax revenue in % of GDP	19.3	17.9	14.6	14.0	13.2	13.9	14.3	14.3
Overall budget deficit (mill Rs)	-31,850	-67,225	-152,115	-139,506	-139,145	-165,326	-204,958	-239,775
Overall budget deficit in % of GDP	-10.0	-10.1	-10.8	-8.8	-7.9	-8.1	-8.7	-8.7

Source: Central Bank of Sri Lanka – different publication

Legislative power in Sri Lanka is exercised by the Parliament which is elected by on proportional representation basis. The President also directly elected by the citizen of Sri Lanka exercises executive power including defence. Sri Lanka enjoys a multi party system, and the citizen vote to elect a new government every six years.

The country consists of 9 Provinces (two Provinces- the North and the East are temporarily merged), with each Province being administered by an elected Council. The Chief Minister is assisted by a Chief Secretary appointed by H. E. the President. Each Province consists of two to three Districts, there being 25 Districts in all. Each District has a District Secretariat headed by a District Secretary, who implements the projects and programmes assigned by the Provincial Council in addition to performing National Government functions. Districts are further divided into Divisional Secretariat (DS) Divisions, headed by a Divisional Secretary. There are 308 such Divisional Secretary Divisions. Each DS Division contains a number of ‘Grama Niladari’ (GN) or Village Officer Divisions. The GN Division is the primary administrative unit in the country and there are 14,110 such units.

Local Government functions are dealt with by Local Authorities (LAs) which are classed into Municipal Councils (MCs) (14), Urban Councils (UCs) (39) and Pradeshiya Sabhas (PSs) (308). These LAs are under the control of the Ministry of Local Government & Provincial Councils. The Local Authorities have been assigned to carry out a whole range of functions and tasks which are delegated by the Central Government to them. Furthermore, local bodies have the authority to pass by-laws as special laws - a form of delegated legislation - in order to improve governance, generate additional revenues or to reduce environmental pollution, among other purposes. However, very few local authorities have passed by-laws for this purpose.

The by-laws are meant to be complementary to laws governing LAs and to ensure a degree of autonomy. Thus the local bodies have the power to pass by-laws that can introduce new environmental taxes. However, the local authority system has not fully adopted the provision for by-laws in governance. Even at present, the institutional capacities of a majority of local bodies are weak in terms of skills to manage revenue as well as accounting, planning, financing, implementation management and to handle properly the operation and maintenance of services so that the services required by the citizen are provided effectively. The LAs are characterised by weak

governance, poor leadership, lack of finances, lack of trained staff, and lack of capital resources such as equipment and transport. Although the capacities of local bodies vary widely, the larger local authorities such as the Municipal and Urban Councils are financially better off and hence more capable of administering MBIs than the smaller Pradeshiya Sabhas.

Chapter

4

**THE CURRENT STATUS AND USE OF MBIs IN SRI LANKA AND
RECOMMENDATIONS**

This section outlines MBIs currently in operation in Sri Lanka based on the findings of eight comprehensive thematic reviews. These eight case studies have been compiled by national experts in the relevant fields. An attempt is made to give a comprehensive overview of the MBIs in each of the following sectors: agriculture, fishery and coastal management, energy, tourism, transport, waste management, and water¹¹.

Based on the comprehensive overview of the current situation in Sri Lanka with respect to environmental taxes proposals for revising the currently applied MBIs respectively the introduction of new environmental taxes are made. These recommendations build on the findings of the case studies and should be seen as a scoping exercise aiming to assess the potential of MBIs in Sri Lanka. Thereby a distinction is being made between revising already existing environment taxes which could be done in the short-run as well as the introducing additional ones in the future, i.e. a medium- to long-term approach.

It must be stressed at this stage that the aim of this report is not necessarily to produce a list of instruments which could be implemented immediately – although it would not be too difficult to launch some of the instruments proposed. The aim is rather to set parameters for discussion followed by further in-depth analysis if policy decision makers are thinking that environmental taxes should play a more crucial role in environmental and fiscal policies, then these instruments should be considered in more detail.

International experience can and may have a significant role with respect to an instruments usefulness and efficacy. However, international experience must sometimes be treated carefully as well as critically as it would be definitely unreasonable to transpose the experiences from one country directly to another as mentioned in the previous section. Such an approach would obviously ignore key issues, such as the ones related to whether a country has a proper functioning regulatory and institutional framework in place and whether monitoring and enforcing policies are working.

¹¹ This section heavily builds on the thematic review studies written by a team of national experts coordinated by the national project coordinator Upali Peiris and Fuard Marikar. The reviews were written by Douglas R. Wijayatilleke (agriculture), Ranjana Piyadasa (coastal management), Tilak Siyambalapitiya (energy), Anton Wimalarathane (fishery), Fuard Marikar (tourism), Don S. Jayaweera (transport), V. U. Ratnayake (water and waste management), and Upali Peiris (general information on Sri Lanka). The fishery and coastal management case studies are not discussed separately but in a broader sub-chapter considering the findings of both case studies.

This latter issue may be summarised under the question of identifying key constraints hampering the effectiveness of MBIs, but which has not been analysed in this report in great detail.

Finally, this analysis is set within on-going and future reform proposals suggested by different ministries. At present, different government departments are in the process of developing various strategies to deal with environmental issues. In consequence, a number of different proposals for the introduction of environmental taxes and charges are already under political discussion in Sri Lanka.

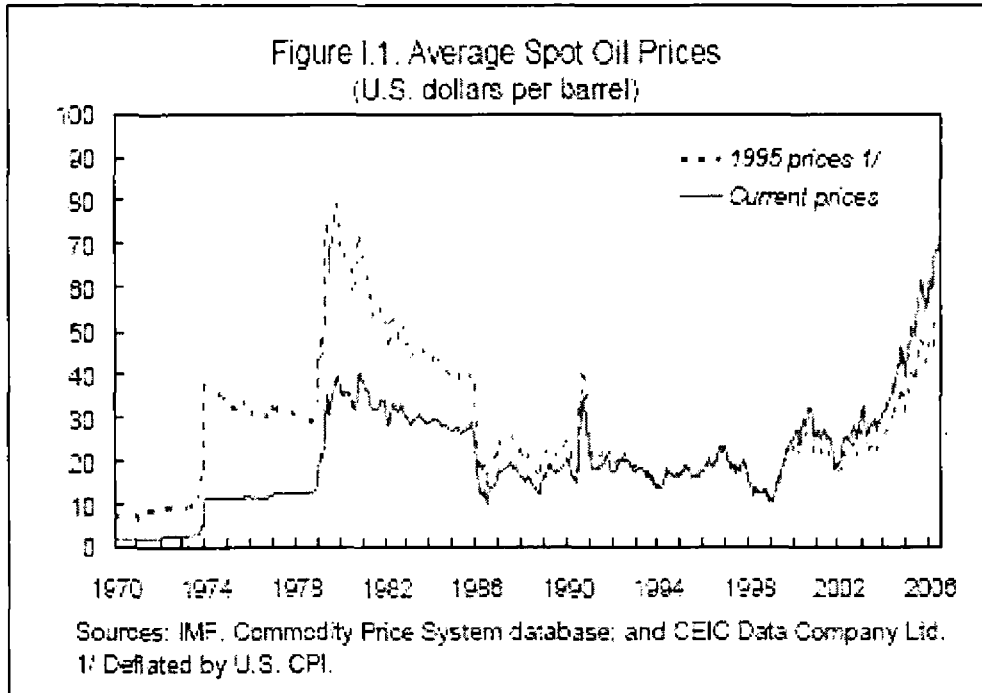
4.1 ENERGY

The Sri Lankan energy sector can be subdivided into three sectors: biomass, petroleum and electricity. Each sector is very important for the economic development of the country. Biomass provides the vital energy for household cooking and the energy requirements of traditional agro-based industries. Petroleum products are used in the transport sector and provide the lighting requirements of rural households. Electricity drives the modern industry and also provides the energy requirements in the households and commercial sector.

The most important development in the energy sector was the sharp increase of the international oil price over the past four years which had severe consequences for many economies worldwide and also for the Sri Lankan economy (see Figure 4.1 below). This increase led to inflationary expectations as well added to external and fiscal vulnerability¹². The importance of petroleum products for the Sri Lankan economy becomes obvious as petroleum products contribute around 45 percent to the primary energy supply. The share of biomass to total energy supply is slightly higher (47 percent) and the remaining 8 percent come from hydro electricity. The share of renewable energy sources (wind, solar power) is currently rather insignificant. Petroleum products have to be imported either as crude oil or as refined products. Petroleum products gained to be more important which is reflected in the total primary energy supply as their share increases from 32 percent in 1996 to around 45 percent nowadays because of increased demand, slow growth in hydropower generation (Central Bank of Sri Lanka, 2005, p.44). Electricity generation is also heavily dependent on thermal plants which are operated with petroleum products, i.e. around 61 percent of total electricity generated was produced in thermal power plants in 2005.

¹² See for a more detailed analysis of the macroeconomic challenges of high oil prices in Sri Lanka: Lueth et al., 2006

Figure 4-1 Evolution of the international oil price



Source: Lueth et al., 2006

4.1.1 Current situation - petroleum products

Pricing structure and taxes

The prices for energy products and electricity are administered by the Government of Sri Lanka (GOSL). In 2002 the GOSL introduced an automatic price adjustment mechanism for establishing prices of petroleum products¹³ and, in addition, the domestic petroleum sector was opened to competition. Until then the petroleum supply sector was a monopoly of the state owned company Ceylon Petroleum Company (CPC) but this situation changed when the Lanka Indian Oil Corporation (LIOC) started to operate in 2003.

The rationale behind the pricing formula was that price adjustments for the local markets follow the development of the international average oil price. However, the pricing formula was soon abandoned despite the rapid increase in the international oil price with the consequence that petroleum prices were not adjusted monthly as foreseen. During the period of the dramatic increase in world oil prices the domestic prices for petroleum products did not increase to the same extent as the world market price, resulting in subsidies to oil companies (Ceylon Petroleum Company (CPC)). The evolution of the domestic prices for petroleum products are shown in Table 4.1. The state administered prices for transport fuels (petrol and diesel) roughly doubled between 2002 and

¹³ The pricing formula set a cap of 2 Rs per litre increase per month (Coady et al., 2006).

September 2006 and that of kerosene and fuel oil increased at a higher rate of 245% and 205% respectively.

Table 4-1 Development of petroleum product prices (2000-2006)

Year	Date	Month	Gasoline		Kerosene		Diesel		Fuel oil	
			90OCT	93OCT	industrial	domestic	Super	Auto	1500s	3500s
2000	As on 1 st	JAN	50.00	55.00	12.70	11.80	18.50	13.20	6.80	6.20
	7	FEB			17.70	15.40	21.50	16.20		
	1	JUN								
	13	JUN					24.80	19.50	9.80	9.20
	17	NOV			19.70	17.40	26.80	21.50	12.70	11.40
	28	DEC			20.70	18.40	29.80	24.50	14.00	12.40
2001	16	APR			21.70	19.40	32.80	27.50	15.80	14.10
	16	NOV			19.70	17.40				
	29	DEC					31.80	26.50		
2002	25	FEB	49.00	52.00			31.30	26.00	15.50	
	18	MAR								
	23	MAR	50.00	53.00					16.00	14.90
	23	APR	52.00	55.00	21.70	19.40	33.30	28.00	18.00	16.90
	22	MAY	54.00	57.00	23.20	20.90	35.30	30.00	20.00	18.70
	22	JUN							21.00	19.60
	15	JUL							20.20	18.90
	15	AUG							21.20	19.60
	15	SEP							21.90	20.60
	22	SEP								
15	OCT							23.00	21.50	
17	DEC							20.70	18.90	
2003	5	DEC							22.30	20.70
2004	14	FEB	57.00	60.00	25.50	27.80	32.00	37.30	23.30	21.00
	13	AUG	68.00	71.00	25.50	27.80	36.00	41.30	24.70	23.20
	1	NOV					40.00	45.00		
2005	5	JUN	80.00	83.00	30.50	33.80	55.30	50.00	31.20	30.30
2006	15	APR	88.00	91.00		38.50	63.30	58.00	38.30	36.00
	11	JUN	93.00	96.00		43.50	66.30	61.00	43.30	41.00
	2	AUG	96.00			45.50		64.00	45.30	43.00
	5	SEP	101.00			48.50		67.00	47.30	
	27	SEP	99.00			48.50		65.50	47.30	
	5	OCT	97.00			48.50		62.00	45.30	
26	OCT	92.00			48.50		60.00	43.30		

Basis: Colombo prices Rs/litre, including all taxes

Source: Sri Lanka Energy Data, 2003 and subsequent changes and Ministry of Finance and Planning, 2006 (Energy case study)

An overview of how the end-user prices of petroleum products are determined is presented in Table 4.2. The table shows that in May 2006, the calculated prices exceeded the selling prices with the exception of petrol 95. The administered price system had a high subsidy component of, Rs. 18 billion in 2004 and Rs 26 billion in 2005. (As quoted by Treasury Secretary Dr Jayasundera in Daily News, of April 27, 2006). The price increases during 2006 as shown in Table 4.1 'eliminated subsidies on petrol but kept diesel and kerosene subsidized by SLRs 6 and SLRs 26 per liter, respectively (ADB, 2006a, p.186)'. During 2006 petroleum prices were increased with the aim of

reducing subsidies needed to offset the losses incurred by the oil companies¹⁴. However, the repeated delays in allowing oil companies to adjust the oil prices to the actual market forces led to further compensation of oil companies of Rs. 9.3 billion in subsidies during the first half of 2006 (Central Bank of Sri Lanka, 2006).

Table 4-2 Summary of price composition and taxes on petroleum products

Product	CIF price	Port charges	Terminal Company (CPSTL) charges	Wholesaler Charges/mark-up	Retailer Margin	Taxes (at all stages)	Calculated Price	Selling Price except to CEB	Share of Taxes in Selling Price
Petrol 90	45.53	1.55	1.89	5.13	1.53	33.05	88.68	88.00	37.6%
Petrol 95	45.91	1.57	1.89	5.16	1.53	33.13	89.19	91.00	36.4%
Auto Diesel	50.27	1.72	1.59	4.27	1.08	3.73	62.66	58.00	6.4%
Super Diesel	55.36	1.87	1.59	4.63	1.18	3.84	68.47	63.30	6.1%
Kerosene	49.86	1.69	1.49	4.15	1.04	2.43	60.66	38.50	6.3%
Furnace oil 180 cSt	34.50	1.31	1.59	2.83	-	6.50	46.73	38.30	17.0%
Furnace oil 380 cSt	33.47	1.28	0.25	1.53	-	5.48	42.01	36.00	15.2%

(Source: Energy Case Study – Units: Rs per litre)

Note: VAT portion (approx 13% of selling price) in the taxes can be reclaimed by users of Furnace Oil. CEB – Central Electricity Board;

Basis: Calculation for May 2006 : Source: CPC

Table 4.3 provides a detailed analysis of the current taxing system of petroleum products. As it can be seen all petroleum products are liable to some specific levies, such as the ports and airports levy, the social responsibility levy and an additional surcharge. VAT is levied on different petroleum products and diesel was originally also subject to VAT but the rate was set to zero in 2005 as a consequence of increases in the international oil market and the attempt to constrain the increase in end user prices of diesel.

¹⁴ The full extent of the financial implication of petroleum subsidies can be summed up as follows: ‘A subsidy of one rupee on a litre of petrol, diesel and kerosene amounts to a subsidy of Rs. 2.6 billion per annum (Central Bank of Sri Lanka, Annual Report 2004, p.14).

Table 4-3 Structure of taxes on crude oil and petroleum products (May 2006)

Petroleum Product	Customs duty	VAT	Excise Duty (Rs per litre)	Cess	Ports and Airports Levy	Social Responsibility Levy	Surcharge (% of customs duty)	Provincial Council Tax
Crude Oil	0%	Exempt	0	0%	2.5%	1.0%	10.0%	0%
Petrol 90	0%	15%	20.00	0%	2.5%	1.0%	10.0%	1%
Kerosene	0%	Exempt	1.25	0%	2.5%	1.0%	10.0%	1%
Auto Diesel	0%	Exempt	2.50	0%	2.5%	1.0%	10.0%	1%
Petrol 95	0%	15%	20.00	0%	2.5%	1.0%	10.0%	1%
Super Diesel	0%	Exempt	2.50	0%	2.5%	1.0%	10.0%	1%
Furnace oil 180 cSt	0%	15%	0	0%	2.5%	1.0%	10.0%	1%
Furnace oil 380 cSt	0%	15%	0	0%	2.5%	1.0%	10.0%	1%

(Source: energy case study)¹⁵

Excise duties on transport fuels and kerosene have been in place for several years. In 2002 the petrol taxation system was revised and the *ad-valorem* excise levy of 25 percent levied on petrol and diesel was changed to an *ad-quantum* excise levy. The rate was set at 24 Rs per litre for petrol and 4 Rs per litre for diesel and was subsequently lowered to the current rates of Rs 20 per litre (petrol) and Rs 2.50 per litre (diesel). In addition kerosene is levied with a rate of Rs 1.25 per litre. Auto diesel used for electricity generation by CEB is free of the ports and airports levy, retailer margin, and is therefore sold at a specially calculated price. However, the price that CEB is charged includes excise duty of Rs.2.50 per litre and the provincial council tax, which can be considered as an input tax on electricity.

Excise tax rates have been lowered since their introduction in 2002 and therefore the real value of these levies have declined considering the fact that inflation rates were around 10 percent per annum in recent years. The development of transport fuel costs and taxes is presented in Table 4.4 showing that tax rates have been reduced in nominal terms meaning that the reduction in real terms is even bigger¹⁶. In general, excise taxes on transport fuels are the main revenue generating instruments in the field of environmental taxation (see OECD, 2001 and EEA, 2005 – see for a more detailed discussion Section 5 below).

Although diesel is not an environmental friendlier product than petrol, it is taxed with a lower rate than petrol worldwide with the exception of the UK and Switzerland. However, efforts are currently underway – above all at the European Union level – to increase diesel tax rates, i.e. to set them in the same range of petrol taxes, so that they are set more in accordance with environmental considerations. The tax differential between the excise tax levied on petrol and diesel in Sri Lanka is therefore of no surprise but the huge difference is remarkable, i.e. the tax differential is 1:8 as compared to less than 1:2 in EU member states

¹⁵ See also for a detailed analysis: Ministry of Environment and Natural Resources, 2003.

¹⁶ A 15 percent VAT rate is levied on the sale of transport fuels. However, the government suspended VAT on diesel fuel and LPG gas in August 2005. This policy aimed to partly offset the increase in the overall diesel fuel price after some adjustments of the price have been made during May and June 2005 (Central Bank of Sri Lanka, 2005).

Table 4-4 Overview of evolution of fuel prices and tax

	1995	1996	2000	2002	2003	2005	Sep-2006	Oct-2006
Gasoline price (90 octane) (Rs/Litre)	40	50	50	54	54	80	101	92
Diesel (Rs/Litre)	12.4	13.2	24.5	30	32	50	65.5	60
Kerosene (Rs/Litre)	9.5	10.4	18.4	20.9	20.9	33.8	48.5	48.5
Excise duty on gasoline	25% ad valorem tax			24	21	20	20	20
Excise duty on diesel	25% ad valorem tax			4	3	2.5	2.5	2.5
Kerosene					1.25	1.25	1.25	1.25

Source: Central Bank of Sri Lanka and Table 4.1

Table 4.5 shows the quantity consumed sales and prices of the three oil products during the period 2000 and 2006¹⁷. The consumption of petrol and kerosene increased despite the price increase. The sale of diesel fuel increased during the period 2000-2004 and dropped during the period 2004 - 2006 probably due to the increase in diesel fuel price (prices increased by about 50% during this period). The increase in the demand of transport fuels was almost exclusively the result of expansion of the sales of petrol (90 and 95 octane) as the sales increased from 224 to 595 (Mt'000) between 2000 and 2006 (est.), i.e. an increase of 165 percent, as compared to a 9 percent increase in the case of auto diesel (1,715 in 2000 and 1,870 in 2006 (est.) (Central Bank of Sri Lanka). However, it would require some detailed econometric models to assess whether the drop in diesel sales, during the period 2004-2006 can really be attributed to the price increase. Nevertheless it reveals a change in the behaviour observed during the late 1990s and early 2000 when an increase in diesel sale is reported in Sri Lanka. But it is interesting to note that the sharp increase in petrol prices did not reduce the demand for petrol during the same period.

Table 4-5 Quantity consumed and prices of petroleum products - 2000 and 2006

	2000	2004	2005	2006	Percentage change 2004 - 2006	Percentage change 2000 - 2006
Quantity sold (mt'000)						
Petrol	224	437	549	595	36.16	165.6
Auto-diesel	1,715	1,890	1,862	1,870	-1.06	9.0
Kerosene	229	204	252	260	27.45	13.5
Prices (annual average - Rs per litre)						
Petrol	50	61	75	90	46.2	80.0
Auto-diesel	24.5	39	48	58	49.5	136.7
Kerosene	18.4	27	31	42	54.5	128.3

Source: author's own calculation based on energy case study and Central Bank of Sri Lanka

¹⁷ The prices of the oil products are calculated as an annual average using the information given in Table 4.1.

Table 4.6 indicates that the increase in crude oil prices had not been passed on to the consumers in Sri Lanka, resulting in large subsidies for fuels. During the period 2000 to 2006 the average crude oil price (in rupees) increased by 311 percent. In contrast the price of diesel increased by 245 percent, while that of petrol increased by 184 percent during the same period, indicating that the entire increase in world market prices had not been passed on to the consumers. The highest percentage increase in the end-user price happened in the case of kerosene during this time period.

Table 4-6 World crude oil prices compared with local fuel prices

		2000	2001	2002	2003	2004	2005	2006
Average crude price	Rs/barrel	2,181	2,207	2,415	2,824	3,811	5,241	6,781
Increase average crude price	in percent (2000=100)		101	111	129	175	240	311
Gasoline price	Rs/litre	50	50	54	54	68	80	92
Diesel price	Rs/litre	24.5	26.5	30	32	40	50	60
Kerosene price	Rs/litre	18.4	17.4	20.9	20.9	27.8	33.8	48.5
Increase gasoline price	in percent (2000=100)		100	108	108	136	160	184
Increase diesel price	in percent (2000=100)		108	122	131	163	204	245
Increase kerosene price	in percent (2000=100)		95	114	114	151	184	264

Source: Central Bank of Sri Lanka and Table 4.1(nominal end of year prices)

The analysis shows that the dramatic increase in the world oil price especially during the period 2004-2006 was not passed on to the consumer. Furthermore, it is worthwhile to mention that kerosene faced the highest percentage increase in the period 2004 to 2006 when the Government of Sri Lanka repealed the fuel subsidies (see Table 4.4). It should be mentioned that diesel and gasoline, which are usually not purchased by the poor household, received the highest subsidies, while kerosene, which is the main source of lighting for poor households, received the lowest subsidy¹⁸. (see Table 5.3),

The large difference between the tax rates levied on petrol and diesel has led to distortions in the vehicle fleet mix. This tax differential contradicts environmental considerations and may be explained by social policy criteria (see for a discussion: transport case study). The tax differentiation in favour of diesel must be disputed from an environmental point of view as diesel is more environmentally unfriendly than petrol. However, the same tax differentiation, i.e. in favour of diesel fuel, can be found throughout the world and only countries, such as the UK and Switzerland, do not apply lower taxes on diesel as the ones levied on petrol.

¹⁸ Our findings are different from the calculation of pass-through rates done by Lueth et al. (2006). However, Lueth et al. are only considering the period between the end of 2003 and the end of 2005 and they are determining the pass through rate by calculating the absolute change in domestic price, in US dollars, divided by the absolute change in world price, in US dollars.

Table 4.7 presents the development of transport fuel prices in Sri Lanka and India. Worthy of note is the fact that during 1990s, the transport fuel prices were higher in Sri Lanka, but the situation reversed after 2000 with Indian prices currently being higher although - when using the 2005 GNI per capita figure as indicator it is reported that Sri Lanka has a higher GNI per capita (1,010 USD per capita) than India (620 USD per capita – World Bank data).

Table 4-7 Comparison of petrol and diesel prices in Sri Lanka and India

	Prices in US cents / litre					
Sri Lanka	1995	1998	2000	2002	2004	Sept. 2006
Petrol	75	84	66	54	72	96
Diesel	23	30	27	31	41	n.a.
India						
Petrol	48	56	60	66	87	111
Diesel	19	21	39	41	62	n.a.

Source: GTZ, 2005 and <http://www.kshitij.com/research/petrol.shtml>

However, Asian countries, such as Indonesia and the Philippines had lower transport fuel prices in 2004 as compared to Sri Lanka. The prices in Malaysia have also been lower (diesel 22 US cents per litre and petrol 37 US cents per litre in 2004) although the GNI per capita is four times higher than Sri Lanka. Transport fuel prices have been dramatically increased in Malaysia and Indonesia very recently as discussed below (Section 5).

4.1.2 Current situation - electricity

Electricity is seen as crucial for the development of the Sri Lankan economy and it is projected that electricity demand will grow at around 8 percent per annum over the next 8 years. The expected increase in demand will require the construction of new power plants and the state-owned Ceylon Electricity Board (CEB)¹⁹ is planning to construct several coal-fired power plants over the coming years. The focus is directed to construct coal-fired power plants as fuel inputs costs are expected to be lower for coal than for fuel oils.

CEB is the main player in the Sri Lankan electricity sector with a market share exceeding 80 percent of total electricity sold. However, the financial position of CEB is far from optimal as its total outstanding long-term debts amounted to around Rs.60 billion²⁰ at the end of 2005 and they are owed to the Government Treasury. In addition, CEB faces short-term debts of around Rs.40 billion by the end of 2005. The financial situation of CEB can be described as rather bleak and aggravated during the last years as the increases in oil prices lead to higher fuel input costs as the CEB electricity generation is heavily depending on oil. The poor financial situation of CEB is clearly recognisable when comparing the average tariffs vs average costs of production as done in Table 4.8.

¹⁹ CEB is the major player in the electricity sector having a market share of around 90 percent of total electricity sale.

²⁰ Provisional estimate

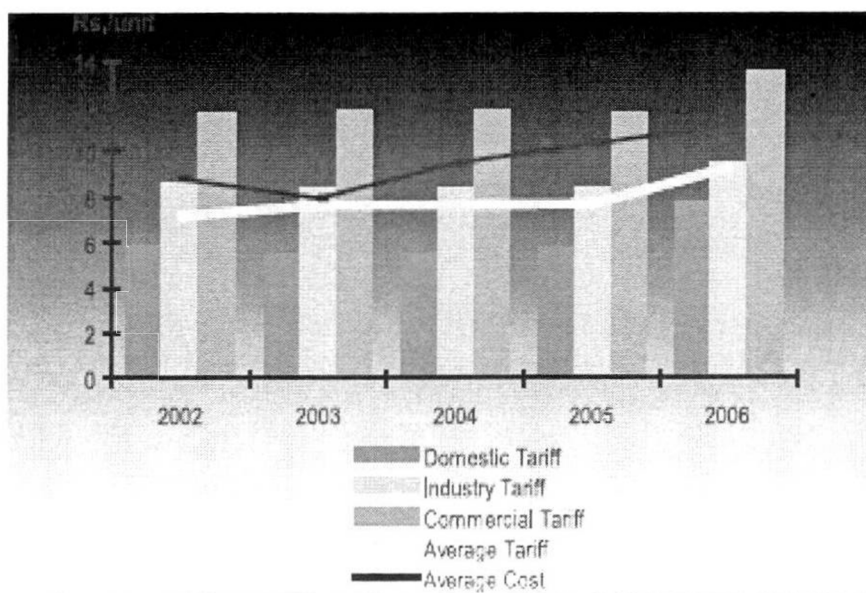
Table 4-8 Average tariff and cost of production of electricity

Unit	Rs per kWh		
	2002	2005	2006
Average tariff	7.21	7.7	9.02
Average costs	8.85	10.35	11.03
Difference	- 1.64	- 2.65	- 2.01

Source: Central Bank of Sri Lanka, different reports

The evolution between 2002 and 2006 presented in Figure 4.2 shows that average costs and tariffs have been roughly the same in 2003 and in all other years the average costs of production exceeded the average tariff.

Figure 4-2 Evolution of electricity tariffs and costs of generation



Source: Central Bank of Sri Lanka, 2007

The major energy source in the power sector is oil products as the largest share of electricity generated comes from thermal power plant, i.e. around 60.6 percent of electricity generated. However, the share of electricity from renewable energy sources is very high amounting to 39.4 percent in 2005 – almost exclusively generated in hydropower plant. This share is very high on the world scale. However, this share of renewable electricity is currently declining and it is expected to reach 27 percent by the year 2015. In this context it is worthy of note that until about 1995 Sri Lanka’s electricity supply was almost completely supplied by hydro-power. However, the increasing electricity demand cannot be satisfied via renewable sources alone and therefore major investments in thermal power plants are planned and some of them are currently under construction. An important step in the context of providing support to renewable sources was the government’s

recent policy declaration that 10 percent of grid electricity should be provided by Non-conventional Renewable Energy (small hydroelectric, wind, biomass, solar and ocean energy) by 2015.

Electricity pricing

Although the electricity generation costs have increased during the last years as shown above (see Figure 4.2) CEB could not increase the tariffs to fully compensate these increases in fuel input costs which is the major cost component of CEB's operational costs²¹. The electricity tariffs are administered by the Sri Lankan Government and remained unchanged from April 2002 until February 2006. Tariffs consist of a fixed charge and a variable charge which is based on the so called 'inverted block tariff scheme' meaning that the charge rate increases when larger amounts of electricity are consumed. The fixed monthly charge was increased by 100 – 275 percent depending on the type of consumer (household, industry, etc.) and the variable charge rate has been kept constant in February 2006 (Central Bank of Sri Lanka, 2006). The fixed charge also depends on the actual consumption of households, i.e. households with lower consumption are paying a lower fixed rate than households with higher consumption (see Table 4.5). Subsequently, the variable charges have been increased in September 2006 and in February 2007. The current tariff structure is presented in Table 4.9.

Electricity consumption of domestic consumers and the use of electricity for religious purposes are billed according to an inverted block tariff system²². Other electricity users, such as industry, commercial users and hotels, are also facing a fixed monthly charge and a charge depending on the actual consumption but which is set at a fixed rate.

The latest tariff increases with regard to the unit rates (i.e. the variable charge) are not uniform. The highest relative increases are facing domestic consumers and electricity used for religious purposes block of up to 81 percent (increase from 4.1 Rs/kWh to 7.5 Rs/kWh for domestic consumption between 61 and 90 kWh per month). The increase for other consumers (general purposes, industry and hotels) is in the range of 10 percent and for street lightning is 28 percent. It is necessary to highlight that the tariff for the basic consumption of electricity (i.e. the first 30 units) has remained constant. This decision of maintaining the low tariff for the first block of electricity consumed is to provide a basic amount of electricity cheaper with the aim of protecting the poor. Major increase also occurred for the unit charge of industrial consumers (time-of-day option): for example the peak tariff increased from 14.7 Rs/kWh to 22 Rs/kWh, a relative increase of 50 percent.

²¹ CEB reports total long-term borrowing obligations of around 72 bill Rs at the end of 2005. In 2005, direct costs exceeded turnover by around 15 bill Rs (CEB, 2005).

²² The so called inverted block tariff system is also referred to as an increasing block tariff system in the literature.

Table 4-9 Electricity tariffs – from February 1, 2007

Customer Category	Conditions	Maximum Demand Charge (Rs/kVA) Per month	Variable Charge - rate (Rs/kWh) by Block					Fixed Charge (Rs/month)
			1-30	31-60	61-90	91-180	>180	
HOUSEHOLDS	Block		1-30	31-60	61-90	91-180	>180	
	Energy Charge	None	3.00	4.70	7.50	14.00	19.80	
	Fixed Charge (Rs/month)		60.00	90.00	120.00	180.00	240.00	Varies
RELIGIOUS PREMISES	Block		1-30	31-90	91-180	> 180		
	Energy Charge	None	2.50	3.70	6.50	10.20		
	Fixed Charge (Rs/month)		60.00	90.00	180.00	240.00		Varies
GENERAL PURPOSE (ie all buildings except manufacturing industries and some hotels)	Metered at 400V/230V, contract demand less than 42 kVA	None	11.90					240.00 up to 10 kVA 500 above 10 kVA
	metered at 400V/230V, contract demand more than 42 kVA	480.00	11.80					3000.00
	metered at 11kV or above	460.00	11.70					3000.00
INDUSTRIAL	metered at 400V/230V, contract demand less than 42 kVA	None	8.50					240.00 up to 10 kVA 500 above 10 kVA
	metered at 400V/230V, contract demand more than 42 kVA	400.00	8.10					3000.00
	metered at 11kV or above	380.00	8.00					3000.00

Customer Category	Conditions	Maximum Demand Charge (Rs/kVA) Per month	Variable Charge - rate (Rs/kWh) by Block	Fixed Charge (Rs/month)
INDUSTRIAL TIME-OF-DAY OPTION	metered at 400V/230V, contract demand less than 42 kVA	None	16.00 (peak period) 7.90 (off peak)	240.00 upto 10 kVA 500 above 10 kVA
	metered at 400V/230V, contract demand more than 42 kVA	380.00	22.00 (peak period) 7.50 (off peak)	3000.00
	metered at 11kV or above	360.00	20.00 (peak period) 7.10 (off peak)	3000.00

Street Lighting	-	None	10.80	None
Bulk supplies to LECO/LA	metered at 400V/230V	240.00	10.80	None
	metered at 11kV or above	220.00	7.50	None

Note: Retail sales by Lanka Electricity Company (LECO), a subsidiary of CEB, are at the same rates as for CEB's own customers. If monthly consumption exceeds 30 kWh (in 2005), the entire electricity bill is charged VAT at 15%. Fuel adjustment charge: 20 percent will be charged on all units consuming less than 90 units per month (except for domestic and religious purposes)

Significant features of the electricity pricing policy in Sri Lanka, as reflected in the presently applicable tariff may be summarised as follows:

- Household customers are charged on an inverted-block tariff, and the vast majority of them pay at rates well below the average price.
- All non-residential buildings, including some hotels, pay at rates up to 50% higher than the average price.
- All manufacturing industries, including some hotels, pay at rates higher than the average price, but not as high as those in (b) above.
- Small non-residential buildings, industries and hotels are charged on a *uniform* tariff (i.e. price per unit is independent of the consumption in a billing period – a departure from the inverted block tariff charging scheme).

- (e) All non-residential buildings, hotels and industries which are classified as either medium or small, pay a two-part tariff. The first part is the charge for maximum demand (measured in kVA) and the second part is the charge for energy use (measured in kWh).
- (f) All industries, including the hotels that are classified as industries, are offered an optional time-of-day tariff. In this tariff, the energy charge is more than doubled during the evening peak hours of 6.30-9.30 p.m. as compared to the rest of the day.

The underlying principles of having block tariffs are manifold including a clause that it will protect the poorer part of the society of having to pay a higher tariff set accordingly to average price. This system also allows the energy supplier to introduce some form of price signals as low consumers of electricity have less of an incentive to increase consumption as this will lead to a higher price per unit of electricity consumed.

The data on the economic performance of CEB as the main electricity generator in Sri Lanka demonstrates that the setting of electricity tariffs does not follow the principles of cost recovery meaning that the electricity generators are not able to cover their costs from the sale of electricity. But this obviously implies that subsidies have to be paid out either in the form of direct subsidies (from state to supply institutions, onwards to customers), indirect subsidies (such as waiving off debt repayments to state by energy institutions) and cross-subsidies (within energy sector institutions). These forms have been operational for years in Sri Lanka.

The comparison of electricity prices between countries is a rather complex task because of inherent problems and biases, such as differences in pricing structures, utility structures, etc. However, it can provide some useful insights and can answer – at least partly – whether a country has higher electricity prices than neighbouring and / or competing countries. A comparison of electricity prices of selected Asian countries and Australia can be found in Table 4.10 providing a glimpse of the Sri Lankan electricity tariffs as compared to the ones of other Asian countries.

It has to be stated that this comparison of electricity tariffs as it was in March 2006 is only indicative but it nevertheless presents some interesting results: Sri Lanka's prices to industry and commercial customers are higher than in most countries in the region with the exception of India and Nepal. The comparison of average tariffs for household use, however, is mixed, with small households charged at rates similar to most countries in the region while large household customers are charged at relatively higher rates. Quite a common feature of cross-subsidisation can be found in Table 4.10. Households are currently facing the lowest tariff in countries, such as Sri Lanka, Pakistan and India, while the commercial sector and industry is levied with a tariff sometimes double the rate of households leading to some form of cross-subsidisation between user groups. Cross-subsidisation is a common fact both in developing and developed countries. However, the major difference is that the commercial sector and industry face the lowest tariffs in developed countries as compared to the situation in developing countries where exactly the opposite is true, i.e. the commercial sector and industry is facing higher rates than households (see for example: energy case study and Table 4.10).

Table 4-10 Comparison of electricity prices in selected Asian countries and Australia

Class	Household			Commercial			Industrial			
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Very Large
Electricity Use (kWh/month)	30	90	300	1,000	58,000	600,000	5,000	65,000	270,000	1,050,000
Maximum Demand (kW)	-	-	-	-	180	1,500	-	180	600	2,250
State/Country	Average Tariff (LKR/kWh)									
Australia	8.43	5.63	4.65	5.14	2.86	2.05	4.89	2.70	1.90	1.72
Bangladesh	5.75	4.98	5.26	8.70	8.80	8.78	6.96	6.44	6.40	6.01
Tamilnadu, India	2.62	4.34	6.89	13.35	13.70	13.28	6.93	10.00	9.62	9.57
Kerala, India	2.19	3.28	6.62	11.64	19.29	9.41	7.80	10.04	9.70	9.09
Maharashtra, India	4.43	6.45	7.09	10.70	8.09	7.79	9.63	7.78	7.57	7.50
Malaysia	6.07	6.07	6.44	8.01	8.01	5.80	7.18	5.52	5.52	5.52
Nepal	6.98	8.99	10.28	12.38	11.32	11.14	9.71	8.79	8.51	6.81
Pakistan	2.57	4.39	5.42	8.52	8.30	8.07	8.91	7.70	7.22	6.79
Philippines	5.72	6.46	6.72	7.36	5.93	5.57	6.72	5.16	4.84	4.67
Singapore	13.34	13.34	13.34	13.34	13.34	11.14	13.34	11.26	10.99	10.50
South Korea	7.10	6.23	12.75	10.79	9.11	8.53	8.23	6.85	6.46	6.75
Sri Lanka	5.00	4.93	11.38	11.14	12.34	11.86	7.55	8.25	7.86	7.82
Thailand	4.07	5.14	6.41	7.38	6.39	5.05	7.75	6.19	5.65	4.63

Source: Energy case study, Status: March 2006

The latest increase in electricity tariffs is definitely a step forward to improve the financial performance of the electricity supply sector as it can be expected that the gap between the unit cost of generating electricity and the average tariff will not be increasing further (see Figure 4.2). This also means that CEB will most likely not require as much as financial support from the Government of Sri Lanka which could free up scarce funds for other purposes²³. However, it is not clear whether the tariff increases are sufficient to recover all costs of generating electricity, i.e. whether the cost recovery principle will be guaranteed meaning that electricity tariffs will cover operation and maintenance costs (O&M costs) as well as capital costs²⁴. This latter cost item should attract greater attention considering the investment plans in the power sector in the near future, i.e. the

²³ The costs of electricity subsidies are reported to amount to around 20 bill. Rs in 2005. These subsidies are borne almost entirely as operational losses by the state-owned power utility CEB (ADB, 2006, p.187).

²⁴ In this context it has to be stated that the Government restructured the debts of CEB at the end of 2006 and that CEB is not servicing the debts anyway. A further grace period with regard the servicing of debts has been given to CEB so that CEB will only service its debts after the first coal-fired power plant will be connect to the grid which is planned for 2011.

construction of new power plants but also the necessary investments into the distribution network as the reported network loss of around 17 percent of net generation is rather high and at an unacceptable level.

The 2007 tariff increase affects all electricity consumers but with different consequences. Some form of cross-subsidisation will remain as the commercial and industrial sectors are still facing higher average tariffs as compared to the household sector. This approach is widespread in developing countries as well as economies in transition as compared to the situation in developed countries where the household sector faces the highest average tariff (compare Australia with Asian countries in Table 4.10 above). Interesting to note is also that the tariff for the first block of household and religious customers has remained constant to maintain the protection of the poorer part of the society.

The findings of Table 4.11 are attracting some attention as the evolution of electricity tariffs for the three main consumer groups are presented.

Table 4-11 Development of electricity tariffs (1985-2004)

	Residential users	Commercial users	Industrial users	Residential users	Commercial users	Industrial users
	Current prices - Rs/kWh			Constant prices Rs/kWh (in 1985 prices)		
1985	1.09	1.97	1.76	1.09	1.97	1.76
1986	1.02	1.96	1.72	0.94	1.82	1.59
1987	1.06	2.18	1.93	0.91	1.87	1.66
1988	1.53	2.57	2.25	1.15	1.94	1.70
1989	1.52	2.42	2.12	1.03	1.64	1.43
1990	1.86	2.97	2.45	1.03	1.65	1.36
1991	2.1	3.32	2.63	1.04	1.65	1.30
1992	2.18	3.92	3.07	0.97	1.75	1.37
1993	2.31	4.53	3.51	0.92	1.81	1.40
1994	2.53	4.4	4.39	0.93	1.62	1.61
1995	2.27	5.82	4.43	0.77	1.99	1.51
1996	2.63	6.03	4.82	0.77	1.77	1.42
1997	2.81	6.34	4.98	0.75	1.70	1.34
1998	3.1	7.0	5.2	0.76	1.72	1.28
1999	3.05	7.03	5.21	0.72	1.65	1.22
2000	3.2	7.21	5.26	0.71	1.59	1.16
2001	3.94	8.74	6.29	0.76	1.69	1.22
2002	5.17	11.3	7.99	0.91	2.00	1.41
2003	5.54	11.86	8.38	0.92	1.97	1.39
2004	5.53	11.86	8.4	0.85	1.83	1.30
% change between 1985 and 2004	407.3	502.0	377.3	-21.6	-7.0	-26.3

Note: The Colombo Consumer Price Index has been used for calculation of constant prices – see <http://www.statistics.gov.lk/price/ccpi/ccpi3.pdf>

Source: Energy case study and author's own calculation

Table 4.11 reveals large increases in the nominal electricity prices for the three consumer groups: residential (households), commercial and industrial users during the period 1985 - 2004. The commercial users faced the largest increase and industry the lowest. However and what is even more important and significant is to analyse the evolution of electricity prices in real terms. The last three columns of Table 4.11 illustrate that the real electricity prices have been fallen by up to 26 percent during the period 1985 and 2004.

Financial incentives aiming to increase the share of renewable are also provided by CEB. Table 4.12 shows the evolution of the purchase prices CEB is paying small power producers for the delivery of electricity during the last decade revealing that the purchase prices have been higher than the tariffs paid by residential users during some periods in the past.

Table 4-12 Purchase price from small power producer

	Purchase Price to the Grid (LKR/kWh)									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Dry Season	3.38	3.51	3.22	3.11	4.20	5.90	6.06	5.70	6.05	6.73
Wet Season	2.89	3.14	2.74	2.76	4.00	5.65	5.85	4.95	5.30	5.82

Source: Annual tariff announcements by CEB

This policy of providing financial incentives²⁵ for the promotion of renewables must be seen in the context of the government's policy of increasing the share of NCRE to 10 percent by 2015. This development is part of a revision process of Sri Lankan Energy Policy leading to the final 'National Energy Policy and Strategies of Sri Lanka' (see Annex 1 for further information). Probably the most significant part of the Energy Policy Declaration in the context of MBIs is the element:

An appropriate pricing policy for the energy sector will be adopted considering important factors such as cost reflectivity, need for targeted subsidies, and competitiveness of locally produced goods and services in the regional and world markets²⁶.

The strategy relating to the issue of having an appropriate energy pricing policy has been further elaborated:

- *The Public Utilities Commission of Sri Lanka (PUCSL) will be empowered to regulate the energy sector including electricity and petroleum sub-sectors, to ensure effective implementation of the pricing policy.*
- *Appropriate pricing strategies will be formulated and implemented by PUCSL, which will prepare and regularly update plans to achieve a cost-reflective pricing policy for all commercial energy products (electricity, petroleum products, LPG) and implement them.*

²⁵ In addition to the buy-back schemes to the grid from small renewable energy producers other forms of support measures are available, such as loans at concessionary rates for commercial and community renewable energy projects.

²⁶ See Annex 1 for more information on strategies, targets and milestones as stated in the government's declaration on energy policy.

These prices will include elements such as a reasonable return on equity, internal cash generation for capital investment and debt service.

- *Necessary steps will be taken by PUCSL to ensure that the optimal energy supply expansion plans are implemented in time so that the cost reflective prices will be based on these optimal plans.*
- *A mechanism will be established by PUCSL to identify target groups of consumers that deserve special consideration owing to social needs or commercial realities.*

The further extension of the capacity for electricity generation is high on the political agenda of the Sri Lankan Government (see energy case study). However, the financial situation of the Ceylon Electricity Board (CEB), the main electricity generator and distributor in Sri Lanka, is bleak. The reason for this assessment is the fact that the majority of electricity is generated in thermal power plants using oil products as the fuel and that the electricity tariffs have remained unchanged during the period 2002–2006. Only in 2006 the tariffs have been revised although the oil price doubled between 2002 and 2005 (see Table 4.6 above) which is significant as oil thermal power plants were generating around 60 percent of total electricity in 2005. The result is that the financial position of CEB has further deteriorated: it is estimated that the net operating loss of CEB amounts to Rs 16 billion in 2005 and that the short-term borrowings amounted to Rs 26 billion and long-term obligations to around Rs 53 billion in 2005 (Central Bank of Sri Lanka, 2005). The problem CEB faced was that 'in 2005, the average cost of production was Rs 10.35 per unit while the average tariff was Rs 7.70 per unit leading to a significant loss to the CEB (Central Bank of Sri Lanka, 2005, p.45)'. Electricity tariffs have been increased during 2006²⁷ but it is not apparent whether these increases will be sufficient to cover the increase in production costs. Latest figures reported by the Central Bank of Sri Lanka show that the gap between average cost and average tariff has been reduced, i.e. from 2.65 Rs per unit in 2005 to 2.01 Rs per unit in 2006 (see Table 4.8 above).

It seems that further increases in the electricity tariffs are almost inevitable as otherwise CEB will require the financial support from the government even longer. However, Sri Lankan electricity consumers are already facing high tariffs and increasing the tariffs further will not be an enviable task. Therefore it is urgent to implement different policy measures, such as eliminating the existing inefficiencies in the electricity sector and undertaking already identified improvement schemes, with the aim of reducing the costs of power generation in the short run (Central Bank of Sri Lanka, 2007). In addition, the policy of promoting energy efficiency through energy efficient wood stoves, energy saving bulbs (Compact Fluorescent Lamps – CFL), appliance labelling, mini hydro development other means should be continued and subsidized if necessary.

An interesting policy approach currently discussed in Sri Lanka deserves special attention as it is proposed in the above mentioned 'National Energy Policy and Strategies of Sri Lanka' to establish an energy fund with wide powers to levy taxes on fuel use (indirect taxation on emissions) and electricity use (energy cess). The proposed energy fund will be used to finance the promotion of energy efficiency and renewable energy. This last point must also be seen in the context of the policy aim to reach a level of 10 percent of grid electricity using Non-Conventional Renewable Energy (NCRE) by 2015. There are already some policy and financial incentives currently in place

²⁷ In February 2006 the fixed charges were increased and the variable charges in September 2006.

(see for a discussion: energy case study) but so far NCRE, i.e. renewable other than conventional hydro, are only playing a negligible role and it can therefore be assumed that such financial support is required to guarantee the achievement of the 10 percent target²⁸.

4.1.3 Recommendations - energy sector

Based on the findings of the case study and on international experience the following policy measures in the context of the current taxation scheme of energy products are proposed.

Petroleum Products

1. Set fuel prices in accordance with world prices

Set transport fuel prices in accordance with the development of world oil price and gradually do away with the price regulation of these fuels in the longer-term. This policy approach has been partly implemented as the subsidy programme for transport fuels has been discontinued in July 2006. The fuel subsidy should be discontinued and fuel companies allowed to, set end-user prices on the basis of actual costs. This will improve the financial performance of CPC and thereby reduce the burden on government fiscal operations. A direct subsidy may be provided only to the poorest affected groups through appropriate programmes such as the Samurdhi grants.

2. Adjust fuel taxes and reduce disparity between diesel and petrol taxes

Increase the tax rates levied on transport fuels, particularly on diesel. The current low rate of diesel tax should be gradually increased over time because of environmental considerations as well as a means of raising additional revenues for the government. It would be advisable to levy at least the same tax rate on diesel and petrol fuels in the long-term. Special tax measures could be introduced to reduce any negative effects, particularly on public transportation assuming that the price increase will be passed on to the consumer. For example, lower tax rates could be introduced for vehicles used for public transport as it is done in some EU Member States. Increases in the tax rates on petrol and diesel may be rather unpopular based on the assumption that these taxes are often been classified as being regressive. However, studies assessing the distributional effects of these taxes in countries, such as Indonesia, Thailand and Tunisia, revealed that the tax on gasoline was progressive and also improved economic efficiency (Gupta and Mahler, 1995). One of the reasons is that the ownership of motor cars and thus of gasoline is increasing with family incomes in developing countries which is also shown in Table 5.3 below considering that the poorest household do not purchase any transport fuels.

3. Index tax rates to inflation

Indexation of tax rates: the annual inflation rate in Sri Lanka was in the range of around 5 to 15 percent during the last decade meaning that the 2007 tax rate is only a fraction of the 2002 tax rate

²⁸ See the article of Wijayatunga et al. (2006) and Perera et al. (2005) for a discussion on the potential of renewable energies and also on strategies to overcome the barriers.

when measured in real terms. Countries, such as the Netherlands and Sweden, are indexing all energy taxes. This may also lead to an increase in overall tax revenues thereby ending the downward evolution of the share of petroleum tax revenues to total governmental revenue as discussed above.

4. Introduce a cess on fuel prices

In the short-run a cess on diesel and petrol fuel could be introduced and the revenues generated from this economic instrument earmarked for investments promoting environmental and public transport improvements. A cess is a tax, charge or levy on the quantum of consumption or use of a locally produced or imported good or service that could be allocated for a particular purpose with or without affecting prices or costs of the good or service. If the cess is applied in addition to the existing taxes or levies, then cost or price would increase by the amount of the cess. If it is appropriated from existing taxes or levies then the cost or price would not increase, but the agency utilizing the tax or levy would have to forego the amount of the cess charged. It is recommended that initially cess be appropriated from existing taxes to avoid additional burdens on the consumer. However, this will increase the losses incurred by the oil companies, which can be recouped by gradually increasing the price to the consumer over a period of time.

Some initial calculations of the implication of a cess on diesel fuel (additional to existing taxes) in terms of revenue generated and diesel sale are presented in Table 4.13. The results presented in Table 4.13 are only indicative but they provide an estimate of the revenues generated from a cess on diesel fuel. Several options have been calculated based on provisional data for the year 2006, i.e. sales price of diesel and total quantity sold of diesel in Sri Lanka. Two elasticities, each estimated independently by different researchers have been used in estimating consumption of diesel, as shown in Table 4.13. Probably most interesting are columns 2 and 9: the former shows the cess rate to be introduced and the latter estimates the revenues generated from this cess under the assumption of a constant income level and the elasticities given in column 4. It is not surprising that the quantity of diesel fuel consumed declines because the elasticities are negative (elasticity is defined as the percentage change in quantity consumed for a percentage change in price, the elasticity is negative as quantity demanded is supposed to fall as price increases and vice versa, according to economic theory). However, the decline in consumption could be offset by an increase in income as income elasticities are positive (higher the income, the higher is the quantity demanded), but such income effects have not been included in the estimation.²⁹

²⁹ A positive income elasticity of 0.129 for diesel fuel is reported in the transport case study for Sri Lanka. This elasticity is calculated for the period 1960-1997 meaning that a 10% increase of income may increase the demand for diesel by 1.29%.

Table 4-13 Estimates of revenue from introducing a cess on diesel in Sri Lanka

Diesel price as of end of 2006	Increase in tax – cess	New price	Elasticity	Quantity of Diesel sold in 2006 (provisional figure)	New quantity – sold	Total revenue at old price (based on 2006 figures – a tax rate of 2.5 Rs per litre)	Estimated new revenue after Cess	Estimated additional cess revenue
Rs per litre	Rs per litre	Rs per litre		thousand litres	thousand litres	Rs million	Rs million	Rs million
60	0.1	60.1	-0.081	2,219,690	2,192,147	5,549	5,700	219
60	0.5	60.5	-0.081	2,219,690	2,113,342	5,549	6,340	1,057
60	1	61	-0.081	2,219,690	2,050,165	5,549	7,176	2,050
60	5	65	-0.081	2,219,690	1,852,334	5,549	13,893	9,262
60	0.1	60.1	-0.154	2,219,690	2,167,617	5,549	5,636	217
60	0.5	60.5	-0.154	2,219,690	2,021,870	5,549	6,066	1,011
60	1	61	-0.154	2,219,690	1,908,504	5,549	6,680	1,909
60	5	65	-0.154	2,219,690	1,573,645	5,549	11,802	7,868

Note: author's own calculation based on data from Central Bank of Sri Lanka for sale of auto diesel³⁰ and short-run elasticity as reported in transport case studies (Chandrasiri, 2002 - diesel short run elasticity of -0.081; Jayaweera, 1999 – diesel short run elasticity of -0.154)

This calculation shows that a marginal increase in the price of diesel of 0.17% as a result of a cess on diesel fuel of Rs 0.1 per litre will generate revenues of at least Rs 200 million. The total cess revenue would be around Rs 2 billion, if diesel price is increased by 1.7% (cess tax rate of Rs 1 per litre). One should keep in mind that the percentage price increases are rather low, and below the average past inflation rate of 5% in Sri Lanka. With inflation increasing rapidly in the recent past, the real value of the increases will be much lower. Therefore the proposal of indexing of energy tax rates could be a way forward to generate additional revenues as the past increase in the petroleum revenues are solely the result of the increase in the sales figures of these products.

In case the suggested cess will also be levied on petrol fuels additional revenues would be generated. However, a cess amounting to 1 Rs per litre would generate lower revenues as the total quantity sold of petrol is also lower. Nevertheless a cess of 1 Rs per litre would amount to around Rs.750 million per annum increasing the pump price for petrol by around 1.1 percent³¹. The corresponding revenue data for a cess rate of Rs.0.1 per litre is Rs.80 million and around Rs.400

³⁰ The sale figure of auto diesel is reported in tonnes in the reports of the Central Bank of Sri Lanka. This figure was converted into litres by using a conversion factor of 1,187 litres per tonne diesel.

³¹ This calculation is again based on the end of 2006 price of petrol (92 Rs per litre), the amount of petrol sold in 2006 and short run elasticity for petrol of -0.076 as reported in the transport case study.

million in case of a cess rate of Rs 0.5 per litre. If the cess is appropriated from existing taxes, then the final product price will not increase.

The introduction of such a new tax or a cess on transport fuels will raise concerns about the impact of such a policy measure on the poorer groups. However, a closer analysis of the purposes for which diesel vehicles are used may indicate that impacts of diesel fuel price increase on the poor population may not be as adverse as thought to be.

- For example, major users of diesel fuel are the vans and buses that transport school children from school and back. This is basically an urban phenomenon, and parents who can afford to send their children by van will not be set back economically by a modest rise in van fares due to fuel price increases. This has happened in the past and has not resulted in a drop in demand for such services. Furthermore this service is a fairly competitive enterprise and any increase in bus fares will be minimized as a result of such competition.
- In the case of trucks transporting goods from producing areas to markets, diesel fuel price increases may have a greater impact, because it is less competitive than the school van service. However, the incremental cost per kilometer due to a fuel price increase is very marginal (estimated at 1.4 cts/ per kg of vegetable in 1994 – see for more information: transport case study) may be partly absorbed by the trucking businesses as it is a very profitable enterprise and these trucking businesses may want to retain their clients, rather than risk losing them by any steep increase in transport costs.

5. Revise electricity tariffs

The high level of subsidy component embedded in the electricity tariff rates has resulted in heavy losses to the CEB. It is imperative that some revisions of the current tariff scheme should be introduced to reduce such losses. In the short run a 10 percent increase of the variable tariffs and a 5 percent increase in the fixed charge - Option (a) could improve the financial position of the CEB as indicated in Table 4.14.

An examination of the current electricity tariffs (February 2007) of the Ceylon Electricity Board (CEB) for households, indicates that households consuming less than 90 units (kWh) per month, comprise about 80% of the total number of consumers and pay an average bill of between Rs 115 and Rs 450 per month at an average tariff of between Rs 5.6 to Rs 6.3 per unit. A further 17.5% of the households consume between 90 and 180 units of electricity per month, paying an average bill of Rs 1050 per month at an average tariff of Rs 8.8 per unit. The highest consuming group (>180 units) comprises only 3.5% of the total number of consumers, paying an average bill of Rs. 4500 per month at an average tariff of Rs 14.6 per unit (see Tables 4.14 and 4.15). The average cost of production of a unit of electricity has been estimated at Rs 8.85 in 2002, Rs 10.35 in 2005 and Rs 11.3 in 2006 (Table 4.8). The recommended tariff increase under Option (a) would increase total revenues of CEB by around 9 percent.

A medium-term recommendation would be to increase the variable tariff of the second block disproportionately. The reason for this recommendation is rather straightforward as one of the underlying rationales for having an increasing block tariff scheme is to protect the poor. Under the current tariff scheme, the first two blocks which are both charging at unit costs far below the average production costs, protects more than 60 percent of the consumers, whereas the poorest consumers are those using less than 30 units. Therefore, it is recommended that the rates of the second block (consumption between 31 and 60 units) be increased by 70 percent. The rates of other blocks are also recommended to be increased, a 10 percent increase for consumption up to 30 units and a 20 percent increase for all other blocks. The results of these proposals - Option (b) can be found in Table 4.14 and the overall revenue increase would amount to around 25 percent.

Table 4-14 Revenue implications of an increase in variable and fixed tariff of the CEB

Number of Units	0-30	31-60	61-90	91-180	>180	Total
Number of customers	647,882	718,520	385,213	390,753	76,351	2,218,719
Consumption by Category %	8.1	22.1	20.2	33.1	16.6	100
Customer by Category %	29.2	32.4	17.4	17.6	3.4	100
Average Consumption (kWh/month)	18	44	74	120	308	64
Current Charge / Rs Unit	3	4.7	7.5	14	19.8	
Present Fixed Charge	60	90	120	180	240	
Proposed Charge Rs / Unit (a)	3.3	5.17	8.25	15.4	21.78	
Proposed Charge Rs / Unit (b)	3.3	7.99	9	16.8	23.76	
% Increase in Charge (a)	10	10	10	10	10	
% Increase in Charge(b)	10	70	20	20	20	
Proposed Fixed Charge (a)	63	94.5	126	189	252	
Proposed Fixed Charge (b)	66	108	144	216	288	
% Increase in Fixed Charge(a)	5	5	5	5	5	
% Increase in Fixed Charge (b)	10	20	20	20	20	
Total Monthly Bill (Current)	114	246	456	1,056	4,490	
Total Monthly Bill (with Inc.) (a)	122	266	496	1,153	4,927	
Total Monthly Bill (with Inc.) (b)	125	319	609	1,329	5,450	
Ave. Tariff Rs per unit	6.3	5.6	6.2	8.8	14.6	
Ave. Tariff (Rs per unit) (a)	6.8	6	6.7	9.6	16	
Ave. Tariff (Rs per unit) (b)	7	7.2	8.2	11.1	17.7	
Ave Cost in 2006 (Rs/unit)	11.3	11.3	11.3	11.3	11.3	
Percent Increase in Bill (a)	7	8	9	9	10	
Percent Increase in Bill (b)	10	30	33	26	21	
Total Current Revenue (million Rs)	74	177	176	413	343	1,182
Total Revenue After Inc. (Rs M) (a)	79	191	191	450	376	1,288
Total Revenue After Inc. (Rs M) (b)	81	229	234	519	416	1,480

Source: CEB data and author's own calculation

These estimates provide some insights into the implications of the revision of the tariff system. The Sri Lankan authorities may also consider revising the whole electricity tariff scheme in the long run. The rationale of the first block is normally to provide electricity for basic use at affordable costs for households (i.e. a lifeline consumption). But it seems that the coverage of the first block (0-30 units) exceeds the lifeline consumption as the average consumption is only 18 units. Therefore, the whole block scheme could be revised so that the first block only covers the real basic consumption (i.e. the lifeline consumption) and to reduce the number of blocks. For example, the first block may comprise consumption between 0 and 15 units, the second block 16 – 50 units, the third block 51 – 100 units and the last block electricity consumed exceeding 100 units. Furthermore, it is suggested that the rate of the second block (which is currently set less than 50 percent of the average production cost of a unit) would only be 10 to 20 percent lower than the average generation costs.

One may argue that such increases may have negative impacts, particularly on marginal and poorer households. However, one should also consider the fact that the very poor households probably do not have an adequate income to obtain an electricity connection in the first place.

Those who have obtained connections are probably relatively better off than the poorest households and should be able to absorb the increases in rates without too much difficulty. If the electricity tariffs are measured in real terms, the percentage change in household tariffs between the years 1985-2004 is estimated to be negative (-21.6%). This means that these rates have risen at below the rate of inflation.

The Poverty line for Sri Lanka has been estimated to be Rs 2,395 per capita per month in June 2007 (Dept. of Census and Statistics). The average household size in Sri Lanka is estimated at a little over 4 persons and therefore the household poverty line works out to about Rs 10,000 per month. According to the recent socio economic survey conducted by the Dept. of Census and Statistics in 2005, about 22% of the households are below the poverty line and about 70% of the households have electricity connections. On this basis one can assume that most of the households of the 22% of the households below the poverty line do not have an adequate income to get electricity connections. In addition a further 8% of the households above the poverty line also do not have electricity connections.

This means that all or most households having electricity connections are above the poverty line. Thus even the lowest consumers of electricity are not really poor and earn an income equal to or above Rs 10,000 per month, according to currently available data.

If the proposals for the rate increase suggested are accepted, the monthly increase in the electricity bill will be in the range from Rs 8 to around Rs 440 in the short run (Rs 10 to around Rs 960 in the medium run) according to the level of consumption. Thus it is likely that these increases can be absorbed by the households and that higher prices will provide incentives to reduce consumption.

6. Introduce air emission taxes and implement CDM under the Kyoto Protocol

A further suggestion is to increase the focus on projects developed under the Clean Development Mechanism (CDM) under the Kyoto Protocol. However, this recommendation is nothing new as it is already part of the governmental energy policy programme as highlighted in the 'National Energy Policy and Strategies of Sri Lanka'.

The introduction of air emission taxes could be also contemplated by the Sri Lankan authorities in the long run. Countries with high industrial growth are often observing increased environmental pollution which is in particular reflected in atmospheric concentrations of pollutants, such as sulphur dioxide and other airborne pollutants, exceeding the World Health Organisation (WHO) safety standards by wide margins. Currently this problem is not reported in Sri Lanka. However, the situation may change over time or the Government of Sri Lanka may consider the introduction of pollution taxes as a precautionary measure as it is done in countries worldwide.

The launching of pollution taxes is obviously one of the potential responses to tackle increased environmental pollution. For example, China implemented already in the 1980s a system of pollution charges which are levied on 22 air pollutants and 29 water pollutants (Wang and Wheller, 2005). The scheme adopted in China is insofar of interest as the Chinese pollution regulation system does not rely on legal sanctions for non-compliance as it is the case in countries like the US and Canada but calls for financial charges that escalate with the degree of non-compliance (Wang and Wheller, 2005, p.194). A further component of the system is worthwhile to mention as the funds from the pollution levy have been used for pollution source control, damage remediation as well as for the development and operation of environmental institutions. A charge on air pollution is also implemented in Korea and up to 90 percent of the revenues generated from this charge are earmarked for environmental investments.

7. Levy a Cess on electricity tariff

An introduction of a Cess on electricity revenues of the CEB is recommended. Initially this should be done without increasing the price to the consumer. This will reduce the revenues accruing to the CEB by the proportion of the Cess levied. In the longer term, the Cess can be made additional to the tariff, in which case, the consumer prices will rise.

4.2 TRANSPORT

The transport sector of Sri Lanka contributes an average of about 8 percent to the national GDP and must be seen as vital for the future economic development of Sri Lanka (Central Bank of Sri Lanka, 2005). A whole range of different market based instruments are in place in this sector mainly affecting road transport. When analysing taxes and charges levied on road vehicles it is common to distinguish between sales/import taxes and circulation taxes. This differentiation is also applied in Sri Lanka.

4.2.1 Current situation - transport

Private transport

The purchase of road vehicles is subject to a hefty tax bill as numerous taxes are currently in use in Sri Lanka: The import of vehicles is subject to customs duty. The rate is set at 28 percent of the CIF³² value except for those vehicles which are imported with special approval from the Ministry of Transport and special categories like ambulances and prison vans etc. in which case the rate is only a nominal rate of 2.5 percent of the CIF value. Commercially used vehicles, such as road tanker or refrigerator trucks, are subject to a 6 percent customs duty. During the last years the normal rate of 28 percent has been slightly increased from 25 percent. Apart from the customs duty the import of vehicles is also levied with an excise special duty scheme distinguishing between petrol and diesel driven cars and other criteria.

Table 4-15 Excise (special duty) scheme with regard to the import of vehicles

Petrol-powered vehicles	Rate
Not exceeding 1000 cc	30%
1000 cc – 1600 cc	40%
Exceeding 1600 cc	60%
Luxury type – Ten seated	60%
Small Vans – Transport of goods	30%
Auto Trishaws	4%
Motorcycles 125 ~ 200 cc	5%
Motorcycles > 200 cc	15%
Diesel-powered vehicles	
Not exceeding 1600 cc	95%
Exceeding 1600 cc	115%
Dual purpose van	
Not exceeding 1500 cc	72%
Exceeding 1500 cc	84%
Luxury type – Ten seated	72%
Passenger Van – (not more than 15 persons)	60%
Auto trishaws	14%

Source: Ministry of Finance, Fiscal Management Report – 2007, p. 65

Table 4.15 presents the latest duty rates of this transport related tax which is a typical example of a one-off vehicle tax. Apart from the differentiation between petrol and diesel-powered vehicles the engine power determines the actual rate. A clear environmental reasoning for setting these rates is not recognisable although it has to be stated that diesel-powered vehicles are levied with a higher duty rate than petrol-powered vehicles which could be seen as an offset of the lower excise tax rate on diesel fuel. In addition to these economic instruments the purchase of vehicles is levied with the national security levy, stamp duty and the VAT rate of 20 percent (i.e. the luxury rate as compared to the standard rate of 15 percent; Ministry of Finance, Fiscal Management

³² Cost, insurance and freight

Report – 2007, p. 62). The 20 percent VAT rate levied on the purchase of motor vehicles other than three wheelers, passenger transport buses, lorries, trucks motor bicycles and any other vehicle used for the transport of goods has been recently increased as the VAT rate was 18 percent in 2005.

In 2006 a Cess levied on the import of vehicles was introduced and the rate was set at 5 percent on the CIF value. The revenues of the Cess are generally earmarked and are recycled back for research and development work to the individual sector. Furthermore, a sales and retail tax of 0.75 percent has been introduced in November 2006 which is applicable for all motor vehicles. Apart from the Cess all revenues from the above mentioned taxes and duties are part of the national budget.

Vehicle charging schemes are also implemented at the provincial levels. Provincial councils are responsible for two different schemes: one is a registration charge scheme which has to be paid when a vehicle is registered and the second one is the annual revenue licence scheme which can be classified as a form of an annual circulation tax.

The rates established under the former scheme are in the range of Rs 1,100 for a motor cycle and Rs 3,400 for heavy vehicles. Standard motor vehicles are charged with a rate of Rs 2,800 and dual purpose vehicles with Rs 3,200³³. Penalty rates are applicable for vehicle owners if they register their cars after 30 days of the date of clearance from the customs. These actual penalty rates are depending on the time when the motor vehicle is registered not within the 30 days period. The rate of a motor car or dual purpose vehicle can amount of up to about Rs 71,238.41 and Rs 115,429.63 respectively if the vehicle is registered later than 10 years after clearance from customs.

The highest annual revenue licence fee for a vehicle is Rs 8,400 for an articulated truck. The rate is rather negligible in the case of petrol-powered vehicles (Rs 700 for a car and Rs 1,800 for a utility vehicle) and higher for diesel-powered vehicles (Rs 4,200 for a car and Rs 2,700 for a utility vehicle). The structure of the annual taxation system is rather similar to the excise duty scheme as diesel-powered vehicles are levied with a higher tax rate as compared to the petrol-driven vehicles. The tax differentiation is clearly in favour of petrol-powered vehicles as the total tax burden of a diesel-powered vehicle may be double that levied on a petrol-powered vehicle (see also for an analysis of the situation in 2002: Ministry of Environment and Natural Resources, 2003).

These fee schemes are issued by the provincial council and also the revenues are collected by them. However, these provincial revenues cannot be characterised as additional revenues for provincial councils as the revenues collected are set-off by the finance commission when it releases government grants. The sharp increase in vehicles on Sri Lankan roads during the last years is reflected in the rise of revenues generated from the annual revenue licence fee: in 2001 total revenues amounted to Rs 795 million and since then the revenue increased by more than 50 percent to Rs 1,210 million in 2005. The number of newly registered vehicles increased from 82,401 in 1995 to around 223,000 in 2004. Motor cycles with almost 125,000 are the highest number of newly registered vehicles.

Noteworthy to report is the fact that the rates of the annual revenue licence fee has been kept constant for 15 years as they have not been revised since 1992. This means that the real fee rate must be more insignificant considering that Sri Lanka faced inflation rates of around 10 percent per annum during this 15-year period. However, the Government of Sri Lanka was in the process of revising the rates during 2006 and the new charge rates should have been issued in a new Gazette and should be effective from January 2007.

³³ See for a full list of all rates the transport sector study

A special type of a circulation tax has been implemented by the Government of Sri Lanka in 1995, i.e. the luxury motor vehicle tax. This tax only applies to luxury motor vehicles and is imposed on an annual depreciation over a period of seven years. The structure of the tax is shown in Table 4.16.

Table 4-16 Luxury motor vehicle tax

Vehicle type	Capacity	Tax rate
Luxury	Diesel-powered vehicles exceeding 2,500 cc	50,000 Rs
	Petrol-powered vehicles exceeding 2,000 cc	
Semi-luxury	Diesel-powered vehicles between 2,200 and 2,500 cc	25,000 Rs
	Petrol-powered vehicles between 1,800 and 2,000 cc	
Semi-luxury dual purpose excluding vans	Diesel-powered vehicles exceeding 2,500 cc	10,000 Rs
	Petrol-powered vehicles exceeding 2,000 cc	

Source: Ministry of Finance – Tax information at a glance – an update (1.1.2005)

Public transport

Bus passenger transportation is still the dominant form of transport, i.e. around 80 percent of total passenger transportation, although private mode of transportation is steadily increasing which is visible through the increased number of private cars and motor cycles. Bus fares are regulated and have been revised during the last three years on several occasions. In 2004 the bus fares were increased two times (in September 2004 by an average rate of 9 percent and in October 2004 by an additional 6 percent). In June 2005 bus fares were raised by 10-20 percent and by an average rate of 16 percent in April 2006. The total increase in nominal bus fares are therefore in the range of 50-60 percent since September 2004 which is still lower as the price increase of diesel fuel of almost 80 percent between the beginning of 2004 and September 2006. The primary reason for the fares increase was higher fuel costs but also an increase in other operational costs. It is reported that the state owned passenger bus service (Sri Lanka Transport Board (SLTB) reinstated in 2005) was able to recoup at least parts of the increase in operating costs as a consequence of fare revision. Nevertheless, the state owned SLTB reported an operating loss of almost Rs 1.9 billion in 2005 and of around Rs 1.3 billion during the first half of 2006³⁴. The Government was required to transfer scarce resources in the magnitude of Rs 1.4 billion to offset the losses. However, the share of private buses exceeds the ones operated by SLTB by a factor of 3:1 meaning that the majority of public transport is served by private bus operator.

³⁴ A higher operating loss of around 2.4 bill Rs for the years 2005 and 2006 is reported in the 2006 Annual Report of the Central Bank of Sri Lanka (see Table 37 in the Statistical Annex of the Annual Report). This table reveals the challenges the Sri Lankan public transport (Sri Lanka Transport Board and Sri Lanka Railways) are facing as both institutions have reported operating losses for each year of the period 1997-2006. These losses of publicly owned institutions are posing a significant burden on the government budget.

Although bus fares have been raised during the last years the findings of the Central Bank of Sri Lanka may still be very true considering the operational losses of the SLTB: 'The government's control of bus fares appears to have been made for protecting commuters, but the very same protection has done more harm to them, by way of discomfort, elongated travel time, high exposure to risk of accident and a general reduction in productivity. A liberal bus fare policy that automatically takes into account cost increases should be put in place to ensure the long-term sustainability of the sector (Central Bank of Sri Lanka, 2004, p.66)'.

The significance of the railway has further eroded in Sri Lanka as the share of the Sri Lankan Railways (SLR) in passenger and freight traffic has fallen to 5 percent and 2 percent, respectively, from 8 percent and 4 percent a decade ago. Railway fares have also been revised but these increases cannot offset higher operating expenditure leading to an operating loss of around Rs.3.5 billion 'exert a heavy burden on the budget (Central Bank of Sri Lanka, 2005, p.48)' in 2005. More investments are needed to improve mass transport through modernized railways. Part of the investment can come from environmental levies in the transport sector, while special incentives may be provided for private sector participation in investments for modernizing mass transport systems in Sri Lanka.

In 2002 the Government of Sri Lanka introduced the ports and airports development levy (the so-called PAL levy)³⁵ which is implemented by the Department of Customs. The levy was initially set at 1.5 percent on the CIF value of imported good and products and has been increased to 2.5 percent in the meantime. During the first months of 2006 the levy generated Rs 18.1 billion. An important tax in the transport sector is the embarkation tax. This type of an MBI has to be paid by each departing passenger at the airport. The current rate is 15 USD, i.e. around 1,500 Rs. The total revenue generated by this tax amounted to Rs 700 mill Rs in 2004 and since then dropped slightly to around 630 mill Rs in 2006. The revenues are evenly allocated to three different institutions, i.e. the tourist agency, the airport & aviation services and to the general budget of the government.

4.2.2 Recommendations – transport sector

As discussed in the transport case study a whole range of different MBIs are implemented in this field, such as vehicle licensing fees (or annual circulation taxes), excise and import duties, first registration fees, VAT and stamp duty. Vehicle related taxes are the main revenue earners from among all environmental taxes. The current scheme of vehicle taxation is not really built on any environmental considerations with the exception that all vehicle related taxes are differentiated according to the fuel used, i.e. petrol-driven vehicles are generally subject to lower taxes than diesel-driven vehicles.

Currently there is a tendency to reform vehicle related taxes by incorporating environmental aspects into the tax base, such as setting tax rates in relation to CO₂ emissions or fuel consumption (see EEA, 2005 and Nordic Council of Minister, 2006). It should be possible to implement such a reform package in Sri Lanka in the medium-term without much difficulty as it would not require any changes in the institutional and regulatory set-up. As for the revision process of the current vehicle taxation regime the approaches adopted in countries, such as the UK or Denmark, could be used as

³⁵ This type of an economic instrument does not fall under the category of an environmental tax.

a starting point for the reform but it is essential to take into account the specific circumstances of the Sri Lankan economy.

- The latest type of MBIs introduced in the field of transport taxes is road pricing, which is a rather new phenomenon and the best example of this type is the London Congestion Charge (see Box 2.3 above and EEA, 2005, for a more detailed discussion). Furthermore, this type of a MBI also applies for driving on roads, tunnels and bridges which are often financed via Public-Private Partnerships (PPPs), which exist not only in the field of transport but also is being promoted by the government in the water sector. A few of these reform proposals could be considered for implementation after more a more detailed study of their implications. Policies and incentives are also needed for private-public partnership in modernizing mass transport railway systems, which can reduce pollution in the transport sector. Policies are also needed to encourage public transport over private transport, by different policies for example, earmarking tax revenues for investments in to public sector.

The main proposals suggested in the sector for the short, medium and long-term are described below.

1. Increase annual vehicle licensing fees

In Sri Lanka the annual vehicle tax rates for all vehicles are low. This does not fall in line with modern taxation strategies, based on the principle that the road user should pay a tax that would cover the cost of road infrastructure and the cost to the environment. This policy approach is based on the User Pays Principle and the potential instruments for covering these costs are transport fuel taxes, vehicle related taxes and road user charges. The rather low tax rate in the transport sector of Sri Lanka (transport fuels and annual vehicle taxes) is inadequate to meet the criteria of the User Pays Principle and consequently, the road infrastructure has to be financed via the general budget³⁶.

Therefore it is proposed that annual licensing fees levied on commercial vehicles, such as trucks and buses, could be set according to environmental criteria, for example on the basis of fuel consumption, and at a level high enough to meet the costs of infrastructure and environment, as it is the case in Germany. The required information for such a reform proposal, i.e. the average consumption of each vehicle imported into Sri Lanka, should be easily available from the producer of the vehicle. Other minor reforms that could be introduced in the short-term include indexing of the rates to the annual inflation rate in order to increase revenue accruing from annual revenue license fees, as well as motor vehicle registration charges. Revenue collected under this proposal could be earmarked for investments in road infrastructure, for the improvement of the public transport and environmental management.

³⁶ The road maintenance costs per vehicle km have been estimated by the author of the transport case study (Don S. Jayaweera) amounting to 2.1 Rs/vehicle km for passenger cars (diesel and petrol), 4.3 Rs/vehicle km for a bus and the highest is 14.52 Rs/vehicle km for a medium truck (3-axle). Based on these estimates only the energy taxes levied on the petrol-driven passenger car exceeds the road maintenance costs (see for more information: transport case study).

2. Cess on Excise Tax on Motor Vehicles

The increase in the revenues accrued from excise duties levied on motor vehicles is budgeted to double during the period 2004 and 2007 and is also reflected in the strong growth in the total number of new registration of motor vehicles. The excise duty on vehicles depend on the fuel used, the tax varies from 10% of CIF value for petrol vehicles up to 17% for diesel vehicles. The total revenue generated from excise taxes was Rs 20.7 billion in 2006. It is proposed that a small proportion of the revenue from excise tax be appropriated for environmental investments. Currently the entire revenue is credited to the general Treasury. It is estimated that if a 2% cess is appropriated from revenue collected from excise tax, a total of Rs 500 million would be available for environmental investments in the year 2008.

3. Revision of taxes levied on first registration of vehicles

A revision of the current taxes levied when a vehicle is registered for the first time in Sri Lanka may also be contemplated by incorporating environmental considerations. The suggested policy approach follows the concept that environmentally-friendlier vehicles are subject to lower taxes thereby providing an incentive to purchase these vehicles.

During the years 2003 to 2007 a total of 935,535 new vehicles were registered in Sri Lanka (Table 27 of the Statistical Appendix of the Annual Report 2006 of the Central Bank of Sri Lanka). Currently, the fee for first registration varies from Rs 1100 for motor cycles to Rs 4800 for prime movers, and an additional charge of Rs 500 is charged for priority registration (within one day). Assuming that all these vehicles are being registered, additional revenues generated if charges for first registration for vehicles are increased, say by Rs 1,000 for vehicles (buses, private cars, vans, heavy good vehicles) and by Rs 100 for motor cycles and three wheelers will be Rs 257 million. (During the years 2003-2006, a total of 189,207 vehicles of the former category and 684,217 three wheelers and motorcycles were registered). These reforms could be implemented over a period of several years either in the short or medium-term.

4. Cess on Ports and Airports Levy (PAL)

Currently a levy is charged from importers of goods and services as a means of obtaining funds for development purposes. It is proposed that a cess of 1% - 2% of the amount collected by the levy be appropriated for mitigation of environmental impacts arising from the development of ports and airports. In 2006, the total amount collected from PAL was Rs 21 billion, and a 2% cess would have provided Rs 420 million for environmental purposes, which is estimated to increase to Rs 560 million in 2008.

4.3 WATER

Major challenges lie ahead for Sri Lanka, if it is to meet the Millennium Development Goals with regard to the water sector by 2015. For example, regional disparities and urban-rural differences in water supply still exists, even though access to improved water sources increased from 91 percent to 99 percent in urban areas and from 62 percent to 72 percent in rural areas between 1990 and 2002. In addition, '75% of the urban population is served by piped water, compared to only 14% of the rural population benefiting, from such a service. The proportion of the urban population that had access to improved sanitation increased from 89% to 98% during the same period, while rural coverage rose from 64% to 89%. Differences among provinces are even more prominent, but cannot always be quantified (ADB, 2006b)'. At the country level 92 percent of the population had therefore access to safe drinking water in 2005 but only 39 percent had access to pipe borne water (Central Bank of Sri Lanka, 2005).

The regulatory framework of the water sector includes the draft water supply and sanitation policy which was first formulated in 2002 and the recently prepared draft national policy on sanitation and the draft policy on rural sanitation. These policies were expected to be submitted to the Cabinet before the end of 2006 providing the necessary framework needed for the sustainable operation and management of sector-related assets. Problems are reported concerning the regulation of the water sector partly as a consequence of the delays in formulating and approving the required laws pertaining to the water industry. In this regard, the Government has recently proposed revising the existing legal framework to enable Public Utilities Commission to regulate service standards, tariffs, and customer satisfaction (ADB, 2006b, p.2)

As one of the objective of this project is to look into the issue of raising revenues for necessary investments in the environmental fields it is of interest to analyse the water sector in more detail. The institution in charge of water investment is also the National Water Supply and Drainage Board (NWSDB). The NWSDB is responsible for achieving the main objective of the national water supply policy which is to ensure that all residents have access to safe drinking water by 2010. Furthermore, the Millennium Development Goals (MDGs) set by the Union Nations requires that all citizens in a country should access safe drinking water and adequate sanitation facilities by 2015. The latest figures published by the NWSDB show that the achievement of these goals would require investments in the water sector amounting to 140 billion Rs up to the year 2010³⁷. When comparing this sum of required investment with the average annual investment of around 8 billion Rs during the last years by the government a substantial financial gap is clearly recognisable (Central Bank of Sri Lanka, 2006). This shows that the funding of the Sri Lankan water sector is not sustainable and that there is a clear underfunding of the necessary investments. This finding is reflected in a statement by the Central Bank of Sri Lanka: 'Successive governments in Sri Lanka have been promoting public investment, but the magnitude has not been sufficient to promote economic growth (Central Bank of Sri Lanka, 2006, p.107)'. In 2005 the share of public investment into energy and water supply was 0.8 percent of GDP which is in the same range as it has been in 1986 where a 0.7 percent of GDP was reported. The 2005 share is low compared to the 2 percent share in 1990 and to the figures for 2000 and 2004 where the share stood by 1.1 percent of GDP (Central Bank of Sri Lanka, 2006, p.107).

³⁷ The latest estimates of the investment need for financing ongoing water projects and planned new projects amount to 126 billion Rs during the period 2006-2016 (Central Bank of Sri Lanka, 2007).

Financing water and wastewater infrastructure is a huge challenge in developing countries. The efficient delivery of infrastructure and social services is critically to alleviate poverty and to develop economic opportunities. However, the problem developing countries are facing is to mobilise domestic resources to undertake water including wastewater investment programmes. Three sources of financing water investment do exist (UNEP, 2004c):

- International Transfers (Official Development Assistance (ODA) and international lending from development banks and commercial banks);
- Private Sector Investments (International and domestic); and
- Other Domestic Sources (budgetary allocations, domestic lending and user finances).

It must be clearly stated and policy decision makers in particular in developing countries must consider that by far the largest share of water investment expenditure has to be raised domestically and that the two other sources, international transfers and private sector funds, are only providing a limited share. This fact is highlighted in this UNEP report (2004c) while quoting the result of a study carried out by WaterAid (UK). The authors of this study are estimating that 'approximately 70 per cent of the current global spending on water and sanitation is provided by the domestic public sector, 20 per cent by ODA, and 10 per cent by private sector that comprises 7 per cent by international private flows while only 3 per cent comes from domestic private sector investments (UNEP, 2004c)'.

This problem of not raising sufficient domestic resources through water pricing regimes brings a dilemma for the countries that have to cope not only with the actual investment into infrastructure, but also to cover recurring costs, i.e. operation and maintenance costs but also capital costs. This fact has been underlined in the so-called Camdessus report (Winpenny, 2003). The political discussion is mainly dominated by the question related to the financing needs, for example the investment needs to achieve the MDGs in this sector. Less importance is directed to the topic of covering recurring expenditures but which is equally important while the assumption does often not apply that these costs are covered by the revenues generated from user charges. In theory all recurring costs should be covered via user charges guaranteeing that the principle of full cost recovery is adhered to. However, full cost recovery is regularly not achieved in developing as well as developed countries and the notion that user charges should contribute to covering capital costs is often neglected when setting user charges for water and wastewater services. But the achievement of medium to long-term sustainable financing of the water sector requires that all these costs, such as the financing of investments but also the funding of these recurrent costs, have to be covered and it is obvious that the largest share has to be financed by water users.

This is increasingly realised in developing countries, where the lack of resources combined with the low collection rate of water bills impedes proper maintenance of the existing infrastructure. A possible solution of this problem, i.e. the coverage of recurrent costs via user charges, is the use of output-based aid (OBA) as practised by the World Bank Group in countries, such as Cambodia, the Philippines, Vietnam and Chile. The aim of the OBA strategy is to use explicit performance-based subsidies to support the delivery of basic services, such as water and sanitation, where policy

concerns justify public funds to complement or replace water tariffs paid by households³⁸. Such an approach could initiate further public private partnerships in the water sector and at the same time it promotes the effective use of public funds. Under this approach, governments delegate service delivery to a third-party under contracts that tie disbursement of public funding to the services or outputs actually delivered to targeted groups. Governments use such performance-based subsidies where policy concerns, such as the affordability for particular groups of users, justify public funding to complement or replace user fees³⁹.

This rather novel approach could solve some of the problems highlighted as it can close the gap between water tariffs set because of affordability reasons and tariffs based on cost recovery principles. However, this approach must be subject to clearly defined rules as the scheme links the payment of subsidies to the outputs delivered. One of intentions of this subsidy scheme is to create opportunities for mobilising private financing (see for more detailed discussion: Marin, 2002, and Baietti and Raymond, 2005). Direct subsidy schemes, such as the OBA, are obviously an alternative to existing subsidy programmes as they are transparent and explicit and that the selection of who will eligible and therefore benefit from the scheme is assessed by using the affordability as the key criterion.

Box 4.1 discusses in more detail the structure of the ODA as developed in Chile⁴⁰. What is in particular of interest in this context is the fact that ODA can support the setting of cost-covering user fees thereby reforming subsidy programmes so that the subsidies are really targeted and time limited (see also Box 5.3 in Section 5). Such a programme could also be effective in the Sri Lankan situation as currently the water tariffs are not covering all financial costs and because of the immense financing needs for infrastructure projects.

³⁸ See for more information on OBA: the website of 'The Global Partnership of Output-Based Aid': <http://www.gpoba.org/index.asp>

³⁹ See for further discussion: <http://rru.worldbank.org/Discussions/Topics/Topic59.aspx>

⁴⁰ See for more examples: Brook and Smith. 2001.

Box 4-1 Output-based subsidies for water consumption

- Chile introduced an individual means-tested consumption subsidy a decade ago. Although the public authorities determine how the subsidy is applied, the mostly private companies deliver the service
- An important part of the reform was a new tariff setting methodology aimed at raising water prices to the true economic cost of the service.
- The Government reimburses the companies for the subsidies based on the actual amount of water consumed by each beneficiary.
- By law the subsidy can cover 25–85% of a household's water and sewerage bill for consumption of up to 15 m³ per month, with the client paying the rest. All consumption above that limit is charged at the full tariff.
- An eligibility scoring system is the main instrument used in Chile for distributing means-tested subsidies. It produces a score for each household wishing to be evaluated, which is based on a personal interview and the answers to 50 questions. The score is valid for 2 years and can be used to avail of other subsidies, including pensions, family benefits, and health benefits.
- Metering is essential, and it requires a strong institutional capacity at the municipal level. It is expensive to apply output-based subsidies just for water, but when combined with other benefits it is more cost-effective.

Source: McIntosh, 2003

4.3.1 Current situation- water

Water policy issues in particular the provision of water for drinking and irrigation on a sustainable basis is a national priority of the Government of Sri Lanka. However, as the Central Bank of Sri Lanka states:

The provision of water for drinking and irrigation on a sustainable basis is a national priority. Achieving sustainability requires economising on the usage, appropriate pricing to prevent wastage and over exploitation and attaining public consensus through awareness on the need for reaching sustainability. Two major factors threatening the long-term sustainability of water resources in Sri Lanka are improper pricing and deficiencies in regulation. Pipe borne drinking water is subject to a price, with a subsidy segment, but other forms of water supply are not subject to any pricing, leading to possible over exploitation and inefficient utilisation. In this connection, only a few regulations exist in respect of the use of natural aquifers and other forms of water resources, threatening their long-term sustainability. (Central Bank of Sri Lanka, 2005, p.50)

Taking into account these findings it is necessary to study the water policies and pricing schemes currently implemented in Sri Lanka..

Potable Water Supply

Domestic or provision of potable water supply is subject to a tariff, which has been revised from time to time to accommodate the cost of supply. The latest water tariff revision was undertaken in March 2005 after a period of three years of operation of the previous tariff scheme. This more progressive revision was expected to improve cost recovery as well reduce existing cross subsidies between different types of water consumers and to lead to a behavioural change towards greater conservation of water. The current scheme for domestic consumers is similar in concept to the electricity pricing scheme, i.e. an increasing block-tariff scheme, including a fixed component (independent of the water consumed) and a variable component which depends on the total amount of water consumed.

Table 4-17 Water tariff for domestic consumers as of March 2005

Consumption units per month	Number of units	Rate per unit Rs
1-15	1-10	1.25
	11-15	2.5
16-20	1-10	1.25
	11-15	2.5
	16-20	8.5
21-25	1-10	1.25
	11-15	2.5
	16-25	30
26-30	1-10	1.25
	11-15	2.5
	16-30	50
31-40	1-10	1.25
	11-15	2.5
	16-40	60
41-50	1-10	1.25
	11-15	2.5
	16-50	70
More than 51	1-10	1.25
	11-15	2.5
	More than 16	75

Note: The fixed component of the water tariff is Rs 50 per month Source: NWSDB
http://waterboard.lk/scripts/ASP/current_traiff.asp

The block-tariff system currently operated for domestic water use varies from the normal block-tariff system in that the first two blocks (block 1: consumption between 1 and 10 units and block 2: consumption between 11 and 15) are fixed. Consumption beyond 15 units is categorized into five blocks charged at varying rates ranging from Rs 8.50 to Rs 75 per unit according to total consumption of water per month. For example, a consumer using between 16-20 units will be charged up to 15 units at the block rate and consumption beyond 15 units at Rs 8.50 per unit. A consumer using more than 30 units will be charged for the first 15 units at the block rate and consumption beyond 15 units at Rs 50 per unit, while those using more than 50 units will be charged at the highest rate of Rs 75 per unit for the total number of units consumed beyond 15 units:

This approach is different from the normal applied block tariff structure as the tariffs for each block are normally set and not depending on total water consumption. This scheme grants a protection clause for the poor as basic water consumption up to 15 units per month is levied with a low tariff but it also provides a clear incentive for water saving as each unit exceeding the threshold of 15 units becomes rather pricy. The consequence of this water policy regime is that the average tariff per unit of water consumed increases with the increase in the total consumption. Thus the domestic consumer using less than 15 units per month will pay a relatively low price per unit of water consumed. This system provides an economic incentive to reduce water use as shown in Table 4.18.

Table 4-18 Water bill of domestic consumers

Units consumed	Fixed component (Rs)	Variable component (Rs)	Total monthly water bill (Rs)	Rs per unit water consumed
1	50	1.25	51.25	51.3
6	50	7.5	57.5	9.6
11	50	15	65	5.9
16	50	33.5	83.5	5.2
21	50	205	255	12.1
26	50	575	625	24.0
31	50	985	1,035	33.4
36	50	1,285	1,335	37.1
41	50	1,845	1,895	46.2
46	50	2,195	2,245	48.8
51	50	2,725	2,775	54.4
61	50	3,475	3,525	57.8
71	50	4,225	4,275	60.2
81	50	4,975	5,025	62.0
91	50	5,725	5,775	63.5
101	50	6,475	6,525	64.6

Source: Author's own calculation based on Table 4.17

All other water consumers are charged a flat rate, i.e. a constant water tariff per unit water consumed, with the exception of religious and charitable institutions plus a fixed component depending on the diameter of the connection. Large differences in the unit tariffs are between different consumers as shown in Table 4.19 but what attracts even more the attention is the fact that water for irrigation is supplied free of charge⁴¹.

In addition to the water tariffs all water consumers have to pay VAT with the exception of the religious sector and domestic consumers who have to pay VAT on water exceeding 25 units per month.

⁴¹ However, it has to be stated that no information on water tariffs for irrigation is reported by the NWSDB but that Lueth et al. (2006) is mentioning some irrigation charges in an overview of different costs for farmers.

Water tariffs for the provision of drinking water are the only MBI currently in place in Sri Lanka. The tariffs were revised in 2005 to recover the increased costs of water production, the major cost component being electricity. The financial performance of the National Water Supply and Drainage Board (NWSDB) working under the Ministry of Water Supply & Drainage has improved after the tariff increases as the average household water bill in Greater Colombo increased by more than 50 percent between 2004 and 2005 (Annual Report of 2005, NWSDB)⁴². This increase was due to the higher tariffs and not due to increased consumption as the average monthly consumption increased by a mere 2.3 percent. Further it is interesting to note that the average household monthly consumption was 19.14 m³ per house connection in the Greater Colombo area and 15 m³ per house connection in the regions outside Colombo in 2005.

Table 4-19 Water tariff for non-domestic consumers (as of March 2005)

Category	Rate per unit Rs
Govt Schools and Govt. Assisted schools	4
Stand posts	7
Commercial institutions	50
Industrial institutions	42
Companies engaged in property development and construction work	50
Export process zones of the BOI	42
Tourist hotels/guest hotels	50
Shipping	250
Other commercial and private institutions	50
Government institutions	42

Source: NWSDB [http://waterboard.lk/scripts/ASP/current traiff.asp](http://waterboard.lk/scripts/ASP/current_traiff.asp)

These average consumption figures are significant in assessing water supply but they cannot be used when assessing the overall water pricing regime as there is no direct link between average consumption and the average household water bill which was Rs 370.1 in Greater Colombo and only Rs 200.7 in the regions.

The rather low tariffs for domestic consumers in comparison to the tariffs paid by other users is also reflected in the revenues collected by NWSDB as the household sector consuming 70 percent of the water delivered only contributes one third of the total revenue of NWSDB (Central Bank of Sri

⁴² In this context the findings as reported in technical assistance report published by the Asian Development Bank (ADB, 2006b, p.2) are definitely of high relevance: Despite satisfactory performance up to 2002, NWSDB's financial performance has declined over the past 3 years. NWSDB's nationwide water tariff was last revised in March 2005. Continued tariff increases are necessary to accommodate, among other things, substantial levels of inflation. NWSDB aims to recover at least operation and maintenance costs, debt-service costs, and depreciation. It derives about two thirds of its revenues in Greater Colombo, with an effective cross-subsidy of 5:1 from nondomestic to domestic water supplies. In addition, the introduction of a sewerage tariff in 2006 remains critical, as sewerage activities contribute to total losses.

Lanka, 2004, p.70). NWSDB is not facing major problems with recovery of water bills from the consumers as the collection efficiency is high⁴³.

Furthermore, NWSDB faces huge challenges with regard to improving the water supply infrastructure as the total water loss exceeds 30 percent at the national level and even a higher loss of 36% in the Greater Colombo area. The loss of water, i.e. non-revenue water, leads to lower revenues but also requires higher investment expenditure in terms of repairing broken water pipes. Unless a major proportion of this water is brought within the revenue stream, the Water Board will not have adequate funds for investment and maintenance. Part of this water is lost due to broken or leaky pipes in the distribution system, while part is lost due to wastage at standpipes where water is provided free of charge and some water is lost due to illegal tapping of water. One of the solutions to reduce the problem may be to provide individual connections to households taking water from stand pipes. A subsidy may be offered to meet the initial cost of connection as an inducement to obtain connections. Many households may be able to pay the monthly cost for water supply but are unable to come up with the initial connection charge, which is quite high. The subsidy provided could result in a long-term reduction in non revenue water. Repairs to pipes and improved maintenance as well as more frequent inspections could reduce water wasted through leaky pipes or through illegal tapping of water.

Sanitation and sewerage

The current situation with regard to the sewerage system cannot be described as satisfactory in Sri Lanka as revealed by the Asian Development Bank (ADB, 2006b, p.2):

Except in a few areas in Colombo, in Hikaduwa, and in the near future, possibly in Jaffna, Kandy and Nuwara Eliya, Sri Lanka has no areas covered by sewerage systems, and of those areas with such systems, Colombo has only basic facilities for primary treatment of sewage. In Colombo, sewers are often silted and in need of maintenance. In towns, storm water drainage facilities are generally in poor condition, as they are rarely cleaned and rehabilitated, but the situation is even worse in poor and informal areas, because of the lack of overall planning, inadequate maintenance, and encroachment on drainage channels. Poor maintenance and rehabilitation are often associated with insufficient allocation of financial resources.

As the infrastructure of the sewerage system is rather rudimentary a pricing regime with regard to sewerage has not been implemented in Sri Lanka but has been under discussion for several years. The Government of Sri Lanka realises the necessity to 'introduce cost-recovery through tariffs to ensure sustainability in the O&M [operation & maintenance] of the sewerage system. The Government has moved to initiate plans for the introduction of a sewerage tariff. Cabinet approval for the introduction of the sewerage charge was obtained in September 2002. NWSDB Board approval has also been obtained and gazette notification has been prepared and forwarded to the Attorney General's Department for opinion. However, a tariff is yet to be instituted. MUDWS [Ministry of Urban Development and Water Supply] in the meantime continues its work on reviewing the proposed sewerage charges (ADB, 2004, p.2)'.

⁴³ The average collection efficiency is was 97.6 percent over the last 10 years (ADB, 2006b).

Progress regarding the introduction of a sewerage charge is rather low but the NWSDB is pressing ahead:

Action is being taken now by the NWSDB to impose a sewerage service charge in all sewerage schemes being maintained by the NWSDB since presently NWSDB maintains the sewerage system of about 6 large housing schemes (Mattegoda, Soysapura, Jayawadanagama, Maddumagewatte, Raddolugama and Hantane) with a total of 10,000 housing units without any fee. Furthermore, foreign lending agencies are insisting on the introduction of a sewerage service charge to extend loan facilities for new sewerage projects. Imposition of a fee is required to cover the O&M costs of the existing systems as well as to gradually expand the sewerage facilities to other urban areas (<http://www.waterboard.lk/Scripts/html/Sewerage.htm> accessed on April 10, 2007).

The introduction of a user charge for covering the costs associated with the dealing of sewage / wastewater, i.e. a wastewater tariff, is definitely high on the political agenda but it still lacks concrete steps to implement such a charge⁴⁴. However, the necessity of such a charge is pressing as the revenues from this charge will improve the financial situation of NWSDB generating additional funds for the urgently needed investment in water infrastructure in Sri Lanka: 'The NWSDB has estimated that the investment requirements of the water supply sector up to 2010 would be Rs. 140 billion. However, the average annual investment by the government in the water supply sector in the last five years was around Rs. 8 billion. This indicates that alternative funding sources need to be tapped in order to reach the targets set with regard to the supply of water (Central Bank of Sri Lanka, 2005, p.51)'. These planned investments are probably in line with the 2001 national policy for rural water supply and sanitation and are reflecting achieving the goal set by the Ministry of Urban Development and Water Supply (MUDWS) of 'providing access to safe drinking water and basic sanitation to all citizens by 2010, whereas the National Water Supply and Drainage Board (NWSDB) aims to provide piped drinking water to 45% of the population by 2015 (ABD, 2006b)'. However, the ADB report spells out that it is essential to have comprehensive policy and regulatory framework in place. Besides it has to be stated that the investment figure quoted above only refers to the water supply sector and therefore it is not difficult to derive that the total needed figure for the water sector including water supply and sewerage services is much higher.

The setting of wastewater charges is not a trivial task as the financial situation of low-income households has to be taken into account, and, as international practice shows it can be done. Furthermore, the poor will benefit from improvements in the sewerage systems as they regularly suffer more than the richer part of the society from the absence of any proper functioning sewerage system as they are affected more from the negative environmental impacts of dumping sewage onto canals and lakes close to the areas where they live.

A further aspect in the context of water pollution is wastewater originated from manufacturing and chemical processes and discharged by industries onto open waters, such as rivers, canals, lakes and the open sea. So far, the discharge of industrial wastewater is under the control of the Central Environmental Authority (CEA) and managed via a licensing scheme, the so-called Environmental

⁴⁴ NWSDB stated in the 2005 Annual Report an income from sewerage of about 50 million Rs. But costs of more than 85 million Rs are also reported. Therefore a net loss of more than 35 billion Rs are shown in the financial accounts.

Protection License (EPL) Scheme. The EPL are issued annually by the CEA and the CEA is also collecting the EPL fees, which can be described as a form of an administrative charge covering the administrative costs of issuing the EPL permits. The fee to be paid for issuing actual license amounts to Rs 750 and is completely independent of the actual amount of pollutants discharged. This means that heavy polluters have to pay the same amount as lighter polluter.

When discharging wastewater onto open waters, industry is obliged 'to meet the relevant concentration based standards established by the CEA. At present, general standards as well as some industry specific standards are used for regulating industrial wastewater discharges. There are no regulations to restrict the quantity of pollutants discharged into the environment. As a result of this, pollution load into the environment and the excessive use of resources cannot be controlled adequately (Central Environmental Authority, 2003, p. 4)'. The current EPL scheme has some disadvantages as the fee to be paid by industry under this scheme is not linked to any environmental criteria as it is flat fee. The CEA has therefore proposed to introduce a Load Based License Fee (LLF) Scheme which can be described as a type of an effluent charge. The main advantage of having a market based instrument, such as the LLF, introduced is the added benefit of improved economic efficiency. The BOD and COD concentrations were the original parameters proposed for assessing the LLF, but, this has been revised and the charge will be now be based on a formula using only the COD value of the wastewater. The testing of wastewater for pollutant load will be undertaken by accredited testing laboratories and they will be inspected on a regular basis by the CEA to ensure that the standards are maintained.

The revenues generated by the LLF are proposed to be earmarked to a special pollution control fund (PCF) and the fund should support pollution control activities in Sri Lanka⁴⁵. The proposal was put forward by CEA and is expected to be implemented within the next year or two, when the required regulations are published and implementation arrangements finalized.

This overview identifies the major challenges faced by the NWSDB and CEA in meeting the goals established in the Sri Lankan water sector. It is obvious that the performance of the water sector has to be improved and the main problems in relation to the delivery of water and sanitation have to be resolved including problems such as, low self-financing ratios, insufficient tariff recovery, and high production costs, as identified by the ADB (ADB, 2006b, p.3).

Water for irrigation

Water used for irrigation is free of charge as is common in many countries throughout the world. However, this policy for free irrigation water is being increasingly challenged as agriculture consumes a major proportion of available fresh water. However, payment for irrigation water was discussed in Sri Lanka in 1969, in the context and need for establishing alternative funding sources for the proper maintenance of Mahaweli dams/reservoirs. As there was no tradition in Ceylon of

⁴⁵ The proposed LLF scheme was put forward by the CEA and to our current knowledge was not implemented so far. More information on the actual scheme proposed can be found in CEA, 2003. The Sri Lankan Institute of Policy Studies published in 1998 already a report assessing the effects of an effluent charge to be implemented in Sri Lanka (Institute of Policy Studies, 1998).

payment for irrigation water supplied by the Government, it was suggested that, in the first five years of development, the settler should be asked to make only a nominal payment to the Government. He should thereafter be required to pay the annual maintenance and operation costs of supplying irrigation water. These charges should be related to the amount of water used, in order to prevent water wastage and promote crop diversification (quoted in Central Bank of Sri Lanka, 2005, p.70)'. This finding and also the recommendations stated in the above report is still relevant and the revision of the overall water tariff regime is needed for achieving the water policy objectives.

Probably the main reason for the free provision of irrigation water is based on the tradition and due to the importance given to the agriculture sector and paddy production in particular. As mentioned above, there are no charges for water used for irrigation but the farmers are required to assist in operation and maintenance of the irrigation scheme through the provision of labour and in some instances monetary contributions. As no fees are charged for water, there is considerable waste during the operation of the irrigation system. The government is attempting to address this issue and the broader issue of water allocation for various purposes.

Currently there is a programme to transfer the management of major irrigation schemes to the farmers. The management of the head-works, main canals and the main distributary canals is the responsibility of the Irrigation Authorities, while the management below the distributary canals, including tertiary and field canals is transferred to the farmers. Farmer organizations have been established in these schemes to take over the management. Farmers are expected to contribute in the form of voluntary labour inputs for operation and maintenance and monetary inputs if required. The government would also contribute a certain amount of funds for maintenance from the annual budget.

4.3.2 Recommendations – water sector

1 Restructuring and rationalization of domestic water tariff rates

The tariffs for water supply were increased in 2005, for the recovery of the increased cost of water production. The current water pricing scheme implemented in Sri Lanka follows the principle of an increasing block tariff including a fixed charge and a variable tariff component based on total consumption levels. The system allows for cross-subsidisation between different user groups to enable households to be charged the lowest rates per unit. Under the current tariff system, the domestic sector consumes around 70 percent of water but contributes only one third of the total revenue. This suggests that a more rational tariff system, which reflects the economic cost of water, should be introduced to reduce wastage of water and to mobilise greater amounts of domestic resources for investment in water infrastructure.

The ADB suggests that the best block tariff system might be a three-block system with the lifeline consumption rate at 0–6 m³ units (for the poorest households in the lowest 10th income percentile), consumption of 6–20 m³ charged at a rate to recover all financial costs, and consumption of more than 20 m³ charged at a penalty rate equal to Rs \$1/m³ [around Rs 100/m³] (to conserve water). (McIntosh, 2003):

The current water tariffs have to be increased over time as the revenues of the NWSDB cover only the operation & maintenance costs and not the development expenditure (see the Annual Report 2005 of NWSDB). The proposed revision of the block tariff system may be considered along the lines of the ADB recommendations in the medium to long-run. The actual rates to be charged for each of the three blocks may have to be carefully worked out using water consumption data at household level. One of the reasons for proposing this revision is the fact that the average household monthly consumption is slightly higher than the current lowest consumption block in the greater Colombo area (19.14 m³ as compared to 15 m³) and less in other regions. Thus the poorest households probably consume much less than the 15 m³ lifeline level assumed by the NWSDB (source: NWSDB - Annual Report 2005), since average consumption is also low. Therefore a lower lifeline block of 6 m³ units as recommended by the ADB should be adopted. The current water tariff scheme provides cheap water to all levels of society, i.e. the subsidies are not directly targeted to the poor only, but applicable to all beneficiaries. Thus a more rational tariff with the subsidies directly targeted at the poor (probably all those consuming less than 6 m³) should be adopted in the medium or long-term. Other households consuming above this level should not be subsidized so that full cost recovery is possible.

The often heard arguments of the difficulties associated with an increase of water tariffs and the issue of affordability should be dealt with some caution as highlighted in a report published by the Asian Development Bank (ADB) (McIntosh, 2003, p.38) and extracted below:

People often hear that the poor cannot afford to pay water tariffs. This is not the case, and proof of this comes from Manila, where a typical household connected to a piped supply pays around \$4 each month for water and uses 30 m³ per month, while the urban poor not being served pay around \$20 each month for their water and use 6 m³ per month. Having to pay an up-front lump sum of around \$100 for connection fees, however, is more than can be expected of the poor. Other arrangements are needed.

A detailed analysis of data collected for Kathmandu and Bangalore showed that 'the average non-poor household received 44% more subsidy than the average poor household in Kathmandu, and 15% more subsidy in Bangalore. The average subsidy received by the richest 10% (decile) of the population was 2-3 times as high as the average subsidy received by the bottom 10% of the population (World Bank, 2003)'. These key findings are relevant to the Sri Lankan situation too, as socio economic conditions here are similar to that of Bangalore and Kathmandu (Komives et al., 2006)

2. Ground / surface water extraction tax

As discussed earlier, water extraction taxes are applied in water management policies to reduce the wastage of water, which is a scarce natural resource. The Government of Sri Lanka should consider introducing a tax on the abstraction of groundwater and surface water in the medium- to long-term. A government agency or authority should be established to manage ground water resources. This economic instrument may be designed in the form of a cess and the revenues generated should be earmarked for use in the water sector. For example, the revenues could be used to financially promote water saving technologies. The cess could be designed in a way – based on international experiences – that the rates are set in accordance to water sources (groundwater vs. surface water)

and water uses (drinking water, irrigation, water for industry use, etc.) and that it should be introduced gradually and the rates could be increased over time starting with a very low rate.

3. Load Based License Fees for industrial waste water discharges

Currently the Sri Lankan Government relies heavily on regulatory policies in the field of wastewater as for example the discharge of industrial wastewater is regulated through Environmental Protection License Scheme. However, initial steps to introduce MBIs in this field were undertaken and a load based license fee scheme for industrial discharges was proposed by the Central Environmental Authority (CEA) in 2003⁴⁶. The CEA is now in the process of introducing a load based licensing scheme in the near future, targeting the most polluting industry initially and then gradually extending it to all other polluting industries over the medium and long-term. Prior to implementation the monitoring and enforcing mechanism should be established, for example, the private laboratories responsible for testing industrial wastewater samples should be in operation. At the same time, subsidies and other incentives should be provided for promoting cleaner production and eco-labelling of goods and services. Financing of such promotion activities could be obtained from aid agencies and from the proposed environmental fund. Waste treatment plants for small and medium scale tourist hotels could be encouraged by partly subsidising the costs of such plants using revenues obtained from embarkation and tourism levies.

There are some success stories concerning the use of MBIs in this field of industrial effluent discharge, in the Philippines, Thailand and in Malaysia. The Philippines experience may be relevant to the situation in Sri Lanka, as both countries have a long tradition of relying on a regulatory system for controlling industrial waste water discharge. Philippines implemented the so-called user fee system in 1997 aimed at curtailing pollution and simultaneously provide incentives for investing in cleaner technologies. The user fee system had two parts: polluters pay a small flat fee to cover the administrative costs, and an additional charge per unit of emissions that meet the standards and a higher unit charge for emissions below the standard. During the first two years of implementation a remarkable reduction of 88% in total BOD discharges was reported. In addition, the revenues generated from the charge provided further financial resources for water quality management programs and simultaneously to strengthen the existing monitoring and enforcement capability of the institutions (World Bank, 2002).

The other example of an MBI implemented in the wastewater sector comes also from Asia and is one of the oldest MBI schemes implemented in developing countries. The Malaysian effluent charge system was initiated in the 1974 Malaysia's Environmental Quality Act and supports the regulatory scheme⁴⁷:

⁴⁶ It should also be mentioned that apart from the above mentioned proposal made by the Central Environmental Authority for introducing a load-based pollution fee in Sri Lanka, the Sri Lankan Institute of Policy Studies carried out a research study analysing the possible effects of effluent charges in 1998 (Institute of Policy Studies, 1998).

⁴⁷ See for more information regarding the Malaysian pollution fee and a comparison of this approach to water pollution taxes and charges implemented in Poland and Colombia: Kathuria, 2006. A report published by UNEP analysing the Indonesian's industrial sector performance and the impacts of export growth resulting from trade liberalisation recommended the introduction of a national effluent charge for the pulp and paper industry. This report clarifies the importance of designing an economic instrument as a whole policy package.

It required that all dischargers pay a fee to obtain a license to discharge waste into public water bodies. The fee varied according to: (1) the class of the premises; (2) the location of the premises; (3) the quantity of wastes discharged; and (4) the existing level of pollution. In 1977, the Department of the Environment decided to combine the effluent charge system with discharge standards and the first discharge fees were collected in 1978. As the quantity of waste discharged increased, the standards became more stringent and the discharge fee also increased. The results have been very encouraging. Despite a 50 percent increase in the number of palm oil mills between 1978 and 1982 and a subsequent increase in palm oil production, the total BOD load released in public water bodies dropped steadily from 22 tons per day in 1978 to 5 tons in 1984. Overall, the regulatory package was clearly effective in reducing pollution and improving the quality of Malaysia's rivers. The Malaysian system, however, is often faulted for being economically inefficient, because its charges are not based on marginal environmental damage costs but rather on the cost of capital for pollution abatement. Also, the charges are based on BOD rather than on the volume of waste discharged, thus providing an incentive for some firms to dilute their effluent in order to avoid paying the charge. In some cases the surcharge for effluents is too low to act as a deterrent. It has been argued that Malaysia might have reached the same goals more cheaply by relying almost exclusively on pollution charges, since they would have allowed plant managers the freedom to minimize pollution-related costs. However, despite its weaknesses, the Malaysian mixed system of command-and-control along with market-based instruments provides valuable lessons for developing countries that are planning to introduce market-based instruments to support environmental legislation. It also shows that efficient enforcement of emission standards can get the job done if public institutions function well, as in Malaysia (World Bank, 2002, pp.78-79).

4. Sanitation – user fees for sewage disposal

User charges may also be recommended to be implemented in the water and sanitation sector in the medium run as there are currently no user charges for sewage disposal services, except in limited systems operated by the Board in housing schemes, hotel resorts, and large apartment blocks using existing sewage disposal systems (Colombo). The financial position of the NWSDB as the operator of a rather limited number of sewerage systems (see above) can be improved through imposition of user fees. These wastewater user charges can only be applied in areas which are connected to the sewerage and they should be set in accordance with the amount of water supplied as it is standard practice. It can be expected that the Sri Lankan sewerage network will be extended over the coming years connecting more private households, commercial enterprises, hotels and industries. Therefore it may be seen as essential to develop wastewater user charge schemes well in advance. This would imply that the currently applied charging scheme – as the NWSDB reports income from the provision of sewerage – should be re-designed.

5. Establishment of River Basin Water Authorities

Regulatory reforms are currently under discussion in Sri Lanka, in particular with regard to the broader issue of water allocation, which is to be attempted by establishing River Basin Water

and the necessity of having a functional institutional and regulatory framework in place (UNEP, no date given).

Authorities for all major river basins. The Authority is expected to comprise of representatives from the various stakeholders and water users. This body is expected to apportion water for various purposes according to the needs and priorities to be established. The down stream users will also be represented in the body to look after their interests. The Authority may impose a charge for water extraction for industry, drinking water supply or other purposes, depending on the availability and priorities established. Under the current political environment, it is unlikely that charges will be imposed for irrigation water. However, irrigation water should be jointly managed by farmer organizations and irrigation agency managers. This system is expected to reduce wastage, improve environment and increase the productivity of water. There is still no time frame for implementing this policy, although it has been discussed and agreed to in various fora as well as in political and administrative circles

6. Joint management of irrigation systems

The joint system of irrigation water management should be pursued and developed further in order to improve the management of both surface as well as ground water for irrigation purposes.

4.4 SOLID WASTE

4.4.1 Current situation – solid waste

One of the many issues and challenges developing countries are faced with is the question of how to deal with the ever increasing amount of waste generated due to rapid economic and population growth. This is in particular the case in developing countries where the collection and proper disposal of municipal solid waste became a major environmental and public health problem.

A recent study analysing the waste management issues in Sri Lanka concluded 'that only 24% of the households have access to waste collection and that in rural areas it was less than 2% (Vidanaarachchi, 2006, p.920)'. Although these figures are based on the findings in the Southern Province of Sri Lanka and therefore cannot be generalised for the whole of Sri Lanka they reveal the problems and challenges Sri Lankan politicians are facing. The amount of waste generated is between 240 and 310 kg per annum per capita in municipal councils, between 164 and 240 kg per annum in urban councils⁴⁸ and between 73 and 164 kg per annum per capita in Pradeshiya Sabhas (PS). These figures are lower than in developed countries, such as the Netherlands, where waste generated was 370 kg per annum per capita. During the last 50 years, solid waste increased at an annual average rate of 2.5% in Netherlands, The forecast of the growth rate in waste generated in Sri Lanka is around 1.2 percent per annum (www.sacep.org/html/mem_srilanka.htm). The OECD average of household waste generated by households in 2002 was 372 kg per capita and 343 kg per capita in Central and Eastern Europe.

⁴⁸ The study by Vidanaarachchi et al. (2006) cited a figure of 0.89 kg MSW generated per capita per day, i.e. a figure of around 325 kg MSW per capita per annum. The source of this figure is a World

The study by Vidanaarachchi et al. (2006) cited a figure of 0.89 kg MSW generated per capita per day, i.e. the comparable annual figure is around 325 kg MSW per capita per annum. The source of this figure is a World Bank (1999) report comparing urban MSW generation figures of Asian countries. Sri Lanka has the highest per capita figure from among low income Asian countries exceeding China (0.79 kg/capita/day) and India (0.46 kg/capita/day) and also the middle income countries Indonesia (0.76 kg/capita/day), Philippines (0.52 kg/capita/day) and Malaysia (0.81 kg/capita/day) but not Thailand (1.1 kg/capita/day).

The most recent report with regard to municipal solid waste (MSW) was published by the Ministry of Environment and Natural Resources in 2005 (MENR, 2005). This report provides the most up-to-date information (up to year 2004) with regard to MSW collection in Sri Lanka. The data shows large differences between the different provinces as well as between municipal councils, the highest MSW collection was 1.09 kg/capita/day reported for Colombo M.C. for the year 2004 followed by Kurunegala M.C. of 1.02 kg/capita/day. The lowest figures reported were 0.17 kg/capita/day for Gampaha M.C. and 0.22 kg/capita/day for Kalmunai M.C. (MENR, 2005, p.23). The data for Colombo and Kurunegala are somehow alarming as they reveal that about 400 kg MSW per capita per annum is collected which is higher than the figure of the Netherlands, a country with a much higher GDP per capita. However, the composition of MSW is definitely different as compared to developed countries as more than 60 percent of MSW is bio-degradable waste, which suggests that there is a need for developing coherent waste management policies regarding composting.

The regulatory system

The basic legislative framework concerning solid waste management establishes that Local Authorities (Las) have the sole responsibility, including the financing of all costs, for the collection and disposal of municipal solid waste (MSW) generated within their boundary. However, no waste user charge is paid by households directly for waste services, as revenue collected as assessment rates and taxes by the LA is expected to finance waste collection and disposal of MSW, according to the existing legislation in Sri Lanka.

The funds allocated to the budgets of Las come from different sources: financial support from Provincial Councils, the Treasury, and from hypothecated taxes and charges, such as the acreage tax, licence fess, assessment rate (i.e. a property tax), fines and service charges (Vidanaarachchi, 2006). The revenue from assessment rate which is levied on all residential and commercial buildings is an important source of revenue for funding the many services the Las are legally bound to carry out. However, assessment rates and property taxes have remained low in most places in Sri Lanka, except in major cities like Colombo and Kandy, and the revenues are therefore not sufficient to provide all the services such as road and drain maintenance, street lighting, solid waste management and other services.

In the past the share of the annual budgets of Las used for waste management operations differed between 12 percent (PSs), 14 percent (MCs) and 20 percent (Ucs) (based on a 1998 report and quoted by Vidanaarachchi, 2006). When assuming that the level of waste generation is positively correlated with household income levels – as it is often the case – it can be concluded that the amount of MSW has increased during recent years and that Las are facing costs of waste management services which are at least requiring the same budgetary share as in the above mentioned report. However, it has to be questioned whether Las are able and willing to fund all

waste management services in an environmentally sound manner considering all the tasks they are obliged to fulfil under the current political and legislative scheme of allocating such tasks from the national level to the local level. The financial sources Las are using to cover the costs of achieving the allocated tasks are scarce and what is even more intriguing is the fact that 'the largest share of waste management expenditure goes to the payment of salaries, fuel and vehicle maintenance, but the proportion spent on final disposal is low (Vidanaarachchi, 2006, p.928)'.

The prime objective of the Local Loans and Development Fund (LLDF) which was originally established in 1916 and since then revised several times must be seen in this context as the LLDF may fund necessary capital investments of Las through lending. Although the LLDF may be of central importance for capital expenditures the funds Las are relying to cover recurrent expenditure (i.e. O&M costs) are rather scarce. Therefore it was suggested to introduce a waste collection levy as an additional source of income of Las (Vidanaarachchi, 2006).

All the issues and problems identified so far are also reflected in the 'National Strategy for Solid Waste Management' (MENR, 2002) which was approved by the Cabinet of Ministers. The strategy identifies that 'in the absence of proper management and disposal practices, solid waste has become a growing problem in Sri Lanka (MENR, 2002, p.3)'. Furthermore, the National Strategy spells out the problems and potential options solving some of the identified problems (MENR, 2002, pp.19-20).

The resources available at present at Local Authorities are not adequate to implement efficient solid waste management strategies. The Local Authorities should be given sufficient incentives in the form of financial and technical assistance to develop and implement solid waste management strategies in a sustainable manner. Law Enforcement should be coupled with these incentives in order to ensure compliance.

A reasonable percentage from the total budget should be allocated by the Local Authorities annually for the implementation of efficient solid waste management strategies. ...

The Government shall take the initiative to provide infrastructure facilities to establish proper waste collection and transportation system of solid waste to reduce haphazard disposal practices and to ensure disposal of waste in an environmentally sound manner. This will facilitate recycling industry to make their production processes economically viable. A system of user fee should be introduced to cover the operations in an appropriate manner. ...

National policies should be developed to facilitate the implementation of the National Solid Waste management Strategy.

A direct form of a waste charge is implemented by the Colombo Municipal Council affecting commercial institutions, such as hotels and retailers. A fee of Rs 50 per day has to be paid for the collection and disposal of wastes generated by them. Other examples of waste charges are a fee of up to Rs 600 per ton of waste paid by the Colombo Municipal Council and of Rs 1,200 per ton in Kaduwela and Gamapaha Pradeshiya Sabas, to private operators who are collecting and disposing waste.

Wastes generated by industries and located in industrial zones which are established under the guidance of the Ministry of Industrial Development are in general dealt with in a more environmentally sound manner as MSW. The reason is that such zones have to establish the proper waste collection and disposal infrastructure.

The National Solid Waste Management Strategy builds on the widely accepted principle of waste avoidance, reduction, reuse, recycling and final disposal in an environmentally sound manner. Composting of biodegradable waste is therefore an option which should receive increased attention by Local Authorities. In particular, the results of a composting plant in the Greater Colombo region may therefore be judged as successful considering that it can process up to 300 tonnes of decomposed waste thereby producing around 30 tonnes of compost per day which is sold successfully to agricultural producers, such as paddy and tea producers (www.usaid.gov/lk/documents/tos/USAEP_composting.pdf). Segregation of wastes into different types, such as biodegradable, glass, plastic, paper, etc., should be further supported as it allows to maximise the recovery of the different products and to make it easier to recycle products, such as glass and paper. An additional aspect must also be referred to as source segregation will lead to a lower amount of wastes to be disposed at a landfill site which is clearly the preferred option of waste disposal in Sri Lanka, i.e. the open dumping of waste in low-lying lands. This is even more relevant as it is more difficult to identify areas for landfill sites which are close to cities.

The introduction of user fees is one of the initiatives especially recommended in the strategy. Unfortunately, no further steps have been undertaken to establish such a system of user fees up to now, except in the Colombo Municipal Council for commercial institutions. Waste related costs take up to 20 percent of local authorities budgets (Vidanaarachchi et al., 2005). Property taxes – apart from financial transfers from the Provincial Councils and the National Treasury – are the main funding sources for local authorities. Recent estimates show ‘that only 41% of households in the province [Southern Province] pay property tax. About 4% of people who have access to waste collection service are not taxpayers. Finance Commission figures indicate that the current property tax collection rate is approximately 75% of the target (Vidanaarachchi et al., 2005)’. These findings clarify the necessity for changes in the funding regime of waste policy and in particular to establish a system of user charges as already laid down in the National Strategy.

4.4.2 Recommendations – solid waste sector

The case study on waste indicates that user charges for waste collection and environmental safe disposal are currently not in place in Sri Lanka. The costs of these services have to be borne by local authorities / municipalities as they are responsible for waste. A large part of the local budgets have to be spent to cover these costs. None of the other environmental taxes discussed in Chapter 2.5 are implemented in Sri Lanka. Some of them could be introduced in due course but for others the institutional and regulatory framework is currently not in place meaning that their introduction would be largely unsuccessful and not effective and their implementation would not necessarily guarantee that the underlying policy objectives could be achieved. However, all these economic instruments should be considered in the context of wider waste management (regulation) policies. They are in particular deserving attention in the context of the evolving regulatory infrastructure in respect of waste management. In the medium to long-term and in the context of the development of Sri Lanka, such instruments clearly deserve consideration. In the meantime, it makes sense to concentrate upon the need for a development of the regulatory framework.

1. User fee for waste collection and disposal

Definitely the most pressing task is to implement a charging scheme for the collection and safe disposal of wastes in Sri Lanka. It is recommended to introduce some form of user charges for the collection and the safe disposal of municipal solid waste in the short run so that the local authorities have a new financing mechanism to cover the costs of waste services. Probably the best and most practical way forward is to follow the recommendation of the World Bank in designing user charges.

(a) Waste fee to be collected through utility bill (electricity)

The World Bank reported that waste charges / fees in around 90 percent of cities throughout the world are collected together with property taxes (World Bank, 2002). However, the authors are putting on record that the collection efficiency of this type of a MBI is rather low, particularly in developing countries. Therefore, the authors are recommending that waste charges should be collected 'with another utility bill (electricity is best) so that the threat of cut-off is credible (World Bank, 2002, p.64)'. The authors are aware that this suggestion is not based on any theoretical considerations and that it is also not in accordance with the user and polluter pays principle. However, they are explaining that this approach as a pragmatic solution. It can be argued that electricity or water consumption is a proxy for income and consumption leading to waste generation, and hence a reasonable surrogate. In the case of large single point producers such as industrial or commercial enterprises, volume or weight-based charges may be more appropriate. This has the advantage of linking waste revenues to the actual volume of services provided (World Bank, 2002, p.65)'.

It would be advisable to introduce a rather low charge rate at the beginning but to inform the public that the rate will be increased over time so that the charge payers can adjust themselves. In the long-run the charges should definitely cover all costs related to waste collection and the environmental sound disposal of waste. It is also important that the revenues generated from these charges are being spent on waste issues and not being used for filling financial gaps of the budgets of local authorities. Furthermore, the public may expect rightly that the overall service of waste collection and disposal will improve as a consequence of the additional financial burden households and commerce are facing. Otherwise it can be expected that fly-tipping will increase.

The interesting and also relevant aspect of this recommendation is that it does not require establishing any new institutions and / or authorities for the collection of this type of waste charges meaning that also the administration costs should be rather low. This policy approach should only be seen as a temporary solution and that such a regime has to be revised in due course. In the longer-run user charges for waste services should be levied on the actual quantity/volume of waste generated by households and industries and therefore be in line with the user pays principle.

It must be made clear from the beginning that this approach is far from being the first best solution. However, the institutional and regulatory framework as well as the economic and social conditions should be taken into account when assessing the applicability of MBIs based on international best practice. Therefore it may be argued that this approach could be a first interim solution on the way ahead of establishing a payment system funding the collection and treatment / disposal services.

(b) Direct user fee – pay-as-you-throw

Sri Lankan authorities should move in the long-run into the direction of establishing differential charging scheme, also called pay-as-you-throw, or direct charging, aiming to provide incentives for households to behave in a sound manner. The advantage of this scheme is that the user charges are imposed with reference to the actual amount of waste generated by waste producers and corresponds to the user pays principle. In general, the effect of variable charging scheme is to reduce overall waste generation and to increase the proportion of waste collected which is suitable for recycling and composting, i.e. differential charging is used to encourage separation of materials at source by waste producers.

A more sophisticated charging scheme may be launched in a large local authority, like the Colombo Municipal Council, which has already more experience with waste management as it contracted out waste collection and disposal to the private sector. Details of how the payment should be made and who collects it need to be worked out based on the different types of schemes implemented worldwide – but adapted to the Sri Lankan circumstances.

Collection of user fees from residents on the basis of weight or volume of waste to be disposed should be the next step in the introduction of user fees. For example, bags or bins of different sizes (say three sizes) may be provided to residents for waste collection and payment collected at the time of collection by the contractors. Thus three different rates can be charged for the three sizes of bin or bags. The contractor may be required to pay the residents for plastic, glass, etc separated from the waste, thus providing a financial benefit for the residents. This system should be tried out initially in a financially viable large local authority, like the Colombo Municipal Council, which has already contracted out waste collection and disposal to the private sector. Details of how the payment should be made and who collects it need to be worked out. One possibility is to collect the fee at the time of waste collection. In this case a reliable person has to be assigned for the collection of the fee and to keep proper accounts. Otherwise, it is possible that revenue collected can be mismanaged or misappropriated, leading to a breakdown of services. An alternative would be for the resident to pay the fee monthly on the basis of the number and size of bins or bags of waste disposed. The former payment method may be more effective, as the resident pays for the service at the time of service.

It is possible to devise methods of collection and accounting that would prevent or reduce any malpractices in the collection procedure. One way may be to sell stickers of a particular value say Rs 5 to households to be used as payment for waste disposal. Households will be required to submit these stickers to the collectors at the time of disposal. The number of stickers to be submitted would depend on the size of garbage bag to be disposed of. Large bags may require 3 stickers, medium bags 2 stickers and small bags 1 sticker. An alternative would be to have the same size bag and charge at the rate of 1 sticker per bag disposed. This will ensure that the household pays according to the amount or volume of garbage disposed and will give incentives to reduce the amount of waste produced by composting, separation of waste etc. These stickers and bags should be made available in all stores, grocery shops, super markets, post office, banks etc and from the collectors themselves for easy accessibility to households.

An allowance based on the amount of fee collected may be paid to the crew of the waste collection truck to provide an incentive for more effective fee collection and service provision. The collection crew may be allocated Rs 1 from each Rs 5 sticker collected as an incentive for providing an efficient service. In this case, the resident can demand a good service as payment is being made for the service. It is recommended that such a system be implemented as a pilot project and expanded to

other local bodies depending on the success of the enterprise. The private collector can also deliver organic waste to compost makers for a small fee and gain additional financial benefits from the enterprise. Imposition of user fees must also be accompanied by stricter enforcement of laws that punish dumping of garbage in public areas, to prevent such dumping.

2. Product taxes and deposit refund schemes

The Government of Sri Lanka may also consider implementing product taxes and deposit refund schemes for some products. The rationale for their introduction is to minimise use of the product concerned (as with, for example, packaging). Packaging taxes and taxes levied on tyres and plastic bags are implemented in many developed countries but as well recommended in developing countries (see for example the report on the recommendation of introducing a plastic bag levy in Kenya (UNEP, 2005)).

The principle behind a deposit-refund system is fairly straightforward. A charge is levied on a potentially harmful product at the point of sale. When the product has reached the end of its useful life, the consumer can then claim a refund by returning the product to the relevant point. One of the most interesting aspects about deposit-refund schemes are that they are a preventative instrument, that is, the charge (deposit) is paid in advance of any harm occurring. They therefore reward good environmental behaviour, rather than penalising bad.

They are most suitable for use with products that

- are easy to identify and handle; and
- are feasible to re-use and recycle.

For example, a plastic bag tax and a deposit-refund scheme for bottles are easily implemented and the institutional and regulatory requirements as well as administration costs are manageable. These policy measures are likely to be appropriate for Sri Lanka in specific contexts.

The revenues from such a plastic bag tax can be used for supporting the funding of recycling / treatment of plastic bags which can generate hazards when disposed of inappropriately. This would also be the case in the case of launching further product taxes levied on batteries, tyres, etc. When considering a plastic tax bag in Sri Lanka it is not recommended to follow closely the Irish example (see Box 2.5 above) as the tax administration systems are probably not geared to impose a tax at the retail stage. Instead, a plastic bag tax imposed on the manufacturers and importers would be more appropriate.

The use of deposit refund schemes would appear to be entirely suitable in Sri Lanka. Indeed, these systems can also provide mechanisms for income supplements for low income citizens. In Sweden, cases have been cited of individuals earning in excess of US\$12,000 per annum from collecting used beverage containers on which refunds could be claimed⁴⁹. Another positive thing about deposit refund schemes is that they can minimize the amount of waste requiring collection.

⁴⁹ Sterner, 1999, *Waste Management and Recycling*, in: T. Sterner (ed.) *The Market and the Environment: The Effectiveness of Market-based Instruments for Environmental Policy Reform*, Cheltenham, Edward Elgar.

4.5 AGRICULTURE AND LANDS

The agriculture sector is important for the Sri Lankan economy in terms of its contribution to GDP as well as around 33 percent of the employed people is working in this sector. The share of agriculture in the GDP declined to 17.2 percent in 2005 from 19.9 percent in 2000 as the industry and in particular the service sector achieved higher growth rates during this period.

The land currently under cultivation is around 2 million hectares in Sri Lanka. Agricultural crop production is carried out mainly in small holdings (80 percent). The largest share of the land is under paddy cultivation (over 45 percent). Crop production in the country can be broadly divided into two sectors: (a) the domestic food production sector and (b) the plantation sector, comprising tea, rubber and coconut. Spices such as cinnamon, cloves, pepper, cardamom and cocoa, coffee are also cultivated on the Island and these crops are classed as export agriculture crops.

4.5.1 Current situation – agriculture and lands

Although there are some MBIs operating in the agricultural sector, environmental criteria were not considered when they were designed. The instruments used, include taxes applied at the point of import and general taxes, such as VAT. The import of pesticides (insecticide, herbicides and fungicides) is subject to a very low custom duty of 1.3 percent (a preferential tax rate) in addition to a general duty of 2.5 percent. The import of mosquito coils is levied with a higher import duty of 28 percent. The sale of pesticides is subject to VAT at a rate of 15 percent.

Pesticides use is administered under the legislative control of the Pesticides Act. In addition, a successful programme of Integrated Pest Management (IPM) has been introduced with the assistance of FAO (Food and Agriculture Organization of the United Nations) which has yielded commendable results. The implementation of Integrated Pest Management (IPM) programme during the last 15 years has assisted farmers to adopt this method of pest management to reduce cost on application of pesticides and to use pesticides in a more environmentally sound manner. Organic farming, without the use of chemicals and eco labelling of such products is undertaken in Sri Lanka on a small scale. This activity should be promoted further through incentives, subsidies and technical assistance. While benefiting the environment, such eco friendly products fetch a high price in the local as well as the export markets, thus providing a better income to farmers.

Other MBIs implemented in the field of agriculture is the so-called acreage tax which has to be paid by agricultural land holders. The proceeds of this tax are recycled back to the sector mainly for agrarian development activities: 80 percent is utilized at local level and the remaining 20 percent has to be remitted to the national level Agrarian Development Fund operated at the head quarters. The tax has to be paid annually and a tax free allowance of ½ an acre is given. The rate of the acreage tax can be decided at the district level and in most districts it is Rs15 per acre/annum. Since the collection of the acreage tax done by village level officers of the Department of Agrarian Development had been poor, powers of collection of this tax had been delegated to registered farmers societies with a commission of 15 percent of the collection. However, according to estimates of the Department, the collections are still around 50 percent of the dues. For example for the year 2005 the collections as at 31st March 2005 was Rs 18.58 million as against a target of Rs 45.48 million and the collection of arrears had been Rs 2.525 million.

A further MBI is the Cess on tea exports which is collected at point of export. The revenues collected are recycled back to the tea industry. Until April 2006, the rate of the cess has been Rs 2.50 per kilogram of tea and the funds generated had been apportioned on the basis of: 34.5 percent to the Sri Lanka Tea Board (product development, maintenance of quality and sales promotion), 39.5 percent to the Tea Small Holdings Authority (area expansion, cultivation subsidy and support to small holders) and 26 percent to the Tea Research Institute for managing the institute. Based on official data of tea exports the estimated collection of cess would be around Rs 745 million. In April 2006, the cess on tea has been increased to Rs 4.00 per kilogram.

Sri Lanka also makes use of a natural resource tax in the form of a royalty tax levied on rock phosphate and dolomite extracted from natural deposits and used for the production of fertilisers. The royalty payment to the government for rock phosphate and dolomite is collected at a rate of 3 percent of the sales value, by the Geological Survey and Mines Bureau. At the prevailing sales price of rock phosphate and dolomite which is approximately Rs 4,600 per metric ton and Rs 2,500 per metric ton (ex-factory prices - May 2006) respectively, the royalty works out to around Rs 138 and Rs 75 per metric ton respectively. Therefore, the annual royalty payment could be estimated to be in the range of Rs 5.5 million and Rs 1.5 respectively for the quantity of rock phosphate and dolomite extracted and used as fertiliser.

The fertiliser subsidy scheme

Sri Lanka has a long history for making use of fertiliser subsidies as an incentive for promoting the use of inorganic fertiliser. The subsidy programme commenced in early 1960s as a measure to encourage farmers to use balanced fertiliser application. This evolution coincided with the green revolution which also involved the introduction of new improved crops. The subsidy scheme was initially provided for five varieties of fertiliser, namely: urea, sulphate of ammonia (SA), muriate of potash (MOP), triple super phosphate (TSP) and imported rock phosphate. The scheme was terminated by the end of 1989, owing to the pressure from international lending agencies. As a result, fertiliser consumption dropped by 16 percent in the following year, but had increased to original levels by the year 1993.

The government which came to power in mid 1994 re-introduced the fertiliser subsidy scheme and subsidies were given for four varieties of inorganic fertilisers: urea, SA, MOP, and TSP. Among these four different fertilisers, urea was the most favoured fertiliser with a higher subsidy rate. It is also the major chemical fertiliser used in Sri Lanka: urea accounts for approximately 50 percent of the total fertiliser consumption and the paddy crop utilizes about 70 percent of total urea supplied to the country. In October 1997 the fertiliser subsidy was confined to urea. Thereafter, all other types of inorganic fertilisers were priced at the open market. Urea was made available at a subsidised price of Rs 350 per 50kg bag or Rs 7000 per metric ton. As a consequence of the subsidy for urea farmers have increased the use of urea in relation to other major nutrient fertiliser (phosphorous (P) and potassium (K)). The result was an imbalance in the use of fertilisers and therefore a deviation from 'Good Agricultural Practice'.

The new government that came in power in November 2005 announced the extension of the fertiliser subsidy scheme to all types of fertilisers. Therefore, from 5th of December 2005, three major types of fertilisers and the mixtures involving these fertilisers was granted the subsidy. Therefore, urea, SA, MOP, TSP and their mixtures were made available to paddy farmers at Rs 350

per 50kg bag or Rs 7000 per metric ton, in addition, to the subsidy on urea to all farmers at Rs 550 per 50kg bag (Rs.11,000 per metric ton) for all crop sectors including plantation sector. The fertiliser subsidy scheme was first extended to farmers growing vegetables and other food crops, such as chillies, maize and onion. In addition a subsidy scheme has now been introduced from which small holders of the plantation sector, i.e. those growing tea, rubber and coconut, are benefiting. However farmers are only entitled for subsidies under this programme if they own less than 5 acres of land. Fertilisers, of which around 90 percent is imported is not subject to any import duty, while its sale is also exempt from VAT.

The evolution of the total costs of the fertiliser subsidy programme is shown in Table 4.20.

The increase in the total subsidy expenditure can be attributed to a certain degree to the high petroleum prices. Nevertheless it has to be stated that the subsidies are using up quite a large sum of the total budget of the government (i.e. almost 2 percent of total tax revenues in 2005).

Therefore it is necessary to assess the effectiveness of the subsidy programme in terms of improvements in the yield of agricultural production but also possible environmental effects of the increased use of inorganic fertilisers.

Table 4-20 **Costs of fertiliser subsidy programme**

Year	Total subsidy expenditure (Rs million)
1997	1,894.28
1998	2,215.34
1999	1,390.02
2000	1,773.98
2001	3,648.99
2002	2,446.03
2003	2,486.98
2004	3,571.76
2005	6,285.52

Source: Agriculture case study source

Note: The expenditure data reflect the total sum of money paid during each year and not the actual dues within the year. The original source of the data is the National Fertiliser Secretariat. More current data on the costs of the fertiliser subsidy programme are presented in Central Bank of Sri Lanka, 2006, revealing that the expenditure of the programme amounted to 6.8 bill Rs in 2005 (provisional) and of 12.5 bill Rs in 2006 (revised estimate by the Ministry of Finance and Planning – End October 2006).

Table 4-21 Paddy yields versus urea application

Cropping year	Average yield	Quantity of urea used
	(kg/ha)	(kg/ha)
1995/96	3,536	210
1996/97	3,514	201
1997/98	3,618	176
1998/99	3,636	202
1999/00	3,666	267
2000/01	3,856	242
2001/02	3,954	251
2002/03	3,892	275
2003/04	3,761	259
2004/05	4,047	237

Source: Agriculture case study

Table 4.21 shows a trend of increasing yields over the last ten year period. Fertiliser use also increased during this period but a clearly observable correlation between increased fertiliser use and increase in yield is difficult to record. It is worthwhile to note that the highest consumption of urea measured in kg per hectare used has not led to the highest yield (see the results of the cropping year 2002/03). More interesting is the fact that average yield increased by around 4 percent between 2002/03 and 2004/05, while fertiliser use declined by about 13 percent. This may suggest that fertilizer is over-applied or inefficiently used, but since there are many factors contributing to the yield of paddy, it is difficult to make any definite conclusions from this data.

A comparison of the use of major plant nutrient fertiliser in selected countries in the region shows that Sri Lanka ranks fourth among the countries listed regarding the use of N-fertiliser but records the lowest in use of phosphate fertiliser denoting a high imbalance in nutrient use (see Table 4.22).

Table 4-22 Use of fertilisers in Asia

Country & year	Major plants nutrients (in kg/hc)		
	N	P ₂ O ₅	K ₂ O
China (1999)	145	60	40
Vietnam (1999)	115	45	42
Indonesia (1997/98)	105	22	14
Sri Lanka (1999)	103.9	13.9	24.4
Malaysia (2001)	95	40	35
Bangladesh (1998)	72	15	10
India (1997/98)	67.7	24.2	9.4
Philippines (2001)	51	15	11

Source: Agriculture case study based on FAO report

Fertiliser use is controlled by the Regulation of Fertilizer Act No. 68 of 1988 which is implemented by the Director of the National Fertiliser Secretariat (NFS) operating directly under the Additional Secretary of the Ministry of Agriculture. There is no provision in the Act for regulating misuse of fertiliser, particularly the over-use of fertiliser. It would be desirable to have control of the over-use of nitrogen fertilizer in vulnerable areas, through a regulation under the National Environment Act. An example of such a regulation is the 'Nitrates Directive of the European Commission' (Council Directive 91/676/EC concerning the protection of waters against pollution caused by nitrates from agricultural sources).

The risk of environmental damage due to the use of fertilisers is well-known. Nitrates resulting from nitrification process of fertilizer and organic waste constitute almost all nitrogen in water. High temperature in tropical countries promotes the nitrification process.

Nitrates carried with surface water enter water bodies such as streams, rivers, reservoirs faster. High nitrate levels in drinking water are known to be the cause of methaemoglobinaemia, a disease which is related to presence of nitrite in stomach of humans. This condition occurs more frequently with infants and hence this disease is known as 'Blue baby syndrome'. Research at Kalpitiya showed that 64 percent of infants in the study area had greater than 2% methaemoglobin, the permitted upper limit. High levels of nitrates in water cannot be purified easily requiring expensive tertiary wastewater treatment plants.

Furthermore, high concentrations of plant nutrients, in particular nitrates and phosphates, cause excessive growth of water plants including algae. This is called eutrophication. When algal blooms are sufficiently dense, with prolonged sunlight and nutrients, it forms a canopy at the top layers of water bodies. This can become a great hindrance to public water supply schemes. Furthermore, it can cause excess growth of algae, the decomposition of which can reduce the level of dissolved oxygen content (DO) in the water body resulting in the death of fishes. Some algae have the ability to produce toxins that are more toxic than cyanide and cannot be deactivated by boiling. Algal

blooms have been reported in number of reservoirs in Sri Lanka including Kotmale, Castlereigh, Mausakele, Rajangana, Kandalama, Nachchhaduwa, Nuwarawewa, Tissawewa and Giritale (Amarasiri, 2006).

In this context it is imperative that we make an assessment of the environmental impact of fertiliser use in Sri Lanka based on available agricultural literature. Awasthi (1999 as quoted by Maine, 2000) reported low efficiencies of fertiliser use in India as a matter of concern. Only about 30-35% of the nitrogen is estimated to be used by paddy and the overall efficiency of nitrogen absorption is said to be about 50 percent. Based on these findings and assuming a modest efficiency of about 50 percent it may be concluded that about 150,000 Mt of urea would be released annually to the environment without being used by crops in Sri Lanka.

Summing up it must be stated that the subsidy scheme for inorganic fertilisers has been operating off and on over the last two to three decades, with some benefits accruing in terms of increased yields and production, attributed mainly to inorganic fertilizer use. The current problems are:

- With yields reaching high levels, the main impact of fertiliser application appears to have declined.
- There is probably over-application of fertilisers and improper mix of nutrient (high N and very low levels of K used in paddy) as a result of the subsidy scheme, resulting in productivity losses.
- Sustained use of high levels of fertiliser may result in environmental degradation in the future.
- The high cost to government has precluded investments in other essential areas.
- The authorities are facing considerable difficulties in managing the programme due to logistical problems such as transport, storage as well as problems due to leakages and corruption.

Soil erosion

Soil erosion is a problem of great concern in today's world since there is a danger of sedimentation of major reservoirs and the drop in agricultural productivity due to soil erosion. In Sri Lanka, soil erosion and the decline of soil fertility are the two main land degradation processes. Nearly 50 percent of the crop land is subject to fertility decline and while 32 percent of the land is exposed to soil erosion. Specific programmes addressing soil conservation measures have been introduced in Sri Lanka aiming to offset the rate of soil erosion in Sri Lanka.

It is extremely important that immediate attention be paid to the problem of soil erosion in agricultural lands as it can lead to, the breakdown of soil structure and the decline in nutrients in the soil as well as loss of soil. Soil erosion ultimately results in loss of productivity of soil, which can be combated by the use of fertilizers to restore or maintain yields (Karunatilake et al, 2001).

The Department of Agriculture (DOA) is responsible for implementing the Soil Conservation Act No. 25 of 1951 and Soil Conservation (Amended) Act No. 24 of 1996. There had been no subsidy

programme promoting soil conservation under the DOA. The 'Soil Conservation Fund' established under the Soil Conservation Act remains inactive due to certain weaknesses in the Act and so far no financial resources have been allocated to this fund. However, some limited subsidies had been provided under various development projects and also under crop area expansion programs.

Other financial incentives are provided for the expansion and rehabilitation of tea cultivation. These funds are available for new plantings as well as for replanting. The current programme provides a subsidy of Rs 160,000 and Rs 150,000 per hectare respectively for mid country/high country tea and low country tea. Of these incentives, the soil conservation component is Rs 90,000 and 87,000 per hectare respectively. The subsidy is limited to one acre per applicant and therefore, it is essentially a programme for small holders. Under, the present government policies, it has been decided to increase the current subsidy to Rs 200,000 and Rs 190,000 per hectare respectively for mid/high country tea and low country tea. Total incentives disbursed during the period 2000 to 2005 amounted to around Rs. 876 million.

With the recent increase in prices of natural rubber, interest in rubber cultivation has been revived. Currently a subsidy of Rs 100,000 per hectare is granted for replanting and new planting of rubber. Small holders and estates are the beneficiaries of this programme and a total of around Rs 480 million has been paid out during the period 1999 to 2003. Incentive schemes are also available from the Coconut cultivation Board of Sri Lanka for the expansion and improvement of coconut cultivation in the country.

4.5.2 Recommendations – agriculture and lands sector

Very few MBIs are currently operational in the agriculture sector (acreage tax, cess on tea exports). However, the fertiliser subsidy program implemented by the Government of Sri Lanka acts as a perverse incentive and revision of this program could reduce adverse impacts on the environment and also reduce budgetary expenditure.

1. Revision of fertilizer subsidy scheme

The aim of the fertiliser subsidy is to support agricultural development and to keep domestic fertiliser prices at affordable levels for farmers as oil prices keep increasing, and resulting in higher fertilizer prices. Subsidies generally tend to promote over-use of fertiliser, although such use may not result in an appropriate increase in the yield. The subsidy has been revised recently due to the government's inability to finance the high costs of the subsidy. Further revision of the fertiliser subsidy should be considered in case the Sri Lankan Government revises all subsidies currently in place in Sri Lanka.

This revision may be based on the evaluation criteria developed by UNEP (see Box 5.3 below). It can definitely be argued that the current fertiliser scheme is not well-targeted, i.e. subsidies should go only to those targeted to receive them. A starting point was the revision proposed in April 2006, by which only small farmers owning or cultivating an area less than 5 acres were made eligible for the urea subsidy.

Although the use of fertilisers has not led to large scale pollution of the water courses in Sri Lanka, eutrophication, i.e. alga blooms a sign of high concentration of plant nutrients caused in particular from nitrates and phosphates, has been reported in a number of reservoirs in Sri Lanka. This should be a cause of concern to the Sri Lankan authorities as it can become a big hindrance to public water supply schemes (see for a more detailed discussion: the agriculture case study). In addition to the recommended revision of the subsidy scheme, regulations should be introduced under the National Environmental Act to limit the over-use of fertilisers in vulnerable areas, as implemented under the EU Nitrates Directive (see for more information http://ec.europa.eu/environment/water/water-nitrates/index_en.html).

A targeted subsidy programme should be considered leading to the removal of the urea subsidy while continuing the small farmer target of Rs 350 per 50 kg bag NPK fertilizer subsidy program for paddy. The rationale of this recommendation is that the current urea subsidy programme is leading to increased nitrogen (N) nutrient without increasing the use of phosphate (P) and potassium (K) nutrient in keeping with the fertiliser recommendation of the Sri Lankan Department of Agriculture (DOA). This has resulted in imbalanced use of fertiliser leading to an increase in nitrates released to the environment thereby causing environment pollution. Therefore, the present urea subsidy can be considered as a perverse incentive in terms of environment. This reform proposal would automatically lead to savings and would reduce the pressure on the budget. Furthermore, it is suggested the fertiliser subsidy programme be combined with a programme enhancing the effectiveness of the subsidy through site specific soil testing by recognized laboratories to ensure that there is no excessive use of fertilisers.

It is recommended that the subsidy scheme be further revised to prevent overuse of fertilisers, reduce the harmful impact on the environment as well as make funds available for other environmental improvements in the sector such as subsidies for soil conservation, and promotion of organic agriculture. The concrete recommendations are as follows:

- The subsidy programme to be limited to small farmers and to a low level of fertiliser application of a selected combination of fertilisers.
- The subsidy to include compost or organic fertilizer as a component of the fertiliser mixture subsidised, to revive the market for organic fertilisers, which has been adversely affected by the subsidy scheme.
- Such a targeted subsidy programme will be difficult to implement with logistics of supply and leakages of subsidized fertilizers being the main problem. However, since the subsidy is limited to a smaller population, such problems would be minimized.

2. Increase acreage taxes

The re-designing the fertiliser subsidy scheme could be combined with a programme for strengthening the enforcement and collection efficiency of the acreage tax. The collection efficiency of this tax is rather low and it could be enhanced substantially if it is tied to a farmer support programme such as the fertiliser subsidy scheme, provision of improved seeds at cost, paddy purchases at glut periods, etc. It would then make sense to increase the rather low rates to a reasonable level.

3 Revision of import taxes on agro chemicals

Sri Lankan authorities should also consider revising the taxation and import tariffs on pesticides, which is not based on any environmental considerations. Therefore it is recommended to classify pesticides according to environmental hazard class as defined by the World Health Organization (WHO). International experience with differentiated tax rates levied on pesticides indicates that such a revision is possible. For example, Denmark introduced such a differentiated scheme in 1996 with the clear political objective of reducing pesticides consumption but also to shift pesticides consumption towards less harmful pesticides. Since the 1996 revision the *ad-valorem* tax is measured in percent of the wholesale price and is differentiated between types of pesticides ranging from a 3 percent rate for wood preservatives up to a 53 percent rate for insecticides (see for more information: European Commission, 2001 and Nordic Council of Ministers, 2006).

It is recommended that the current pesticide taxation regime be replaced by a differential cess based on hazard level of pesticides. Under this programme, a redrafting of the current structure of duties & levies for pesticides has to be undertaken. Thereafter, a classification of pesticides according to Environmental Hazard Classes as defined by WHO has to be made with the aim of setting differential cess rate. The rates are proposed to be set as follows:

Table 4-23 Suggested cess rates for hazardous chemicals

Hazard level	Cess rate (in percent of CIF value)
Extremely hazardous (WHO Class 1A)	100 percent
Highly hazardous (WHO Class 1B)	80 percent
Moderately hazardous (WHO Class II)	60 percent
Slightly hazardous (WHO Class III)	50 percent

Source: Agriculture case study

There are several reasons justifying this proposal:

- reduction of environmental pollution from hazardous chemicals,
- funds generated from the cess could be earmarked for environmental protection activities such as promotion of Integrated Pest Management (IPM) programmes aiming to further reduce the use of pesticides, and promotion of organic farming and eco-labelling for local and export markets.
- the proposal does not involve an additional cost to the Government of Sri Lanka.

4. Soil erosion taxes

Besides these measures the introduction of other MBIs could be considered to address the problem of soil erosion as it imposes substantial economic costs in Sri Lanka. Bandara et al. (2001) evaluated a whole range of different policy options all aiming to reduce environmental damage caused by soil erosion and concluded that the introduction of the following instruments can be effective: 'Other policies which directly target soil erosion, such as tax and subsidy instruments, are required to achieve more substantial soil erosion abatement (Bandara et al., 2001)'.

The authors of the study recommend the introduction of the following:

- Production tax on erosive crops and a production subsidy on less erosive crops.
- Land tax on erosive crops and land subsidy on less erosive crops.
- Export subsidy on less erosive agricultural exports and a production or land tax on high erosive crops.

Apart from the MBIs suggested above, measures such as, mandatory requirement for soil conservation of lands granted by the state and use of at least 25% of planting subsidies provided by the state on soil conservation could also be implemented.

5. Land degradation taxes

Of the many activities that cause land to degrade, tobacco cultivation, gem mining and construction activities cause considerable land degradation, including soil erosion, land slides, breeding of mosquitoes and other insects, drainage and flooding problems.

- It is proposed to levy a cess on the export value of gems and a tax based on the square area of building under construction, to be utilized for improving the degraded lands and surroundings. The total value and quantity of gems exported between the years 2002 and 2005 is shown in Table 4.24

Table 4-24 Export of Gemstones

Year	Qty Exported (Carats)	Value (Rs. Million)	Cess @ 3% of Value (Rs Million)
• 2002	7674	5664	170
• 2003	3702	5989	180
• 2004	4302	8809	264
• 2005	6644	8005	240

Source : Sri Lanka Minerals Year Book 2006. Geological Survey and Mines Bureau, Sri Lanka

The National Gems and Jewellery Authority regulates the mining and exports of gems. A cess of 3% of the value of gem exports would provide about Rs 250 million for environmental improvements. Similarly a tax on the square area of the building or premises constructed could provide a substantial amount for environmental investments.

- Another proposal recommended is to levy a cess on the excise taxes paid for tobacco and cigarettes. Tobacco cultivation causes considerable land degradation in Sri Lanka. Cigarette smoking also contributes to air pollution, while increasing health risks and medical treatment costs. It is suggested that a cess be levied on the excise tax paid by tobacco producers, cigarette manufacturers and importers, to be earmarked for environmental improvements. In 2006, the amount of excise tax collected was Rs 30 billion, and if 1% of

the excise tax collected is appropriated it would amount to Rs 300 million per annum that would be available for environmental management.

- It is also proposed to levy a tax on businesses involved in land development and building construction activities to be utilized for mitigation of any environmental impact caused by such activities. Currently considerable problems of drainage, soil erosion, as well as adverse health impacts have resulted from such activities and the government is required to take remedial action, while the developer is not taxed because it is a public good.

6. Royalty payments

A wide application of royalty payment is also recommended. Currently a royalty payment is only applicable for the extraction of rock phosphate and dolomite (natural resources used for the production of fertilisers) and it raises therefore the question whether the extraction of other natural resources is subject to royalty payments. For example, some form of royalty payments in the form of stumpage fees may be considered to be implemented in the context of logging trees as it is done in other parts of the world. The Geological Survey and Mines Bureau, Sri Lanka, leases land for mining of various products, including mineral sands, mica, graphite, dolomite, sand, corals, limestone, silica, quartz, etc. The royalties charged for such extraction is low. Table 4.25 provides details. Thus all royalty rates should be increased to reflect the cost to the environment from the extraction of these resources.

Table 4-25 Collection of Royalties

Year	Amount (Rs Million)
2002	39.3
2003	65.9
2004	80.8
2005	129.4

Source : Sri Lanka Minerals Year Book 2006, Geological Survey and Mines Bureau, Sri Lanka

4.6 FISHERY AND COASTAL MANAGEMENT

Sri Lanka an island situated in the Indian Ocean with a land area of 65,500 km² possess a 200-mile exclusive economic zone (EEZ) of 517,000 km², which is eight times more than its total land area. For a small island like Sri Lanka, the coastal zone obviously forms a significant part of the landscape. Development activities covering the fisheries sector and the coastal zone play a vital role in the economy of the country.

The coastal zone in Sri Lanka is heavily populated and besides its importance in relation to the fisheries sector, it plays a pivotal role in the tourist industry. Today, 55 percent of the population of 18 million lives on the coastal region or within a few kilometres of it. The coastal region is the hub of industrial production and contains 61.6% of all industrial units. There are over 30 coastal divisions with industrial units and most of these units are clustered in Colombo, Gampaha, Kalutara, Galle, Matara and Puttalam districts.

4.6.1 Current situation – fishery and coastal management

Sri Lankan coastal and marine areas have considerable socio economic significance with fishing activities playing an important role. Estimates show that the coastal fishery accounts for around 60 percent of the marine fishery. This in turn provides 91 percent of the total fish production in Sri Lanka which earns foreign exchange over Rs 6 billion. The fisheries sector including coastal aquaculture provides direct employment to about 150,000 people and sustenance to at least a million. However, quite a large part of the coastal population lives in comparative poverty and under poor condition.

Table 4-26 Annual Fish Production in Sri Lanka

Year	Total fish production	Marine fish production		Inland aquaculture
		Coastal	Offshore	Fish production
In Metric Tonnes				
1990	163,664	134,132	11,666	17,866
1991	198,063	159,151	15,080	23,832
1992	206,170	163,170	22,000	21,000
1993	220,900	169,900	33,000	18,000
1994	224,000	174,500	37,500	12,000
1995	237,500	159,259	60,000	18,250
1996	228,550	149,300	57,000	22,250
1997	242,000	152,750	62,000	27,250
1998	269,850	166,700	73,250	29,900
1999	279,900	171,280	76,500	31,450
2000	300,380	179,280	84,400	36,700
2001	284,760	167,530	87,360	29,870
2002	302,890	176,250	98,510	28,130
2003	284,960	163,850	90,830	30,280
2004	286,370	154,470	98,720	33,180
2005	163,230	63,690	66,710	32,830

Source: Fishery case study

The fisheries sector contributed 2.3 percent to the Sri Lankan GDP in year 2004. However, this share dropped to 1.3 percent in 2005 due to the adverse effects of the Tsunami which hit the island in December 2004 and in particular marine fish production as shown in Table 4.26 above. The other important fishing area is aquaculture which was not hit as badly as marine fish production. Aquaculture is divided into 2 main categories: brackish water culture and fresh water culture. Despite fresh and brackish water resources Sri Lanka does not have a tradition of aquaculture and only marine shrimp aquaculture and ornamental fish culture have been developed to some extent. Nevertheless this sub-sector of the fishery sector increased the production level during the last 15 years.

Annual fish production has gradually increased since 1990 reaching the highest level in 2002. However, high catching numbers of fishes can lead to over exploitation causing the loss of biodiversity in the sea. The 2002 coastal fish production of 176,250 tonnes exceeded the calculated critical level, i.e. maximum sustainable level of fishing (MSY), of 165,235 tonnes.

As mentioned earlier, the coastal region is a highly populated area with a concentration of industrial units, tourist hotels, fishery service units and aquaculture ponds. All these entities have the potential to generate pollutants into the surrounding environment. The complete lack of proper waste and sewage collection as well as disposal systems in the highly populated coastal belt also leads to pollution of the coastal environment. These challenges of man-made problems can be mitigated by proper land-use planning and management, particularly in the small islands, and integrated coastal zone management (ICZM) is the specialised planning tool addressing this issue. ICZM ensures the orderly development of beach areas, including the management and protection of wetlands, marine resources and wildlife habitats under a designated umbrella policy, so that conflict in natural resource use and management is avoided. ICZM is needed to counter threats to the countries' coastal resources, including beaches, coral reefs, mangroves, and coastal fisheries and wildlife.

As discussed in Section 1 MBIs are rather complex and can be categorised between those which are using existing markets and those which are creating new market. The second type is insofar exciting as they are affecting prices not directly but that they design an institutional and regulatory framework addressing shortcomings and failures in environmental policy. One of the instruments belonging to the category is defining property rights. What is interesting in the context of this report is the fact that such an economic instrument has been used in the Sri Lankan fishery sector and which is still policy by the Government of Sri Lanka.

Box 4-2 Traditional property rights in the Sri Lankan fishery sector

Sri Lankan coastal fisheries have a history of traditional property rights in the form of rights of access and closed communities. In earlier times, beach seine owners controlled access to coastal waters and had associated rights that were obtained through inheritance or marriage. While there was no limit to the number of nets that anyone holding rights to access could have constructed, the fishermen on a given beach refrained from constructing additional nets unless they could bring in a catch whose value would have been higher than the cost of the net. That is, they acted as a single unit.

Sri Lankan coastal villages tend to be 'closed' communities in the sense that outsiders are not allowed access to the fishing grounds. Outsiders are also not allowed to anchor or beach fishing boats along the shoreline of the community, and labour is not recruited from outside the village. This restriction on access may be instrumental in the observation that Sri Lankan coastal fishermen, unlike other small-scale fishermen in Asian countries, earn incomes above their opportunity costs.

Source: ESCAP virtual conference: Integrating Environmental Considerations into Economic Policy Making Processes http://www.unescap.org/DRPAD/VC/orientation/M5_3.htm

Table 4-27 Annual license fee / renewal fees in the context of fishing operations

1	All types of fishing operation boats over 32 feet	500
2	For each additional types of fishing gear on board	100
3	All types of fishing operations with boats up to 32 feet	400
A	All types of fishing operations with boats/traditional craft with out board engines with one type of fishing gear on board	200
B	Each additional fishing gear	50
4	Fishing operations with beach seine craft and nets	300
5	Trawler fishing operations with traditional non-motorized craft except beach seine craft	200
6	Other fishing operations with boats excluding trawling with traditional non-motorized crafts except beach seine crafts	50
7	Fishing operations with jakotu, atoli and other traps in addition to above license fees	100
8	All other types of fishing operations without craft	25

Source: Fishery case study

Other MBIs are rather rare in the fishery sector and the coastal management respectively. But some types of administrative fees for issuing permits do exist (Table 4.27 for a list of fees).

The fee rates must be described as rather low, in particular as they have not been increased during recent year meaning that their real value have deteriorated over time. Apart from these license fees generating around Rs 0.9 mill in 2005 other administrative fees for the granting of permits are levied within the fishery sector, such as ones for health certificate and operation licenses fee for the processing industry. All the fee rates are also rather low as for example the former rate is Rs 1,000 per annum and in the latter case Rs 200 per annum. The generated revenues can be used for marine environmental protection activities.

The import of fishes and other related articles of the fishery sector is subject to an import duty. The rates of the duty vary between the goods and do not exceed 10 percent. The Government grants to all tsunami affected craft owners a fuel subsidy adding up to a total of Rs 103 million.

There are no applications of MBIs in Sri Lanka to protect coastal zone except fees for the granting of permits and licenses for constructions in the coastal zone. However, the charge rates seem to be very low as they are ranging from Rs 100 to Rs 2,000 (depending on the floor area) per unit of proposed construction. Table 4.28 below gives details of this levy. It may be doubtful whether the fee rate is high enough to cover all costs incurred by the relevant institution issuing this permit.

Table 4-28 Permit fee for Constructions in the Coastal Zone

Floor area of proposed building	Fee rate (in Rs)
Less than 1,000 sq ft	100
1,001 – 2,000 sq ft	300
2,001 – 3,000 sq ft	500
More than 3,000 sq ft	2,000

Source: Coastal zone management case study

Environmental damage to the coastal zone

The vulnerability to erosion due to natural causes along the coast differs considerably as the underlying factors vary from place to place. In addition to the natural erosion, certain anthropogenic activities have accelerated the erosion rates along many areas of the country. These activities include extractive (where natural resources are removed) and non-extractive (where resources are not removed but the environment is used for an activity) actions, most of which are development oriented. Examples of extractive actions are sand mining on beaches and in rivers, sea coral mining, and removal of coastal vegetation. Among non-extractive actions which also damaging the coastal zone are the location of buildings in close proximity to the shoreline and the construction of dams and irrigation schemes inland and construction of coastal structures (e.g. groynes, detached breakwaters, seawalls and revetments, ports and inlet jetties).

River sand mining which depresses the supply of sediment that stabilizes the shoreline has been widely acknowledged as the main cause for coastal erosion in Sri Lanka. An administrative fee has to be paid for extracting sand amounting to Rs 50 per m³ sand.

4.6.2 Recommendations – fishery and coastal management sector

The sectors fishery and coastal management was hardest hit by the Tsunami in 2004 and are slowly recovering from this disaster. There are very few MBIs in these sectors, excepting permits and licenses for construction, fishing and development activities in the coastal zones.

1 Access agreements

An attractive policy approach is discussed in the recent OECD report 'Environmental Fiscal Reform for Poverty Reduction' (OECD, 2005) which may also be of interest for Sri Lanka. It is stated that 'the financial benefit from exploiting fisheries resources are fully captured by the private sector, without compensation to society at large (OECD, 2005, p.69)'. This situation is existent in Sri Lanka considering that a great part of the fish is caught by foreign trawlers, in particular in the 'exclusive economic zone'. The United Nations Convention on the Law of the Sea (UNCLOS) determines the 'provisions for states unable to fully harvest their fisheries resources to provide access to the available surplus to other states, through appropriate agreements (OECD, 2005, p.69)'.

In many developing countries, "access agreements" are the main mechanism to manage access to national stock by foreign fleets (known as distant water fleets, DWFs). These are negotiated between governments or between the host government and the foreign fishing operator(s). ...

Access agreements generally provide for financial compensation paid by the DWF country (or private operator) to the country in whose waters the fishing takes place. This serves the dual purpose of allocating to the coastal state a share of the profits generated from resource extraction and of regulating the harvest. ...

Countries which have entered into "access agreements" include some of the poorest and least developed, such as Angola, Guinea Bissau, Mauritania, Mozambique, Sao Tome and

Senegal. For some, these agreements represent significant financial resources. For example, it is estimated that the EU agreements provide as much as 30% of government revenues in Guinea Bissau, 15% in Mauritania and 13% of Sao Tome.⁵⁰

Since Sri Lanka is unable to fully exploit the deep sea fishery resources falling within the economic zone, it could be worthwhile to follow-up these successful examples of access agreements, which can be signed with foreign governments and their nationals, wherein financial compensation can be paid to host countries for fishing rights. The agreement can specify the amount of compensation to be paid and the quantum of fish extraction permitted.

2. Fishing permits / quotas

Currently, the fishery resources of the coastal areas have been over-exploited as maximum sustainable yield (MSY) levels have been exceeded. Removal of the existing financial support measures for coastal fishing could lead to an overall reduction of coastal fishery. However, this may not be a feasible option at present. Instead, an allocation system should be introduced to limit the catching of fish helping to prevent the overexploitation of coastal fishing and protect the fragile state of the coastal zone and reefs. A fishing permit / quota system is proposed as an example of a MBI, where a permit or quota is issued for a whole community. Under this system, a maximum fishing limit should be established for each region or fishing area on a scientific basis. Such a fishing limit should be then divided among the fishing communities or cooperatives in the region, again based on past statistics or on a scientific basis. Any community or cooperative organization exceeding the limits will be charged a fee based on the amount of excess catch beyond the established limit. This fee should be paid by the cooperative or community fishery society and subsequently recovered from the members on an agreed basis.

The successful operation of this system will also depend on many factors, for example;

- A proper monitoring system for estimating the quantity of the catch must be available within the community and this should probably be supervised by the Fisheries Inspector of the area. There is already a system to quantify the fish catch in the community, but the system should be improved and regularized.
- A system to recover the fee from individual members of the community has to be established. The fee to be paid by each individual should correspond with the number and size of the fishing vessels owned or used by the fishermen.
- If the annual quota has been exceeded three times in a row, then the fee should be increased threefold in order to provide incentives for keeping to the quota

As it was revealed in Box 4.2 above the Sri Lankan fishery sector has a long tradition of having property rights controlling access to waters and the catch of fish. This recommendation is completely in accordance with the old and existing tradition.

⁵⁰ See also Nichols, 2003, for a discussion of the situation in Namibia where quota fees based on total allowable catch for major species and license fees were introduced with fishing rights biased to Namibian vessels.

3. Other Fees

Furthermore, license / registration / permit fees / health certification and administrative fees levied by the Department of Fisheries and Aquatic Resources and Department of Coast Conservation should all be increased. These fees are rather low and have not been increased in the recent past, and with high inflation levels, the real value has declined even further. The same holds true for the permit fees for new construction which should also be revised upward because of the same reasons. This recommendation would lead to a soft increase in non-tax revenues of the Sri Lankan authorities corresponding to the aim of increasing this type of revenues. In addition, the fee levied on the extraction of sand should also be increased and as mentioned in Chapter 4.5 might be considered to be redesigned and extended to other natural resources.

4.7 TOURISM

The tourism sector in Sri Lanka is mainly a private sector industry while the Government of Sri Lanka (GOSL) carries out the monitoring, taxation, policy formulation, administration of wildlife/nature reservations/botanical parks and cultural attractions. Gross earning from the tourism sector was US\$413 million in 2004, but declined to US\$ 360 million in 2005 due to the Tsunami and is estimated to have increased to about US\$ 380 million in 2006. The sector was the 4th largest foreign exchange earner for Sri Lanka. It is estimated that over 130,000 persons are employed in the sector.

At present there are very few market based instruments that are operational in the sector. Some of the fees levied at the national, regional and local levels are falling under the category of MBIs and could be classified as environmental MBIs in a wider sense, while others could be considered to be instruments that could be categorized as of the Command and Control type.

At the national level the Sri Lanka Tourist Board (SLTB) is the government agency responsible for the level and type of MBIs the tourist industry is subject to. Revenue from such levies is collected by the SLTB. The Central Environment Authority (CEA), the Department of Wild Life Conservation, (DWLC), Department of Archaeology, Department of Cultural Affairs, Department of Museums and Department of Agriculture (DOA) are other national agencies responsible for levies the tourism industry is facing. At the local level the respective Local Authorities (LA), such as the Provincial Councils (PCs), the MCs, the UCs and the PSs, also have the authority to raise revenues from charges to be paid by the tourism industry.

Available data suggests that only part of the revenues raised from the tourism sector is recycled back to the sector, in environmental services or investments benefiting the tourism sector. The use of the balance revenue raised is not transparent from the data available. A substantial proportion of the revenue goes back to the Treasury, while collections made by SLTB are utilized for the operation of the SLTB.

4.7.1 Current situation - tourism

Economic instruments in the tourism sector at the national level

The most important MBI in terms of its revenue generating effect is the embarkation levy at US\$ 15 per ticket which is imposed on all departing foreign and local travellers and included in the air ticket fare. The administration and collection of the levy is therefore relatively simple. The agency collecting the tax, i.e. the Department of Civil Aviation (DCA), receives one third of the revenues of the embarkation tax and the remaining revenues is credited equally to the account of the SLTB and to the Treasury (see Table 4.30 below).

Another tax imposed is the Tourism Development Levy at the rate of turnover tax of 1 percent applicable to all private and public sector businesses, hotels, service providers, and all others engaged in the tourist trade registered with the SLTB. The bulk of the revenue earned from this tax is earmarked for expenditure on state sponsored activities for tourism development. At present there are no clearly defined guidelines for expenditure on environmental improvements within the sector from the revenue collected from this tax. Transparency in the use of these funds, particularly for environment related expenditure, is needed to improve the effectiveness of this MBI and to achieve the goals of sustainable environmental investments in the development of tourism. The SLTB uses its authority for renewal of annual licenses to businesses in the tourism sector as leverage in collecting this levy. Unless this is paid, the licenses will not be renewed and is therefore an effective arrangement for compliance with regard to this levy/ tax. However, not all tourist businesses are registered with the SLTB, and therefore a considerable number of businesses do not pay this tax. Furthermore, all businesses in the tourism sector have to pay a Registration Fee and an Annual Licensing Fee as well as an Inspection Fee, when required.

An Environmental Protection License (EPL) for wastewater disposal is required for all tourist hotels registered with the SLTB (see also Chapter 4.3). This is usually issued by the Central Environmental Authority (CEA) in the case of large hotels. Once the approval is granted and the EPL is issued, the license should be renewed annually on the payment of fixed amount of Rs 750. The CEA has the authority to inspect the treatment facilities and order further processing if necessary prior to renewal.

Table 4-29 National level taxes and levies in tourism sector

Type of Charge	Rate	Proportion of Revenue Deposited With	
		Tourist Agency	Other Agencies
Embarkation Levy	US\$ 15/ air ticket	1/3 of revenues (US\$ 5) SLTB	Airport & Aviation Services (DCA) (US\$5) Treasury (US\$5)
Tourism Dev. Levy	1 percent of Turnover	100 percent to SLTB	0 percent
Registration, License and Inspection Fees	Rs 500 to Rs 10,000	100 percent to SLTB	0 percent
EPL License Fee	Rs 750	0 percent	100 percent CEA

Source: Tourism case study

In addition to these MBIs, tourist attractions, such as wild life parks, archaeological and cultural sites, botanical gardens and museums, are charging an entry fee. Although the foreign tourists pay a much higher rate than locals to enter these sites, the rates have not been established on any rational basis such as costs of maintenance, upkeep, maintenance of ecological balance, facilities provided, the uniqueness of the attraction, and other relevant factors. Some of these rates have not been revised in recent times, while rates charged for locals may be too low, considering the large number of locals visiting some sites. Entrance to a few ecological sensitive sites may have to be restricted to reduce any damage to the fragile eco systems that may be permanently changed if there is a larger flow of visitors. Such restrictions may be enforced by manipulating the pricing structure of the existing MBIs such as the entrance ticket. Higher prices may reduce the demand for visiting these sites, thus reducing the pressure on the natural resource, while at the same time increase revenues or keep revenues at previous levels. In the case of certain other sites such as water falls, geysers, hot wells, etc, which do not charge any entry fee, it may be feasible to impose an entry charge to collect revenue that could be used for upkeep and maintenance of these sites. In most foreign countries, entry fees are levied from visitors to such sites. Not all such sites may be suitable for such a charge, but an identification of such sites may have to be undertaken prior to selecting suitable sites.

The revenue figures of these levies revealing the increasing significance of Sri Lanka as a tourist attraction as they have sharply increased until 2004. But they also show the drop in foreign tourist numbers as a consequence of the tsunami at the end of 2004.

Table 4-30 Government Revenue from Tourism 2000-2005

Source / Year	Revenues from Tourism – national level (Rs Million)					
	2000	2001	2002	2003	2004	2005
Cultural Triangle (Tickets) Foreign	276	222	242	403	543.1	285
Cultural Triangle (Tickets) Local	6.5	7.1	7.8	8.6	8.8	11.3
Zoo - (Tickets) Foreign	29	22	30	42	119.6	61
Zoo - (Tickets) Local	35	37	50	51	64.2	68
Botanical Gardens (Tickets) Foreign	30	21	26	58	70.7	33
Botanical Gardens (Tickets) Local	18	19	21	22	22.3	24
Wildlife Parks (Tickets) Foreign	60	55	59	102	113.8	63
Wildlife Parks (Tickets) Local	6.8	5.8	7.2	8.9	9.8	8.2
Museums (Tickets) Foreign	0.5	0.6	0.8	1.2	1.5	3.9
Museums (Tickets) Local	0.9	1.4	1.6	1.4	1.2	3.2
Tourism Dev. Levy 1 percent of turnover	0	0	0	0	300.6	172.5
Embarkation Tax (foreign tourist)	200	269	393	501	0	0
Embarkation Levy (all @ US\$ 15)	0	0	0	0	780.4	674.2
SLTB Income	20	21.7	17	26	34.9	39
Total	682.7	681.6	855.4	1,225.1	2,070.9	1,446.3

Source: Tourism case study Note: The SLTB income is made up of charges levied by SLTB with regard the registration and inspection of hotels, guesthouses, restaurants and other tourist attractions.

As discussed above hotels and other commercial establishments are subject to higher electricity and water tariffs as domestic consumers. In addition, they are also levied with VAT which is not included in this analysis as it is international standard not classifying VAT as an environmental tax.

Economic instruments levied at the regional and local levels

Local Authorities such as the PCs, MCs, UCs, and PSs also levy taxes and charges for various services provided at these levels including property (assessment) taxes, fees for business licences, environmental protection license fees, and other charges such as parking fees, taxes based on turnover of business establishments, particularly tourist hotels. Some local bodies also run rest houses or guest houses in remote areas as well as near tourist attractions.

Local authorities have the authority to pass by-laws – a form of delegated legislation - in order to improve governance, earn more revenue or to reduce environmental pollution, among other purposes. However, very few local authorities have passed by-laws for this purpose. Thus taxation and charges of local authorities can vary considerably, depending on local circumstances, quality of management, financial viability, and political influences. In general solid waste management is a function of the local authority, as are road and drain maintenance, storm water drainage as well as public health and sanitation and street lighting. In most cases, the local authorities do not collect sufficient revenue to provide these services adequately. Most often they have to prioritize and provide the services most critical to the area. Solid waste collection is the most acute problem faced by a majority of the local bodies.

The major problem for most tourist establishments has been solid waste management and waste water disposal, for both of which the services provided by the local bodies are woefully inadequate. Some tourist hotel associations have started to use their own or collective resources to dispose of solid waste, but dump sites are also scarce and difficult to obtain, thus causing serious concern regarding environmental pollution. Wastewater treatment plants, particularly for the hotel trade are required by CEA before business licenses can be obtained. Most large hotels have complied with the requirement, but a large number of small and medium sized establishments do not have adequate financial resources to construct such plants and therefore send their waste water into public drains, canals, water bodies such as rivers and also into the sea.

A portion of the revenue obtained from taxes and charges levied by local bodies is recycled back to the area by way of provision of services such as solid waste management, drainage improvement, road maintenance, street lighting, etc. Thus there is a direct impact on the tourism industry through improvements to the local environment. However, the services provided are usually inadequate and therefore there is a visible deterioration of the environment impacting on the tourism sector. The use of revenue is not very apparent or transparent in the case of local authorities. This is particularly so for large local bodies, which collect a considerable amount of revenue from property and other taxes.

The local authority system has not fully adopted the provision for by-laws in governance. Even at present, the institutional capacities of a majority of local bodies are weak in terms of skills to manage generation of revenue, accounting, planning, financing, implementation management and effective operations and maintenance of services to provide the services required of them. They are characterized by weak governance, poor leadership, lack of finances, lack of trained staff, lack of capital resources such as equipment and transport. Although the capacities of local bodies vary widely, the larger local authorities such as the Municipal and Urban Councils are financially better off and hence more capable of administering MBIs, than the smaller Pradeshiya Sabhas.

4.7.2 Recommendations – tourism sector

The tourism case study indicates the different MBIs implemented in the Sri Lankan tourist sector. Apart from the MBIs which are rather general like water and electricity tariffs some more tourism-specific are currently in place, such as the embarkation levy, the tourism development levy as well as entry fees to National Parks and Gardens. The revenues of all these MBIs are partly earmarked while the embarkation and tourism development levy are raising the largest revenues.

All businesses in the tourism sector are facing additional MBIs including a registration fee, the annual licensing fee as well as an inspection fee to be paid to the Sri Lankan Tourism Board (SLTB). The analysis of these fee regimes shows that the rates are sometimes very low and what is interesting is the fact that the collection efficiency is low too 'as out of 239 hotels and 438 rest houses of different grades registered with the SLTB, only 48 or 20% of the hotels and 182 or 40% of the rest houses had renewed their licenses for the year 2004, resulting in a loss of income of over Rs 1.8 million (tourism case study)'. This finding is undoubtedly an example that the institutional capacity has to be strengthened with the clear aim to enforce and monitor the implementation of laws. It has to be made clear that strengthening institutional capacity is not limited to this sector but should be perceived as a necessary requirement for the whole country, in particular when new MBIs are planned to be implemented.

The recommendations have been based on the analysis of the various factors impinging on the success of these MBIs. In order to minimize, the passing of new laws or enhancing the institutional capacity for implementing the MBIs, the first priority has been to work with existing MBIs that can be revised with the minimum of disruption to the existing operating system. Again this is clearly the guideline with regard to all sectors and MBIs discussed throughout in this report. By making small changes in the way these MBIs are now operating, much can be achieved to improve the environment. The collection systems are all established and are operating reasonably well, therefore there is no need to make any major changes to the collection systems. However, it may be considered to allocate a reasonable proportion of the funds collected from different environmental taxes and charges towards environmental improvements. The purposes for which this fund should be used would have to be determined largely by the agency collecting such fees, but a committee comprising of officials and stakeholders should be set up in each agency to determine for what purposes and who should spend such funds.

1. Revise entry fees to parks, gardens, cultural sites and museums

The study recommends the need to revise the entry fees to parks, gardens and other cultural sites and museums. The current structure distinguishes between rates applicable for locals and foreign tourists and it is recommended that both rates be increased as they have been kept constant for a considerable period. In particular, the increase in the tourist visitor fees for natural parks is in line with a more scientific approach of economic valuation methods, such as willingness-to-pay to determine the fee rates. The revenues generated are normally used for the management of national parks and studies have shown that tourists have no objections to paying higher fees if the revenues are exclusively used for park management. The tourist view it as a means of securing a sustainable source of funding.. A study analysing the range of entrance fees of the Bunaken National Park in Indonesia, which foreign tourists would be willing to pay, concluded that foreign tourists would have an average willingness to pay of around 31 USD per visit as compared to the then existing rate of 2 USD per visit (Erdmann et al., 2003). Although such results may not be directly applicable to Sri Lankan conditions, it does point to the fact that there is considerable scope for increasing or revising the existing fee regimes⁵¹.

2 Tourism taxes

Another example of international practice is the introduction of a tourism tax as it exists in the Maldives. This type of a MBI was introduced on the Balearic Islands (Spain), one of the main holiday destinations in Europe, aiming to alleviate the effects of tourism on the environment. The revenues generated from this tax paid by tourists have been earmarked for an environmental regeneration fund. The design of this tax scheme was interesting as the rates were set in accordance with the chosen accommodation thereby charging the highest rate for luxury hotels. In the meantime this tax was abolished as the then government lost an election on the island and the new government was against the tax from the beginning.

⁵¹ A detailed report and analysis of the application of evaluation studies can be found in the report 'Developing pro-poor markets for environmental services in the Philippines' published by Rosales, 2003.

However, the idea of a tourist tax came into focus in Italy as the Italian Government proposed the introduction of such a tax in the 2007 Italian Budget. Under the proposal Italian towns are allowed to tax tourist up to 5 EUR per day and the revenues would have to be spent on tourist infrastructure and services. Interesting is also that the tax could only be applied at certain times of the year (see <http://news.bbc.co.uk/1/hi/business/5398066.stm>).

3. User Fees

In addition, the Government of Sri Lanka may weigh up the possibility of introducing a type of user fee for natural resources. Many tourist enterprises are dependent on natural resources for their existence. For example, hotels near the sea shore depend on the beaches, while those close to forests exploit these resources for their income. Similarly the cultural resources and wild life parks are the attractions for hotels and guest houses in such areas. Therefore it is appropriate that they pay a small fee for maintaining these resources in a sustainable manner. It is proposed that a user fee be charged from all hotels and guest houses that are in places where there is no entry fee for using natural resources. For example, tourist establishments near the beaches, which have a beach front, should be required to pay a user fee depending on the length of the establishment facing the beach. These establishments benefit directly from the beach, while others further inland do not have this benefit. It is proposed that hotels, restaurants and other enterprises such as scuba diving places, water sports, etc. should be charged a user fee depending on the length of the hotel or enterprise facing the beach i.e. all beach fronted construction benefiting from the beach should be required to pay this fee at a rate to be determined. It is proposed that this should be an annual payment and be enforced by the Department of Coast Conservation (DCC), through the Local Authority of the area. Alternatively, the SLTB can enforce this during the licensing process. Currently, the use of the beach or coastal resources for any purpose must be approved by the DCC, but no fee is charged for granting such approval. The funds collected should be used to clean up the beaches, and make it sustainable for all users. The fact that the establishments fronting the beaches pay a fee should not mean that such areas are reserved exclusively for their use. Since beaches are common property, everyone should have access and nobody should be given exclusive rights to any part of the beach.

4 Eco-labeling

A relatively new form of an economic instrument is also recommended in the field of tourism: Eco-labelling is another important instrument that can be used to attract more tourists to the country. With the growing awareness of the environmental impacts of tourism, in countries from which foreign tourists originate, it is likely that in the future tourists may want to stay in places which have been certified as environment friendly. Therefore there is a need for encouraging local hotels, guest houses, restaurants, eco-tourism sites to obtain such certification. However, obtaining such certification involves considerable efforts on the part of the tourism enterprises to adhere to the strict conditions imposed in the construction and operation of such places. In addition, the process also requires considerable additional expenses in the form of refurbishments, and operational expenditure as well as training and human resource development. Therefore, it is proposed that a subsidy be granted to all enterprises which plan to obtain such certification in the future. The subsidy should cover the initial expenses of obtaining such international certification, particularly the one time expenditure needed for refurbishments, training, etc. but not the additional operational expenditure. The funding for this should be obtained from the embarkation and tourism development levies administered by the SLTB.

Chapter

5

CONCLUSION

The thematic review indicates that some environmental taxes and charges are in place in Sri Lanka although the question is whether they are effective in terms of addressing environmental concerns, financing public services or raising public revenues. Alongside environmental taxes the Government of Sri Lanka grants subsidies in different economic sectors and environmental domains. The implications of providing subsidies are insofar of great significance as one of the objectives of the project is to assess the role of MBIs in generating funds for long-term financially sustainable environmental investments. The objective can be hampered in case when the total amount of subsidies⁵² outmatched the revenues that accrue from environmental taxes. During the years 2004 and 2005 huge subsidies have been provided by the Government of Sri Lanka to consumers of petroleum products as the retail prices of these products have been regulated and thereby kept them well below market prices. This policy has recently been revised as the regulated prices for transport fuels have been increased, in particular during 2006 (see Table 4.1) thereby reflecting the development of the international oil price. The tariffs for electricity and water have also been raised recently after they have been kept constant for quite a time period. But these tariffs are still well below the financial cost recovery level implying that the Government has to cover the losses of the state-owned enterprises which are providing these products. The report suggests some revisions in the design of the different tariff schemes as well as a gradual increase in the tariffs.

Environmental considerations are not to the forefront in the design of MBIs in Sri Lanka as, for example, Sri Lanka's transport fuel taxation regime does not reflect the environmental qualities of these various fuels. In addition, the real values of the taxes levied on transport fuels have further declined as the nominal tax rates have not been increased but instead they have been reduced (see Table 4.4). An increase in these tax rates is recommended – at least and as a first step the taxes should be indexed to the inflation rates - as a means to generate additional revenues. One of the recommendations of this report is to implement a cess for transport fuels, in particular for diesel, using the revenues to improve public transport. Energy taxes as well as the pricing policy clearly supports diesel fuels as the taxes and the regulated prices are much lower than the ones levied on petrol. However, transport related taxes are favouring petrol-driven vehicles as the levels of the numerous vehicle related taxes are lower when compared to those one levied on diesel-driven vehicles. Again there is scope to increase the tax rates of at least the annual vehicle license fee.

⁵² At this stage it is probably quite useful to remind that a general accepted definition of the term subsidy exists. A definition of practical use is the one of the OECD stating that a subsidy is any measure that keeps prices for consumers below market levels, or for producers above market levels.

A revision in the electricity tariff system is also highly recommended as it is not necessarily in accordance with best practice. One of the rationales of having an increasing block tariff scheme is to provide a basic amount of electricity at low costs, i.e. the so called lifeline consumption. The poor should in particular benefit from this policy. However the current scheme supports the majority of the citizen who are connected to the electricity network. It is therefore suggested to revise the boundaries of the different blocks and to reduce the amount of the blocks (from the current five to three or four) as well as to increase the rates of the different blocks. The same suggestion may also be considered in the context of the pricing scheme for water supply. The introduction of new environmental taxes seems to be inevitable in the wastewater sector: the final launch of the load based license fee would be a way forward and the introduction of properly designed wastewater user charges.

The sector is completely lagging an appropriate pricing scheme and other economic instruments in the waste sector as there is no user charges for the collection and disposal of waste implemented so far. This is surprising in that the Government of Sri Lanka is aware of the problems, in particular in the context of raising revenues for the proper financing of the waste sector, as stated in the waste strategy approved by the Government of Sri Lanka. Revisions of the currently implemented MBIs in the agriculture, fishery and tourism sector are also required as discussed in the relevant chapters. The call for an increase of the generally low rates is valid for all sectors as it is reported that the rates have been kept constant for a longer time period entailing that the real value of the tax and charge rates are further decline.

As the previous chapters have demonstrated, environmental taxes and charges have a potentially significant role to play in Sri Lanka environment and fiscal policy. Whilst many different instruments would appear to be potentially suitable, it remains important to identify the right instruments for the specific contexts and what is also decisive to ensure that they are designed in the best way possible, in particular taking into account the specific economic, social, geographical and social circumstances of Sri Lanka.

However it should not be concealed that authors have raised questions concerning the appropriateness of MBIs for the environment in a developing country context. Hence, one commentator argues (Bell, 2002):

Market-based instruments were done a disservice when the OECD, World Bank, and others pushed these tools too hard and too fast in countries that were institutionally unprepared to implement them. The power of these instruments may have been trivialized when the experts were less than candid about the total package. If environmental professionals in the countries in transition were led to believe that they could make this leap without at the same time constructing supporting institutions, the cause of environmental protection itself may have been dealt a blow by the disappointments that followed.

Arguments of this nature do not undermine the case of MBIs, but they act as a warning to countries implementing them that the seductive 'market is best' mantra tells only half the story. An adequate infrastructure for regulation, monitoring and enforcement is a necessary complement to all MBIs to ensure that the incentives created to avoid their impact do not jeopardise the instrument's success. Hence, the World Bank notes (World Bank, 1998):

Evidence from a number of countries suggests that a lack of previous experience with well-enforced and effective CAC regulations leads to a dangerous underestimation of the need for strong institutional support when designing pollution charge programs. An adequate capacity for monitoring or inspection, as well as extensive and systematic training of staff involved in implementing a new instrument, should be built into the design of the charges.

In Sri Lanka, these issues are of significance. The case studies often comment on an inadequate system of environmental regulation and lagging monitoring and enforcement capacities in many areas. It is therefore necessary to fully establish a legal and institutional background so that MBIs can properly be working and thereby achieving the policy objectives as well as to strengthen the monitoring and enforcement capacity in the country.

The long-term policy goal should be directed to establish cost based prices for all goods and services. It is understood that the polluter pays principle is adhered to so that all external costs (environmental, health, etc.) are internalised into the market price. It has to be made clear that achieving this policy goal is not trivial but rather a huge challenge to be successfully accomplished. In addition, the current comprehensive system of granting direct subsidies, such as the fertiliser subsidy programme, or indirect subsidies - in form of water and electricity tariffs which are not set according to the full cost recovery principle - should be completely re-designed so that only the real needy and poor will be supported by direct subsidies. Direct subsidy programmes, such as the Dole or Samurdhi schemes, do already exist in Sri Lanka and is a more effective means to support the needy and poor than the current non-transparent schemes.

5.1 REVENUES OF ENVIRONMENTAL TAXES IN SRI LANKA

The comparison of the use of MBIs between countries is not a straightforward task and international organisations, such as the OECD, are publishing several indicators, such as the ratio of environmental tax revenues to GDP and to total tax revenues as a mean for analysing environmental taxes between countries (OECD, 2006). These ratios are on the one hand a useful tool to compare the situation in different countries over time, i.e. how the revenues are evolving over time, but on the other hand these indicators have to be interpreted with great care as they do not reveal whether a tax system is 'environmentally friendly' or not. This latter issue is of central significance in the case of Sri Lanka as discussed in more detail below. Another problem is that these indicators are only published on a comparative basis for OECD countries or EU Member States regularly meaning that data for developing countries are not easily available.

Experiences gained from the situation in OECD countries shows unequivocally that around 90 per cent of revenues generated by environmental taxes are collected in the transport sector, and are raised by taxes on transport fuels and vehicles (OECD, 2001). The major part of revenues is accrued by taxes levied on energy products (around 75 percent) as compared to around 20 percent which is generated by taxes levied on vehicles⁵³. The situation in Sri Lanka is different as shown in Table 5.1 as the revenues from taxes levied on petroleum products are lower than the ones generated by taxes

⁵³ The remaining part is generated from taxes on natural resources and pollution.

levied on vehicles, i.e. ratio is about 40:60 during the period 2004 – 2007 with the exception of 2005 where the ratio was about 60:40.

Table 5.1 indicates a rather stable ratio of revenues generated from environmental taxes to total tax revenues between 2003 and 2006 and the ratio between environmental tax revenues to GDP is slightly increasing during this period. On average the share of environmental taxes to total tax revenues is in the order of 6-7 percent in OECD countries (OECD, 2006). This ratio is clearly exceeded in Sri Lanka as Table 5.1 reveals. However, the share of environmental tax revenues to GDP is in the area of 2 – 2.5 percent but with large differences between countries. This ratio exceeds 3 percents in countries, such as Denmark, Czech Republic and Turkey, while in the US the revenues represented less than 1 percent of GDP. The Sri Lankan ratio is around 1.5 percent which is comparable to the figure of Malaysia (around 1.6 percent in 2000 – Eunomia et al., 2003).

Table 5-1 Overview of revenues generated by environment taxes in Sri Lanka

Type of Tax	Revenue Generated Rs Million (current prices)			
	2004	2005	2006 (Rev. Estimate)	2007 (Projected)
<i>Excise (special provisions) duty</i>				
Petroleum products	10,295	22,564	18,234	19,164
Motor vehicles	12,674	13,033	20,847	26,100
<i>Licence taxes & others</i>				
Motor vehicle tax	323	276	550	650
Tax on sale of motor vehicles	16	17	15	16
<i>Sale proceeds and charges</i>				
Embarkation levy	700	651	630	630
Total environment. tax revenues	24,008	36,541	40,276	46,560
GDP (market prices)	2,029,365	2,365,702	2,802,000	3,267,000
Tax revenues	274,895	345,864	432,462	526,479
Environment tax revenues in % of total tax revenues	8.7	10.6	9.3	8.8
Environment tax revenues in % of GDP	1.2	1.5	1.4	1.4
Revenues from taxes on petroleum products tax in % of environmental tax revenue	42.9	61.7	45.3	41.2
Revenues from transport related taxes in % of environmental tax revenue	54.2	36.5	53.2	57.5

Source: Ministry of Finance & Planning, Government revenue – tax revenue;

<http://www.treasury.gov.lk/BOM/nbd/pdfdocs/nationalsum2007/revenue2007/2-GovernmentRevenue2007.pdf> [accessed April 2, 2007] and Central Bank of Sri Lanka – Annual report 2006

http://www.cbsl.gov.lk/pics_n_docs/10_publication/docs/efr/annual_report/Ar2006/Content.htm [accessed May 7, 2007] and author's own calculation.

As mentioned above the findings regarding revenues must be treated with some cautious as they do not present the whole picture as it is especially obvious in the Sri Lankan case. During the years 2004 and 2005 the Sri Lankan Government provided large subsidies in the field of fuel and fertilisers amounting to around Rs. 22 billion in 2004 and to almost Rs. 33 billion in 2005. The table

below provides some information concerning the total size of these environment subsidies in relation to total governmental revenues⁵⁴.

Table 5-2 Environmental subsidies

	Rupees Million		
	2004	2005 (est.)	2006 (est.)
Subsidies – fuel products	18,000	26,000	9,300 (first half of 2006)
Subsidies – fertilisers	3,572	6,846	12,500 (revised estimate)
Total environmental subsidies	21,572	32,846	21,800 (min.)
Subsidies in % of GDP	1.1%	1.4%	0.8% (min.)
Subsidies in % of tax revenue	7.8%	9.5%	5.0% (min.)

Source: Central Bank of Sri Lanka – author’s own calculation

The figures presented in Tables 5.1 and 5.2 are intriguing as they show that the revenues generated from environmental taxes have been slightly higher than the subsidies in the years 2004 and 2005. This meant that net revenues have been 2.4 billion Rs in 2004 and 3.7 billion Rs in 2005, i.e. the net ratio environmental tax revenues to total tax revenues have been around 1 percent as compared to the figures of around 9-10 percent presented in Table 5.1. The fuel subsidies may be considered to be successful in the short-run as the domestic prices of fuel products have not been increased along the lines of the increase in world oil price. However, the outcome in the medium-term was definitely not a success story as the Government of Sri Lanka discontinued the provision of subsidies from July 2006 while ‘the subsidy created serious macroeconomic implications through higher fiscal expenditure. Higher budget deficits emanating from huge oil subsidies in turn would either raise the government borrowings, compel it to reduce capital expenditure or increase the tax burden (Central Bank of Sri Lanka, 2007)’⁵⁵.

These huge transfers of budgetary sources have been reduced in 2006 while the subsidies for fuel products expired as the energy prices have been increased (see Table 4.1). The reasons for introducing subsidies are often founded in terms of aiming to achieve special social policy objectives and have mainly to do with the issue of protecting some parts of the society, especially the poor, from increased prices and costs. This motivation was one of the underlying principles for implementing the fuel subsidy regime during 2004 and 2005 as the Government tried to offset the effects of the increase in world oil prices during this period. However, the provision of subsidies is not a panacea as it is using scarce financial means that cannot be used for other – maybe more welfare increasing – policies as it is discussed in Box 5.1 below.

⁵⁴ A rather detailed and interesting discussion of the implications of oil price shocks and the consequences of the Sri Lankan economy and national budget can be found in Central Bank of Sri Lanka, 2005, pp.14-15, Box 4.

⁵⁵ The Central Bank of Sri Lanka reports in its Annual Report 2006 that the kerosene subsidy programme is yet continuing (Central Bank of Sri Lanka, 2007).

Box 5-1 The welfare costs of subsidies

Box 3

Welfare Cost of Subsidies

Subsidies are of different types: transfers of budgetary resources, tax holidays, tax concessions, supplying goods or services below cost and policies that create transfers through the market mechanism. Subsidies are popular means of providing relief by governments to categories of persons (e.g. farmers), private agents and public enterprises, enabling them to either purchase or sell a good or a service at a cost below the market price.

The welfare cost of subsidies is multi faceted. They lead to governments incurring a budgetary burden, which has to be met through either increased taxing of the population or increasing the government's indebtedness or covering the cost by cutting fiscal expenditure, frequently by reducing expenditure on public investment. Thus, subsidies often involve a serious opportunity cost of growth and development with the reallocation of resources from productive public investment to current expenditure. Furthermore, lower prices, mostly below the cost of production paid by economic agents on goods and services could lead to over exploitation and misallocation of resources. Utilities such as water, electricity and petroleum in many countries are subject to subsidies and those resources are being over exploited. Such over exploitation could lead to a worldwide shortage of resources.

In Sri Lanka, subsidies are widespread. Annual subsidies for fuel and fertiliser amount to Rs.26 billion and Rs.6.8

billion, respectively. These subsidies amounted to 1.4 per cent of GDP in 2005, which could be compared with the total public spending on health in 2005 (Rs.44.8 billion) and the cost of the Norochcholai power project (Rs.47.9 billion). It is almost equal to the total estimated cost of the Southern Highway (Rs.33.9 billion). This is several times higher than the allocation (Rs.0.35 billion) made for the new Uva Wellassa University in 2005. The annual cost of subsidies could be utilised to construct about 1,300 schools or about 160 base hospitals per year. In addition to these, a wide range of corporate tax holidays and tax concessions exists leading to a loss of fiscal revenue.

The key issues in managing subsidies are the size, incidence and distortions in allocation. The adverse implications of subsidies could be minimised by their reduction through provision of subsidies only to the needy through proper targeting. Though the need for reducing subsidies has been recognised, intervention by various pressure groups and insufficient consensus on reforming subsidies, often does not allow the implementation of such policies.

Rationalisation of subsidies can remove economic distortions, thereby improving efficiency and growth, reduce the budgetary burden and significantly enhance much needed public investment.

Source: Central Bank of Sri Lanka Annual Report, 2005, p.12

5.2 SUBSIDY REFORM

Probably one of the central policy measures to be recommended is a detailed analysis and implications of all subsidies provided by the Government of Sri Lanka. As discussed above the subsidies for fuel and fertilisers given in 2004 and 2005 are large in terms of the total environmental tax revenues and the current account deficit of the Sri Lankan Government. International organisations, such as the World Bank, the International Monetary Fund (IMF), the Asian Development Bank (ADB), the Organisation for Economic Co-operation and Development (OECD), the United Nations Environment Programme (UNEP) and the European Environment Agency (EEA), have recently published detailed report analysing subsidy schemes implemented in all regions of the world⁵⁶.

There is almost a unanimous agreement that the introduction of any new MBIs, such as environmental taxes, should only be done after the existing subsidy schemes are reformed as their effectiveness may be counteracted by subsidies. It is rather straightforward to conclude that these types of MBIs, i.e. environmental taxes and charges on the one hand and subsidies on the other are definitely offsetting each other with regard to the revenue-generating / spending functions as discussed in Box 5.1 above and as highlighted in a recent OECD / World Bank report in which the idea of an environmental fiscal reform for poverty reduction is discussed in detail (OECD, 2005 and World Bank, 2005a).

However, a 'single' and straightforward way of reforming subsidies is not available as the given economic, social and geographical conditions of the individual countries and regions have to be kept in mind as the World Bank reports about reforming energy subsidies World Bank, 2002):

Efforts in transition economies need to focus on raising energy prices to market levels and improving collection rates: non-payment of energy bills constitutes a major source of implicit subsidy. For African countries, the challenge is to structure subsidies to alleviate poverty and raise living standards by improving access to modern forms of energy in an environmentally acceptable and financially viable way. In Asia, the recent financial crisis and surge in international prices, which have led to higher end-user prices and put enormous strain on government finances, have heightened the necessity for a move to more market-based energy pricing while highlighting the need for continued support to poor people. And most Latin American countries recognize the necessity to reform energy subsidies and have already engaged in reform processes where access to electricity seems to be the overarching theme.

Reforming subsidies must also be seen as an important step to freeing up revenues for financing other policy areas, such as achieving specific goals established under the Millennium Development Goals policy. This aspect must be put into the context of the importance of mobilising domestic

⁵⁶ When discussing subsidies in this report the focus is directed to ones which are generally called 'environmental damaging subsidies' as compared to 'environmental friendly subsidies'. The latter are comprising a range of different financial measures aimed to influence citizen to behave in a more environmentally-friendly way, for example the provision of a subsidy to purchase a more energy efficient refrigerator, or to achieve clearly defined environmental policy objectives, such as the mandatory purchase at predefined prices of renewable electricity.

resources for development activities including environmental infrastructure investments in developing countries. Revenues from environmental taxes can thereby play an important role as it is shown during the transition phase of Central and Eastern European countries in the 1990s (Speck et al., 2001).

The authors of a report published jointly by UNEP and OECD/IEA (2002, p.29) conclude that

it is becoming increasingly apparent that many types of energy subsidies today run counter to the goal of sustainable development:

- *Subsidies often lead to higher consumption and waste, exacerbating the harmful effects of energy use on the environment.*
- *They can place a heavy burden on government finances and weaken the potential for economies to grow.*
- *They can undermine private and public investment in the energy sector, which can impede the expansion of distribution networks and the development of more environmentally benign energy technologies.*
- *They do not always end up helping the people that need them most.*

Recently two reports analysing the provision of fuel subsidies have been published by the International Monetary Fund (Lueth et al., 2006 and Coady et al., 2006). Both reports are very timely as the authors are assessing the fiscal and distributional impacts of fuel subsidies. Although the fuel subsidies have been reduced in Sri Lanka during the second part of 2006 the conclusions drawn by the authors are worthwhile to be reported – in particular with regard to the current practice of setting electricity tariffs⁵⁷.

The most significant policy development in terms of reforming fuel subsidies was the decision of the Government of Sri Lanka to rethink petroleum product prices as the increase in the refined product prices have been passed-through on domestic prices at the end of 2006 resulting in recurrent increases of domestic fuel prices throughout 2006. The rationale of this policy approach is summarised by Lueth et al. (2006):

With oil price likely to remain higher, the full pass-through to domestic consumers is the best policy on both fiscal and efficiency grounds. Subsidization of petroleum products can crowd out productive expenditures, increase public debt, and undermine the financial position of public enterprises. Below cost prices also create distortions (for example, using kerosene to adulterate diesel) and prevent the adjustment in domestic demand that facilitates a return to a sustainable external balance. In the longer term, correct price signals induce countries to adopt alternative energy sources and pursue more energy-efficient technologies, which will serve the countries when they face future oil shocks.

⁵⁷ See also World Bank, 2005b, for an analysis of who actually benefits from water and electricity subsidies.

The possible problems listed above occurred in Sri Lanka during the period 2004-2006, in particular the weakening of the financial position of public enterprises, such as the CEB and the CPC. Furthermore, the authors of this report conclude that '... experience has shown, a determined and timely adjustment is preferable to a large and disruptive one and eventually helps to minimize the negative effects often associated with external shocks (Lueth et al., 2006).

Table 5.3 provides an overview of estimated budget share by product and income group for Sri Lanka revealing some interesting facts. Low-income households allocate a lower proportion of their budget to energy. However they are spending by far the largest share on kerosene evidently reflecting the high usage of kerosene. On the contrary low-income households do not spend any of their budgets for transport fuels (gasoline and diesel) and have the lowest budget share spent on electricity which is by far the highest shares for high-income households.

Table 5-3 Estimated fuel budget shares by income quintiles

Product	Percentage of Total Consumption					
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	All
Kerosene	1.8	1.2	0.9	0.8	0.4	1.0
LPG	0.1	0.2	0.2	0.6	1.4	0.5
Gasoline and diesel	0.0	0.2	0.3	0.5	1.6	0.5
Electricity	0.8	1.1	1.1	1.5	2.1	1.3
Total	2.7	2.6	2.6	3.4	5.4	3.3

Source: Coady et al., 2006

The results are rather obvious showing that fuel subsidies were a significant drain on public funds (see also Table 5.2) and that high-income groups were the main beneficiary as opposed to the often articulated statement that subsidies are introduced to support low-income households respectively the poor.

Based on these findings it is not surprising that the elimination of fuel subsidies was desirable from both a fiscal and efficiency perspective as 'fuel subsidies are not a cost-effective approach to protecting the real incomes of low-income households (Lueth et al., 2006)'. The conclusion of these reports seem to be a rather crushing verdict against subsidies as it is summarised that '...subsidies are typically inefficient and regressive, as evidenced by the substantial leakage of existing subsidies to high-income households (Lueth et al., 2006)⁵⁸'. However, the statement regarding the use of subsidies to protect the poor is eased as other forms of financial support measures exist which are more efficient and effective by eliminating fuel subsidies and using some of the proceeds to compensate the poor through well-targeted safety nets and simultaneously be able to record budget savings.

⁵⁸ It was calculated that about 52 percent of the fuel subsidies went to the top two income quintiles compared to only 31 percent to the bottom two-income quintiles. Therefore it is obvious that the fuel subsidy scheme which was maintained until the summer of 2006 was regressive as well as being inefficient, as evidenced by the substantial leakage to high-income households (Lueth et al., 2006). Slightly different figures are reported by Coady et al., 2006 as these authors concluded that the share of the poorest 40 percent of households (i.e. the bottom two-income quintiles) in the total benefits from fuel subsidies were 25.1 percent in Sri Lanka.

It is worthwhile to note that the reduction in fuel subsidies and the simultaneous increase in petroleum prices (see Table 4.1) was not offset by a similar increase in the budget of the Samurdhi programme which is targeted at poor households and described as the most cost effective one in Sri Lanka (Lueth et al., 2006)⁵⁹. As mentioned above fuel subsidies may also crowd out desirable social expenditures. The budget of Samurdhi programme as the main safety net in Sri Lanka amounted to around 0.42 percent of GDP in 2004 dropping to 0.39 percent of GDP in 2006 (provisional data). The latest estimates reveal a further reduction in the budget of this programme leading to a further drop in the GDP-share to around 0.29 percent. It therefore seems rather obvious that the latest increase in fuel prices, in particular for kerosene which is the main fuel purchased by low-income households (see Table 5.3), may not be compensated via support measures paid out from the Samurdhi programme.

As discussed above the financial performance of CEB and NWSDB is poor as the two service provider cannot levy tariffs based on the full cost recovery principle. The implication of this policy is that the losses have to be somehow covered by the government. This form of indirect subsidisation of electricity is again leading to an increased burden of the governmental budget with the consequence that scarce budgetary resources have to be used to improve the financial performance of public enterprises. The rationale for such subsidisation schemes is in general associated with distributional concerns and the protection of the poor. However, the findings of several studies shed a different light on this subject:

⁵⁹ The budget of the Samurdhi programme increased from 8.5 billion Rs in 2004 to 9.2 billion Rs in 2005 (provisional) to 10.8 billion Rs in 2006 (provisional) and reduced to 9.6 billion Rs in 2007(approved estimate) (Central Bank of Sri Lanka, 2005 and 2006). It is assumed that the development of the budget of the Samurdhi programme does not reflect the elimination of the fuel subsidy scheme, in particular when considering that the Samurdhi programme could be used to protect the poor from increase in fuel prices.

Box 5-2 Extracts from different reports highlighting the problems and drawbacks of providing subsidies

A second objective of water or electricity subsidies is to make or keep service affordable to the poor, especially as prices increase to cost recovery levels. It is important for policy makers to recognize that consumption subsidies have serious drawbacks in this regard: the leakage cost of the subsidies is high and many poor households do not receive any subsidy. At best, connection and consumption subsidies have the potential to address only one of the many factors – price – that explain why so many poor households currently do not use utility services. Utility subsidies cannot eliminate barriers such as tenure insecurity and may even exacerbate other problems if the utilities are not reimbursed through government transfers or cross-subsidies for the discounts they provide to residential customers. Financially weak utilities will lack the resources to expand network service and improve service quality (Komives et al, 2006).

The book's findings are sobering. It concludes that the most common subsidy instruments (quantity-targeted subsidies such as those delivered through increasing block tariffs) perform poorly in comparison with most other transfer mechanisms. Alternative consumption and connection subsidy mechanisms show more promise, especially when combined with complementary nonprice approaches to making utility services accessible and affordable to poor households (World Bank, 2005).

A recent review concludes that the impact of energy sector reform on the poor has been positive in countries where the reform is most complete and mature (Albouy and Nadifi, 2000). While the direct impact is often a tariff increase for many users, in these cases the poor were protected against increases or benefited as group from the improvements that reform brought about in the sector – better access and service – in government finances and in the economy at large. Reforms indirectly benefit the poor in three ways (1) enabling energy delivery mechanisms (whether off-grid electricity, LPG bottles, or other) that expands energy access, choice, and choice for consumers; (2) freeing fiscal resources for high priority fiscal spending; and (3) reducing the health impacts of energy supply to which the poor are most exposed.

Finally, the real impact of energy subsidy removal on the poor should come from the use of the funds liberated. In countries where lack of access is an important issue, some form of assistance may be required to help poor households obtain higher quality energy services. Such assistance should be directed at encouraging access to services rather than subsidizing the operating costs of providing the services. In countries where affordability is the main issue, as in Eastern Europe and Central Asia, safety nets (such as raising pensions or providing targeted assistance) must be put in place in parallel to the tariff increases. When the temperature is -40°C , energy prices obviously cannot be raised without concern for affordability. This highlights the fact that subsidy reform must be contemplated in the context of broader policy reform, not merely as a sector intervention, and must be tailored to the specific circumstances of each country (World Bank, 2002).

This report does certainly not recommend that subsidies are completely abolished but that the current schemes are reformed as subsidies are not generally bad. However, subsidy programmes should follow some clear criteria as a recent UNEP report concludes.

Box 5-3 Key criteria for the provision of subsidy programmes

In practice, governments need to take account of national and local circumstances in reforming subsidy policies or designing new ones. These include the country's own policy objectives and priorities, its stage of economic development, market and economic conditions, the state of public finances, the institutional framework and the state of the country's environment. Nonetheless, there are a number of basic principles that countries need to apply in designing subsidies and implementing reforms to existing programmes. Experience shows that when applied, subsidy programmes and their reform should meet the following key criteria:

- *Well-targeted*: Subsidies should go only to those who are meant and deserve to receive them.
- *Efficient*: Subsidies should not undermine incentives for suppliers or consumers to provide or use a service efficiently.
- *Soundly based*: Subsidies should be justified by a thorough analysis of the associated costs and benefits.
- *Practical*: The amount of subsidy should be affordable and it must be possible to administer the subsidy in a low-cost way.
- *Transparent*: The public should be able to see how much a subsidy programme costs and who benefits from it.
- *Limited in time*: Subsidy programmes should have limited duration, preferably set at the outset, so that consumers and producers do not get "hooked" on the subsidies and the cost of the programme does not spiral out of control.

In practice, public resistance to reform can be very strong. Reforming existing energy subsidies requires strong political will to take tough decisions that benefit society as a whole. Certain approaches can also help. Implementing reforms in a phased manner can help to soften the financial pain of those who stand to lose out and give them time to adapt. This is likely to be the case where removing a subsidy has major economic and social consequences.

Source: UNEP, 2004b

These criteria developed by UNEP are of great relevance for Sri Lanka. A specific recommendation would be to link increases in electricity tariffs, for example, to the international oil prices as oil products will still be the main energy input in electricity generation for the coming years.

During recent years, energy subsidy reforms have been implemented in South-East Asia where price controls and energy subsidies were widespread. However, during the past years Indonesia and Malaysia have rather drastically reduced subsidy payments with the consequence that fuel prices increased by 127 percent in Indonesia in 2005 and petrol prices increased by 40 percent while diesel prices doubled during the period from October 2005 until March 2006. The public outcry manifested in street protests in these countries did not lead to reversing these decisions and what is even more noticeable is that 'governments' finances have improved greatly but the resulting sharp rise in fuel costs has not plunged the region into recession, even though demand for oil-based fuels has slumped (The Economist, 2006, p.58).

It must clearly be stressed that subsidy removal or reduction 'does not mean the abandonment of social policy goals. In general, they can be achieved more effectively through alternative mechanisms involving direct welfare payments or investment in social services, since the economic efficiency losses and environmental effects are less marked. It is usually better for a government to contribute directly to the cost of building or running a school or hospital than to subsidize the electricity or heating fuels needed to run them (UNEP and OECD/IEA, 2002).

When assessing the current scheme of electricity tariffs in Sri Lanka the findings of the IMF reports are also of interest. The current provision of subsidies in this field accrues to middle-income households as poor households have a rather low access rate to electricity (Lueth et al., 2006)⁶⁰. Coady et al. (2006) claim 'that under the existing subsidized tariff structure less than 15 percent of the subsidy accrued to the poorest 40 percent of households. It was also found that although restructuring the tariff could improve targeting, its ability to do so was severely limited not only by the lack of access by poor households to the electricity network, but also by the low correlation between electricity use and income among those with access'.

In 2001, the World Energy Council (WEC) published a report focusing on pricing practices in developing countries. One of the key messages is that the goal of energy policy is accessibility, availability and acceptability (the so-called 'three A's' of sustainable energy systems) and should also form the pillars of energy pricing policies in all countries including developing countries. Several findings emphasise the reform proposals recommended in this report as 'energy price subsidies which encourage energy consumption by keeping prices below costs impose heavy burdens on economic efficiency, environmental quality and government budgets (WEC, 2001)'. Another observation is also mentioned in the WEC report that namely 'the most pressing issue in many developing countries is the failure of energy providers to recover full costs. Such a situation hinders development, prevents investment in energy accessibility and availability, and in certain cases draws government resources away from other needs (WEC, 2001)'. The WEC report also lies out some principles on pricing energy in developing countries including:

- *Prices should be set at a level which allows energy providers to recover the long run marginal cost of delivering the service, including a fair return on investment.*
- *A major issue in many developing and transitional economies is not that electricity tariffs are set too low but rather that there are major deficiencies or incapacities in metering the energy consumed, billing the energy delivered, and collecting payment. The maximum possible reduction in non-technical losses and non-collection rates represents the best "return" in terms of addressing the financial health of the energy provider, the efficiency of the energy system, and the prosperity of the country.*
- *Producer subsidies should be avoided.*
- *Some types of temporary consumer subsidies can be justified in specific market situations if the goal is to ensure energy accessibility and acceptability for the two billion people in the world without commercial energy, especially for the very poorest people in developing countries. Where governments have social equity in mind, they may seek to provide a basic supply of commercial energy to all of their people at an affordable tariff.*

⁶⁰ Almost 62 percent of households are reported to have access to the electricity network but the actual access rate varies from 30 percent for the bottom decile to 88 percent in the top quintile (Lueth et al., 2006).

The Government of Sri Lanka may consider to adapt the principles mentioned above and to abandon producer subsidies and moving instead in the granting of consumer subsidies in the form of providing the financial means to connect the poor to the water and electricity network. The lack of available funds is often the reason why the poor are not connected to these networks as the costs are quite high. The poor would often be able to pay the water and electricity tariffs, i.e. the monthly water and electricity bill, but they cannot afford to pay for the connection.

5.3 EARMARKING OF TAX REVENUES AND ENVIRONMENTAL FUNDS

During the last two decades political decision makers have increasingly recognized the capacity of economic instruments to provide incentives for attaining environmental policy goals at least costs. The trend in EU member states has been directed to introduce environmental taxes as a means to reduce other distortionary taxes as part of an Environmental Fiscal Reform (see Chapter 1.2) as these revenues are no longer considered as sources for financing environmental infrastructure measures via earmarking, or the process of hypothecation of revenues generated by such taxes. However, the earmarking of environmental taxes is still widespread in transition countries and in some developing countries, in particular, in the context of environmental, energy or water funds. This approach is also proposed in Sri Lanka as the revenues from the proposed energy cess should be earmarked for an energy fund.

Environmental funds are institutions, typically governmental or quasi-governmental, designed to channel earmarked public revenues for environmental protection purposes (OECD, 1995 and Speck et al., 2001). Funds administer revenues mainly generated by environmental taxes to provide financial assistance on subsidised terms for investments and projects designed to achieve environmental policy goals. Specific funds such as the water funds in France and the Netherlands also exist in developed market economies. However, earmarking of revenues is not always considered to be in accordance with good practice in public finance.

However, the polluter pays principle provides for exceptions to the standard rule that governments should not provide subsidies to polluters (see for further information: OECD, 1995). This implies that earmarking of revenues from environmental taxes and charges can be implemented. Three conditions, commonly found in countries in transition to a market economy as well as in developing countries, justify such exceptions temporarily. The conditions are that (OECD, 1992):

1. the subsidy does not introduce significant distortions in international trade and investment;
2. without the subsidy, affected industry would suffer severe difficulties complying with environmental requirements— subsidies should be limited to such well-defined sectors; and
3. the subsidy is limited to a well-defined transition period adapted to the socio-economic problems associated with the implementation of a country's environmental policy.

Probably the most important of the exceptions outlined above in respect of the Sri Lanka situation is the third of the points above. Earmarking of public revenues and the use of environmental funds offers a number of opportunities for financing environmental investments but also raises some concerns. In 1995, the OECD developed the *St. Petersburg Guidelines for Environmental Funds in the Transition to a Market Economy*, which has acted to provide a benchmark for the development and evaluation of environmental funds.

Box 5-4 St Petersburg Guidelines on Environmental Funds:

The main conclusions of the St. Petersburg Guidelines on Environmental Funds include the following:

- To avoid or minimize the long-term economic inefficiencies inherent in earmarking of funds, expenditure should be targeted to meet environmental priorities and promote projects with large environmental benefits relative to their costs.
- Environmental funds should play a catalytic role in financing, ideally offering no more support for project than is necessary, adapt to changing economic conditions, and support, not compete with, emerging capital markets.
- Environmental funds should be used in conjunction with, and reinforce, other environmental policy instruments, such as compliance schedules, environmental auditing programs and voluntary agreements.
- Environmental funds should develop an overall financing strategy, follow clear and explicit operating procedures for evaluating and selecting projects, adopt effective monitoring and evaluation practices, and make effective use of internal and external expertise to enhance administrative efficiency.
- For investment projects, funds should have well-designed program and project cycles to ensure cost-effective use of resources.
- Environmental funds should leverage increased private sector resources and capital market financing for environmental investments.
- In defining and evaluating fund revenue mechanisms, environmental authorities should try to ensure environmental effectiveness, economic and administrative efficiency, equity and acceptability. Systems should provide a stable base of revenues, be simple in structure, and be easy to monitor and enforce.
- Environmental funds should ensure transparency and should be accountable to government, parliaments, and the public for their actions.

These guidelines recognize the peril that earmarking can lead to inefficient allocation of resources if public revenues could generate greater net social benefits by being spent in areas other than the earmarked sector. In particular, the OECD report note the danger that 'the level of public services financed by earmarked funds adjusts to changes in revenue rather than changes in demand (OECD, 1995)', whilst the creation of vested interests may result in a demand for extension of subsidised financing for longer than may be necessary. Earmarking of environmental taxes can be an effective instrument for environmental policy but should only be done if sound principles of public finance, such as transparency and the continuous analysis of the necessity for maintaining the earmarking, are guaranteed.

Chapter

6

SUMMARY OF RECOMMENDATIONS

The following is a summary of the proposals for MBIs and policy measures needed for establishing an enabling environment for future implementation of the MBIs recommended in the report. The proposals have been arranged on the basis of time period during which they could be implemented and categorized as short-term, medium-term or long-term. There is no condition that the proposed timing of implementation should be strictly adhered to. However, the proposed short term proposals are easy to implement as it requires little or no improvement in terms of institutional capacity and if at all only minor changes in legal or policy framework to put into practice.

The National Environment Fund should be established in the Ministry of Environment and Natural Resources and revenues generated from MBIs and other policies deposited into this fund. These funds would be used for specific environmental improvement or mitigation activities or programmes. The details of how this fund should be utilized and the purposes and the priorities in investment should be decided by the Ministry of Environment and Natural Resources and approved by the Cabinet of Ministers.

6.1 SHORT-TERM PROPOSALS FOR MBIS AND POLICIES FOR IMMEDIATE IMPLEMENTATION

- *Introduce Cess on petrol and diesel with or without raising the price to the consumer and use revenues for mitigating environmental impacts. If consumer prices are not raised and the oil companies make losses, such losses should be made up by an increased government subsidy.*
- *Gradually adjust fuel taxes to reduce disparities between diesel and petrol prices to reduce consumption of the more environmentally polluting diesel fuel.*
- *Introduce cess on excise tax on motor vehicles.*
- *Increase annual vehicle licensing fees.*
- *Introduce cess on Ports and Airport Levy.*
- *Index tax rates to inflation.*
- *Improve management of CEB to reduce operational costs and transmission losses.*
- *Promote renewable energy, CFL (Compact Fluorescent Lamps – energy saving light bulbs), appliance labelling, efficient wood stoves, and mini hydro schemes.*
- *Provide subsidy for cost of water connection to induce households using free stand pipes to reduce "non-revenue water" losses (revenue losses due to water provided free of charge from public street stand pipes in poor community settlements).*
- *Reformulate inorganic fertilizer subsidy by limiting to small farmers and low level of application and combine it with subsidy for organic fertilizer (compost).*
- *Increase taxes on toxic chemicals to reduce use of harmful chemicals & pesticides and promote Integrated Pest Management (IPM).*
- *Introduce cess on excise tax on cigarettes and tobacco.*
- *Introduce land degradation tax on land development and building projects causing harm to environment and use proceeds to mitigate any environmental impact.*
- *Introduce cess or tax on gem exports.*
- *Increase royalties for extraction of natural resources such as gems, sand, coral, phosphate rocks, minerals, timber, etc.*
- *Jointly manage irrigation systems through the establishment of farmer organizations*
- *Introduce a load based effluent charge system for industrial waste water discharges.*
- *Provide subsidies for eco-labelling and promote cleaner production of goods and services.*
- *Introduce user fees for solid waste disposal specifically in urban areas*
- *Increase entry fees to parks, gardens, cultural sites and other tourist attractions.*
- *Use revenues from embarkation and tourism levies, to partly subsidize waste water treatment plants in tourist hotels and to improve tourism environment.*

6.2 MEDIUM-TERM PROPOSALS FOR MBIS AND POLICIES FOR IMPLEMENTATION WITHIN A FIVE-YEAR TIME FRAME.

- *Revise taxes on first registration of motor vehicles.*
- *Set fuel prices in accordance with world prices*
- *Gradually reduce diesel fuel subsidies to reflect market prices and provide direct subsidy only to affected groups, through appropriate programmes.*
- *Reformulate electricity tariffs to reduce subsidies for the medium and large consumers to recover cost of electricity provision.*
- *Introduce cess on electricity and water rates with or without increasing the cost to the consumer and use revenues for environmental improvement. If consumer prices are not raised and the CEB or electricity/water companies make losses, such losses should be made up by an increased government subsidy.*
- *Restructure and rationalize domestic water tariffs to limit subsidies only to the affected very poor consumers.*
- *Provide subsidies to the poor for water and electricity connections.*
- *Introduce water extraction fees for large scale use of ground and surface water*
- *Mandate 25% of replanting or other subsidies in the agriculture sector for soil conservation purposes.*
- *Promote organic farming of agricultural products for local and export market.*
- *Sign Access Agreements with foreign enterprises and countries exploiting deep sea fisheries in Sri Lankan waters.*
- *Increase permit, license and administrative fees for coastal zone development.*
- *Increases administrative fees for permits, health certificates and operation licenses in fishery sector.*
- *Introduce fishing permits / quotas for coastal fishing*
- *Impose user fees for sewage disposal*
- *Introduce product taxes on e.g. polythene or packing material to reduce solid waste*
- *Introduce deposit refund schemes for recycling of waste*
- *Introduce air emission taxes and implement CDM under Kyoto Protocol*
- *Promote eco labelling in tourist enterprises through a subsidy financed by tourism levy*
- *Charge user fee from all hotels and guest houses using natural resources free of charge.*
- *Introduce tourism (bed) taxes*

6.3 LONG-TERM PROPOSALS FOR MBIS AND POLICIES FOR IMPLEMENTATION WITHIN A TEN TO TWENTY-YEAR TIME FRAME

- *Provide incentives for mass transport investments*
- *Establish River basin Water Authorities*
- *Impose soil erosion taxes for erosive crops*
- *Establish an authority or agency to manage ground water resources.*
- *Make soil conservation mandatory for recipients of lands under land grant schemes.*
- *Increase acreage taxes and enhance collections by linking it to a farmer support program such as fertilizer or other subsidies.*

6.4 REVENUE ESTIMATES OF SOME SHORT-TERM PROPOSALS

Revenue from applying MBIs is hard to predict, as this would depend on the level of charges or taxation to be applied, the elasticities of consumption or use, the measures taken by polluters to take pollution abatement measures, collection efficiency, as well as other factors. The proposals can be grouped into long term, medium term and short term measures. A preliminary estimate of revenues that could be appropriated in the year 2008 from a few selected short-term proposals is presented below.

Table 6-1 Estimates of revenue from selected short-term proposals (Year 2008)

Proposal	Period	Rates applied (Rs/Unit)			Projected Revenue Range Rs Million		
		Rate (1)	Rate (2)	Rate (3)			
Cess -electricity sales	ST	0.01/Kwh	0.05/Kwh	0.10/Kwh	91	456	913
Cess - petrol sales	ST	0.01/L	0.05/L	0.10/L	19	47	94
Cess - diesel sales	ST	0.01/L	0.05/L	0.10/L	24	118	237
Excise tax on vehicles	ST	0.5%	1%	2%	125	249	498
Excise tax on cigarettes & tobacco	ST	0.5%	1%	2%	191	383	766
Cess on gem exports	ST	1%	2%	3%	90	180	270
Port & Airport Dev Levy	ST	0.5%	1%	2%	140	279	559
Total					680	1712	3337

ST – Short Term: Sources: Ministry of Finance and Planning Annual Report 2006 Sri Lanka Minerals Year Book 2006, Geological Survey and Mines Bureau, Sri Lanka

Short term proposals for charging a cess on a few selected commodities or taxes can provide revenues ranging from Rs 680 million to Rs 3300 million per annum, for environmental investments, depending on the cess rates that will be applied and can contribute substantially to the mitigation of environmental impacts in the various sectors.

Chapter

7

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Reports commissioned for the project:

Case studies drafted by Sri Lankan national experts – coordinated by the national project coordinator Upali Peiris

- Agricultural case study written by Douglas R. Wijayatilleke
- Coastal management case study written by Ranjana Piyadasa
- Energy case study written by Tilak Siyambalapitiya
- Fishery case study written by Anton Wimalarathane
- Tourism case study written by Fuard Marikar
- Transport case study written by Don S. Jayaweera
- Waste case study written by V. U. Ratnayake
- Water case study written by V. U. Ratnayake
- Background information on Sri Lanka written by Upali Peiris

ANNEXURES

ANNEX 1

EXCERPT FROM THE ENERGY POLICY STRATEGY OF SRI LANKA

The three energy policy elements promoting energy efficiency, promoting indigenous resources and protection from adverse environmental impacts of energy facilities are explained in more detail by highlighting the strategies involved to achieve these policy targets as well as setting specific targets and milestones.

A.1.1: Promoting Energy Efficiency and Conservation

The following strategies, targets and milestones have been stated in the energy policy.

Strategy	Targets and Milestones
Supply side and end-use energy efficiency will be encouraged through financial and other incentives/disincentives in respect of energy end-use, and mandatory measures such as appliance energy labelling, building codes and energy audits will be enforced.	<ul style="list-style-type: none"> • Transmission and distribution energy losses (the sum of technical and commercial losses) in the electricity sub-sector will be gradually brought down to a maximum of 13.5% net generation by end 2009. • All appliances which substantially contribute towards electricity demand will be identified and labelled based on their energy efficiency by end 2010, allowing consumers to make informed purchase decisions. The appliance labelling programme will be made mandatory to identified appliances by mid 2007. • Benchmarks on energy intensity of specific industries will be established by end 2007. Specific benchmarks for energy consumption of commercial, transport and domestic customers will be established by end 2007. • The Energy Efficiency Building Code will be updated and made mandatory to state sector entities by end 2007.
Private sector participation in providing expert services on energy efficiency will be promoted and facilitated.	-
Financial resources required to continuously improve efficiency in energy conversion, transmission and utilisation will be acquired from within and outside the energy sector by levying appropriate energy charges and formulating long term funding programmes with financiers.	-

A.1.2: Promoting Indigenous Resources

The promotion of indigenous resources is linked with renewable energy development, because Sri Lanka has not yet discovered any non-renewable sources of energy apart from hydropower. The strategies, targets and milestones stated in the energy policy are the following:

Strategy	Targets and Milestones
The use of economically viable, environment friendly, non-conventional renewable energy sources will be promoted by providing a level playing field for developers of both conventional and non-conventional energy sources.	The Government will endeavour to reach a minimum level of 10% of electrical energy supplied to the grid to be from NRE by a process of facilitation including access to green funding such as CDM. The target year to reach this level of NRE penetration is 2015 .
Concessionary financing will be sought to implement remaining medium sized hydroelectric projects which are economically, environmentally and socially viable, but not viable under normal commercial terms. Pricing of electricity generated would, however, be on commercial terms.	<ul style="list-style-type: none"> • The NRE strategy shall not cause any additional burden on the end use customer tariffs. If justified, the Government may subsidize the energy utilities for this purpose. • The Government recognises that certain NRE technologies would require incentives to ensure their capacity build-up to contribute to the national NRE target. These incentives shall be provided on a competitive basis, in which the NRE developers shall bid for a share of the NRE target subject to a price ceiling. NRE incentives shall be technology-specific and based on actual energy supplied to the grid. • NRE developments will not be charged any resource charge (royalty) for a period of 15 years from the commercial operation date. The resource charges shall be used to finance incentives for further NRE development through the Energy Fund.
Necessary incentives will be provided and access to green funding including Clean Development Mechanism (CDM) will be facilitated to develop other non-conventional renewable energy resources to ensure their contribution to the energy supply in special situations, even if their economic viability is marginal.	To make available the incentives for NRE technologies, the Government will create an ' Energy Fund ', which will be managed by the ECF. This fund will be strengthened through an energy cess , grants received from donors and well wishers, as well as any funds received under CDM. This fund will be used to provide incentives for the promotion of NRE technologies and strengthen the transmission network to absorb the NRE technologies into the grid.
Biomass-based energy projects will be developed in areas where land resources are available, enabling a new industrial activity in such areas, emphasising on creating rural income generation avenues.	-
Focused attention will be drawn on development of bio-fuels as an alternative energy source for the transport sector.	-
Initiatives of other sectors and institutions to convert biomass and other waste to energy will be encouraged and supported where appropriate.	-

A.1.3: Protection from Adverse Environmental Impacts of Energy Facilities

Strategy	Targets and Milestones
Energy sector utilities will be compelled to comply with safety standards issued by PUCSL as well as environmental standards stipulated by the state.	-
A scheme of compensation to victims of accidents involving energy sector utilities will be established with the participation of all stakeholders.	-
Every energy sector utility will establish an environmental division with staff qualified to conduct environmental safety audits of existing and new facilities to comply with the standards and regulations under the National Environment Act.	-

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