

Sri Lanka
State of the Economy Report 2015

Chapter 12
Environmental Reforms for Sustainable Growth

by
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12. Environmental Reforms for Sustainable Growth

12.1 Introduction

Environmental concerns have been increasingly notable in on-going debates on economic growth strategies for development. While a number of factors are essential to achieve high and sustained growth in the long-run, environmental sustainability is a vital aspect. Though negative environmental impacts of growth are apparent, little has been done to minimize such impacts with policy attention seemingly focused almost entirely on growth, with resultant negative implications on the natural environment and its resources being largely ignored.

Overall, in order to ensure a sustainable development trajectory for a country, key elements that have to be assured are sustaining the natural capital stock and preservation of the natural environment from pollution. In addition, a proper adaptation mechanism should be in place to respond to global environmental threats, such as climate change. Individual policy level attempts to find solutions to existing issues are not sufficient. By and large, the issues call for reforms in the overall environmental management system of a country.

Though there have been many discussions on environmental issues, and a recognition of the need to change existing policies and regulatory frameworks, nothing tangible has occurred in terms of changes in the overall environmental management practices in Sri Lanka. This is in spite of the country embarking on ambitious large scale infrastructure development projects that have raised concerns on environmental damage. A clearly

visible outcome of such omissions is confrontations among environmental activists, responsible agencies, groups responsible for environmental problems and the general public in many instances. This is a clear symptom of an unhealthy environmental management system in the country, and justifies the need for environmental reforms. It is therefore timely to focus on environmental reforms as part of a larger economic reform effort to ensure that intended development outcomes are environmentally sustainable.

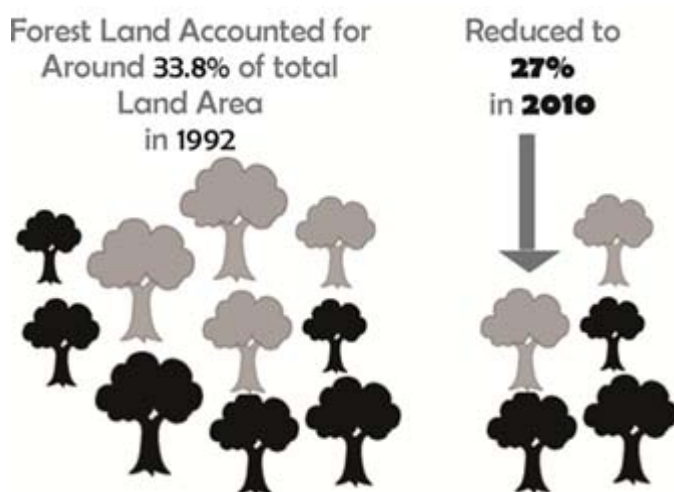
12.2 Key Environmental Issues in Sri Lanka

Key environmental issues facing Sri Lanka at present can be discussed under three themes; namely, degradation of natural capital stock, environmental pollution and responding to impacts of global climate change.

12.2.1 Degradation of Natural Capital

At the national level, there are issues in allocation of natural resources, including land, forests, etc. Degradation of natural capital brings adverse impacts on the economy as they play a significant role in economic activities, though they are not considered in standard national accounting frameworks.

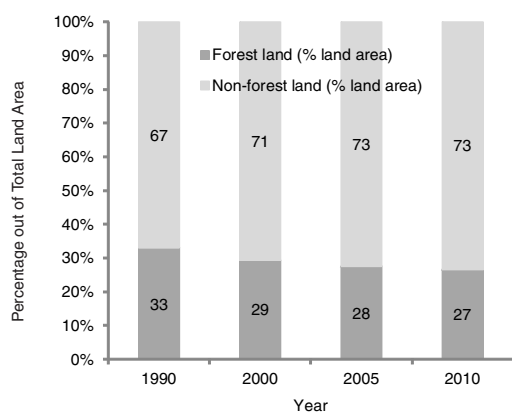
Deforestation and forest degradation: According to Forest Department data, a notable change in the country's forest cover has been



observed. Forest land accounted for around 33.8 per cent of total land area in 1992, but reduced to around 27 per cent in 2010 (Figure 12.1).

The causes for forest degradation are numerous. Forest degradation in the Dry Zone is mainly linked to the nature of the agriculture system prevailing in the respective areas. Increased demand for land

Figure 12.1
Change in Forest Cover (1990-2010)



Source: UN (2014), *Millennium Development Goals Country Report 2014 - Sri Lanka*, United Nations, Colombo.

Degradation of natural capital brings adverse impacts on the economy though they are not considered in standard national accounting frameworks.

by farmers has resulted in considerable deforestation. Additionally, unsustainable land use patterns, including in plantation agriculture, has been the main reason for forest loss and subsequent land degradation in the hill country. The forest land which was kept intact in the Northern and Eastern regions due to absence of development projects during the conflict-affected years is now exposed to deforestation and degradation. Unplanned settlements and development projects are causing significant changes in the forest cover in the areas.¹

Forests provide a number of ecosystem goods and services. Thus, forest degradation is directly associated with many other environmental problems such as negative implications on biodiversity, water scarcity, land degradation, etc., which lead to significant environmental costs.

Land degradation: Land degradation, occurring at varying degrees in different parts of the country,

¹ UNDP (2011), "Northern Province - Integrated Strategic Environmental Assessment", United Nations Development Programme, Colombo.

is particularly a problem in sensitive areas, especially in the hill country, with steep slopes, high intensity rainfall and inappropriate land use practices. For instance, cultivating potatoes and tea in sloppy lands, without adopting proper soil management measures has resulted in severe degradation problems.²

Land degradation in Sri Lanka is highly associated with the changes in land use pattern over the years and rate of deforestation. Historically, deforestation took place due to large-scale conversion of agricultural lands to grow plantation crops. For instance, tea lands are already showing signs of loss of fertility in the uplands,³ and cardamom cultivation in the Knuckles forest area has degraded the soil cover significantly.⁴ Loss of soil fertility is a direct consequence of land degradation, which poses significant problems for agricultural productivity. Land resources are being used by a number of economic sectors in the country, such as agriculture, forestry, irrigation, plantation industries, etc. Due to inadequate legal interventions, land is being unsustainably utilized.

12.2.2 Environmental Pollution

Unplanned rapid industrialization reforms that took place in the early 1980s have in particular, led to a number of environmental pollution issues.⁵ Lack of due consideration on the environmental consequences by the said reforms has made the intended developments environmentally unsustainable and caused many environmental costs such as industrial pollution, agricultural pollution, etc.

Damage to the environment by excessive application of chemicals:

Heavy use of agrochemicals, such as chemical fertilizer and pesticides is continuing with the objective of increasing agricultural productivity. Agrochemicals are heavily used particularly in paddy cultivation, vegetable farming in the uplands and tea plantations. The government fertilizer subsidy, which represents a major agricultural policy, has direct implications on the use of fertilizer in Sri Lanka. Though the fertilizer subsidy has in part contributed to increase rice production in the country, its effectiveness and sustainability, especially in regard to negative environmental externalities, are often being questioned.⁶

As shown in Figure 12.2, the use of fertilizer per land unit was comparatively low during 1990-94 where there was no subsidy given for paddy cultivation. The full subsidy came into effect in 1995 and fertilizer use has since increased considerably. Paddy productivity has also increased with the subsidy schemes over the years. However, the latest data show a decrease in paddy productivity even under increased fertilizer utilization. This provides some evidence that fertilizer is being used excessively and paddy cultivation is becoming less responsive to applied fertilizer. Both lead to negative environmental externalities where excess fertilizer reduces soil fertility, bio-diversity and water quality in agricultural lands.

Studies have found that existing cropping systems with heavy use of fertilizer in the upper catchment areas of the Mahaweli have caused increased

² Samaratunga, P.A. and C.M.M. Chandrasekara (2002), "Applicability of Economic Instruments in Controlling Soil Erosion in Up-Country Sri Lanka", Ministry of Environment and Natural Resources, Colombo, Sri Lanka.

³ Ananda, J., (1998), "Soil Erosion Damage Function for Smallholder Tea in Sri Lanka: An Empirical Estimation", a paper presented at the 1st World Congress of Environmental and Resource Economists, 24-27 June 1998, Isoladi San Giorgio, Venice, Italy.

⁴ Dhakal, B., et al., (2012), "Impacts of Cardamom Cultivation on Montane Forest Ecosystems in Sri Lanka, *Forest Ecology and Management*, vol. 274, pp.151-160.

⁵ Ileperuma, O.A., (2000), "Environment Pollution in Sri Lanka: A Review", *Journal of National Science Foundation Sri Lanka*, 28(4):301-325.

⁶ Rodrigo, C. (2014), "Key Determinants of Sri Lanka's Fertilizer Subsidy: Some Research Findings for Policy Makers", Institute of Policy Studies of Sri Lanka, Colombo, <http://www.ips.lk/talkingeconomics/2014/11/24/key-determinants-of-sri-lankas-fertilizer-subsidy-some-research-findings-for-policy-makers/>.

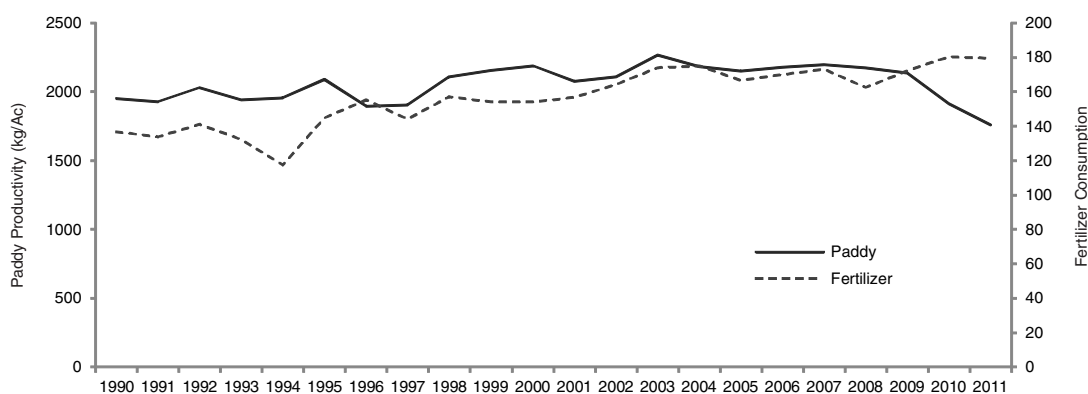
Lack of due consideration on the environmental consequences of industrial reforms has made the intended developments environmentally unsustainable and caused many environmental costs.

Cadmium levels in the Mahaweli river water.⁷ Heavy use of agrochemicals is a risk factor for the occurrence of kidney disease in the North Central Province of Sri Lanka.⁸ This calls for promoting more organic agriculture in the country, which at present claims only around 5 per cent of agricultural land.⁹

An agricultural system that operates under organic fertilizer has the potential to produce Ecosystem Goods and Services (EGSs). Many EGSs produced through agricultural systems generate positive externalities. For example, revitalization of the soil with rich organic matter is a direct positive externality, while improving the biodiversity is an indirect positive externality. However, an agriculture system that is predominantly based on chemical use will lose most of these EGSs and create negative environmental externalities.

Un-coordinated waste management: Over the years, much emphasis has been laid on dealing with the Municipal Solid Waste (MSW), as it is the main

Figure 12.2
Fertilizer Consumption and Paddy Productivity (1990-2011)



Source: Department of Agriculture, "Cost of Cultivation" data.

⁷ Bandara J.M., *et al.*, (2011), "Pollution of River Mahaweli and Farmlands under Irrigation by Cadmium from Agricultural Inputs Leading to a Chronic Renal Failure Epidemic among Farmers in NCP, Sri Lanka", *Environmental Geochemistry and Health*, (5):439-53.

⁸ Bandarage, A., (2013), "Political Economy of Epidemic Kidney Disease in Sri Lanka", <http://sgo.sagepub.com/content/3/4/2158244013511827.full>.

⁹ Wahundeniya, W.M.K.B., (2013), "Organic Farming Situation in Sri Lanka", Horticulture Crop Research and Development Institute, Sri Lanka.

contributor to the solid waste generated in Sri Lanka. Handling of MSW is being done with the services of municipal councils. The management of MSW, unlike other waste, is backed by a national solid waste management policy, a national strategy for solid waste management and technical guidelines.¹⁰ As evident from Figure 12.3, a larger proportion of MSW is biodegradable which can be used to make organic fertilizer, if appropriate strategies are in place.

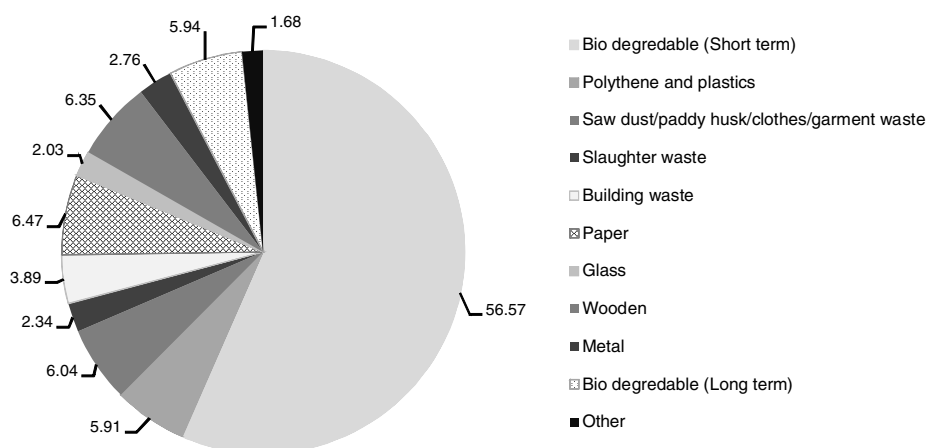
Industrial waste, hospital waste and electronic waste generation are on an increasing trend. Waste separation is minimum at household level, thus it leaves room for electronic and other waste to be mixed with household solid waste. In addition, hospital waste and industrial waste also have the probability of being mixed with MSW since 'open

dumping' is quite common for all these waste types. With heavy rainfall, these can get easily absorbed into soil and water, creating environmental pollution.

Industrial waste management is mainly focused on FTZs and it does not involve a national strategy. There are other industries in urban areas that violate the conditions of the Environment Protection Licence (EPL) issued by the Central Environment Authority (CEA). It leads industrial waste to be mixed with solid waste.¹¹ In addition, though there is an environmental management framework for health care waste in Sri Lanka,¹² only a handful of hospitals implement it. Lack of adoption of set frameworks leaves room for environmental pollution.¹³

Sri Lanka does not have an electronic waste management policy or a strategy in place. The CEA

Figure 12.3
Composition of MSW in Sri Lanka (2013)



Source: Western Province Waste Management Authority of Sri Lanka.

¹⁰ CEA (2005), "Technical Guidelines on Solid Waste Management in Sri Lanka," Central Environmental Authority, Colombo; Wijetunga, S., (2013), "Community Views and Attitudes for Waste Management Improvement in a Higher Education Institute: Case Study," *Journal of Environmental Professionals Sri Lanka*, 1(1): 57-69.

¹¹ Karunasena, G., and A Kannangara (2013), "Industrial Waste Management: Free Trade Zones in Sri Lanka," University of Moratuwa, Sri Lanka, <http://www.civil.mrt.ac.lk/conference/ICSBE2012/SBE-12-226.pdf>.

¹² MOH (2012), "Environmental Management Framework for Healthcare Waste and Infrastructure Development," Ministry of Health, Colombo.

¹³ Visvanathan, C., (2006), "Medical Waste Management Issues in Asia," paper presented at Asia 3R Conference, 30 October -1 November, 2006, Tokyo, Japan.

has linkages with around 14 private sector companies in Sri Lanka in managing electronic waste under a Memorandum of Understanding. Though MSW is being managed with high emphasis on a proper policy, strategy and technical guidelines, other types of waste are not managed in such a comprehensive manner. This leaves room for industrial, health care and electronic waste to create more pollution. The absence of a comprehensive integrated sustainable waste management policy has now become a significant issue in environment management in Sri Lanka.

Air pollution: The WHO estimates the number of deaths attributable to indoor air pollution and outdoor air pollution in Sri Lanka to be 4,200 and 1,000, respectively in 2004. A majority of the residential areas in Sri Lanka have particulate matter (PM), ground level ozone (O₃), carbon monoxide (CO), sulfur oxide (SO_x), nitrogen oxide (NO_x) and lead (Pb) levels which are higher than recommended levels. These elevated conditions have the probability of causing respiratory diseases.¹⁴



While the MOH is fully equipped to treat respiratory illnesses, it involves significant costs. Preventing such health and related environmental impacts have to be done by limiting the emissions of pollutants. The main cause of air pollution in Sri Lanka is an ever increasing vehicle population. The number of motor vehicles annually registered is clearly showing an increasing trend (Table 12.1).

The CEA is the responsible authority to measure air quality in Sri Lanka. However, CO₂ emissions are not measured at the moment because the machines have malfunctioned, thus creating a problem of monitoring. Air pollution monitoring mechanism should also be improved; CO₂ emission data is only available for Sri Lanka up to 2008. The available data suggest an increase in the emissions as illustrated in Figure 12.4.

As outdoor air pollution in Sri Lanka is mainly caused by emissions from vehicles, it is necessary to reduce the importation of high emission vehicles. One solution to fill the gap of vehicle demand is to import more low emission vehicles, namely hybrid and electric vehicles. As suggested by the US Environmental Protection Agency (EPA) every gallon

Table 12.1
Number of Motor Vehicles Registered

Vehicle class	Year			
	2003	2006	2009	2012
Buses	1,949	3,346	739	3,095
Cars	21,184	27,758	5,762	31,546
Motor cycles	86,777	156,626	135,421	142,584
Three wheelers	36,204	64,466	37,364	98,815

Source: Department of Motor Traffic, Colombo, <http://www.motortraffic.gov.lk/>

¹⁴ Nandasena, S., et al., (2012), "Air Pollution and Public Health in Developing Countries: Is Sri Lanka Different?," *Journal of the College of Community Physicians of Sri Lanka*, 17(1): 15-20.

of gasoline pumps about 20 to 25 pounds of carbon dioxide into the air. For Sri Lanka, this amount of carbon dioxide is released by consuming 3.785 litres of fuel. The hybrid technology is however capable of running a car at 20-30km per litre and at zero emission level using electricity.¹⁵

Sri Lanka's draft 'National Transport Policy' has placed emphasis on having more cost effective and environmentally friendly automobiles. However, the recent increases in the taxes of hybrid cars discourage consumers from buying them. Therefore, the government should reconsider its taxation policies in order to achieve the objectives of transport policy, and ensure there are no contradictory policies and strategies dealing with the same environmental issues.

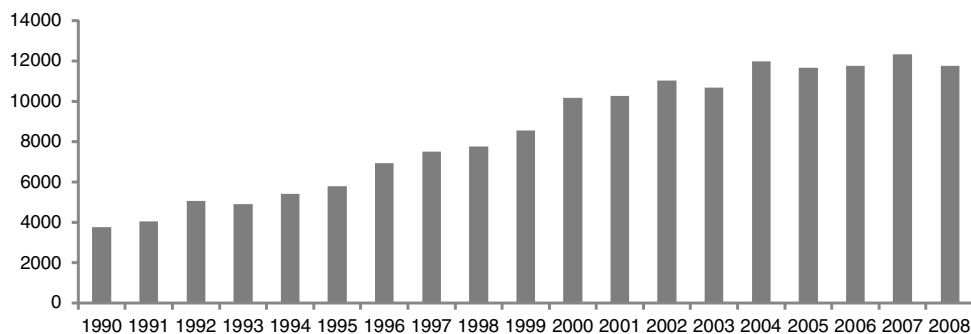
12.2.3 Global Environmental Threats

Though Sri Lanka is not a significant contributor to global climate change, the country has to face its negative impacts like many other developing and

emerging countries. The impacts are and predicted to be, in terms of increase in air temperature, changes in intensity and distribution of rainfall, increased frequency and severity of extreme weather events and sea level rise. While the specific impacts of these are different across the economic sectors, the cost of climate change is not negligible. Impacts of climate change are particularly to be felt by agriculture, water management, coastal and human settlement sectors, health, biodiversity, etc. The integrated assessment models suggest that the loss of annual GDP due to climate change impacts in Sri Lanka will be 1.2 per cent by 2050.¹⁶

A 'National Climate Change Policy' and a 'National Climate Change Strategy (2011-16)' to deal with climate change issues are in place in Sri Lanka. However, still there are several gaps in relation to mainstreaming climate change into the country's development process. They include information gaps, lack of a policy agenda and identification of priorities, coordination gaps and resource mobilization gaps.¹⁷

Figure 12.4
Total CO₂ Emissions (MT)

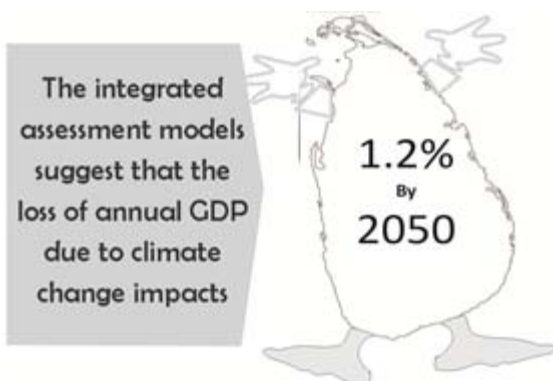


Source: UNDP (2015), "Millennium Development Goals Country Report", United Nations Development Programme, Colombo.

¹⁵ Abeygunasekara, S., *et al.*, (2014). "Evaluation and Comparison of Automobile Fuel Systems, Most Appropriate to Sri Lankan Automobile Standards", paper presented at the SAIM Research Symposium on Engineering Advancements, 25-26 April 2014, Sri Lanka.

¹⁶ Ahmed, M., and S. Suphachalasai (2014), "Assessing the Costs of Climate Change and Adaptation in South Asia", Asian Development Bank, Manila.

¹⁷ Senaratne, A., N. Perera, K. Wickramasinghe (2009), "Mainstreaming Climate Change for Sustainable Development in Sri Lanka: Towards a National Agenda for Action", Working Paper Series No. 14, Institute of Policy Studies of Sri Lanka, Colombo.



Sri Lanka has to focus more on the impacts of climate change in regard to the above mentioned gaps. However, in order to make an adaptation process effective, reforms are needed in inter-sectoral policy coordination and institutional mechanisms. The focal point for climate change in Sri Lanka is the Climate Change Secretariat (CCS), which comes under the purview of the ministry dealing with the subject of environment. While the CCS undertakes the central role, other ministries and line agencies too have to be coordinated effectively in order to mainstream climate change into the development process.

12.3 Present Environmental Management System and Gaps

12.3.1 Issues in Environmental Governance

At policy level, the subjects of natural environment and resources are being handled by a specific ministry in the country's administrative structure, as in many other countries. The ministry is expected to provide leadership to manage the country's environment and natural resources in line with sustainable development initiatives. In order to achieve this, it is very important that the ministry and its implementing agencies have a common policy direction.

In the case of Sri Lanka, there have been ad hoc changes in the implementing agencies under subject ministry. Accordingly, the name of the ministry has undergone significant changes during Cabinet reshuffles (Table 12.2). Agencies which are not directly dealing with environment and natural resource issues have also been included under the purview of the ministry. For instance, the Department of Railways and several agencies dealing with transport were placed under one ministry along with the environmental agencies during 1994-97.

The agencies which are directly dealing with the environment subject such as the Forest Department (FD), CEA, State Timber Corporation (STC), Geological Survey and Mines Bureau (GSMB) and Marine Environment Protection Authority (MEPA) have been continuously listed under the ministry dealing with the environment subject. However, the Department of Wildlife Conservation (DWC), which owns and manages a significant portion of forests in the country (accounting for nearly 12 per cent of the total land area) is frequently placed under ministries which are not primarily dealing with conservation. There have been periods where the DWC was under the ministry dealing with agrarian services; during 2010-12, the DWC functioned under the Ministry of Economic Development; and currently, it is under the Ministry of Tourism and Sports.

The income generated by the wildlife parks owned and managed by the DWC is showing a significant increase, mainly after the end of the North/East conflict in 2009.¹⁸ However, there are many concerns relating to the sustainability of wildlife parks as certain parks are being over-visited during some parts of the year, and it creates direct adverse impacts on wildlife. However, the ministries dealing with tourism or agrarian services do not have the capacity to address such issues which are related to natural resource management.

¹⁸ SLTDA, "Annual Statistical Report 2013", Sri Lanka Tourism Development Authority, Colombo.

Table 12.2
Changes in the Ministry Dealing with Environment Subject (1994-2015)

Period	Name of the Ministry	Environment Subject Related Agencies under the Ministry	Other Agencies under the Ministry
1994-1997	Ministry of Transport Environment and Women's Affairs	CEA	Department of Railways, Sri Lanka Central Transport Board, Department of Motor Traffic, National Transport Commission, Transport Studies and Planning Centre, Women's Affairs Division
1998-2000	Ministry of Forestry and Environment	CEA, FD, STC	Department of National Zoological Garden
2001-	Ministry of Forestry and Environment	CEA, FD, DWC, STC, GSMB, WT	Department of National Zoological Garden
2003	Ministry of Environment and Natural Resources	CEA, FD, DWC, STC, GSMB, WT	Department of National Zoological Garden
2004-2005	Ministry of Environment and Natural Resources	CEA, FD, DWC, STC, MEPA, GSMB, WT	Department of National Zoological Garden, Department of Meteorology
2006	Ministry of Agriculture, Irrigation and Mahaweli Development	CEA, FD, DWC, STC, MEPA, GSMB	
2007	Ministry of Environment and Natural Resources	CEA, FD, DWC, STC, MEPA, GSMB	
2008-2009	Ministry of Environment and Natural Resources	CEA, FD, DWC, STC, MEPA, GSMB, WT	
2009	Ministry of Environment	CEA, FD, DWC, STC, MEPA, GSMB, WT	
2010-2012	Ministry of Environment	CEA, FD, STC, MEPA, GSMB	National Gem and Jewellery Research and Training Institute, National Gem and Jewellery Authority
2012-2013	Ministry of Environment	CEA, FD, STC, MEPA, GSMB	National Gem and Jewellery Research and Training Institute, National Gem and Jewellery Authority Sustainable Energy Authority
2013-2015	Ministry of Environment and Renewable Resources	CEA, FD, STC, MEPA, GSMB	National Gem and Jewellery Research and Training Institute National Gem and Jewellery Authority Central Engineering Consultancy Bureau
2015-todate	Ministry of Mahaweli Development	CEA, FD, STC, MEPA, GSMB	National Gem and Environment Jewellery Research and Training Institute National Gem and Jewellery Authority Central Engineering Consultancy Bureau

Notes: CEA (Central Environment Authority), FD (Forest Department), STC (State Timber Corporation), DWC (Department of Wildlife Conservation), GSMB (Geological Survey and Mines Bureau), WT (Wildlife Trust), MEPA (Marine Environment Protection Authority).

With these types of frequent and ad hoc changes in administrative structures of the ministry and agencies dealing with the environment subject, the intended 'sustainability' objectives are difficult to achieve. The ministry is expected to provide overall policy direction to its agencies, but when the policy direction of the main ministry is not centred on natural resource management, it creates confusing policy signals and undermines sustainability as a core focus of development policy.

In addition, when the implementing agencies of a ministry change, it leads to a number of inefficiencies due to logistical issues. The personnel allocated to address certain subject areas under the overall environment subject also tend to be underutilized. The situation is further worsened when the agencies which are not directly dealing with the environment subject are listed under the environment related ministry.

Apart from the above mentioned agencies, there are other ministries and implementing agencies which are dealing with environment and natural resource issues. Water resources in the country are managed by a number of agencies, such as the Water Resource Board, Irrigation Department, Mahaweli Authority, etc. Coastal resource management is undertaken by the Coast Conservation Department. Fishery resources are managed by the Ministry of Fisheries and Aquatic Resources and its line agencies. Most of such agencies have a development mandate primarily, though conservation aspects are also included.

12.3.2 Gaps in Environmental Planning

Proper environmental planning is essential in making decisions in regard to planning development activities and prioritizing them, with due consideration to the natural environment. In practice, environment planning has to incorporate all the elements which deal with development and natural

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environment, such as land use, infrastructure development, regional development, urban planning, etc. It should take place at all levels in the decision making process - national, regional, programme or project levels.

National and regional planning: At national and regional levels, environmental planning is based on the National Physical Plan (NPP) for 2011- 2030, which was approved by the National Physical Planning Council in July 2007, as per the Town and Country Planning (Amendment) Act No 49 of 2000. The project proposals in relation to the plan were approved in January 2011. The plan was prepared with the objective of promoting and regulating the integrated planning of economic, social, physical and environment aspects of land in Sri Lanka, and thereby to promote economic growth. It also aims to

bring the government, stakeholders and the community together to discuss, review and make decisions to guide the future of Sri Lanka's economy, environment and communities.

A NPP is an important strategic document for any country. It is of high importance to guide development in an environmentally and socially sustainable manner. The plan should provide guidelines for utilizing the natural resource sustainability while optimizing economic gains. However, there are several issues in the current NPP which limits its effective implementation in development planning. According to the NPP, the central hills and the coastal belt is identified as the key fragile areas of the country. It identifies that the population density of the identified fragile areas are higher than that in the rest of the country. Thus, the NPP identifies the movement of population from the fragile areas to metro regions as a national priority. Several metro regions are proposed to be developed namely, Western Metro Region, Southern Metro Region, Eastern Metro Region, North Central Metro Region and Northern Metro Region.

One of the most observable facts in regard to the NPP is that areas identified for development activities are covered by natural forests. Thus, forest areas are allocated for other economic uses such as rural settlements, agriculture, metro regions, etc. This calls for careful examination and appropriate revisions in the plan, so that the natural resource capital of the country is kept intact. Additionally, it is questionable if the development projects proposed in the NPP have been undertaken with adequate feasibility assessments.

Project level planning: At present, Sri Lanka uses Environmental Impact Assessment (EIA) as a tool at the initial stage to identify possible effects of projects on the environment. The EIA process was first introduced to Sri Lanka in 1981 and it became a mandatory requirement by law in 1993; it is a mandatory requirement as per the National

Environment Act No. 47 of 1980 amended by Acts No. 56 of 1988 and No. 53 of 2000. In addition, the EIA provisions are also included in the Coast Conservation (Amendment) Act No. 57 of 1981 and the EIA in the Fauna and Flora (Amended) Act No. 49 of 1993. There are around 23 government agencies which can act as the project approving agencies for EIA depending on the subject area, and they are responsible for administering the EIA process for a project.

According to the National Environment Act, only large scale development projects which are likely to have significant negative impacts on the natural environment are subjected to EIA. When it is considered that the environmental impacts of a project are not significant, only an Initial Environmental Examination (IEE) is required to be carried out. In addition, projects located in environmentally sensitive areas are required to go through the EIA. According to the Fauna and Flora Act, any development activity which takes place within a mile from the boundary of any National Reserve should undergo an EIA process.

There are several drawbacks in using the EIA as the only tool to integrate environmental aspects into development planning. First, the EIAs take into consideration only project-based environmental impacts and they do not consider the cumulative impacts of development projects. However, at policy and programme planning level, strategic decisions ought to be taken considering the entire impacts of development projects and not necessarily considering an individual project impacts on the environment. Project level environmental assessments limit the space for coordinated action among the government agencies. Thus, current mechanisms constrain effective decision making. The need is for a more holistic approach which looks at the cumulative impacts of development projects.

It is argued that rapid industrialization with lack of monitoring, insufficient technically skilled personnel

and lack of baseline information for evaluation are factors that restrict sustainable implementation of environmental assessments in Sri Lanka.¹⁹ Also, studies document gaps in relation to the present EIA process itself. For instance, the EIA which was carried out for the Southern Transport Development Project in Sri Lanka was highly criticized for its lack of consideration of environmental issues.²⁰ Major environmental concerns such as the impact on the river basins and wetlands were largely ignored. Lack of transparency and inadequate involvement with the affected local communities were also issues in this context.

Key local level issues such as implications on biodiversity, ecosystem services which have significant social implications are under-represented in EIAs. Also, the assessments of ecological impacts of development projects have not been done up to the required details. Accordingly, it seems that the present EIA system does not provide necessary information for relevant stakeholders, including policy makers.²¹

12.3.3 Weaknesses in Current Approach of Environmental Management

Though Sri Lanka adopted open market economic reforms in the late 1970s, it is important to note that the approach for environmental management in the country is largely based on a command and control method.²² Enough evidence exists to support market-based mechanisms, rather than command and control methods as effective pollution mitigating

tools. Market-oriented mechanisms refer to economic instruments such as taxes, permits and emission charges, which create incentives for polluters to reduce pollution rather than paying penalties.²³

Pollution control is mandated by the National Environment Act and the regulatory powers are vested with the CEA. Only a few significant interventions exist to control pollution and Sri Lanka's pollution control mechanisms lack market-based instruments (MBIs). For example, if a firm pollutes an open water source by its effluents, the CEA can charge it under existing laws that can lead to a cancellation of the firm's Environmental Protection License (EPL) and halt further business. Such command and control approaches encourage rent seeking behaviour. There are other rules and regulation in place to control pollution in Sri Lanka; public littering is prohibited and it is a punishable offence; open dumping of MSW can only happen at an identified place by the local government; at every registration, it is mandatory for motor vehicles to pass an emission test. All these mechanisms are command and control methods.

Sri Lanka introduced a load based licence fee scheme in 2000. It was initially introduced to high polluting industries with the aim of expanding towards moderate and low polluters as well. Market-based instruments (MBIs) like this are common in countries such as Thailand, the Philippines and Malaysia. They are effective in reducing pollution levels while promoting environmental-friendly technologies in managing industrial waste.

¹⁹ Mackee, J., *et al.*, (2001), "Environmental Assessment in Sri Lanka: Its Status and the Potential for the Introduction of Strategic Environmental Assessment"; *Journal of Environmental Assessment Policy and Management*, 3(02):209-240.

²⁰ ADB (2009), "Southern Transport Development Project Sri Lanka" in *ADB and the Environment, A Monitoring Framework for ADB's Environment Policy based on Four Case Studies*, <http://www.forum-adb.org/docs/ADB-and-the-Environment-case1.pdf> [accessed 25 April 2015].

²¹ Samarakoon, M., and J.S. Rowan (2008), "A Critical Review of Environmental Impact Statements in Sri Lanka with Particular Reference to Ecological Impact Assessment"; *Environmental Management*, 41(3).

²² Wilson, C., *et al.*, (2010), "Why do Policy Decision-makers Opt for Command and Control Environmental Regulation? An Economic Analysis with Special Reference to Sri Lanka", School of Economics and Finance Discussion Papers and Working Papers Series 259, Queensland University of Technology, Australia.

²³ Edirisinghe, J., *et al.*, (2008), "Taxing the Pollution: A Case for Reducing the Environmental Impacts of Rubber Production in Sri Lanka", South Asian Network for Development and Environmental Economics, Nepal.

12.4 Proposed Environmental Reforms

Given the negative economic, social and environmental impacts highlighted above, it is timely for Sri Lanka to adopt suitable reforms to address gaps and deficiencies in its management of the environment and natural resources. Reforms can include changes in policies, regulations, and institutional frameworks. These are discussed below.

12.4.1 Reforming Environmental Governance

In the case of Sri Lanka, due to existing weaknesses in the governance mechanism of the environment sector, it has to undergo system-wide changes. The reforms should ensure that the basic components of environmental governance that leads to sustainable development are in place. There are mainly seven principles of effective environmental governance and they are:²⁴

- Environmental laws should be clear, even-handed, implementable and enforceable,
- Environmental information should be shared with the public,
- Affected stakeholders should be afforded opportunities to participate in environmental decision-making,
- Environmental decision-makers, both public and private, should be accountable for their decisions,
- Roles and lines of authority for environmental protection should be clear, coordinated, and designed to produce efficient and non-duplicative programme delivery,
- Affected stakeholders should have access to fair and responsive dispute resolution procedures,
- Graft and corruption in environmental programme delivery can obstruct

environmental protection and mask results and must be actively prevented.

In order to achieve effective environmental governance, reforms are required in the institutional structure and the policy structure of the country. In terms of institutional changes, it is a must that the ministry dealing with the environment subject and relevant implementing agencies are assigned a single policy direction, by bringing all the agencies with a conservation mandate under the ministry. Ad hoc shuffling of implementing agencies and attaching non-relevant subjects to the ministry handling the environment subject should be avoided. The role of the ministry as the main government entity to ensure sustainable development should be given due prominence in the overall governance structure of the country.

The institutional reform measures should also take into consideration the need for creating inter-agency linkages with the agencies under the mandate of natural resources and environmental management. Both the agencies with a conservation mandate, listed under the ministry dealing with environment subject and other ministries and agencies which deal with environment and natural resource management should have effective coordination. The coordination is also required for agencies under environment vis-à-vis other economic sectors.

In terms of policy reforms, attention must be given to eliminating the contradictory policies with regard to environmental conservation and economic development. For instance, though the overall policy thrust is to promote forest-based ecotourism in Sri Lanka, there are policy and legal barriers in forest and wildlife policies for effective implementation of ecotourism principles.²⁵ All the policies and Acts related to environment and natural resource

²⁴ Benjamin A.H., and S. Fulton (2011), "Effective National Environmental Governance – A Key to Sustainable Development", United Nations Environmental Programme (UNEP).

²⁵ Wickramasinghe, K., (2009), "Ecotourism for Sustainable Forest Management in Sri Lanka", Environmental Economic Policy Series No. 12, Institute of Policy Studies of Sri Lanka, Colombo.

management should be reviewed carefully and revised to eliminate contradictions and gaps. Ultimately, reforms should make sure that policy and the legal framework for environmental and natural resource management are clear and consistent.

Both institutional and policy gaps can be addressed via an inter-ministerial coordination committee at the policy making level. There has to be a change in the current approaches to minimize such conflicts and thereby move towards environmental conservation and gaining economic benefits through natural resources. Mainstreaming climate change into Sri Lanka's development process is a must in adapting to the impacts of global climate change. As impacts are felt across all economic sectors, system-wide changes are required to incorporate climate change adaptation into all policies, plans, programmes, projects, etc., in appropriate manner. Facilitation of climate change adaptation can be listed as another important role of an inter-ministerial committee for ensuring sustainable development.

The existing issues in the environment sector with regard to development activities show that there is lack of awareness among important stakeholders such as the public and more specifically local communities. Development activities which have implications on the natural environment should necessarily consider the involvement of affected groups from the design stage and create a proper dialogue in order to reduce possible economic and social issues. Unfortunately there is no forum at present for relevant stakeholders to meet and discuss environmental issues in Sri Lanka. Also, increased community participation in management of natural resources such as forests can bring in sustainable outcomes. Thus, establishment of transparency in terms of environmental planning and management should be an important component of the reform process.

12.4.2 Enhancing Environmental Planning

It is a commendable move that the National Physical Planning Department is in the process of integrating climate change and disaster risk reduction aspects into the NPP. Given the increased frequency and severity of natural disasters and more visible signs of global climate change, this is an important step forward. However, incorporation of climate change adaptation into national physical planning should acknowledge that there are significant information gaps and research needs in relation to climate change vulnerabilities in various sectors. The NPP has to be flexible enough to incorporate such findings in the future. Similar to many other national plans, the NPP should not exist in isolation of other strategic plans in different sectors. Revisions and further improvements in the NPP is a prioritized need. Meaningful coordination of relevant stakeholders is a must in this regard. It also calls for synergy among other policy plans at sectoral level.

Strategic Environmental Assessment (SEA) can be viewed as an important tool for integrating environmental aspects into development activities. There is no exact definition for the SEA, though it is being increasingly adopted by many developed and certain developing countries in the world. There are several definitions proposed by various agencies. According to OECD, an SEA refers to a range of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter-linkages with economic and social considerations.²⁶ It is a complementary tool for EIA. The SEA is a broader concept than the EIA - which is for a particular project - and helps in decision making in regard to government policies, plans and programmes.

²⁶ OECD (2006), "Applying Strategic Environmental Assessment: Good Practice Guidance For Development Co-Operation", DAC Guidelines and Reference Series, OECD Publishing.

The SEA is meant for proactive decision making in regard to the most appropriate development interventions for a given geographical area. However, as opposed to the EIA, it does not need to end at the initial phase in getting legal clearance for the project. Instead, it can be used to evaluate and modify policies during and after the process. Though it implies integration of environmental concerns into development planning, social aspects in regard to planning are also usually incorporated. The SEAs do not necessarily take a 'one-size-fits-all' approach for different contexts. There is no uniform approach which is universal in regard to SEAs. The SEA for a given context has to be developed based on specific conditions.

There have been many discussions in regard to weaknesses of the EIA process and the potential benefits of SEA; it has not been a mandatory requirement in the case of Sri Lanka. In 2006, the Cabinet of Ministers approved implementation of SEA for policies, programmes and plans in Sri Lanka. The memorandum that was submitted by the CEA through the Ministry of Environment and Natural Resources recommends that in the future, all policies, plans and programmes should be subjected to a SEA during their development.²⁷ There have been three pilot scale SEA studies carried out since then, namely the Trincomalee Metro Area Development Plan (2008), Hambantota Development Plan (2010) and Northern Province Regional Development Plan (2011). There is an important need to make SEA a mandatory requirement in development planning, with required legal provisions in place. This has to be coupled with capacity building and proper awareness creation among the stakeholders.

12.4.3 Introduction of Market-based Instruments

MBIs are based on creating an explicit or implicit price on emissions, and generate financial

incentives for controlling environment pollution. Market signals are a key element in implementing MBIs. These are also called economic incentives (IEs) and include pollution charges or levies, taxes, subsidies, and tradable permits. MBIs have the potential to allow a recommended level of environmental pollution while compensating the affected groups at the social cost of environmental cleaning. MBIs can be either direct or indirect. Direct instruments require the regulator to monitor emissions. The most used direct instruments are emission fees and tradable permits. Taxes and subsidies are the main indirect MBIs.

Under an emission fee system, the regulatory authority charges the polluting entity once the effluent discharge passes set standards. In a tradable permit system, once the overall level of pollution is established, the level of allowable pollution is allocated among firms in terms of a permit. If a firm is polluting below its allowable limit, under the permit, it is possible to trade the rest of the permit to another entity.

Taxes are common in controlling air pollution. For example, a tax system to encourage low emission vehicles can reduce the level of air pollution and encourage more usage of such vehicles in the country. At the same time, tax systems are important in reducing the flow of goods into the country. An effective tax scheme is capable of reducing the importation of second hand electronic and electrical items, limiting the amount of electronic waste being generated. One example of a possible subsidy intervention is to provide loan facilities or grants for entrepreneurs to collect electronic waste and handle disposal. Under a sufficient subsidy scheme, electronic waste can be bought for a nominal price from the consumers where waste collectors are paid for their services and consumers get a price for their waste, encouraging more environmentally-friendly electronic waste disposal. Another popular subsidy scheme is the deposit-refund system. In such a

²⁷ CEA (n.d.), "A Simple Guide to Strategic Environmental Assessment (SEA)", Central Environment Authority, Colombo.

Box 12.1

Deposit Refund Systems in Sri Lanka

Deposit refund systems are a famous MBI tool that most countries use to minimize the consumption of potentially harmful products. This is done at the point of sale, and the consumer can claim the refund at the end of the useful life of the product by returning it to the sales point. Deposit refund system is a preventive mechanism, the charge or the deposit is paid in advance before the pollution occurs. Hence, it rewards the good environmental practices rather than penalizing the bad. The revenue collected from such a system can be applied to recycling efforts. Sri Lanka in 2011, attempted to implement the deposit refund system to the use of pesticide containers. However, it has not yet been finalized as the proposal for implementation of the scheme is awaiting Cabinet approval.

system, a deposit is taken by the regulators when the items are sold to the consumer and it will be returned after use (Box 12.1). This sort of system is also ideal in controlling electronic waste with LED batteries and CFL bulbs.

Emission fee systems are ideal in controlling pollution through industrial waste disposal. Industries are known to dispose their effluent to nearby streams, ultimately damaging the ecosystems, downstream water quality and even ground water. Once emission fee systems are established, the monitoring agencies can be vigilant about the levels of emissions and charge them

accordingly. However, the major drawback in such a system is that the regulatory authorities are responsible for monitoring, where a possibility of bribes and cost of monitoring and technical support can cripple such a system easily. A tradable permit system is also ideal for controlling industrial and hazardous waste, especially for an industrial zone. Since there are many industries in a zone, where firms are polluting at different levels, a tradable permit system will ensure that pollution is controlled by the pricing of permits. There are enough examples from developing countries around the world regarding implementation of MBIs for controlling environmental pollution (Box 12.2).

Box 12.2

Market Based Instruments (MBI) in Developing Countries

Malaysia stands as one of the first countries to implement effluent charges. In 1978, Malaysia introduced effluent fees, paired with licensing in order to control pollution from the palm oil industry. In 1997, the Philippines implemented environmental fees for wastewater discharge from industrial sources. Colombia introduced a pilot programme of water effluent charges. This is after experiencing no success in pollution control with command and control regulations. Ecuador implemented a water effluent charge system in the municipality of Quito. Here, the enterprises discharging above national standards for organic content and Total Soluble Solids (TSS) pay a per-unit charge equal to the cost incurred by the municipality. Also, the provision of subsidies and tax relief for the mining sector mercury recovery investments is a priority for the Ecuadorian authorities. Brazil and Colombia extended subsidies in the clean technology area. Important aspects of the programme were industrial pollution abatement investments, as well as income tax and value-added tax rebates for clean technology adoption. Furthermore, Jamaica offers tax and tariff relief for pollution abatement investments, while Mexico offers subsidies for industrial pollution abatement investments. This is administered by exempting a set of pollution control equipment from import taxation. In addition, for industrial abatement investments, the Venezuelan authorities provide tax and tariff relief.

Three key requirements for implementation of MBIs are setting up rules, monitoring performance, and enforcing compliance.

However, the implementations of MBIs are heavily dependent upon the regulatory and enforcement mechanisms, and the strength of the institutions. Three key requirements for this are setting up rules, monitoring performance, and enforcing compliance. It is important that as a first step, Sri Lanka recognizes environment and development as complementary rather than substitutes. Once this is accepted, the problems of weak regulatory institutions, understaffing and lack of resources can be better addressed.

12.5 Conclusion

Ad hoc policy interventions do not lead policy makers to find lasting solutions to existing and emerging environmental threats in Sri Lanka. Most of the environmental issues arise due to lack of consideration in making system-wide changes, such as in governance structure, environment planning and monitoring, and approach to environmental management. As Sri Lanka gears to revisit its development framework and relevant economic reforms, it is timely to mainstream environment sector reforms to ensure sustainable growth in the long-term.

As previously discussed, three types of reforms in the environment sector in Sri Lanka can be identified. First, there should be changes in the environment governance structure, where environmental sustainability is given due recognition in policy planning and implementation. This has to be supported with enhancing inter-agency linkages, policy coordination and meaningful stakeholder participation. Mainstreaming climate change into development planning becomes an important need in this regard. Secondly, changes should be made in the current method of environmental planning by addressing gaps in the NPP and making SEAs mandatory for the relevant development interventions. Thirdly, weaknesses in the current command and control based environmental management system can be avoided by introducing appropriate MBIs to manage not only existing environment problems, but also those that can arise due to the growth process.

Ad hoc policy interventions are not sufficient to find lasting solutions to existing and emerging environmental threats in Sri Lanka.