

# **Profile on Environmental and Social Considerations in Sri Lanka**

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## Abbreviation List

ADB	Asian Development Bank
AECEN	Asian Environmental Compliance and Enforcement Network
AIA	Archaeological Impact Assessments
AirMAC	Air Resources Management Centre
APs	Affected Persons
AQ	Air Quality
BCAP	Biodiversity Conservation Action Plan
BOD	Biological Oxygen Demand
BOI	Board of Investment
CA2AP	Clean Air 2000 Action Plan
CAI	Clean Air Initiative
CCA	Coast Conservation Act
CCD	Coast Conservation Department
CCG	Community Consultative Groups
CEA	Centralized Environmental Agency
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMA	Colombo Metropolitan Area
CMS	Convention on the Conservation of Migratory Species of Wild Animals
COD	Chemical Oxygen Demand
CR	Critically Endangered
DCC	Department of Coast Conservation
DCS	Department of Census & Statistics
DFID	UK Department for International Development
DMC	Displacement Monitoring Center
DSM	Demand Side Management
DWC	Department of Wildlife Conservation
EA	Environmental Assessment
ECA	Environmentally Critical Area
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EN	Endangered
EP	Eastern Provinces
EPL	Environment Protection License
EW	Extinct in the Wild

EX	Extinct
FAO	Food and Agriculture Organization of the United Nations
FD	Forest Department
FI	Financial intermediary
GIC	Government Information Centre
GIS	Geographic Information System
GOSL	Government of Sri Lanka
HEC	Human-Elephant Conflict
IAS	Invasive Alien Species
IBA	Important Bird Area
IDA	International Development Association
IDE-JETRO	Institute of Developing Economies, Japan External Trade Organization
IEE	Initial Environmental Examination
IPAP	Indigenous Peoples Action Plan
IPCC	Intergovernmental Panel on Climate Change
IPDP	Indigenous People's Development Plan
IPP	Indigenous Peoples Plan
IPRA	Indigenous Peoples Rights Act
IPs	Indigenous Peoples
IROW	Infrastructure Right-of
ISA	Initial Social Assessment
IUCN	International Union for Conservation of Nature
JBIC	Japan Bank for International Cooperation
JICA	Japan International Corporation Agency
JILAF	Japan International Labour Foundation
KDN	Kanneliya-Dediyahala-Nakiyadeniya
LA	Local Authority
LAA	Land Acquisition Act
LAO	Legal Affairs Office
LAPRAP	Land Acquisition Plan and Resettlement Action Plan
LLDF	Local Loans and Development Fund
LLRC	Lessons Learnt and Reconciliation Commission
LTTE	Liberation Tigers of Tamil Elam
MASL	Mahaweli Authority of Sri Lanka
MDG	Millennium Development Goal
MENR	Ministry of Environment and Natural Resources
MHRD	Ministry of Highways and Road Development
MoE	Ministry of Environment
MoEF	Ministry of Environment and Forestry
MOFA	Ministry of Foreign Affairs of Japan

MoFE	Ministry of Forestry and Environment
MOLGPC	Ministry of Local Government and Provincial Councils
NEA	National Environmental Act
NGO	Non-Governmental Organisation
NH	National Highways
NIRP	The National Involuntary Resettlement Policy
NORAD	Norwegian Agency for Development Cooperation
NSSWM	National Strategy for Solid Waste Management
NSWMSC	National Solid Waste Management Support Centre
NWP	North Western Province
NWSDB	National Water Supply and Drainage Board
PAA	Project Approving Agency
PAPs	Project Affected Persons
PC	Public Consultation
PC	Provincial Councils
PEA	Project Executing Agency
PI	Preliminary Information
PIU	Project Implementation Unit
PM	Particulate Matters
PMO	Project Management Office
PP	Project Proponent
PSC	Parliamentary Select Committee
RAP	Resettlement Action Plan
REDD+	Reducing emissions from deforestation and forest degradation, plus conservation, sustainable management of forest, and enhancement of forest carbon stocks
RIP	Resettlement Implementation Plan
RP	Resettlement Plan
RPF	Resettlement Policy Framework
RRAN	Resettlement and Rehabilitation Authority of the North
RWSS	Rural Water Supply and Sanitation
SEA	Strategic Environment Assessment
SIL	Sector Investment Lending
SLILG	Sri Lankan Institute of Local Governance
SLS	Sri Lanka Standards
SPM	Suspended Particulate Matters
SPS	Safeguard Policy Statement
STDP	Southern Transport Development Project
SWM	Solid Waste Management
SWML	Scheduled Waste Management License
TA	Technical Assistance

TEVT	Technical Education and Vocational Training
TNA	Tamil National Alliance
ToR	Terms of Reference
UDA	Urban Development Authority
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USAID	The United States Agency for International Development
VU	Vulnerable
WB	World Bank
WB OP	World Bank Operational Policy
WEPA	Water Environment Partnership in Asia
WHO	World Health Organization
WRB	Water Resources Board

# **Chapter 1**

## **Country Overview**



# 1 Country Overview

## 1.1 Overview

### 1.1.1 Map of the Country



Map No. 4172 Rev.3 UNITED NATIONS  
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Figure 1.1.1: Map of Sri Lanka



### 1.1.2 Location and Topology

Sri Lanka, officially known as the Democratic Socialist Republic of Sri Lanka, was known as Ceylon before 1972. This country lies in the Indian Ocean southwest of the Bay of Bengal. It is separated from the Indian subcontinent by the Gulf of Mannar and the Palk Strait. Sri Lanka is divided into 25 districts. It is a pear-shaped island consisting mainly of flat-to-rolling coastal plains, with mountains rising only in the south-central part of the country.

Colombo, the former capital of Sri Lanka, lies in a coastal area in the lowlands of the south-western section of the island. The city covers an area of 37.29 km<sup>2</sup>. It is strategically situated as a seaport and the decision to position the city in this manner was made during the early 20th century (ADB and CAI-Asia Center 2006).

### 1.1.3 Climate

Sri Lanka is a tropical island located in the Indian Ocean off the southern tip of peninsular India, between 5°55'–9°51' N and 79°41'–81°54' E. It has an area of 65,610 km<sup>2</sup> and consists of three penneplains: lowlands (<300 m above sea level), uplands (300–900 m above sea level) and highlands (>900 m above sea level). According to the distribution of rainfall, three major climatic zones have been recognised: dry (annual rainfall: <1900 mm), wet (>2500 mm) and intermediate (1900–2500 mm) zones. The island also contains three distinct mountain ranges: the central hill massif, the Rakwana range to the southwest and the Knuckles range north of the central massif. For details, refer to Section 2.1.

## 1.2 Legislation and Policies Related to Environmental Considerations

Since the English colonial era, more than 90 environment-related regulations have been enacted over the span of 100 years. The general regulatory trend in Sri Lanka is to control the protection of natural resources for controlled use of resources, related management activities and sustainable management. The key environmental regulations are noted in Table 1.1.1.

**Table 1.1.1: Major Laws and Projects Concerning the Natural Environment**

No.	Name of legislation	Year
1.	Forest Ordinance	1907
2.	Fauna and Flora Protection Ordinance	1937
3.	Mines and Minerals Act	1973
4.	National Water Supply and Drainage Board Law	1974
5.	Coast Conservation Act	1981
6.	National Aquatic Resources Research and Development Agency Act	1981
7.	National Heritage Wilderness Act	1987

Prior to 1980, there was no overarching legislation to regulate pollution from all sources, and various agencies addressed issues pertaining to their sectors according to sector-specific laws. In particular, the Factories Ordinance addressed industrial operations, including the safety and welfare of workers, while the Nuisances Ordinance regulated certain defined nuisances. Local authorities were entrusted by law with the regulation, control and administration of all matters relating to public health, public utility services and public thoroughfares within their geographical areas (CEA, AECEN and ADB. 2006).

In 1980, the National Environmental Act (NEA) was enforced with the objective of protecting and managing the environment as a whole. The initial provisions of the Act focused on 'environmental management'; with very little enforcement power vested in the implementation agency. In 1988, the Act was amended to expand implementation authority to (1) 'environmental protection', (2) 'environmental quality' and (3) 'approval of projects'. While in 1988 the provisions on environmental protection applied to all activities discharging, emitting or depositing waste into the environment and causing pollution, a subsequent amendment in 2000 limited these provisions to listed 'prescribed activities'. While this amendment limited the jurisdiction of the Act, the purpose of this amendment was to focus management resources on priority challenges. An amendment in 2005 increased the fines specified under the Act. This act is an umbrella law to address a variety of environmental issues (CEA, AECEN and ADB 2006).

The environmental quality provisions of the NEA provide for the prevention of pollution of inland waters, the atmosphere, soil or the surface of any land; further, they also provide for the control excessive noise. Unlike the provisions on EIA, which is described in a subsequent chapter, which are restricted to a defined list of prescribed activities, these provisions apply to all polluting activities. The environmental quality provisions, however, are more complicated to enforce and require 'proof of pollution'. Further, the subsidiary legislation required to bring these provisions into effect are incomplete. In general, the government relies on these provisions at the time of litigation, where charges are brought under these provisions along with provisions on environmental protection (CEA, AECEN and ADB 2006).

Since 1996, the NEA has prescribed regulations for the management of hazardous waste, and in 1999 the Central Environmental Authority (CEA) prepared Guidelines for the Implementation of Hazardous Waste Management Regulations. To date, the CEA has not issued licenses, and the regulations have not been implemented due to the lack of treatment and disposal facilities. Since 2004, the CEA has been implementing an environmental clearance process for hazardous waste, allowing certain types of hazardous waste to be co-processed at a cement plant. Other alternative interim measures are also in place (CEA, AECEN and ADB. 2006).

Sri Lanka's administrative system is characterised by a form of government in which power is divided between one central authority and several regional ones. As of today, Sri Lanka has 25 districts organised into nine provinces. In 1987, Provincial Councils were introduced as a new

level of intermediary governance between the Central and Local governments. The 13th Amendment to the Constitution of Sri Lanka empowered Provincial Councils with legislative and executive power over the environment with the jurisdiction of the respective provinces, provided such laws were not in conflict with those of the Central Government. In response to this, the North Western Provincial Council set up its own environment statutes (the North Western Provincial Environmental Statute No. 12 of 1990) and acts in lieu of CEA for this province. As a result, the NEA is no longer a national act. In the Western Province, the waste management statute provides for the establishment of the Waste Management Authority of the Western Province, which has powers to introduce waste management regulations and waste management guidelines within this province. These regulations and guidelines cover ‘solid waste’, ‘hazardous waste’ and ‘clinical or infectious waste’, thus allowing possible duplication of the CEA’s powers and functions (CEA, AECEN and ADB 2006).

### 1.3 Governmental Organisations (Including Municipalities) Related to Environmental Considerations and Their Capacity for Implementation

The governance structure in Sri Lanka is three-tiered: (1) the Parliament is at the national level, (2) the Provincial Councils act at the provincial level and (3) the Local Authorities consisting of Municipal Councils, Urban Councils and Pradeshiya Sabhas act at the local level.

The sovereignty of Sri Lanka is vested in the people, while the Parliament exercises the legislative power of the people, and the President exercises the executive power. Excluding the event of parliamentary privileges, the judicial power lies with the courts, tribunals and institutions created and established by law or the Constitution. Laws formulated by the Parliament enjoy immunity from challenge upon passing, and a Court or tribunal may not question the validity of any such law made by the Parliament (CEA, AECEN and ADB 2006).

At the national level, the Ministry of Environment (MoE), which was established in 1990, is the most relevant entity with regard to environmental considerations. The MoE is in charge of providing ‘leadership to manage the environment and natural resources in order to ensure national commitment for sustainable development for the benefit of the present and future generations’ and the vision of ‘a healthy and pleasant environment, sustaining nature for the well-being of the people and the economy’. The following agencies are under the jurisdiction of the MoE: the Forest Department, State Timber Cooperation, CEA, Wildlife Trust, Department of Wildlife Conservation, Geological Survey & Mines Bureau, and the Marine Pollution Prevention Authority. The Ministry formulated the National Environment Policy (NEP) and the *Caring for the Environment 2003–2007: Path to Sustainable Development as an action plan towards the implementation of the NEAP* in 2003. The Ministry has also formulated national policies including the recent National Policy on Watershed Management and the Biodiversity Conservation Action Plan (BCAP) (CEA, AECEN and ADB. 2006).

The CEA, established by and in accordance with the NEA, is the administering agency for the

NEA. The CEA Board consists of a Chairman and two other members appointed by the President in consultation with the Minister. Two of the members are required to have adequate expertise and qualifications in the subject of environment, while the third is required to have suitable administrative skills and experience in environmental management. The CEA is a corporate body with perpetual succession that may sue and be sued in its name. While the CEA is empowered to establish its own fund, it is subject to the Auditor General's scrutiny under Article 154 of the Constitution and the provisions of the Act, and thus comes under parliamentary supervision. A 30-member Environmental Council appointed by the Minister advises the CEA. The CEA established District Environmental Agencies for each administrative district under the Chairmanship of the Government Agent of the District. The CEA is responsible for the coordination of all regulatory activities related to the discharge of wastes and pollutants into the environment and the protection and improvement of the quality of the environment. In order to carry out its objectives, the Authority is empowered to survey and investigate the causes, nature, extent and prevention of pollution, and to conduct, promote and coordinate research on environmental degradation and its prevention. The CEA can give directives to local authorities to comply with any CEA recommendations. It may also provide information and education to the public regarding the protection and improvement of the environment. The CEA has five divisions: Environment Pollution Control, Environment Management and Assessment, Environment Education and Awareness, Human Resources, and Operational Planning and Monitoring (CEA, AECEN and ADB 2006).

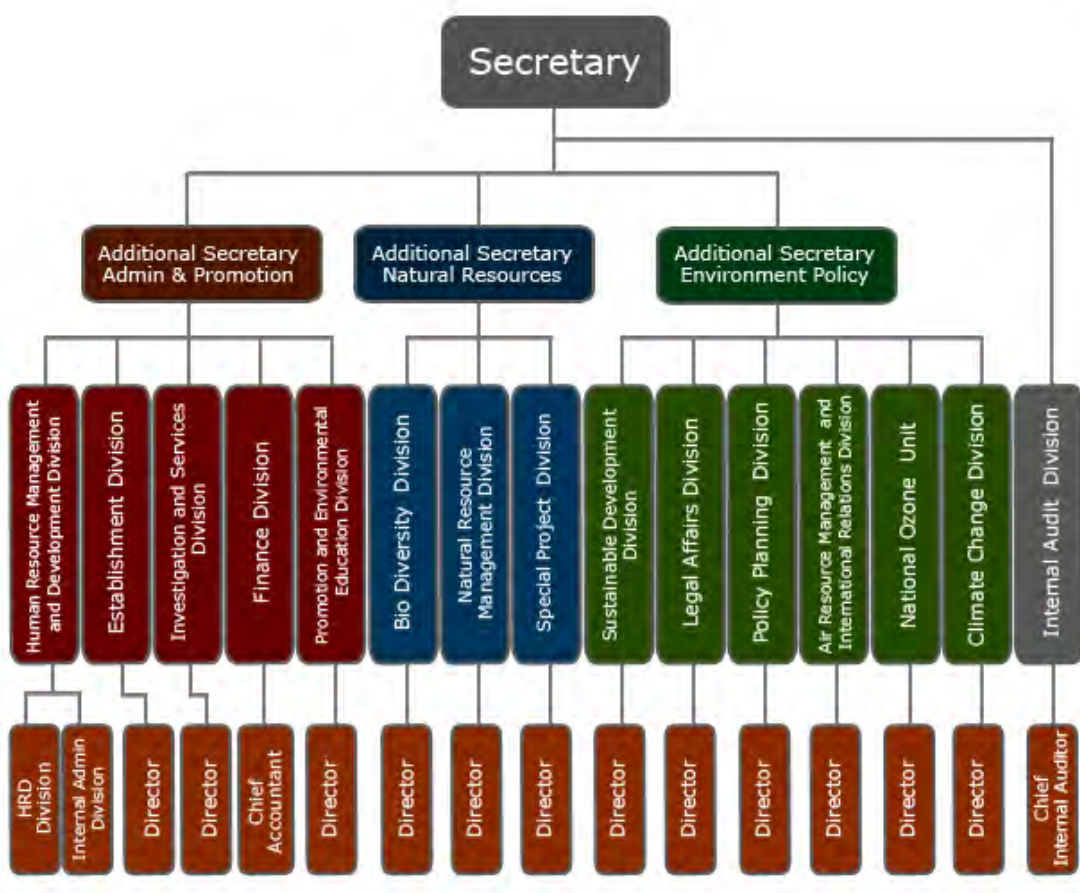
In decentralising its functions, the CEA has established four regional and four sub-regional offices throughout the country. Except for the Western Province, the CEA operates provincial, regional and sub-regional offices that handle most compliance and enforcement functions. In the Western Province, where the CEA head office is located, the Environment Pollution Control Division conducts routine compliance and enforcement functions, detracting from its national responsibilities, although this situation is expected to change. Recently, the CEA established a regional provincial office for the Western Province, and is in the process of transferring the functions of the Environment Pollution Control Division to this regional office (CEA, AECEN and ADB 2006).

The next level of governance below the Parliament is represented by the nine Provincial Councils established by the 13th Amendment to the Constitution. Provincial Councils consist of an elected legislative body and a Governor appointed by the President, who performs executive functions. The Provincial Councils may make statutes applicable within the province with respect to subject areas specified under the Constitution. Since the Provincial Councils are subsidiary law-making bodies, their statutes do not enjoy immunity from challenge, and courts may at any time strike down a provincial statute on constitutional grounds (CEA, AECEN and ADB 2006).

Local authorities consisting of Municipal Councils, Urban Councils and Pradeshiya Sabhas constitute the third level of governance. Local authorities are corporate bodies and have the

power to formulate subsidiary legislations on subjects specified in the respective laws and thus formulate by-laws for their areas. This power, which is an exception to the rule that the Parliament may not abdicate its law-making power, is subjected to challenge in terms of whether or not it has been exercised within the limits prescribed by law. Thus, a court may scrutinize and set aside by-laws at any time on the grounds of its being ultra vires. Since 1987, local authorities have been placed under the Provincial Councils. Provincial and local administration is further complicated in the conflict areas (CEA, AECEN and ADB 2006).

The organisational chart of the Ministry of Environment is shown in Figure 1.3.1.



Source: MoE. <http://www.environmentmin.gov.lk/web/> (Accessed on 26 May 2012).

**Figure 1.3.1: The Organisation Chart of the Ministry of Environment**

Since the late 1980s, decentralisation of authority has been promoted in Sri Lanka. In brief, decentralisation of environmental administration has progressed since the late 1980s. State government was empowered by the 13th Constitutional Amendment in 1988, the administrative authority and responsibility has been delegated to the state government for a number of areas including the environment. In addition, according to Act No. 58 of 1992, the central government authority of 25 districts has been delegated to 280 local governments. In order to implement this

clause in the revised constitution, Provincial Councils were established in 1987.

Provincial Councils were introduced as a new level of intermediary governance between the Central and Local Governments. The 13th Amendment to the Constitution of Sri Lanka empowered Provincial Councils with legislative and executive power over the environment with the jurisdiction of the respective provinces, as stated above, provided such laws were not in conflict with those of the Central Government. In response to this, the North Western Provincial Council set up its own environment statutes (the North Western Provincial Environmental Statute No. 12 of 1990) and acts in lieu of CEA for this province. The administrative divisions in Sri Lanka are shown in Figure 1.3.1.

Major strategies and policies related to the natural environment in Sri Lanka are shown in Table 1.3.1. For further details, see Table A-1 in the Appendix.

**Table 1.3.1: Policies Related to the Natural Environment in Sri Lanka**

<b>Policies</b>	<b>Year</b>
National Environmental Action Plan	1991
Clean Air 2000 Action Plan	1993
Forestry Sector Master Plan: To translate policy strategies into action (1995–2020)	1995
National Biodiversity Conservation Action Plan	1998
National Industrial Pollution Management Policy	1998
National Strategy for Solid Waste Management	2002
Caring For The Environment 2003–2007: Path to Sustainable Development, the successor of NEAP 1998–2001	2003
National Environment Policy	2003
National Forestry Policy	2005
Progress Report 2011 and Action Plan 2012 (regularly published)	2012



Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

**Figure 1.3.2: Administrative Divisions in Sri Lanka**

## 1.4 Overview and Contact Details of Relevant Organisations

### 1.4.1 Governmental Organisations and Research Institutions

Table 1.4.1 presents a list of governmental organisations and research institutions related to environmental and social considerations in Sri Lanka.

**Table 1.4.1: List of Governmental Organisations and Research Institutions Related to Environmental and Social Considerations in Sri Lanka**

Organisations	Assigned Role	URL
Ministries and Agencies		
Government of Sri Lanka		<a href="http://www.priu.gov.lk/">http://www.priu.gov.lk/</a>
Ministry of Economic Development	The Ministry of Economic Development in Sri Lanka has a varied purview including regional and rural development, poverty alleviation and empowerment of the poor, promoting investments to Sri Lanka, travel and tourism industry development, and nature and wildlife conservation.	Address: 464 T B JAYA MAWATHA, COLOMBO 10 Tel: 011 2688088 / 2681966 / 2681967 / 2681977 / 2681973 /2681974 <a href="http://med.gov.lk/english/">http://med.gov.lk/english/</a>
Ministry of Industries and Commerce	Responsible for promoting industrial development in the country within the wide policy framework of Mahinda Chintana spelt out by the government.	Address: No. 73/1, Galle Road, Colombo 03, Sri Lanka. Tel: +94-11-2392149, 2392150, 2327554 <a href="http://www.industry.gov.lk/web/index.php?option=com_content&amp;view=frontpage&amp;Itemid=1&amp;lang=en">http://www.industry.gov.lk/web/index.php?option=com_content&amp;view=frontpage&amp;Itemid=1&amp;lang=en</a>
Ministry of Economic Reform, Science and Technology	Responsible for the formulation of policies, programmes and projects with regard to Technology and Research and for the direction of the implementation of such policies, programmes and projects.	Address: Ministry of Technology & Research. No.408, Galle Road, Colombo-03 <a href="http://www.most.gov.lk/">http://www.most.gov.lk/</a>
Ministry of Foreign Affairs		Email: <a href="mailto:cypher@mea.gov.lk">cypher@mea.gov.lk</a> Tel: 0094 (0) 11 2325371 / 2325372 / 2325373 / 2325375 Fax: 0094 (0) 11 2446091 / 2333450 / 2430220 <a href="http://www.mea.gov.lk/index.php/contact-us">http://www.mea.gov.lk/index.php/contact-us</a>



Ministry of Finance & Planning	Responsible of the Preparation of a Long Term /Medium Term Development Plans and the Investment Programme Development of a macro-economic framework, strategies. Review of economic development policies, strategies, programmes and project appraisal	<a href="http://www.treasury.gov.lk/EPPRM/npd/aboutus.htm">http://www.treasury.gov.lk/EPPRM/npd/aboutus.htm</a>
Ministry of Health, Nutrition & Welfare	To contribute to social and economic development of Sri Lanka by achieving the highest attainable health status through promotive, preventive, curative and rehabilitative services of high quality made available and accessible to people of Sri Lanka.	Address: 385, Ven. Baddegama Wimalawansa Mawatha Colombo-10, Sri Lanka. Tel: 011 2698511, 011 2698517 <a href="http://www.health.gov.lk/">http://www.health.gov.lk/</a>
Ministry of Education	Responsible of developing competent citizens keeping with the global trends through innovative and modern approaches to education leading to efficiency, equity and high quality performance ensuring stakeholder satisfaction	"Isurupaya", Pelawatta, Battaramulla, Sri Lanka. Tel: +94 112 785141-50, Email: <a href="mailto:info@moe.gov.lk">info@moe.gov.lk</a> <a href="http://www.moe.gov.lk/">http://www.moe.gov.lk/</a>
Department of Wildlife Conservation	Responsible for maintaining national parks, nature reserves and wildlife in wilderness areas in Sri Lanka. Forest reserves and wilderness areas are maintained by the Department of Forest Conservation	Address: 811A Jayanthipura Road, Buttarmulla Tel: 0112 888 565 Email: <a href="mailto:dg@dwc.gov.lk">dg@dwc.gov.lk</a> <a href="http://www.dwlc.lk/">http://www.dwlc.lk/</a>
Department of Census and Statistics (DCS)	Responsible of collecting, compiling and disseminating relevant statistical information.	Address: 4th and 5th Floors, Rotunda Tower, 109, Galle Road, Colombo 03. Tel : +94 11 2147000, +94 11 2147050 E-mail : <a href="mailto:information@statistics.gov.lk">information@statistics.gov.lk</a> <a href="http://www.statistics.gov.lk/">http://www.statistics.gov.lk/</a>
<b>Research Institutions</b>		
National Science Foundation	State founded institution under the Ministry of Technology & Research with the objective of facilitating and supporting basic and applied scientific	Address: 47/5 Vidya Mawatha Maitland Place, Colombo 00700. Sri Lanka E-mail: <a href="mailto:info@nsf.ac.lk">info@nsf.ac.lk</a>

	research by universities, science and technology institutions and scientists	Tel: +94 011 2696771 Fax: +94 011 2694754 <a href="http://www.nsf.ac.lk/">http://www.nsf.ac.lk/</a>
National Aquatic Resources Research & Development Agency	It is the principal National Institute charged with the responsibility of carrying out and coordinating research, development and management activities on the subject of Aquatic Resources in Sri Lanka.	Address: Crow Island, Colombo 15, Sri Lanka Tel: 94 11 2521000 / 2521006 Fax: 94 11 2521922 E-mail: <a href="mailto:postmaster@nara.ac.lk">postmaster@nara.ac.lk</a> <a href="http://www.nara.ac.lk/index.html">http://www.nara.ac.lk/index.html</a>
Others		
Colombo National Museum	National museum with nine branch museums and a school science programme and a mobile museum service are also in operation.	Representative: Mr. S.H. Ranjith Designation: Museum Keeper Address: P.O. Box 854, Sir Marcus Fernando Mw., Colombo 07 Tel: 0094 112 694366 E-mail: <a href="mailto:ranjith.s.hewage@yahoo.com">ranjith.s.hewage@yahoo.com</a> <a href="http://www.museum.gov.lk/">http://www.museum.gov.lk/</a>
Air Resources Management Centre	Integration of air pollution abatement programs; Development & implementing public sensitisation programmes; Institutional strengthening, training, capacity building of related staff of air resources management; Development of policies and programme; Establishment of air resource information Network for collection and dissemination of air quality documents; Promotion & facilitation of air quality research with a view to ensuring of clean and safe air for the health and well being of the people.	Address: No.980/4A, Wickramasinghe Place, Ethulkotte, WP. Sri Lanka, Sri Lanka Tel: 0094-11-2888248 Fax : 0094-11-4410236 <a href="http://www.airmacsl.org">www.airmacsl.org</a>
University of Colombo	Public research university located primarily in Colombo, Sri Lanka. The oldest institution of modern higher education in Sri Lanka, it is also the largest university in the island.	Address: College House University of Colombo 94, Cumaratunga Munidasa Mawatha, Colombo 3, Sri Lanka Tel: (9411) 2581835, (9411) 2584695, (9411) 2585509,(9411)

		2583818 Fax : (9411) 2583810 <a href="http://www.cmb.ac.lk/">http://www.cmb.ac.lk/</a>
University of Sri Jayewardenepura Department of Forestry and Environmental Science	University offering both undergraduate and postgraduate courses in Forestry and Environmental Science. We have been able to reach wide horizons in training professionals who are capable of contributing effectively to the country's development process.	Address: Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka. email: <a href="mailto:dfes@sjp.ac.lk">dfes@sjp.ac.lk</a> Tel: +94 11 2804685 Fax: +94 11 2803470 <a href="http://www.sci.sjp.ac.lk/fes/">http://www.sci.sjp.ac.lk/fes/</a>
University of Moratuwa	Technological University in Sri Lanka	Address: Katubedda, Moratuwa, Sri Lanka. Tel: 2650301, 2650534, 2650441, 2650340 2650188, 2650286, 2650287, 2650185 Email: <a href="mailto:info@uom.lk">info@uom.lk</a> <a href="http://www.mrt.ac.lk/web/">http://www.mrt.ac.lk/web/</a>

#### 1.4.2 Donors

Table 1.4.2 lists the active donors in the environmental and social sector in Sri Lanka.

**Table 1.4.2: Major Donors in Sri Lanka**

Organisations	Assigned Role	Contact Address
<b>International Donors</b>		
United Nations Development Programme (UNDP) Sri Lanka	UNDP began operations in Sri Lanka in 1967. UNDP's overarching goal is to support the country in the attainment of the Millennium Development Goals and the reduction of poverty. UNDP pursues this goal by working closely with the Government of Sri Lanka and supporting its agenda and objectives as captured within the framework of the United Nations Development Assistance Framework	Address: 202-204, Baudhaloka Mawatha, Colombo 7, Sri Lanka. Tel: +94-112-580691 Fax: +94-112-581116; 2501396 Email: <a href="mailto:registry.lk@undp.org">registry.lk@undp.org</a> <a href="http://www.undp.lk/">http://www.undp.lk/</a>
The World Bank (WB) Sri Lanka	The World Bank is a vital source of financial and technical assistance to developing countries around the world.	Address: 2nd Floor, DFCC Bldg 73/5 Galle Road Colombo 3, Sri Lank, Tel: +94-11 2448070

Organisations	Assigned Role	Contact Address
		E-mail: <a href="mailto:infosrilanka@worldbank.org">infosrilanka@worldbank.org</a> <a href="http://www.worldbank.lk/">http://www.worldbank.lk/</a>
Asian Development Bank (ADB) Sri Lanka	Sri Lanka is now categorized as a middle-income country, and needs to reorient its planning to suit the requirements of a middle-income country. ADB will enhance its assistance by helping the government address major policy issues and institutional strengthening initiatives.	Address: 23, Independence Avenue Colombo 7, Sri Lanka Tel +94 11 267 4499 Fax +94 11 267 4488 Email: <a href="mailto:adbslrm@adb.org">adbslrm@adb.org</a> <a href="http://www.adb.org/SriLanka/">http://www.adb.org/SriLanka/</a>
<b>Bilateral Donors</b>		
JICA Sri Lanka Office		<a href="http://www.jica.go.jp/srilanka/english/index.html">http://www.jica.go.jp/srilanka/english/index.html</a>
Embassy of Japan in Sri Lanka		<a href="http://www.lk.emb-japan.go.jp/index.html">http://www.lk.emb-japan.go.jp/index.html</a>
United States Agency for International Development (USAID) Sri Lanka	The Agency aims to accelerate the reconciliation and integration of the areas formerly controlled by the LTTE (the secessionist Tamil Tiger militant group) with the whole of Sri Lanka, enabling all Sri Lankans to rebuild their local communities as well as benefit from and participate in the country's economic growth and development equitably and sustainably.	44, Galle Road, Colombo 3, Sri Lanka Tel: +9411.249.8000 Fax: +9411.247.2850 Email: <a href="mailto:infos@usaid.gov">infos@usaid.gov</a> <a href="http://srilanka.usaid.gov/">http://srilanka.usaid.gov/</a>
Department for International Development (DFID)	The Department for International Development (DFID) was set up in 1997, as UK's international agency with the objective of fighting world poverty. This marked a turning point for Britain's aid programme, which until then had mainly involved economic development.	DFID, South Asia Directorate 1 Palace Street London SW1E 5HE Tel :+ 44 (0) 207 023 0600 (press enquiries) Fax :+44 (0) 207 7023 0019 <a href="mailto:pressoffice@dfid.gov.uk">pressoffice@dfid.gov.uk</a> <a href="http://www.dfid.gov.uk/Where-we-work/Asia-South/Sri-Lanka/?tab=2">http://www.dfid.gov.uk/Where-we-work/Asia-South/Sri-Lanka/?tab=2</a>

#### (1) World Bank

The World Bank's new Country Partnership Strategy (CPS) for the fiscal years 2012–2016 is prepared in close consultation with the Government of Sri Lanka and other important stakeholders, including the general public, civil society organisations, the private sector and

other development partners in the country. It identifies three pillars that encapsulate these goals: facilitating private and public investment, supporting structural shifts in the economy and improving living standards and social inclusion. The new CPS will be launched in June 2012.

#### (2) ADB

ADB's operations in Sri Lanka over the next 5 years will be guided by the country partnership strategy (CPS), 2012–2016, which is closely aligned with the government strategy Mahinda Chinthana 2010–2016 and ADB's long-term strategic framework, Strategy 2020. It focuses on three pillars: inclusive and sustainable economic growth, catalysing private investment and enhancing the effectiveness of public investment, and human resource and knowledge development.

#### (3) USAID

USAID focuses on providing assistance to the most vulnerable Sri Lankan citizens, working with local organisations whenever possible. Programs concentrated primarily on lagging regions. Their 2010 - 2013 strategy is

##### \* A Strengthened Partnership between the State and its Citizens:

In support of a more unified, prosperous Sri Lanka, programs serving this objective foster rule of law systems and effective, timely justice for citizens; improve public services and relationships between citizens and local governments; and stabilize conflict-affected communities.

##### \* Increased and More Equitable Economic Growth:

Programs serving this objective seek to nurture positive business climates, boost enterprise productivity, and expand opportunities for vulnerable Sri Lankans. Public-private alliances, many with Sri Lankan companies, promote investment in vulnerable regions.

#### (4) DFID

The end of the conflict in May 2009 created almost 280,000 internally displaced people (IDPs). The majority of these remained detained in camps in the north of Sri Lanka until October 2009 when the Government started a 'crash' returns programme to return them to their homes.

In response to needs on the ground, DFID has committed £13.5 million of humanitarian funding to Sri Lanka since September 2008.

### 1.4.3 NGOs

NGOs conduct various kinds of activities. The major NGOs in are shown in Table 1.4.3.

**Table 1.4.3: NGOs in the Field of Environmental and Social Considerations in Sri Lanka**

NGOs	Assigned Role	Contact Address
<b>Environmental Considerations</b>		
Conservation International	Non profit organisation, originally only dedicated to protecting tropical biodiversity, CI has evolved into an international organisation with influence among governments, scientists, charitable foundations, and business. CI implements projects with development agencies countries such as the US or Netherlands as multilateral donors. While CI does not have offices in the country, it has several projects in Sri Lanka. Due to similar social and environmental conditions CI groups Sri Lanka with India's Western Ghats region.	No offices in Sri Lanka.  2011 Crystal Drive, Suite 500 Arlington, VA 22202, U.S.A Tel: 1 (703) 341-2400
EMACE Foundation	Non-Governmental Organisation, working towards adaptation to climate change mitigating adverse impacts on environment and ecology.	Address: P.O. Box – 96, Moratuwa 10400, Sri Lanka Tel: +94-(0)11-2612837, +94-(0)60-2164571 Mobile: +94-(0)77-7913393 Fax : +94-(0)11-2610080 Email: emace@slt.lk, asianwomen@sltnet.lk <a href="http://www.emacesrilanka.com/index.php">http://www.emacesrilanka.com/index.php</a>
Environmental Foundation Limited	One of Sri Lanka's oldest public interest organisations working in environmental conservation and protection since 1981	Representative: Mr. Hemantha Vithanag Address: No. 146/ 34, Havelock Road, Colombo 5, Sri Lanka Tel: (94 11) 739 6700 – 5 Fax: (94 11) 452 8483 Email: efl@sltnet.lk <a href="http://www.efl.lk/">http://www.efl.lk/</a>

NGOs	Assigned Role	Contact Address
International Union for Conservation of Nature Sri Lanka Country Office (IUCN)	Sri Lanka Programme facilitates conservation action by offering technical, institutional and policy support to government agencies and NGOs.	Address: 53, Horton Place, Colombo 7, Sri Lanka Tel. +94-011-2694094, 2682418 Fax: 2682470 <a href="http://www.iucn.org/about/union/secretariat/offices/asia/asia_where_work/srilanka/">http://www.iucn.org/about/union/secretariat/offices/asia/asia_where_work/srilanka/</a>
National Solid Waste Management Support Centre	<ol style="list-style-type: none"> <li>1. Provide manuals and guidelines to facilitate local authorities to implement proper solid waste management (SWM).</li> <li>2. Provide technical assistance on SWM to local authorities.</li> <li>3. Collect and study information on the current SWM practices in local authorities, as well as those in foreign countries.</li> <li>4. Facilitate local authorities to get technical and financial assistance from NGOs and donors.</li> </ol>	Address: No.330, Union Place, Colombo 2 Telephone: 011- 2423146 Fax : 011-2302722 E mail : <a href="mailto:info@pclg.gov.lk">info@pclg.gov.lk</a> , <a href="mailto:nswmsc@pclg.gov.lk">nswmsc@pclg.gov.lk</a> <a href="http://www.pclg.gov.lk/en/sub_pgs/contact_us.html#con">http://www.pclg.gov.lk/en/sub_pgs/contact_us.html#con</a>
Sri Lanka Environmental Journalists Forum (SLEJF)	SLEJF is an independent, public interest media organisation established in 1987, to give training, communicate and promote sustainable human development with equity, participation and democracy.	Address: P.O.Box26, 434/3 Sri Jayawardenapura - Sri Lanka. Tel/ Fax:+94-11- 5648151 Email: <a href="mailto:ejournalists@gmail.com">ejournalists@gmail.com</a> <a href="http://www.environmentaljournalists.org/">http://www.environmentaljournalists.org/</a> <a href="http://www.environmentaljournalists.org/">http://www.environmentaljournalists.org/</a>
Sri Lanka Wildlife Conservation Society (SLWCS)	Sri Lanka Wildlife Conservation Society (SLWCS) is the first organisation established outside of Sri Lanka with the sole purpose to conserve the dwindling biodiversity of Sri Lanka.	Address: 38 Auburn Side, Dehiwala Tel: 94-11-2714710 Fax: 94-11-573131 Email: <a href="mailto:info@slwcs.org">info@slwcs.org</a> <a href="http://www.slwcs.org/aboutus.html">http://www.slwcs.org/aboutus.html</a>
Wildlife & Nature Protection Society (WNPS)	Established in 1894 as a game protection society and evolved over the years to become a wildlife and nature conservation society by the 1970s.	Address: No. 86, Rajamalwatte Road, Battaramulla, Sri Lanka Tel: +94 11 887390 Fax: +94 11 887664 <a href="http://www.wnpssl.org/">http://www.wnpssl.org/</a>
World Wide	International NGO working on issues	No office in Sri Lanka

NGOs	Assigned Role	Contact Address
Fund For Nature (WWF)	related to the conservation, research and restoration of the environment.	<a href="http://wwf.panda.org/">http://wwf.panda.org/</a>
<b>Social Considerations</b>		
Consortium of Humanitarian Agencies (CHA)	Association of agencies working on the development and dissemination of standards, guidelines, principles, and working methodologies for the humanitarian sector	Address: No. 86, Rosmead Place, Colombo 07, Sri Lanka. Tel: +94-11-4626100 Fax: +94-11-4626100 ext.113 Email: <a href="mailto:info@cha.lk">info@cha.lk</a> <a href="http://www.humanitarian-srilanka.org">http://www.humanitarian-srilanka.org</a>
International Centre for Ethnic Studies (ICES)	A research centre established in 1982. Research on ethnicity, identity politics and conflict.	Address:2, Kynsey Terrace, Colombo 8, Sri Lanka T: +94-11-2679745 / 2674884 F: +94-11-2688929 <a href="http://ices.lk/">http://ices.lk/</a>
Lanka Mahila Samiti	Voluntary Social Service Ordinance advocated to help raise the overall social, health and economic standards of women in their homes and communities	Address: 123, Sir James Peiris, Mawatha Colombo 2 Tel/Fax: 0094-1-424060 No official website <a href="http://www.craftrevival.org/detailsNgos.asp?CountryCode=Sri%20Lanka&amp;NgosCode=002237">http://www.craftrevival.org/detailsNgos.asp?CountryCode=Sri%20Lanka&amp;NgosCode=002237</a>
Sarvodaya	The largest people's organisation in Sri Lanka. Currently involved in resettlement, reconstruction and reconciliation activities in the war affected North and East of Sri Lanka, and "Deshodaya", National Reawakening programme which aims to promote good governance and democracy	Mr. Saman Algoda, Executive Director Email: <a href="mailto:saman@sarvodaya.org">saman@sarvodaya.org</a> . Address: Sarvodaya Headquarters No 98, Rawatawatta Road, Moratuwa , Sri Lanka Phone +94 11 264-7159, +94 11 555-0756, +94 11 265-5255 Fax +94 11 2656-512 <a href="http://www.sarvodaya.org/">http://www.sarvodaya.org/</a>
Sewalanka Foundation	NGO working on enhancing the capacity of rural communities to democratically identify and address their own development needs by providing services that contribute to the economically viable, socially just, and ecologically sustainable development of Sri Lanka.	Address: 432 A, 2nd Floor, Colombo Road, Boralesgamuwa Tel: 011 - 254 5362- 5 Fax: 011 - 254 5166 Email: <a href="mailto:headquarters@sewalanka.org">headquarters@sewalanka.org</a> <a href="http://www.sewalanka.org">http://www.sewalanka.org</a>



**Chapter 2**  
**Natural Environment**



## 2 Natural Environment

### **Latest Development/Issues Regarding the Natural Environment**

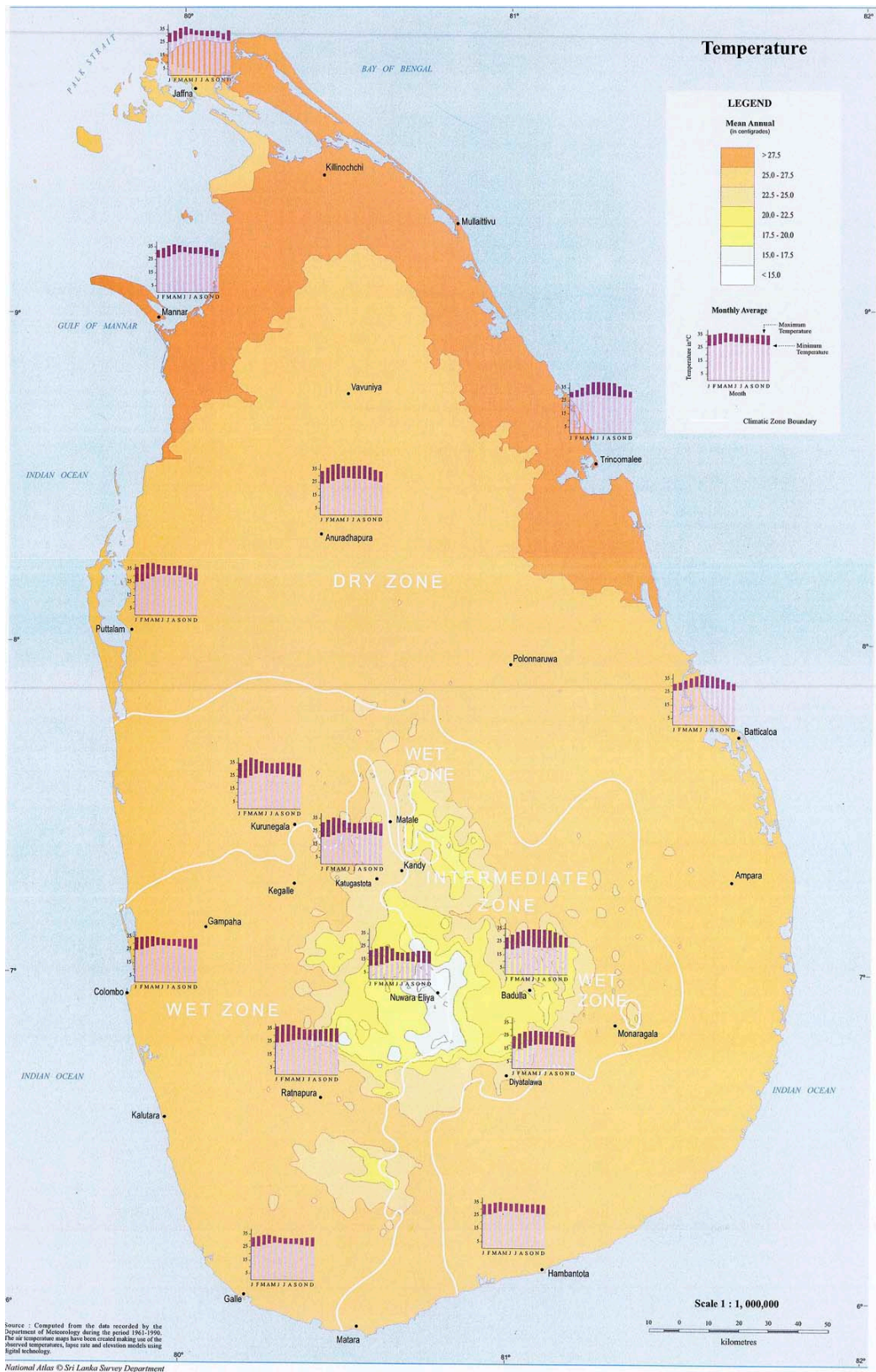
- Protected Areas and Ramsar Wetlands have increased (Sections 2.3 and 2.5.3.1).
- Forest areas have been decreasing significantly (Section 2.6).
- Human-elephant conflict is one of the major problems (Section 2.7.1).
- UN-REDD+ Programme started in 2012 (Section 2.7.4).

### 2.1 Overview (General Features)

Sri Lanka is a tropical island located in the Indian Ocean off the southern tip of peninsular India, between latitudes 5° 55' and 9° 51' North and longitudes 79° 41' and 81° 54' East. The island is 65,610 km<sup>2</sup> in area and consists of three peninsulars: lowlands (up to 300 m above sea level), uplands (300 to 900 m above sea level) and highlands (more than 900 m above sea level). According to the distribution of rainfall, three major climatic zones are recognised: a dry zone (with an annual rainfall less than 1900 mm), wet zone (annual rainfall more than 2500 mm) and intermediate zone (annual rainfall 1900 to 2500 mm). The island also contains three distinct mountain ranges: the Central hill massif, the Rakwana range towards the Southwest and the Knuckles range towards the north of the Central massif (IUCN 2007).

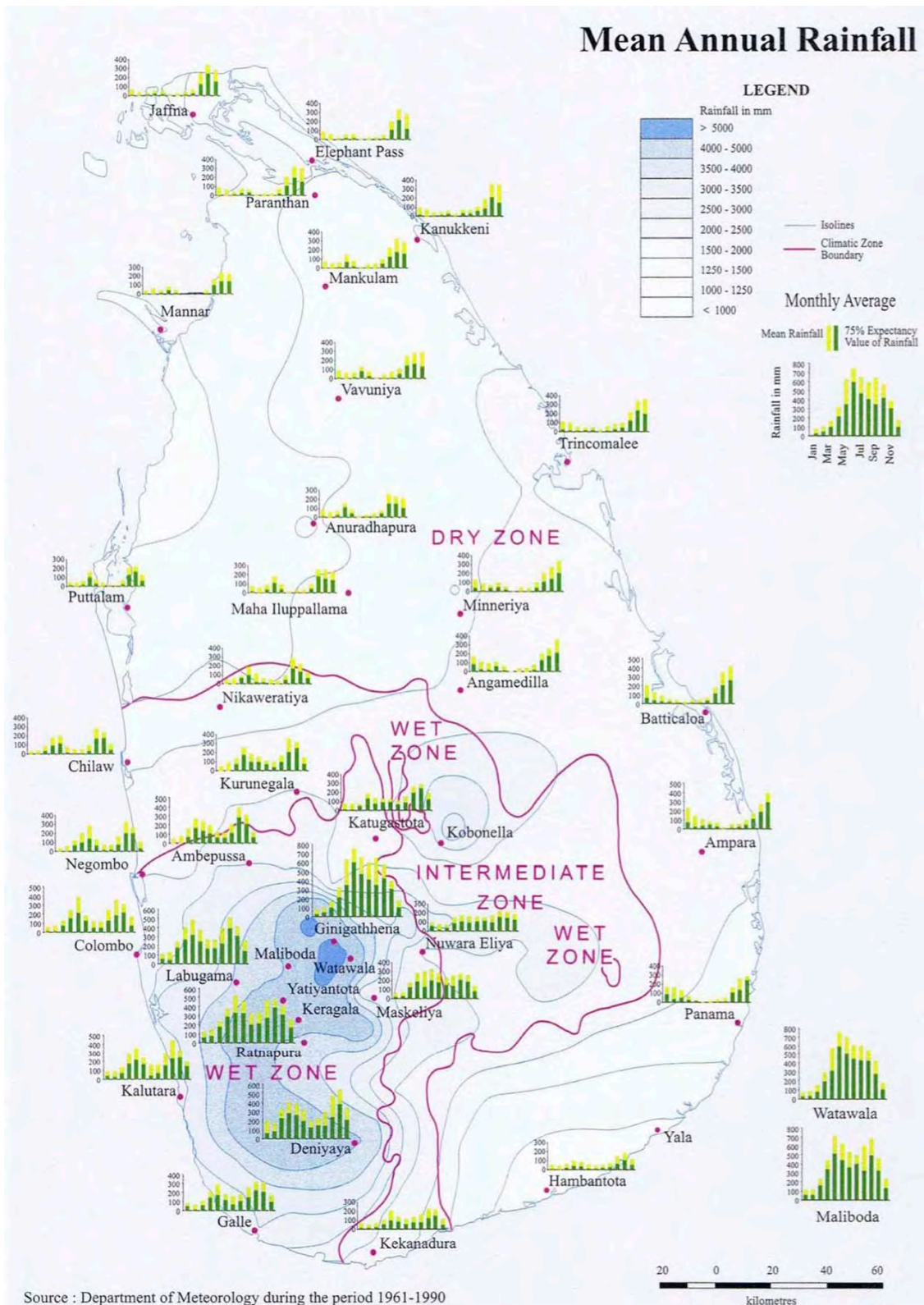
The geo-climatic diversity on the island is clearly reflected in the variety of natural ecosystems and habitats inland. Forest types range from dry monsoon forest in the dry coastal lowlands and closed-canopy rainforest in the south-western aseasonal lowland wet zone quarter to tropical montane cloud forest reaching a maximum altitude of 2,524 m in the central highlands. In turn, these ecosystems exhibit a high degree of species diversity among different groups of fauna and flora, including a high proportion of endemic species. Among the indigenous inland vertebrate fauna and flowering plants documented to date, nearly 40% and 30%, respectively, are endemic to the island. Much of this diversity and endemism is found in the south-west wet zone, which occupies one-third of the country (IUCN 2007).

Sri Lanka's mean annual temperature and rainfall are shown in Figures 2.1.1 and 2.1.2.



Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

**Figure 2.1.1: Mean Annual Temperature in Sri Lanka**



Source: Survey Department. 2007. *The National Atlas of Sri Lanka*.

**Figure 2.1.2: Mean Annual Rainfall in Sri Lanka**

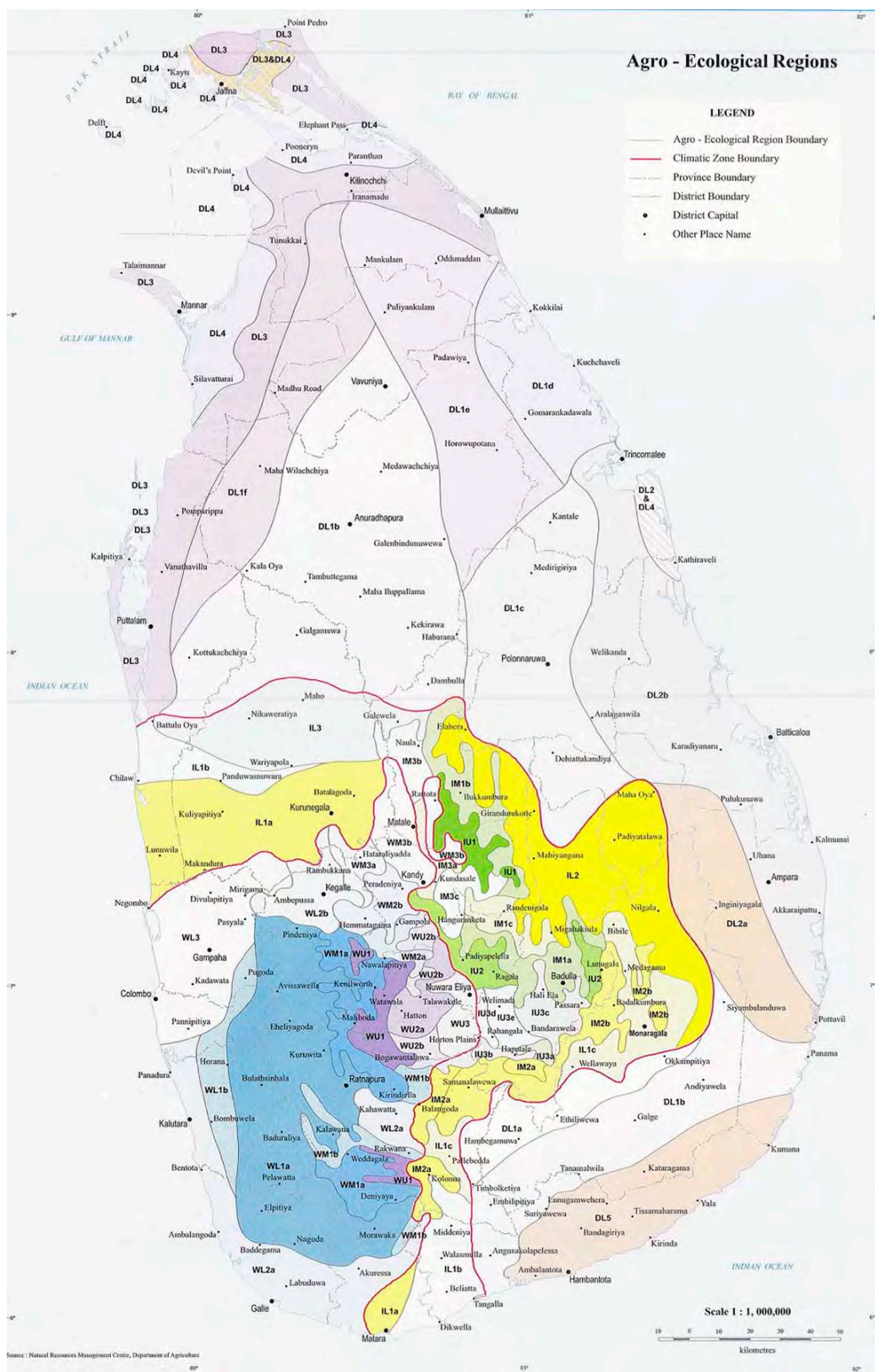
### 2.1.1 Agro-ecological Regions

An agro-ecological region represents a particular combination of the natural characteristics of climate, soil and relief. When an agro-climatic map — of an area where the integrated effects of climate are uniform for crop production — is superimposed on its soil and terrain, the resulting map demarcates an agro-ecological region. Thus, each agro-ecological region represents somewhat uniform condition of agro-climate, soil and terrain, which would best support a particular farming system where a certain range of crops and farming practices find optimal expression (SD 2007).

The regional nature of rainfall distribution in Sri Lanka has traditionally been generalised into three climatic zones: a 'Wet Zone' in the southwestern sector, including the central hill-country; and a 'Dry Zone' covering the northern and eastern part of the country; separated by an 'Intermediate Zone' skirting the central hills, except in the south and the west. While the amount and distribution of annual rainfall has been widely used to differentiate these three climatic zones, adequate attention has also been focused on other factors such as soil, terrain and land-use for the demarcation of boundaries. The Wet Zone covers an area that receives a relatively high mean annual rainfall of over 2,500 mm without pronounced dry periods. The Dry Zone receives a mean annual rainfall of less than 1,750 mm, with a distinct dry season from May to September. The Intermediate Zone receives a mean annual rainfall between 1,750 to 2,500 mm, with a short and less prominent dry season. As low temperature is an important climatic factor affecting plant growth in the Wet and Intermediate zones of Sri Lanka, a subdivision based on altitude takes temperature limitations into account in these two climatic regions. In this classification, the low-country is demarcated as land below 300 m in elevation, the mid-country as elevations between 300 m to 900 m, while the up-country is land above 900 m. Both the Wet and Intermediate zones spread across all three categories of elevation, while the Dry Zone is confined to the low-country, resulting in seven agro-climatic zones spanning the entire island (SD 2007).

Based on many decades of research, Sri Lanka is divided into 24 agro-ecological regions. The differentiation of the Wet Zone into its distinctive agro-ecological regions is determined primarily by differences in rainfall and elevation. In the Dry Zone, conversely, it is the nature of the soil that primarily determines the identity of a specific agro-ecological region. In the Intermediate Zone, it has been observed that rainfall, elevation and soil play an equally important role. However, agro-ecological boundaries should not be considered fixed. They are best treated as variable, not only because of global and local changes in the environment, but also and often more significantly, because of the means we have at our disposal to estimate and

represent them. Hence, even if delineation criteria remain unchanged, the physical boundaries of agro-ecological regions may change with more spatial and temporal coverage of data, improved data interpolation and interpretation algorithms, as well as reduction of scale. Hence, in view of environmental change, the availability of more spatial and temporal data, along with the advancement of GIS technology, has led to revision of the agro-ecological map of Sri Lanka into a map with 46 agro-ecological sub-regions on an enhanced scale, as shown in Figure 2.1.3. For details of the feature of each agro-ecological region, see Table 2.1.1 (SD 2007).



Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

**Figure 2.1.3: Agro-ecological Regions in Sri Lanka**



**Table 2.1.1: Distinguishing Characteristics of the Agro-ecological Regions**

CLIMATIC ZONE	AGRO - ECOLOGICAL REGION	MONTHLY HISTOGRAMS OF 75 % RAINFALL PROBABILITY FOR RESPECTIVE REGIONS (mm)	75 % EXPECTANCY VALUE OF ANNUAL RAINFALL(mm)	DESCRIPTION (Land use / Terrain / Major soil groups )	
WET ZONE	UP COUNTRY	WU1		> 3,100	Tea, Forest plantations, Natural forest Mountainous, steeply dissected, hilly & rolling RYP, Mountain Region & Lithosol soils
		WU2a		> 2,400	Tea, Forest plantations Steeply dissected, hilly & rolling RYP soils
		WU2b		> 2,200	Tea, Forest plantations, Vegetables Mountainous, steeply dissected, hilly & rolling RYP, Mountain Region & Lithosol soils
	MID COUNTRY	WU3		> 1,800	Tea, Vegetables, Pasture, Home gardens, Forest plantations Hilly & rolling RYP soils with prominent A1 horizons & RYP soils with dark B horizon
		WM1a		> 3,300	Tea, Natural forest Mountainous, steeply dissected, hilly & rolling RYP soils with semi prominent A1 horizons & Lithosol soils
		WM1b		> 2,900	Tea, Natural forest, Mixed home gardens Steeply dissected, hilly & rolling RYP soils with semi prominent A1 horizons & Lithosol soils
		WM2a		> 2,200	Tea, Mixed home gardens, Export Agricultural Crops, Natural forest, Paddy Steeply dissected, hilly & rolling RYP, RBL & LHG soils
		WM2b		> 1,800	Mixed home gardens, Paddy, Export Agricultural Crops, Tea Steep, hilly & rolling RBL, IBL, LHG & RYP soils
		WM3a		> 1,600	Mixed home gardens, Export Agricultural Crops, Tea, Paddy, Rubber Steep, hilly & rolling RBL, IBL, LHG Lithosol soils
	LOW COUNTRY	WM3b		> 1,400	Mixed home gardens, Export Agricultural Crops, Tea, Vegetables, Paddy Hilly, rolling, undulating & steep RBL, IBL & LHG soils
		WL1a		> 3,200	Tea, Rubber, Mixed home gardens, Paddy, Export Agricultural Crops (Cinnamon) Rolling, undulating & hilly RYP, RYP soils with semi prominent A1 horizon & LHG soils
		WL1b		> 2,800	Rubber, Mixed home gardens, Paddy Undulating & rolling RYP & LHG soils
		WL2a		> 2,400	Rubber, Tea, Coconut, Mixed home gardens, Paddy, Export Agricultural Crops (Cinnamon) Rolling, undulating and flat RYP, LHG & Bog and Hall - Bog soils
		WL2b		> 2,200	Rubber, Coconut, Mixed home gardens, Paddy Steeply dissected, rolling & undulating RYP, RYP soils with strongly mottled sub-soil, RBL & LHG soils
	INTERMEDIATE ZONE	UP COUNTRY	WL3		> 1,700
IU1				> 2,400	Tea, Export Agricultural Crops (Cardamom) Natural forest, Forest plantations Mountainous, steeply dissected, hilly & rolling RYP, Mountain Region & Lithosol soils
IU2				> 2,100	Tea, Vegetables, Mixed home gardens, Natural forest, Forest plantations Mountainous, steeply dissected, hilly & rolling RYP, Mountain Region & Lithosol soils
IU3a				> 1,900	Tea, Forest plantations Steeply dissected, hilly & rolling RYP & Mountain Region soils
IU3b				> 1,700	Tea, Natural forest, Forest plantations Mountainous, steeply dissected, hilly RYP, Mountain Region & Lithosol soils
MID COUNTRY		IU3c		> 1,600	Tea, Vegetables, Paddy Steeply dissected, hilly & rolling RYP & LHG soils
		IU3d		> 1,300	Tea, Vegetables, Forest plantations, Natural forest Steep, hilly & rolling RYP & Mountain Region soils
		IU3e		> 1,400	Tea, Vegetables, Paddy, Mixed home gardens Steeply dissected, hilly & rolling RYP & LHG soils
		IM1a		> 2,000	Tea, Vegetables, Mixed home gardens, Paddy, Forest plantations Very steep & hilly RBL, RYP, IBL, LHG & Lithosol soils
		IM1b		> 2,000	Natural forest, Mixed home gardens, Paddy, Grasslands Hilly, rolling & undulating RBL, RBL, LHG, Mountain Region & Lithosol soils
		IM1c		> 1,300	Natural forest, Vegetables Very steep, hilly & rolling RBL, IBL, Mountain Region & Lithosol soils
		IM2a		> 1,800	Export Agricultural Crops, Mixed home gardens, Tea, Vegetables Steep, hilly & rolling RBL & RYP soils
		IM2b		> 1,600	Natural forest, Mixed home gardens, Paddy, Tea, Vegetables Very steep, hilly & rolling RBL, IBL, RYP, LHG & Lithosol soils
		IM3a		> 1,400	Mixed home gardens, Export Agricultural Crops, Paddy Hilly, rolling & steep IBL, RBL & LHG soils
		IM3b		> 1,200	Mixed home gardens, Export Agricultural Crops, Rubber, Vegetables, Paddy Rolling & undulating RBL, RBL & LHG soils
LOW COUNTRY	IM3c		> 1,100	Vegetables, Tea, Mixed home gardens, Export Agricultural Crops Steeply dissected, hilly & rolling RBL & IBL soils	
	IL1a		> 1,400	Coconut, Mixed home gardens, Export Agricultural Crops, Paddy, Rubber Rolling, undulating & flat RYP soils with strongly mottled sub-soil, RYP, LHG, RBL & Regosol soils	
	IL1b		> 1,100	Coconut, Paddy, Mixed home gardens, Export Agricultural Crops Rolling, undulating & flat RYP, RBL, RBL, LHG & Regosol soils	
	IL1c		> 1,300	Mixed home gardens, Rubber, Paddy, Sugar cane Rolling, undulating & flat RBL, RBL, LHG & IBL soils	
	IL2		> 1,600	Mixed home gardens, Paddy, Rainfed Upland Crops, Scrub, Sugar cane, Citrus Rolling, hilly & undulating RBL, LHG & RBL soils	
DRY ZONE	LOW COUNTRY	IL3		> 1,100	Coconut, Paddy, Mixed home gardens Undulating NCR, RBL & LHG soils
		DL1a		> 1,100	Mixed home gardens, Paddy, Forest plantations, Scrub, Sugar cane, Natural forest Rolling & undulating RBL & LHG soils
		DL1b		> 900	Rainfed Upland Crops, Paddy, Scrub, Mixed home gardens, Forest plantations Undulating RBL & LHG soils
		DL1c		> 900	Rainfed Upland Crops, Paddy, Scrub, Natural forest, Forest plantations, Sugar cane Undulating RBL & LHG soils
		DL1d		> 900	Rainfed Upland Crops, Scrub, Paddy Undulating & flat RBL, Regosol & LHG soils
		DL1e		> 900	Rainfed Upland Crops, Paddy, Scrub Undulating RBL & LHG soils
		DL1f		> 800	Rainfed Upland Crops, Paddy, Scrub, Natural forest Undulating RBL, LHG & Gammel soils
		DL2a		> 1,300	Rainfed Upland Crops, Paddy, Natural forest, Sugar cane, Scrub Undulating NCR, RBL, LHG & Old alluvial soils
		DL2b		> 1,100	Paddy, Rainfed Upland Crops Undulating & flat NCR, RBL, Old alluvial, LHG, Regosol & Solonchak - Solonetz soils
		DL3		> 800	Carabus, Coconut, Condiments, Scrub, Natural forest Flat & slightly undulating RYP & Regosol soils
DL4		> 750	Scrub, Paddy, Rainfed Upland Crops Flat Solonchak - Solonetz, Solonchaks, & Gammel soils		
DL5		> 650	Scrub, Natural forest, Rainfed Upland Crops, Paddy Undulating & flat RBL soils with high amount of gravel in sub-soil, LHG & Solonchak - Solonetz soils		

ABBREVIATIONS : IBL Immature Brown Loam LHG Low Humic Gley NCR Non Calcic Brown RYL Red Yellow Latosol RYP Red Yellow Podsolis RBE Reddish Brown Earths RBL Reddish Brown Latosols

Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

## 2.2 Relevant Regulations and Policies

Sri Lanka has a history of environmental regulation spanning over two millennia. It originally took the form of royal decrees and customary law, but since the 16th century these laws have been supplanted by the laws of Portugal, the Netherlands and Britain. At present, a complex mix of English common law, Roman Dutch law, and Sinhalese, Muslim and Tamil customary laws are accepted. Various environmental regulations introduced by the British rulers continue to be used. Following independence in 1972, several legislations relevant to the environment were enacted and the state ratified a number of international treaties bearing on the environment. In 1976, an expert from the United Nations Environment Programme (UNEP) concluded that Sri Lanka's environmental policies and laws were too fragmented and too often ignored by planners. When a new constitution was enacted in 1978, environmental conservation was enshrined in Article 18 ('It is the duty of every person in Sri Lanka to protect nature and conserve its riches') and Article 27(14) ('The state shall protect, preserve and improve the environment for the benefit of the community'). In 1980, the National Environment Act (NEA) was passed to serve as the focal point for environmental protection. Supplementary legislation such as the Coast Conservation Act (CCA) in 1981 and National Heritage and Wilderness Act in 1987 later augmented the existing environmental regulations (Zubair 2001).

The United States Agency of International Development (USAID) supported the government in implementing environmental regulations. USAID and the Government of Sri Lanka conducted the Natural Resources and Environmental Policy Project in tandem from 1991 to 1997 to assist in setting up the Environmental Impact Assessment (EIA) process through foreign expertise and local training (Zubair 2001).

According to Sri Lanka's main policy document on conservation of biodiversity, namely *Biodiversity Conservation: A Framework for Action, 1998*, there are around 80 laws and other regulatory measures related to environmental protection. The most cited of these are the Fauna and Flora Protection Ordinance of 1937 with its subsequent amendments; the Forest Ordinance; the National Environment Act No. 47 of 1980; the National Heritage Wilderness Areas Act; the Felling of Trees (Control) Act; the Botanic Gardens Ordinance; the National Aquatic Resources, Research and Development Agency Act; the Fisheries and Aquatic Resources Act; the Plant Protection Ordinance; the Animal Diseases Act; and the Customs Ordinance.

### 2.2.1 Status of Ratification and Application of International Treaties and Conventions

For details on the status of ratification of international treaties and conventions, see Table A-2 in the Appendix. In this chapter, we address three conventions in particular: the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), and the Convention on Wetlands of International Importance, especially as Waterfowl Habitats (also known as the Ramsar Convention).

**Table 2.2.1: List of Environment-related International Conventions, Protocols, and Treaties**

No.	Environment-Related International Conventions, Protocols, and Treaties
1.	International Plant Protection Convention (Rome, 1951)
2.	Plant Protection Agreement for the South East Asia and Pacific Region (Rome, 1956)
3.	Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971)
4.	Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)
5.	Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 1973)
6.	Convention on Biological Diversity (Rio De Janeiro, 1992)
7.	International Convention to Combat Desertification (Paris 1994)
8.	Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, 1995)
9.	United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, 1994)
10.	Cartagena protocol on Biosafety to the Convention on Biological Diversity (Cartagena, 2003)
11.	Convention on Conservation of Migratory Species (Bonn, 1979)

### 2.2.2 Domestic Laws and Policies

The law which is most directly relevant to protecting Sri Lanka's natural environment is the Fauna and Flora Protection Act No. 2 of 1937. The Department of Wildlife Conservation (DWC) enforces this law within the areas under its jurisdiction. The Act was originally

developed for the protection of game rather than for wildlife conservation. Domestic laws and the administrative entities related to the natural environment, including those in the Act, are shown in Table 2.2.2.

**Table 2.2.2: Relevant Laws and Their Administrative Entity**

Law	Description	Administrative entity
National Environmental Act No. 47 of 1980 (as amended by acts No. 56 of 1988 and 53 of 2000) and the Regulations under the Act	Establishes the Central Environmental Authority (CEA) and defines its powers, functions and duties. Provides overall environmental protection legislation, including licensing procedures, environmental standards and project approval procedures.	Central Environmental Authority
Fauna and Flora Protection Ordinance No. 2 of 1937 (as amended by acts No. 49 of 1993 and 12 of 2005) and the Regulations under the Ordinance	Provides for the conservation of plants and animals, which have been declared as protected species. Empowers the Minister to declare any area of State Land as a National Reserve or Sanctuary.	Department of Wildlife Conservation Director General of Wildlife Conservation
Forest Ordinance No. 16 of 1907 (as amended) and the Rules and Regulations under the Ordinance	Consolidates the laws relating to forests and to the felling and transportation of timber. Empowers the Minister to declare any area of State land as a Reserved Forest, Conservation Forest or a Village Forest.	Forest Department Conservator General of Forests
Mahaweli Authority of Sri Lanka Act No. 23 of 1979 (as amended) and the Regulations under the Act	Established the Mahaweli Authority of Sri Lanka and provides for the conservation and maintenance of the physical environment of Mahaweli Areas, including watershed management, soil erosion and the protection of reservation areas.	Mahaweli Authority of Sri Lanka
State Lands Ordinance No. 8 of 1947 (as amended) – Parts VI,	Provides for how State Lands and their resources, including lakes, rivers and streams, should be allocated, used and	Ministry of Agricultural Development

Law	Description	Administrative entity
VIII and IX	managed. Also provides for the declaration of State reservations.	District Secretaries
Mines and Minerals Act No. 33 of 1992	Regulates mining, exploitation, processing, trading and export of minerals.	Geological Surveys and Mines Bureau
Coast Conservation Act No. 57 of 1981 (as amended)	Identifies Coastal Zones and regulates activities within such zones.	Coast Conservation Department Ministry of Fisheries and Aquatic Resources
Fisheries and Aquatic Resources Act No. 2 of 1996 (as amended)	Makes provision to protect and conserve fisheries and aquatic biodiversity in marine and freshwater areas for the declaration of fisheries reserves, and imposes licensing and registration requirements with regard to fishing. Defines the term 'Sri Lankan Waters'.	Ministry of Fisheries and Aquatic Resources, Director of Fisheries and Aquatic Resources
National Heritage Wilderness Areas Act No. 3 of 1988	Provides for the declaration, protection and preservation of any area of State land with unique ecosystems, genetic resources or outstanding natural features as National Heritage Wilderness Areas.	Forest Department, Ministry of Agricultural Development
Plant Protection Act No. 35 of 1999	Provides for the prevention of wild plants, weeds and plant diseases, and controls the introduction of new plant species.	Department of Agriculture
Felling of Trees (Control) Act No. 9 of 1951 (as amended)	Provides for the prohibition, regulation and control of the felling of specified tree species, including cultivated tree species such as Jak.	Forest Department Ministry of Agricultural Development and Agrarian Services
Water Hyacinth Ordinance No. 4 of 1909	Provides for preventing the importation, introduction into and dissemination in Sri Lanka of the plant known as Water Hyacinth.	Department of Agriculture Sri Lanka Customs

Source: UNEP. 2009. *Judges and Environmental Law: A Handbook for the Sri Lankan Judiciary*.

Table 2.2.3 summarises the policies, strategies and action plans related to the protection of the natural environment.

**Table 2.2.3: Policies, Strategies and Action Plans Related to the Natural Environment**

Policy, strategy or action plan	Relevant institution
Biodiversity Conservation in Sri Lanka: A Framework of Action (1998)	Department of Wildlife Conservation Forest Department
Forestry Sector Master Plan—to translate policy strategies into action (1995–2020)	Central Environmental Authority Ministry of Environment
Invasive Plants Action Plan (draft)	
National Biosafety Policy (2005)	
National Forestry Policy (2005)	
National Policy on Elephant Conservation and Management (2006)	
National Wetland Policy and Strategy (2006)	
National Wildlife Policy (2000)	

Source: UNEP. 2009. *Judges and Environmental Law: A Handbook for the Sri Lankan Judiciary*.

### 2.3 Protected Areas and Regulations of Development Activities in These Areas

The concept of a ‘protected area’ is used to restrict the scope and nature of the activities that can be conducted in a designated area. Protected areas enable the *in-situ* conservation of species and ecosystems as opposed to *ex-situ* conservation where the conservation happens in zoos, botanical gardens or other such artificially managed environments. Sri Lanka’s protected area network is established and regulated mainly through the Fauna and Flora Protection Ordinance and the Forest Ordinance. These two laws enable the government to designate certain areas as protected areas and to specify the permitted and prohibited activities in those areas. Sanctuaries established under the terms of the Fauna and Flora Protection Ordinance may even be declared on private lands. The National Heritage Wilderness Act and the Fisheries and Aquatic Resources Act also provide for the designation and management of protected areas (UNEP 2009).

Sri Lanka's protected area system harbours various species and a wide variety of ecosystems. These include forests, wetlands, grasslands, sand dunes and also coastal and marine ecosystems. The protected area network currently covers about 18% of the country's land area, increased from 14% in 2001. Two administrative entities are directly relevant to protected areas: the Department of Wildlife Conservation (DWC) and the Forest Department (FD). DWC has recently added eight new national parks (Kaudulla, Hikkaduwa, Pigeon Island, Horagolla, Galaways, Angamadilla, Yala-east Kumana, and Lahugla-Kitulana), one nature reserve (Vedihitilanda) and 13 sanctuaries. In addition, several 'corridors' to link the existing protected area network have been identified (UNEP 2009, MENR and UNEP 2009).

Protected areas administered by the FD fall into five categories: National Heritage and Wilderness Area, Conservation Forest, Forest Reserve, Village Forest and Other State Forest. Under these categories, the FD currently manages a number of biodiversity-rich ecosystems, such as those in the Sinharaja World Heritage Site, the Kanneliya-Dediyahala-Nakiyadeniya (KDN) Reserve, and the Knuckles Conservation Forest (SD 2007). The protected areas managed by the DWC fall into two major categories: National Reserve and Sanctuary. There are six types of National Reserves: Strict Natural Reserve, National Park, Nature Reserve, Jungle Corridor, Refuge and Marine Reserve. National Reserves include over 5,000 km<sup>2</sup> of protected areas, of which about 85% are National Parks (SD 2007; MoE 2011). For further details about each protected area see the Tables A-27 to A-31 in the Appendix.

**Table 2.3.1: Protected Areas Administered FD or DWC**

National Designation	Number	Management Authority	Area (ha)
National Heritage and Wilderness Area	1	FD	11,187
Conservation Forest	55	FD	76,822
Forest Reserve	360	FD	575,228
Village Forest	N/A	FD	N/A
Other State Forest	N/A	FD	516,990
Subtotal			516,990
Strict Natural Reserve	3	DWC	31,574
National Park	22	DWC	535,393
Nature Reserve	4	DWC	57,058
Jungle Corridor	0	DWC	0
Refuge	0	DWC	0

Marine reserve	0	DWC	0
Buffer zone	0	DWC	0
Sanctuary	63	DWC	264,101
Subtotal	624,025		
Total	63		

Source: Ministry of Environment. 2011. *Progress Report 2011 and Action Plan*; Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

**Table 2.3.2: Protected Areas, Categories and Regulations  
Managed by the Forest Department**

Category	Law provision	Description	Regulation
National Heritage and Wilderness Area	National Heritage Wilderness Areas Act	The unique ecosystem of the country and of international importance.	No activity other than research and visitations is allowed.
Conservation Forest	Section 3 of the Forest Ordinance	The most important ecosystems.	No activity other than research and visitations is allowed.
Forest Reserve	Section 3 of the Forest Ordinance	Important forest areas for conservation of soil, water and biodiversity.	Activities confined to non-extractive uses are allowed.
Village Forest	Section 12 of the Forest Ordinance	Forests that provide forest products and services for the local communities	N/A
Other State Forest	Section 20 of the Forest Ordinance	Forest areas that do not fall under the above categories are designated as Other State Forests. After survey and demarcation, these	N/A



Category	Law provision	Description	Regulation
		forests will eventually be declared as one of the above categories.	

Source: Forest Department. 2012. Forest Reserves.

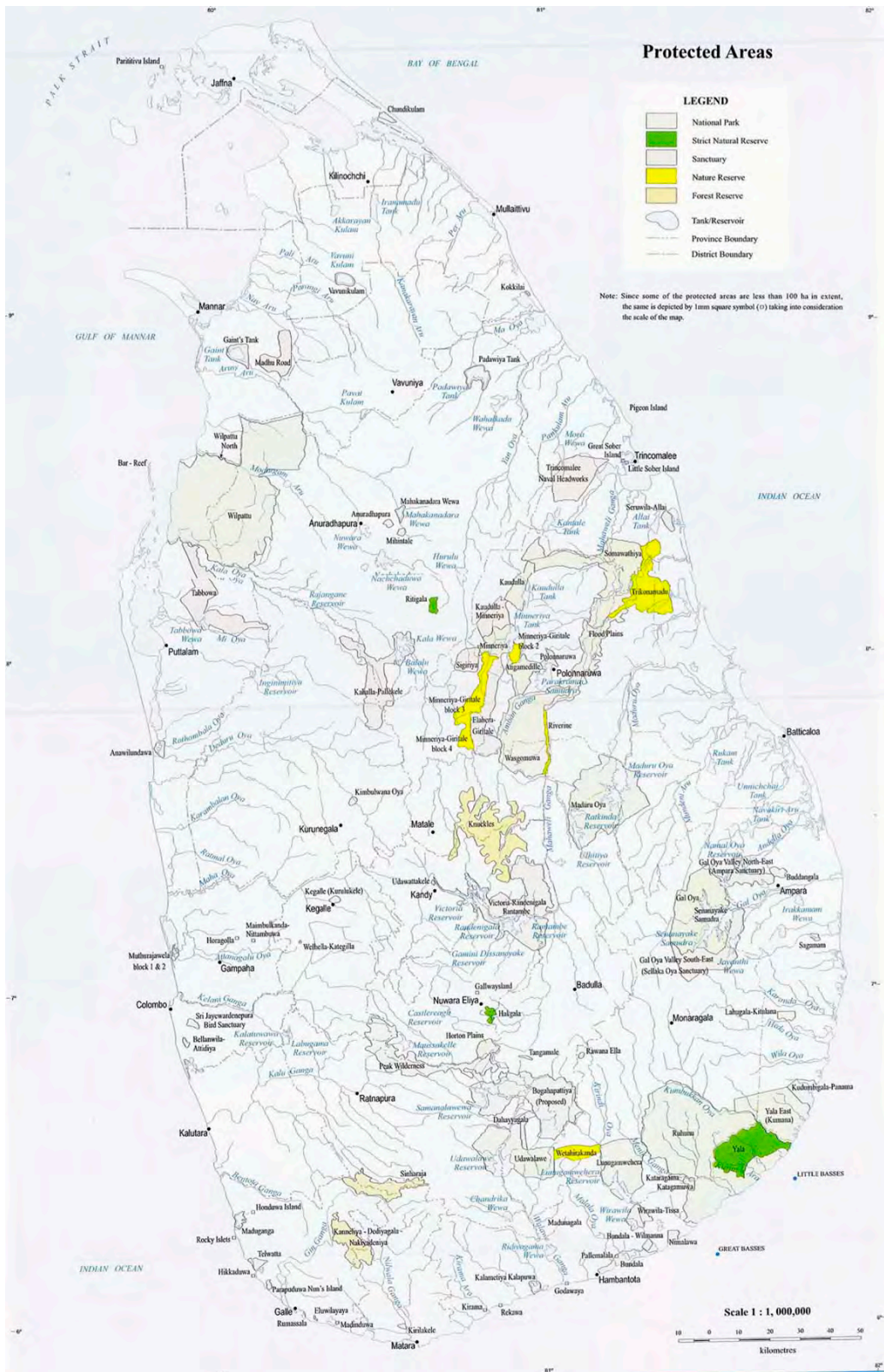
[http://www.forestdept.gov.lk/web/index.php?option=com\\_content&view=article&id=124](http://www.forestdept.gov.lk/web/index.php?option=com_content&view=article&id=124)

For activities such as export of plants and seeds, timber enterprise and forestry research, applications are required. The application forms are available on the website of the FD ([www.forestdept.gov.lk/web/index.php?option=com\\_content&view=article&id=121&Itemid=125](http://www.forestdept.gov.lk/web/index.php?option=com_content&view=article&id=121&Itemid=125)).

**Table 2.3.3: Protected Areas, Categories and Regulations  
Managed by the Department of Wildlife Conservation**

Category	Regulation
Strict National Reserve	Off limits. Research activities are allowed with permission and under the supervision of the Department of Wildlife Conservation
National Park	In principle, off limits. For the purposes of education, research and sightseeing, entry and observation may be allowed.
Nature Reserve	Only traditional human activities are allowed. Research activities are allowed under the supervision of the Department of Wildlife Conservation.
Jungle Corridor	Animal trails (e.g. elephants). Hunting, gathering and artificial activities are prohibited.
Refuge	Hunting, gathering and artificial activities are prohibited.
Marine Reserve	Hunting, gathering and artificial activities are prohibited.
Intermediate Zone	Hunting, gathering and artificial activities are prohibited around protected areas.
Sanctuary	Only traditional human activities (agriculture and residence etc.) are allowed in privately owned lands; they are prohibited in state-owned lands.

Source: Central Environmental Authority. 2005. *Environmental Atlas of Sri Lanka*.



Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

**Figure 2.3.1: Map of Protected Areas in Sri Lanka**

## 2.4 Wildlife Species

### 2.4.1 Endemic Species

Sri Lanka embraces rich biodiversity and endemism is high, mainly due to the country's geographical characteristics.

**Table 2.4.1: Number of Faunal and Floral Species and Endemism in Sri Lanka**

Group of species	Number of species	Endemic species
Mammals	91	16
Birds	482	33
Reptiles	171	101
Amphibians	106	90
Freshwater fish	82	44
Bees	148	21
Butterflies	243	20
Flowering plants	3,771	926
Ferns	348	48

Source: IUCN. 2007. *The 2007 Red List of Threatened Fauna and Flora of Sri Lanka*.

### 2.4.2 Endangered Species

The world's most comprehensive inventory of the global conservation status of biological species is compiled by the International Union for Conservation of Nature (IUCN). The IUCN Red List of Threatened Species is regularly revised. As of February 2011, 274 species of animal and 285 species of plant were categorised as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in Sri Lanka.

**Table 2.4.2: Number of Species in Each IUCN's Category in Sri Lanka**

	EX	EW	CR	EN	VU	Total
Fauna	21	0	62	90	122	295
Flora	1	0	78	74	133	286

Notes: EX: extinct; EW: extinct in the wild.

Source: IUCN. Red List version 2011.2, Summary Statistics,

<http://www.iucnredlist.org/about/summary-statistics> (Accessed on 26 April 2012).

According to research conducted by the IUCN, districts in the lowland wet zone (i.e. Galle, Matara, Ratnapura, Kalutara and Kegalle) and the central highlands (i.e. Kandy, Matale,

Nuwara-Eliya and Badulla) harbour a larger number of threatened taxa than other areas in the country. Although this geographical distribution of threatened species should be taken into consideration in the site selection for activities that could affect the environment, it is important to note that these figures are uncertain, particularly those of the Northern Province (i.e. Jaffna, Kilinochchi, Mullaitivu and Vavuniya) and the Eastern Province (i.e. Ampara, Batticaloa and Trincomalee) due to insufficient distribution data (IUCN 2007).

**Table 2.4.3: Distribution of Threatened Species**

District	Number of threatened species							
	Butterfly	FW Fish	Amphibian	Reptile	Bird	Mammal	Flora	Total
Ampara	0	3	1	8	5	1	15	33
Anuradhapura	1	2	0	8	3	12	68	94
Badulla	7	5	9	9	20	24	90	164
Batticaloa	0	0	0	1	0	1	9	11
Colombo	3	10	2	3	5	8	22	53
Galle	6	16	14	14	18	14	187	269
Gampaha	1	9	2	4	3	8	10	37
Hambantona	5	2	0	10	14	12	32	75
Jaffna	0	1	0	3	2	2	7	15
Kalutara	14	16	2	10	16	15	126	199
Kandy	10	5	7	21	27	30	310	410
Kegalle	3	12	5	5	20	9	98	152
Kurunegala	3	4	2	3	3	9	44	68
Mannar	4	3	0	1	1	1	5	15
Matale	3	3	9	11	11	23	71	131
Matara	3	8	4	7	11	7	101	141
Monaragala	5	3	2	9	11	10	56	96
Mullaitivu	0	3	0	2	0	3	0	8
Nuwara Eliya	5	0	16	11	22	30	150	234
Polonnaruwa	0	5	0	4	4	2	26	41
Puttalam	8	4	0	4	1	6	21	44
Ratnapura	38	14	23	22	30	17	264	408
Trincomalee	1	3	0	0	2	6	10	22

District	Number of threatened species							
	Butterfly	FW Fish	Amphibian	Reptile	Bird	Mammal	Flora	Total
Vavuniya	0	5	0	0	1	3	1	10

Note: FW: Freshwater

Source: IUCN. 2007. *The 2007 Red List of Threatened Fauna and Flora of Sri Lanka*.

### 2.4.3 Species Protected by International Conventions and Agreements

#### 2.4.3.1 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

As of 22 December 2011, roughly 5,000 species of animal and 29,000 species of plant were protected by CITES against overexploitation through international trade (CITES 2011a). Within the species listed in Appendix I, 14 of the animal species live in Sri Lanka. None of the listed plants are found in Sri Lanka (CITES 2011b). For further details about the species protected by CITES see Table A-17 in the Appendix.

#### 2.4.3.2 Convention on the Conservation of Migratory Species of Wild Animals (CMS)

Sri Lanka signed the Convention on the Conservation of Migratory Species of Wild Animals (CMS, also known as the Bonn Convention) in 1979. The protected species are listed in Table A-18 in the Appendix.

## 2.5 Important Ecosystems and Habitats

### 2.5.1 Coral Reefs

There are fringing, patch and platform reefs around Sri Lanka covering 680 km<sup>2</sup>. These include sandstone/limestone and rocky reef habitats. The most extensive coral reefs are offshore in the Gulf of Mannar region. The northeast and southwest monsoons govern environmental conditions for reef development. The south-western coast of Sri Lanka has many rocky headlands due to strong waves generated by the southwest monsoon; there are no barriers to the south of Sri Lanka to reduce the impact of oceanic waves on the coast. There is better fringing coral reef development along the eastern coast, both on the leeward side of the headlands and on offshore rocks and islands. Each of the important reef sites is designated as Sanctuary or

National Park. The reefs are heavily exploited for resources and management intervention is generally inadequate as Table 2.5.1 summarises (Wilkinson 2004).

**Table 2.5.1: The Detailed Status of Reef Sites in Sri Lanka**

Reef site	Coral condition	Management	Damage
Bar Reef Marine Sanctuary	Corals are recovering well but fishing pressure increased	Coastal Resources Management project developing strategies & planning marine protected area management.	Extractive use has increased, including fishing & especially sea cucumber & chanks collection
Hikkaduwa National Park	Corals in poor condition due to sedimentation & high visitor pressure	No Management	Sedimentation, visitor pressure & physical damage by boats & trampling of corals
Rumassala Sanctuary	Corals in poor condition; recent bleaching observed	No management	Blast fishing, ornament fish collecting & visitor pressure
Pigeon Island National Park	Corals in good condition	No management	Visitor pressure & destructive fishing in vicinity

Source: Wilkinson, C, ed. 2004. *Status of Coral Reefs of the World*.



Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

**Figure 2.5.1: Distribution of Coral Reefs in Sri Lanka**

Blast fishing and purse seining continues, even in reef areas designated for protection such as the Pigeon Island National Park in Trincomalee, the Bar Reef Marine Sanctuary and Rumassala Sanctuary. The coastguard is confined to land-based activities and has not taken an active role in the prevention of illegal fishing operations and coral mining. Coral mining is rampant in Rekawa, despite a USAID program from 1991 to 1996 which was established to provide alternative livelihoods to coral miners. Miners now use large rafts to drag coral blocks to shore. A socio-economic study of coral mining communities in the south-western coastal areas identified a lack of alternative employment opportunities as the major reason for continued coral mining. In the same area in 2003 and 2004, the Turtle Conservation Project and Coral Reef Degradation in the Indian Ocean implemented a pilot demonstration project during which 20 coral mining women were provided with the opportunity to change their livelihood. The Coastal Resources Management Project continues its special area management programs at the Bar Reef Marine Sanctuary, Unawatuna and several other coastal lagoons and estuaries along the western coast. Two new protected areas (Pigeon Island National Park in the northeast and Rumassala Sanctuary) were declared in 2003 to protect coral reefs, however there has been no management due to lack of human, institutional and financial resources (Wilkinson 2004).

The protection and conservation of coral reefs are managed mainly by the Department of Coast Conservation (DCC) and the Ministry of Fisheries and Aquatic Resources, based on the Coast Conservation Act (CCA) and Fisheries and Aquatic Resources Act. According to the CCA, the administration, control, custody and management of the Coastal Zones (for the definition of the Coastal Zone, see Section 5.3.1) reside in the country. The Director of DCC is responsible for:

- The administration and implementation of the provision of the Act
- The formulation and execution of work schemes for coast conservation within the Coastal Zone
- The conduct of research, in collaboration with other departments, agencies and institutions for the purpose of coast conservation

In terms of the Act, the Director is required to have surveys as to the Coastal Zone conducted and to prepare a report based on the results of such survey. The report must include:

- An inventory of all coral reefs found within the Coastal Zone
- An inventory of all commercially exploitable mineral deposits, both proven and suspected, located within the Coastal Zone
- An inventory of all areas within the Coastal Zone of religious significance or of unique scenic or recreational value, including those areas most suitable for recreational bathing



- An inventory of all ‘estuarine or wetland’ areas within the Coastal Zone with an indication of their significance as fisheries or wildlife habitats
- An inventory of all areas within the Coastal Zone of special value for research regarding coastal phenomena, including fisheries and shell fisheries, sea erosion, littoral movements and related subjects
- An inventory of all areas within the Coastal Zone from which coral, sand, sea shells or other substances are regularly removed for commercial or industrial purposes. (UNEP 2009)

The Act also requires the Director to prepare a comprehensive Coastal Zone Management Plan (CZMP) based on the results of the survey. This plan is available for public inspection and comment. Upon approval by the Cabinet of Ministers, the plan will be published in the Gazette and come into operation. The Minister may make necessary regulations to give effect to any of the provisions of the plan, including regulations restricting and controlling the use of the foreshore by members of the public or prohibiting or controlling any development activity within the Coastal Zone. Currently, the CZMP of 2004 is in operation. (UNEP 2009)

The Fisheries and Aquatic Resources Act, No. 2 of 1996 places restrictions on reef harvesting, but there are no regulations on the use of scuba. The Ministry of Fisheries and Aquatic Resources formed a committee in 2004 to develop special regulations and management recommendations to stop the over-exploitation of sea cucumber and chanks. Although the Act was amended in 2006, no major revision was found (Wilkinson 2004).

The ‘environmental assessment’ process in respect of the marine environment can be found in both the CCA and the NEA. The ‘environmental assessment’ process, in terms of the NEA, applies in respect to projects that are wholly or partly outside the Coastal Zone. Those projects which are entirely within the Coastal Zone require approval under the CCA. The details are described in Chapter 5 (UNEP 2009).

### 2.5.2 Mangrove Wetlands

Mangroves around Sri Lanka are concentrated in fringing formations around estuaries and lagoons. Although they were certainly more widespread in the past, they were probably never highly abundant due to the low tidal ranges and high-energy coastlines around most of the country. More open fringing formations are restricted to the northwest around the Gulf of Mannar and Palk Bay where the continental shelf is wider and the coastline less exposed;

however, arid conditions prevail and many of these mangroves back onto hyper-saline flats. Diversity appears to peak in intermediate rainfall areas (e.g., Chilaw and Negombo lagoons) on the central west coast. This coast is the only place where *Bruguiera cylindrica* is found. Patterns of zonation are not simple, but seaward mangroves are generally dominated by species of *Rhizophora* and *Avicennia*, whereas *Ceriops*, *Bruguiera*, *Excoecaria* and *Aegiceras* are more typically found in sheltered waters and near land (Spalding et al. 2010).

Mangroves are widely used for timber, poles and fuelwood. Furthermore, it has been estimated that over 120,000 fishers operate in Sri Lanka's lagoons. Brush park fishing involves constructing dense patches of branches (often from mangroves) in the lagoon water. Over a period of several weeks, these are colonised by shelter-seeking fish, which are caught either with traps or by encircling nets that close in as the branches are removed. One study of this fishery estimated an average yield of over 12 tonnes per hectare per year. In order to support this fishery and to provide a supply of branches and poles, fishers in Negombo Lagoon have established a simple, sustainable mangrove silviculture at the lagoon margins. A more unusual recent utilisation of mangroves has been the extraction of pulp from the fruits of the mangrove apple, *Sonneratia caseolaris*, which is used in fruit drinks and ice cream. There are plans to expand the use of this pulp to a range of health food and ecoproducts (Spalding et al. 2010).

The 2004 Indian Ocean tsunami was powerfully felt around significantly affected Sri Lanka's south-eastern, eastern and north-eastern shores. One study in the southeast showed that natural mangrove communities fared relatively well. Trees along the seaward edges were badly damaged, but these outermost trees protected those inland, which showed very good survival and appeared to have offered some protection to adjacent land areas. In the worst-hit areas, the mangroves were more comprehensively damaged, although again there is evidence that secondary forests and degraded mangroves suffered greater damage than mature stands. In addition to the direct impact on mangroves, sediment movements and considerable erosion led to the opening of sand bars across the mouths of many estuaries, leading to changes in water levels and salinities. The role that mangroves may have played in protecting adjacent communities and reducing the loss of human life has been stressed by some, but it has been difficult to disaggregate from other factors, such as distance from shore, elevation and aspect of coastal settlements (Spalding et al. 2010).

Large areas of mangrove have been lost in the conversion to agriculture, while elsewhere intensification of fuelwood use—sometimes exacerbated by the settlement of refugees—has led to degradation or loss. These losses have led to declines in fish yields. Conversion of mangroves

to shrimp ponds began in the 1980s, and these are now widespread in most estuaries and lagoons, with mangroves remaining only as a narrow fringe that is often affected by pollution from aquaculture wastewater. Losses of an estimated 3000 ha of mangroves to aquaculture in the Puttalam district led to a 60% drop in fish catches per unit effort and loss of jobs for some two-thirds of the estimated 28,000 fishermen in that area. Efforts to redress these losses have included the formation of the Small Fishers Federation to work on education, retraining and engagement with both shrimp farming and political communities (Spalding et al. 2010).

International tourism is important in Sri Lanka and is an additional pressure for coastal development. Ecotourism is limited, but Muthurajawela in the Negombo area has nature trails and mangrove boat rides transporting 1,200–1,500 visitors per month. There are a number of important mangrove protected areas, including two Ramsar sites. One of these, Maduganga, is one of the most important nearly pristine areas, with about 1.4 square kilometres of mangroves (Spalding et al. 2010).

In Sri Lanka, the protection and conservation system of mangrove wetlands is similar to that of coral reefs. The administrative entity in charge of it is the Department of Coast Conservation (DCC), and the basis law is the Coast Conservation Act (CCA). Also, each of the important mangrove wetlands is designated as Sanctuary, National Park, Nature Reserve or Ramsar Wetland, mentioned below. For details of the CCA, see Section 2.5.1.



Source: Spalding, M., M. Kainuma and L. Collins, eds. 2010. *World Atlas of Mangroves*.

**Figure 2.5.2: Distribution of Mangrove Wetlands in Sri Lanka**

### 2.5.3 Areas Designated by International Conventions and Agreements

#### 2.5.3.1 Wetlands of International Importance

In Sri Lanka, there are five sites designated as Wetlands of International Importance under the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (also known as the Ramsar Convention).

**Table 2.5.2: Wetlands of International Importance in Sri Lanka**

Name	Date of designation	Province/District	Area (ha)	Coordinates
Annaiwilundawa Tanks Sanctuary	3 Aug 2001	North-western Province	1,397	7°42' N 79°49' E
Bundala	15 Jun 1990	Southern Province	6,210	6°10' N 81°12' E

Name	Date of designation	Province/District	Area (ha)	Coordinates
Kumana Wetland Cluster	29 Oct 2010	Ampara District	19,011	6°37' N 81°44' E
Maduganga	11 Dec 2003	Southern Province	915	6°18' N 80°03' E
Vankalai Sanctuary	12 Jul 2010	Mannar District	4,839	6°56' N 79°55' E

Source: The List of Wetlands of International Importance. <http://www.ramsar.org/pdf/sitelist.pdf> (Accessed on 9 May 2012).



**Figure 2.5.3: Map of Wetlands of International Importance in Sri Lanka**

### 2.5.3.2 Biodiversity Hotspots

The whole land of Sri Lanka has been designated as the Western Ghats and Sri Lanka biodiversity hotspot by Conservation International (CI), a non-profit environmental organisation headquartered in Arlington, Virginia. The organisation's mission is to protect nature and its biodiversity for the benefit of humanity. It works mainly for the conservation of diversity hotspots, tropical primary forests and valuable coastal ecosystems. A diversity hotspot is a biogeographic region with a significant reservoir of biodiversity that is under threat by human activities. CI designates the hotspots according to various criteria including: (1) an area that has the world's highest biodiversity; and (2) an ecosystem damaged severely by human activities,

including development. Biodiversity hotspots hold particularly high numbers of endemic species, yet their combined area of remaining habitat covers only 2.3% of the Earth's land surface. Each hotspot faces extreme threats and has already lost at least 70% of its original natural vegetation. Over 50% of the world's plant species and 42% of all terrestrial vertebrate species are endemic to 34 biodiversity hotspots (Conservation International 2012).

### 2.5.3.3 Important Bird Areas

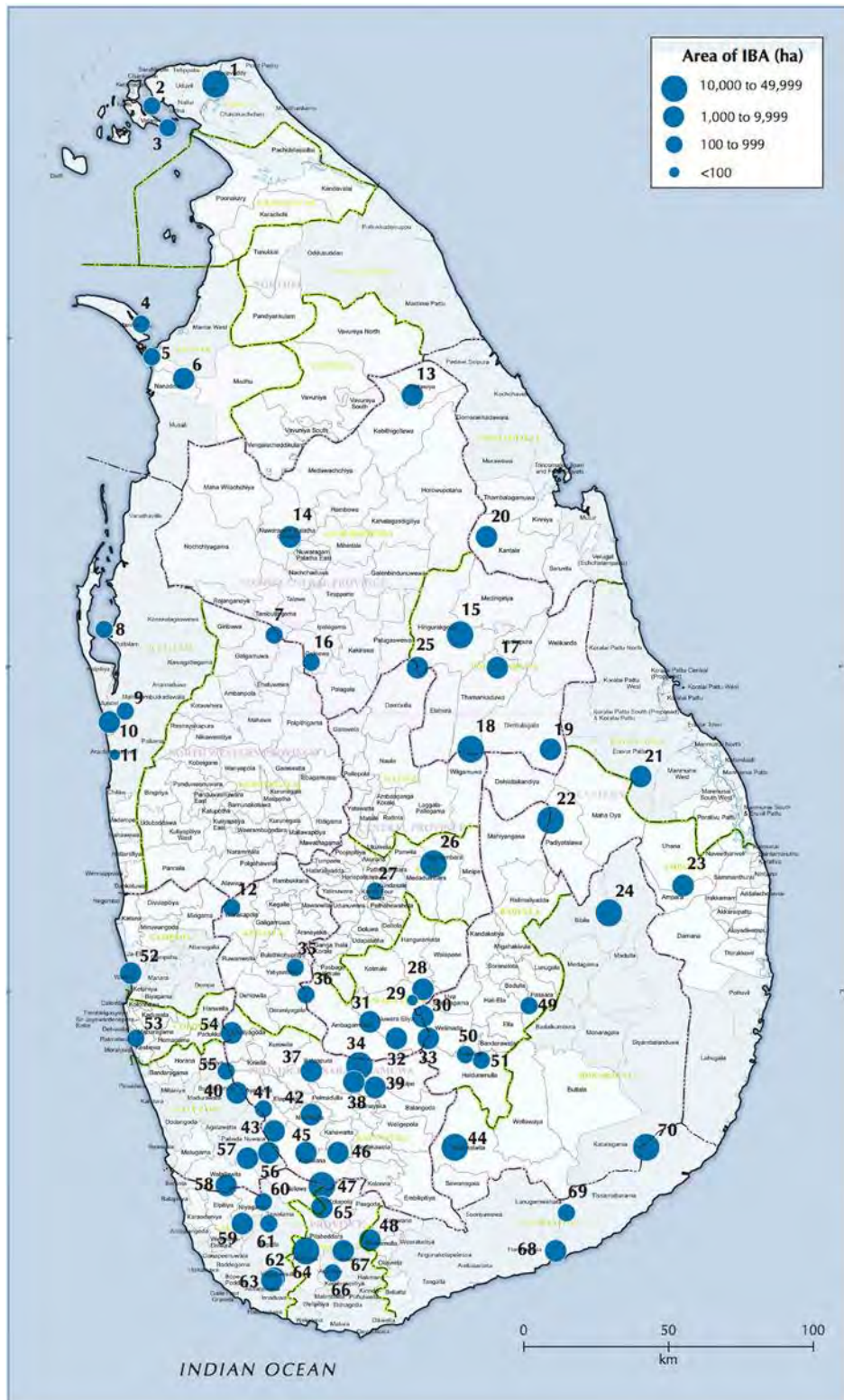
An Important Bird Area (IBA) is recognised as a globally important habitat, especially for the conservation of birds. Currently there are about 10,000 IBAs worldwide. The programme was developed, and sites are identified by BirdLife International. In Sri Lanka, 70 areas are currently designated as IBAs. In addition to the 70 formally designated areas, an additional 44 areas are considered as preliminary IBAs in Sri Lanka (SD 2007). Table 2.5.4 and Figure 2.5.2 show the names, locations and areas of IBAs in Sri Lanka.

**Table 2.5.3: Important Bird Areas in Sri Lanka**

1. Jafna Lagoon	2. Araly South-Punalai
3. Kayts Island-Mandathive	4. Amaipaddukkai
5. Periyakalapuwa mouth	6. Giants Tank
7. Usgala Siyambalanduwa	8. Seguwantive mudflats
9. Periyakadawela	10. Mundel Lake
11. Anaiwilundawa complex	12. Neugalkanda
13. Padaviya	14. Anuradhapura
15. Minneriya / Girithale / Kaudulla	16. Kumbuk Wewa
17. Polonnaruwa	18. Wasgomuwa
19. Pimburettewa Tank	20. Kantale Tank
21. Rugam Tank	22. Madura Oya
23. Ampara	24. Senanayake Samudraya / Nilgala
25. Sigiriya	26. Knuckles
27. Udawattakele	28. Kandapola-Seethaeliya / Pedro
29. Nuwara Eliya	30. Hakgala / Meepilimana
31. Dikoya	32. Agrapatana-Bopaththalawa
33. Horton plains / Ohiya / Pattipola-Ambewela	34. Peak Wilderness
35. Amanawala	36. Kithulgala
37. Gilimale-Eratna	38. Bambarabotuwa

39. Dotalugala / Rassagala	40. Delmella
41. Ayagama	42. Karawita
43. Waratalgoda	44. Udawalawa
45. Delgoda / Kudumiriya / Kobahadukanda	46. Delwela / Panilkanda / Walankanda
47. Sinharaja	48. Rammalkanda
49. Namunukula	50. Tangamalai
51. Haputale	52. Muturajawela
53. Bellanwila-Attidiya	54. Labugama
55. Bodhinagala	56. Morapitiya-Runakanda
57. Kalugala	58. Yagirala
59. Beraliya-Kudagala	60. Haycock / Habarakada
61. Malambure	62. Kombala-Kottawa
63. Beraliya-Akurassa	64. Nakiyadeniya / Kanneliya / Dediyaagala
65. Dellawa / Diyadawa	66. Welihena
67. Mulatiyana	68. Bundala complex
69. Wirawila Tank	70. Yala

Source: BirdLife International. 2004. *Important Birds Areas in Asia: Key Sites for Conservation*.



Source: BirdLife International 2004. *Important Bird Areas in Asia: Key Sites for Conservation*; Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

**Figure 2.5.4: Locations and Areas of IBAs in Sri Lanka**



## 2.6 Forests (Primary Forest, Other Naturally Regenerated Forest and Planted Forest)

According to the *Global Forest Resources Assessment 2010 Main Report*, Sri Lanka's total forest area was estimated to be about 18,600 km<sup>2</sup> in 2010, which is 29% of the land, excluding inland water areas. These figures have been declining significantly. From 2005 through 2010, approximately 300 km<sup>2</sup> of forest per year were either converted to other uses or lost through natural causes.

**Table 2.6.1: Trends in the Extent of Forest, 1990–2010**

Forest Area (km <sup>2</sup> )				Annual Change Rate					
1990	2000	2005	2010	1990–2000		2000–2005		2005–2010	
				km <sup>2</sup> /yr	%	km <sup>2</sup> /yr	%	km <sup>2</sup> /yr	%
23,500	20,820	19,330	18,600	-270	-1.20	-300	-1.47	-150	-0.77

Source: FAO. 2010. *Global Forest Resource Assessment 2010*.

With regard to the types of forests, the areas of primary forest, other naturally regenerated forest and planted forest are 1,670 km<sup>2</sup>, 15,080 km<sup>2</sup> and 1,850 km<sup>2</sup>, respectively. Data suggest that recent deforestation in Sri Lanka has occurred most heavily in naturally regenerated forest areas (FAO 2010).

**Table 2.6.2: Types of Forests**

Primary forest		Other naturally regenerated forest			Planted forest		
km <sup>2</sup>	% of FA	km <sup>2</sup>	% of FA	% of which IS	km <sup>2</sup>	% of FA	% of which IS
1,670	9	15,080	81	–	1,850	10	–

Notes: FA: Forest Area; IS: Introduced Species

Source: FAO. 2010. *Global Forest Resource Assessment 2010*.

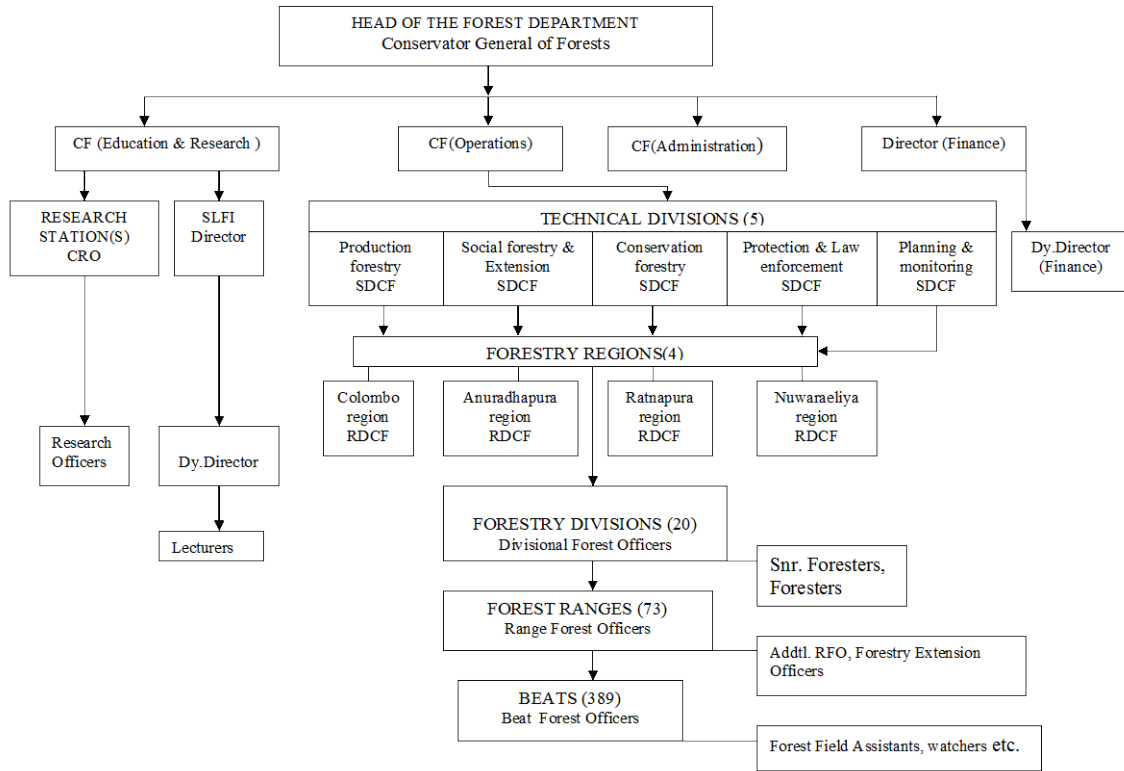
The forests in Sri Lanka have been removed to make way for agricultural land and plantations and provide fuel and timber. As a part of the national economy, the sale of timber raises revenue. The production of industrial roundwood accounted for 763,000 m<sup>3</sup> in 2005, and this figure has been relatively stable for the last two decades. The total volume of trees cut down for fuelwood was 6,476,000 m<sup>3</sup> in 2005. Although data to indicate how much these activities contribute to the deforestation in Sri Lanka are missing, it is important to establish sustainable forest management (FAO 2010).

Regarding forest ownership patterns, public ownership is predominant in Sri Lanka, amounting to 93%, while the remaining 7% is privately owned. The management rights of public forests are all held by public administration, namely the Forest Department (FD) and the Department of Wildlife Conservation (DWC) (FAO 2010). Especially, the FD is in charge of surveying and demarcation of all the forests in Sri Lanka to categorise them and protect them properly, as mentioned in Section 2.3.

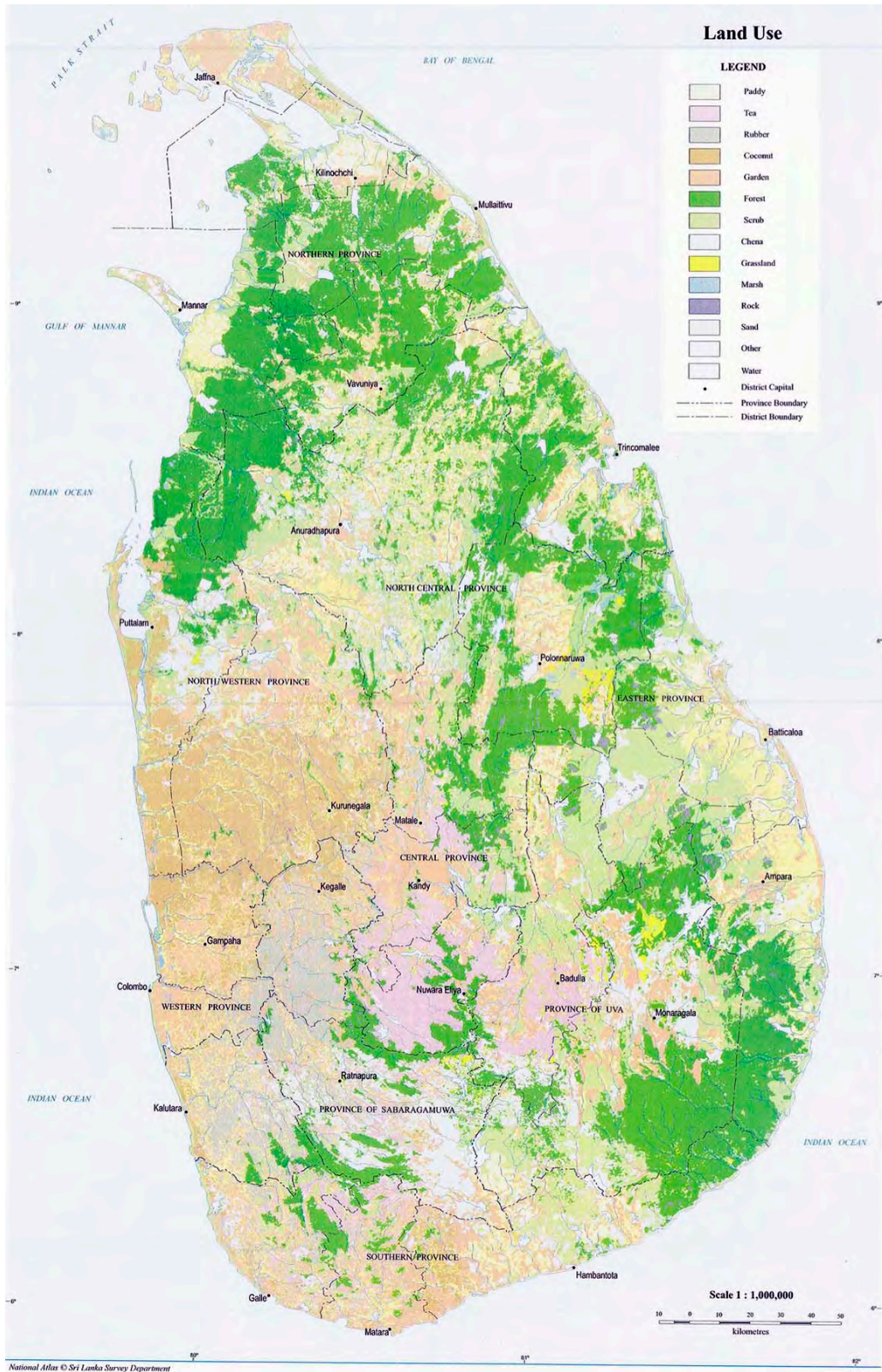
Forest Act No. 10 of 1885 tightened control on and access to forest resources and carved out reserved forests to allow very limited access to the public. The primary emphasis of the act was to control exploitation of forest resources to ensure the sustained yield of marketable goods. However, the act was also utilised for establishing two uninhabited forests—Yala and Wilpattu—as sanctuaries for the protection of wildlife. This act was replaced by Forest Act No. 16 of 1907, which is the basis of the present law relating to forests and plant protection. The act has been amended many times to address specific problems, but its initial structure has remained intact. The act facilitates the maximisation of public revenue and cares more about the interests of the state at large than the needs and interests of local people and communities. The act does not address trees outside forests. The state implements the act through the FD and regulates the sale and transport of forest produce and timber (FAO 2000).

The roles of the FD, as well as the DWC, are policy formulation, macro-level planning, monitoring and surveying forests and improving conservation management. However, the capacity of the FD, as well as the DWC, to enforce the law is declining because of the general fall in social values. Despite severe penalties, the quality and extent of forest cover continue to decline. Forest protection rather than forest management has become the main objective of the FD. This has resulted in heavy costs for policing, inefficient use of forestry personnel, increased corruption and abuse and disincentives to private tree growers and markets. Some of the important reasons for the inefficiency of these acts are that (a) their boundaries are not well drawn, (b) the acts have not been implemented in a coordinated manner by the FD and the DWC and (c) they exhibit poor sensitivity and flexibility when it comes to adapting to quickly changing social and political conditions. For example, boundaries of forests and protected areas in the forest and wildlife legislation are not very clear. The protection, conservation and development of forest resources are intimately related to other sectors, but the forest planning and management process in Sri Lanka is not participative (i.e., with stakeholders), integrated within the forestry sector or coordinated with other sectors of the economy. The process of implementing changes in the legislation is very slow and bureaucratic. Finally, the system is not

designed to make optimal use of local knowledge (FAO 2000).



**Figure 2.6.1: Organisation Chart of the Forest Department**



Source: Survey Department of Sri Lanka. *The National Atlas of Sri Lanka.*

**Figure 2.6.2: Land Use and Forests in Sri Lanka**

## 2.7 Current Situation and Efforts to Reconcile Development and Nature Conservation

### 2.7.1 Elephant Corridor

The human–elephant conflict (HEC) is the direct result of habitat loss and the consequent competition for natural resources. The establishment of electric fences, temporary driving of elephants to protected areas, the issuance of thunder flashes to chase elephants from cultivations and settlements, and the capture and translocation of troublesome animals have been the responses to this problem. Providing adequate compensation for damage and loss of agricultural produce to farmers was a policy option for the conservation and management of wild elephants, which was developed into a strategy of ‘cohabitation.’ This would bring compensatory benefit to the people and promote possible economic returns from the elephant presence outside protected area systems. Unfortunately, due to financial constraints, the implementation of this strategy had to be discontinued (MENR and UNEP 2009).

The locations of elephant corridors are said to correspond to the annual numbers of elephant deaths. Table 2.7.1 shows the regional distribution of elephant deaths in Sri Lanka. According to this data, the North Western Province and the Mahaweli Region have seen over 50 elephant deaths annually. It is worth noting that there is an increasing trend in the Southern Province and the Eastern Province. The administrative entity relevant to HEC and the elephant corridors is the Department of Wildlife Conservation.

**Table 2.7.1: Regional Distribution of Elephant Deaths in Sri Lanka**

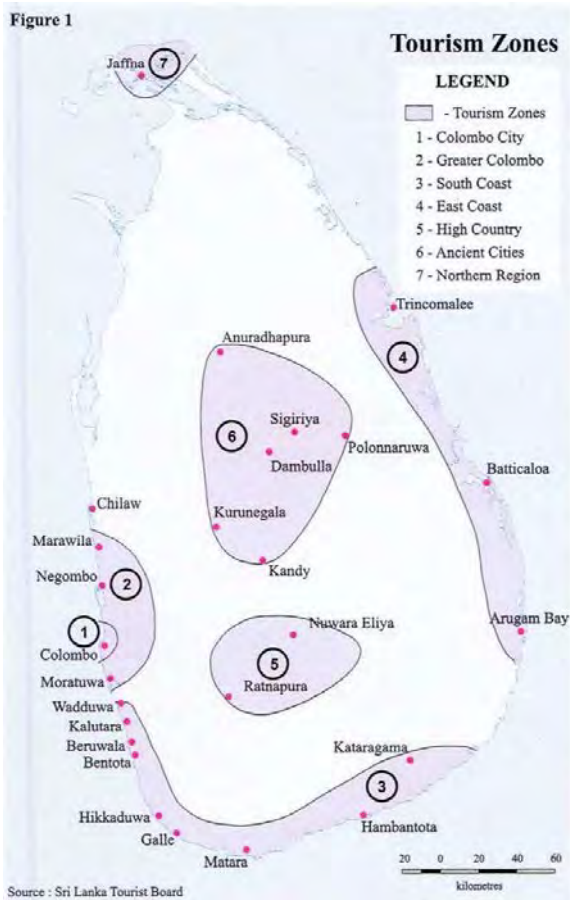
Year	North Western	Mahaweli	Southern	Eastern	Central	Yala/Bundala	Total
2005	47	41	13	13	1	8	123
2006	67	51	16	16	4	9	163
2007	73	57	27	21	3	8	189
2008	92	65	30	23	4	10	224
2009	66	72	30	41	3	16	228
2010	66	74	35	42	2	8	227

Source: MoE. 2011. *Progress Report 2011 and Action Plan*.

Sri Lanka Wildlife Conservation Society is one of major NGOs that actively participated in the conservation of the wildlife in Sri Lanka. The Society focuses mainly on the HEC problem.

### 2.7.2 Eco-tourism

Sri Lanka has encouraged tourism. The Sri Lanka Tourist Development Authority (SLTDA; formerly, Sri Lanka Tourist Board) has classified Sri Lanka into seven resort regions: Colombo City, Greater Colombo, South Coast, East Coast, High Country, Ancient Cities, and the North. However, since the outbreak of the civil war, tourism has been dormant in the North and the East coastal resort regions. Over the last four decades, Sri Lanka has promoted 'mass tourism' with a focus on 'sun, sea and beach'. Mass tourism by its very nature is large scale, externally controlled, and creates a homogenous tourism product. In contrast, 'alternative tourism' is the opposite of mass tourism, being small in scale, locally controlled, and having a 'sense of place'. It is also more sustainable. The importance of making the transition from mass tourism to alternative tourism has been recognised in the Tourism Master Plan (1993), as well as in the Medium-term Strategic Marketing Plan for Sri Lanka. Hence, there is an increasing interest in eco-tourism in Sri Lanka. There is also the realisation that the island's tourism potential needs to be tapped with a more comprehensive focus on the regions. The Master Plan has proposed 14 tourism development zones. In Sri Lanka, the term 'eco-tourism' has been used in a generic sense without much emphasis on its diverse attributes, such as nature-based tourism, cultural tourism, adventure tourism, and geo-tourism (SD 2007).



Source: Survey Department of Sri Lanka. *The National Atlas of Sri Lanka*.

**Figure 2.7.1: Tourism Zones**



Source: Survey Department of Sri Lanka. *The National Atlas of Sri Lanka*.

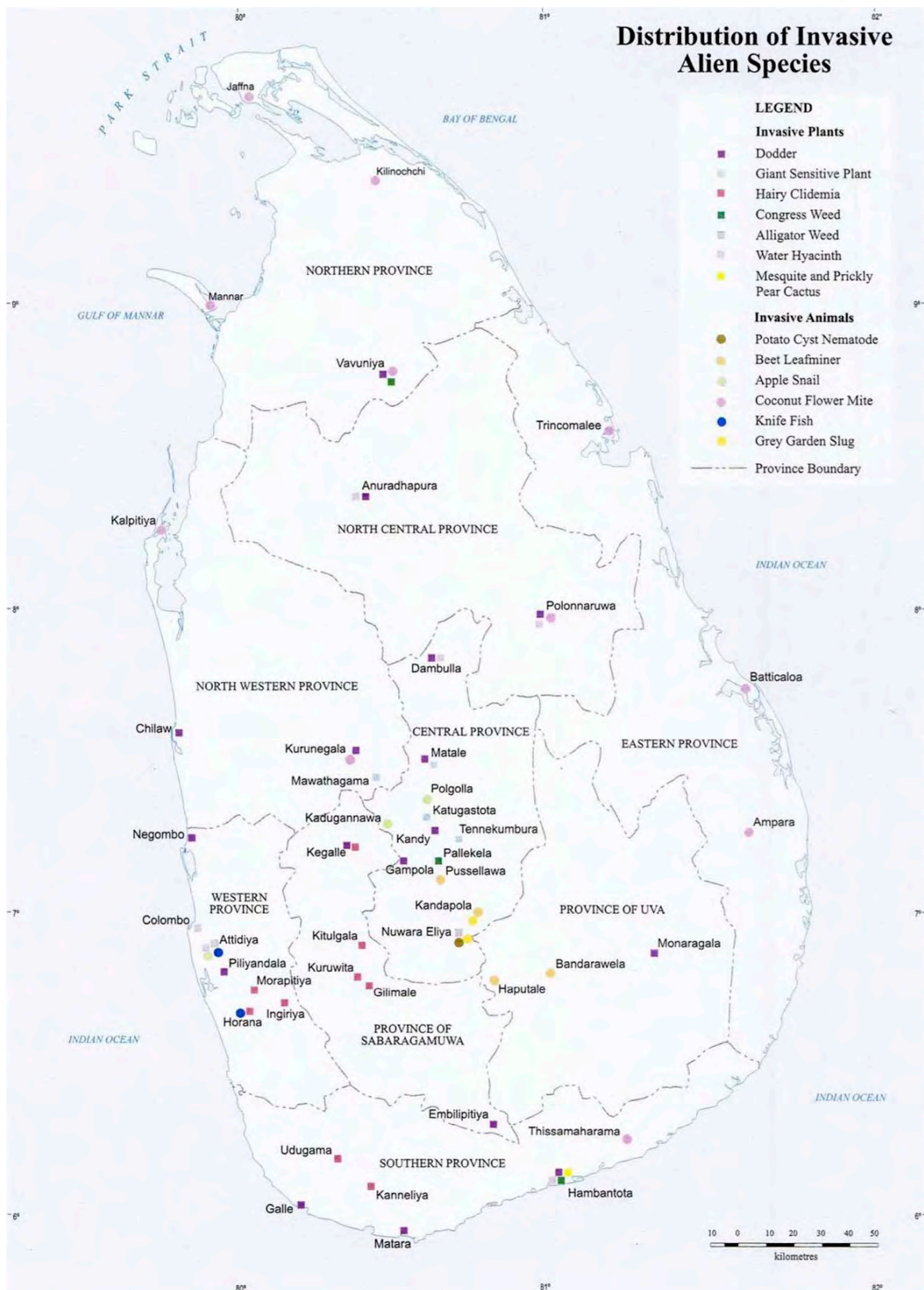
**Figure 2.7.2: Proposed Tourism Zones**

The SLTDA, which has the responsibility of developing tourism, has the authority to regulate all tourism development activity. Accordingly, all tourism development activities and services have to be duly approved by the SLTDA. The Authority refers all applications for developments received to relevant governmental organisations such as the Central Environmental Authority (CEA), Coast Conservation Authority (CCA), and Urban Development Authority (UDA) to ensure that they comply with the stipulated requirements to minimise any negative impacts. All projects to be located along the coastal belt are examined for environmental implications by the CCA, while all developments in the hinterland are examined by the CEA. If the identified location is in close proximity to a heritage site, the Department of Archaeology would consider the implications arising as a result of the project. It is mandatory for all development projects to obtain the approval of the UDA in areas under UDA jurisdiction.

### 2.7.3 Invasive Alien Species

Invasive alien species (IAS) is another problem related to the protection of the natural environment and endemic species in Sri Lanka. Almost all these species have been carried by human activities. The distribution of IAS is shown in Figure 2.6.3.





Source: Survey Department of Sri Lanka 2007. *The National Atlas of Sri Lanka*.

**Figure 2.7.3: Distribution of Invasive Alien Species**

#### 2.7.4 Climate Change

Climate change is often referred to as the greatest challenge of our time, and it is thought to be a bigger threat to the world than terrorism. Rising sea-level, erratic weather patterns, melting ice, expanding deserts, and vanishing species are all associated with climate change, and predictions indicate disastrous consequences if action is not taken now. Sri Lanka has joined the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto protocol. According to Sri Lanka's National Communication to the Intergovernmental Panel on Climate Change (IPCC) in 2000, land use change and forestry, energy and transformation industries, and other industries are the biggest contributors to greenhouse gas emissions in the country. Statistical analyses of the temperature data have shown that temperatures in Sri Lanka have been increasing by approximately 0.16 °C per decade. Rainfall trends were found to be complex, with some areas showing less rainfall while other areas showed an increase. According to the most recent assessment by the IPCC in 2007, climate change is affecting global temperature, sea levels and precipitation. It has been predicted that global warming, along with the rise in sea levels, would continue for centuries even if greenhouse gas concentrations were to be stabilized because of the timescales associated with climate processes (UNEP 2009).

Sri Lanka is one of the countries that are most vulnerable to climate change. Among a number of adverse effects of climate change, the rise of sea levels, the change of rainfall pattern (inducing more frequent and severe floods, droughts and landslides), and the bleaching and death of coral reefs are of the most concern in Sri Lanka. The forecast is that world temperatures could rise between 1.1 °C and 6.4 °C this century, with sea levels predicted to rise by 18 to 59 cm. In addition, there could be very frequent warm spells, heavy rainfall, increased drought, tropical cyclones, and extremely high tides. These climatic changes will affect the environment as well as various sectors, including agriculture, biodiversity, human health, water, poverty and the economy (UNEP 2009).

The Meteorological Department of Sri Lanka established the Centre for Climate Change Studies to create awareness among the public on climate change and to conduct climate change related research (MENR and UNEP 2009). In addition, the Ministry of Environment administers affairs related to climate change. Domestic policies, strategies and action plans related to climate change are as follows:

- Climate Change Policy (initial stages)
- National Climate Change Action Plan (draft)
- National Policy on Clean Development Mechanism (CDM)

- National Strategy for Clean Development Mechanism

As a signatory to the UNFCCC, Sri Lanka is committed to addressing the threat of human-induced climate change in all sectors, both by increasing the resilience of its people and its ecosystems through adaptation measures and by decreasing the intensity of climate change through mitigation measures. Sri Lanka's forests, unique among its land-use sectors, can make a significant contribution to both adaptation and mitigation. The Sri Lankan Government, under the leadership of the Ministry of Environment (MoE), seeks to maximize this contribution by developing a national strategy for reducing emissions from deforestation and forest degradation, plus conservation, sustainable management of forest, and enhancement of forest carbon stocks (REDD+) (UN-REDD 2012b).

The UN-REDD programme assists developing countries to prepare and implement National REDD+ Strategies. Designed collaboratively by a broad range of stakeholders, National UN-REDD programmes are informed by the technical expertise of FAO, UNDP and UNEP. Priority is given to developing sustainable national approaches that promote equitable outcomes and ensure that countries use reliable methodologies to assess emission reductions (UN-REDD 2009). During its eighth policy board meeting 25–26 March 2012, the UN-REDD Programme Policy Board approved US\$8 million in funding for the Republic of Congo and Sri Lanka's National Programmes for REDD+, bringing the total amount of approved funding for UN-REDD National Programmes to US\$67.3 million (UN-REDD 2012a).

Mattsson et al. (2012) constructed a historical reference level using available forest inventory data combined with updated 2008 and 2009 *in situ* carbon density data for Sri Lankan forests. They estimated that baseline deforestation emissions in Sri Lanka amounted to 17 MtCO<sub>2</sub> per year from 1992 to 1996, but concluded that it is challenging for Sri Lanka to produce a robust and accurate reference level due to the lack of nationally based inventories. Sri Lankan revenues from REDD+ participation could be substantial, but they are sensitive to REDD+ policy transaction cost, highly uncertain timber revenues, and in particular, the carbon price paid for emission reductions. The latter must be higher than \$5–10/tCO<sub>2</sub> if there are to be substantial incentives for Sri Lanka to participate in REDD+. There is, however, a large gap in the knowledge of deforestation drivers that must be filled if Sri Lanka is to formulate an effective policy response to forest degradation in REDD+. For successful REDD+ implementation in Sri Lanka, technological assistance, readiness assistance, and continued political momentum are crucial (Mattsson 2012).

## **Chapter 3**

# **Pollution and Environmental Contamination**

## 3 Pollution and Environmental Contamination

### **Latest Development/Issues Regarding the Pollution and Environmental Contamination**

- National ambient air quality standards were revised in 2008. (Section 3.3.2)
- The Scheduled Waste System (for hazardous waste) based on the National Environmental (Protection & Quality) Regulation started in 2008 (Section 3.6.1).

### 3.1 Overview (General features)

In Sri Lanka, industrialisation has proceeded rapidly since the 1980s, and the proportion of Gross Domestic Product (GDP) represented by the industrial sector reached 30% in 2009 (World Bank 2011). As a result, the problems of industrial pollution (water pollution, waste, noise and so forth) have become serious. Moreover, the number of automobiles has increased along with the growth of the economy, and air pollution caused by vehicle exhaust has become a problem, especially in urban areas.

To solve such pollution problems, the government established both the National Environmental Act (NEA) and the Central Environment Authority (CEA) in 1981. Then, in 1990, the Ministry of Environment was established, thus strengthening administrative capacity pertaining to environmental conservation and pollution control and prevention.

### 3.2 Legal Framework and Administrative Organisations Related to Pollution and Environmental Contamination

#### 3.2.1 Status of Ratification and Application of International Treaties and Conventions

Sri Lanka has joined several conventions and protocols related to the prevention of pollutions. Such conventions include the Vienna Convention for the Protection of the Ozone Layer, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Convention on Persistent Organic Pollutants and the Kyoto Protocol to the United Nations Framework Convention on Climate Change. For details of the status of ratification of international treaties, conventions and protocols related to pollution and environmental contamination, see Table A-2 in the Appendix.

### 3.2.2 Domestic Legal Framework and Key Institutions

As stated in Section 1.2, there was no overarching legislation that could regulate pollution from all sources, and various agencies addressed issues pertaining to their sectors per sector-specific laws prior to 1980. In 1980, the National Environmental Act (NEA) was enacted with the objective of protecting and managing the environment as a whole.

The environmental quality provisions of the NEA provide for the prevention of pollution of inland waters, the atmosphere, soil or the surface of any land and the control of excessive noise. Unlike the provisions on environmental impact assessment as described later in Chapter 5, which are restricted to a defined list of prescribed activities, these provisions apply to all polluting activities. The environmental quality provisions, however, are more complicated to enforce and require ‘proof of pollution’. Further, the subsidiary legislation required to bring these provisions into effect are incomplete. In general, the government relies on these provisions at the time of litigation, where charges are brought under these provisions along with provisions on environmental protection (CEA, AECEN and ADB 2006).

Since 1996, the NEA has prescribed regulations for the management of hazardous waste, and in 1999 the CEA prepared Guidelines for the Implementation of Hazardous Waste Management Regulations. To date, the CEA has not issued licenses, and the regulations have not been implemented due to the lack of treatment and disposal facilities. Since 2004, the CEA has been implementing an environmental clearance process for hazardous waste, allowing certain types of hazardous waste to be co-processed at a cement plant. Alternative interim measures are also in place (CEA, AECEN and ADB 2006).

Sri Lanka’s administration system is characterised by a form of government in which power is divided between one central and several regional authorities. Today, there are 25 districts organised into 9 provinces in Sri Lanka. In 1987, provincial councils were introduced as a new level of intermediary governance between the central government and local governments. The 13th Amendment to the Constitution of Sri Lanka empowered provincial councils with legislative and executive power over the environment with the jurisdiction of the respective provinces, provided such laws do not conflict with those of the central government. In response to this, the North Western Provincial Council has already set up its own environment statutes (the North Western Provincial Environmental Statute No. 12 of 1990) and acts in place of CEA for this province. As a result, the NEA is no longer a national act. In the Western Province, the

Waste Management Statute provides for the establishment of the Waste Management Authority of the Western Province with the power to introduce waste management regulations and waste management guidelines within the Western Province. These regulations and guidelines cover 'solid waste', 'hazardous waste' and 'clinical or infectious waste', thus allowing a possible duplication of the CEA's powers and functions (CEA, AECEN and ADB 2006).

As stated in Section 1.3, the government structure in Sri Lanka is decentralised and complicated. At the central level, the Ministry of Environment (MoE) and the Central Environmental Authority (CEA), which belongs to MoE, are the most relevant domestic institutions responsible for preventing and controlling pollution and environmental contamination. The CEA has its provincial regional and sub-regional offices that handle most compliance and enforcement functions. In the Western Province, where the CEA head office is located, the Environment Pollution Control Division has been carrying out routine compliance and enforcement functions. Though this detracts from its national responsibilities, this situation will change: The CEA recently established a regional Provincial Office for the Western Province and is in the process of transferring the functions of the Environment Pollution Control Division to this regional office (CEA, AECEN and ADB 2006).

Although most pollution-control programs are currently being implemented by the central government through the CEA, there is an increasing trend toward devolving those powers to the provinces. Currently, the North Western Provincial Council has its own statute, and the Environmental Protection Licence (EPL) program for industries (stated below) is being administered through the provincial authorities. This arrangement has encountered problems, including lack of personnel and lack of capacity to tackle major pollution problems arising from large-scale heavy industry (ADB and CAI-Asia Center 2006).

The division of responsibilities between the centre and provincial/local authorities requires clarification. At present, in the absence of fully functional provincial environmental agencies (except for the North Western Provincial Environment Authority), there is no conflict between the centre and the provinces. In the future, however, once provincial authorities come into being, the respective roles of provincial authorities and the central government will have to be clearly defined to avoid confusion (ADB and CAI-Asia Center 2006).

The table below summarises important laws and authorities in charge of supervision, regulation and/or enforcement related to the prevention and control of pollution.

**Table 3.2.1: Relevant Laws and Their Administrative Entity**

Law	Description	Administrative entity
National Environmental Act No. 47 of 1980 (as amended by Acts No. 56 of 1988 and 53 of 2000) and the Regulations under the Act	Establishes the Central Environmental Authority (CEA) and defines its powers, functions and duties. Provides overall environmental protection legislation, including licensing procedures, environmental standards and project approval procedures.	Central Environmental Authority
Fauna and Flora Protection Ordinance No. 2 of 1937 (as amended by Act Nos. 49 of 1993, 12 of 2005) and the Regulations under the Ordinance	Provides for the conservation of plants and animals that have been declared as protected species. Empowers the Minister to declare any area of state land as a National Reserve or Sanctuary.	Department of Wildlife Conservation Director General of Wildlife Conservation
Forest Ordinance No. 16 of 1907 (as amended) and the Rules and Regulations under the Ordinance	Consolidates the laws relating to forests and to the felling and transportation of timber. Empowers the Minister to declare any area of state land as a Reserved Forest, Conservation Forest or Village Forest.	Forest Department Conservator General of Forests
Mahaweli Authority of Sri Lanka Act No. 23 of 1979 (as amended) and the Regulations under the Act	Established the Mahaweli Authority of Sri Lanka and provides for the conservation and maintenance of the physical environment of Mahaweli Areas, including watershed management, soil erosion and the protection of reservation areas.	Mahaweli Authority of Sri Lanka
State Lands Ordinance No. 8 of 1947 (as amended) – Parts VI, VIII, IX	Provides for how state lands and their resources, including lakes, rivers and streams, should be allocated, used and managed. Also provides for the declaration of state reservations.	Ministry of Agricultural Development District Secretaries
Mines and Minerals Act No. 33	Regulates mining, exploitation,	Geological



Law	Description	Administrative entity
of 1992	processing, trading and export of minerals.	Surveys and Mines Bureau
Irrigation Ordinance No. 32 of 1946 (as amended) – Part VI	Deals with environmental aspects of water, irrigation and land use in irrigated agricultural activities.	Irrigation Department
Water Resources Board Act No. 29 of 1964 (as amended)	Establishes the Water Resources Board and sets out its duties, which include promotion of afforestation; prevention of the pollution of rivers, streams and other water courses and formulation of national policies relating to the control and use of the country's water resources.	Water Resources Board
Coast Conservation Act No. 57 of 1981 (as amended)	Identifies Coastal Zones and regulates activities within such zones.	Coast Conservation Department Ministry of Fisheries and Aquatic Resources
Marine Pollution Prevention Act No. 35 of 2008	Provides for the prevention, reduction, and control and management of marine pollution in the Territorial Waters of Sri Lanka, any other maritime zone, the foreshore and the coastal zone of Sri Lanka. Also provides for the establishment of the Marine Environment Protection Authority.	Marine Environment Protection Authority
Fisheries and Aquatic Resources Act No. 2 of 1996 (as amended)	Makes provision to protect and conserve fisheries and aquatic biodiversity in marine and freshwater areas and for the declaration of fisheries reserves. Imposes licensing and registration requirements for fishing. Defines the terms 'Sri Lankan Waters'.	Ministry of Fisheries and Aquatic Resources, Director of Fisheries and Aquatic

Law	Description	Administrative entity
		Resources
National Heritage Wilderness Areas Act No. 3 of 1988	Provides for the declaration, protection and preservation of any area of state land with unique ecosystems, genetic resources or outstanding natural features such as National Heritage Wilderness Areas.	Forest Department, Ministry of Agricultural Development
Soil Conservation Act No. 25 of 1951 (as amended)	Provides for the conservation of soil resources, mitigation of soil erosion and protection of lands against flood and drought.	Ministry of Agricultural Development
Plant Protection Act No. 35 of 1999	Provides for the prevention of wild plants, weeds and plant diseases and controls the introduction of new plant species.	Department of Agriculture
Felling of Trees (Control) Act No. 9 of 1951 (as amended)	Provides for the prohibition, regulation and control of the felling of specified tree species, including cultivated tree species such as Jak.	Forest Department Ministry of Agricultural Development and Agrarian Services
Flood Protection Ordinance No. 4 of 1924 (as amended)	Provides for the protection of areas from flood damage and empowers the Director of Irrigation to declare any area as a flood area.	Ministry of Irrigation and Water Management Director General of Irrigation
Water Hyacinth Ordinance No. 4 of 1909	Provides for preventing the importation, introduction and dissemination in Sri Lanka of the plant known as Water Hyacinth.	Department of Agriculture Sri Lanka Customs
Control of Pesticides Act No.	Provides for the licensing and regulation	Registrar of

Law	Description	Administrative entity
33 of 1980 (as amended)	of the import, packing, labelling, storage, formulation, transportation, sale and use of pesticides.	Pesticides
Atomic Energy Authority Act No. 19 of 1969	Provides for the establishment of the Atomic Energy Authority, which is empowered to control and regulate the importation, exportation, production, acquisition, transportation, treatment, storage and disposal of radioactive materials.	Atomic Energy Authority
Health Services Act No. 12 of 1952 (as amended)	Provides for the regulation of the environmental aspects of human health.	Department of Health Services
Municipal Councils Ordinance No. 29 of 1947 (as amended)	Provides for the establishment of Municipal Councils and outlines their powers, duties and responsibilities in relation to the built environment and matters such as waste disposal and sanitation.	Municipal Councils
Urban Councils Ordinance No. 61 of 1939 (as amended)	Provides for the establishment of Urban Councils and outlines their powers, duties and responsibilities in relation to the built environment and matters such as waste disposal and sanitation.	Urban Councils
Pradeshiya Sabha Act No. 15 of 1987 (as amended)	Provides for the establishment of Pradeshiya Sabhas and outlines their powers, duties and responsibilities in relation to the built environment and matters such as waste disposal and sanitation.	Pradeshiya Sabhas
Urban Development Authority Law No. 41 of 1978 (as amended)	Empowers the Urban Development Authority (UDA) to regulate and manage the urban environment.	Urban Development Authority
Sri Lanka Land Reclamation	Empowers the Sri Lanka Land	Sri Lanka

Law	Description	Administrative entity
and Development Corporation Act No. 15 of 1968 (as amended)	Reclamation and Development Corporation (SLLR&DC) to reclaim low-lying lands and wetlands.	Land Reclamation and Development Corporation
Agrarian Development Act No. 46 of 2000 – Part II	Provides for the utilisation of agricultural lands in accordance with agricultural policies, with regard to natural resources.	Commissioner General of Agrarian Development
National Aquaculture Development Authority of Sri Lanka Act No. 53 of 1998 (as amended)	Establishes the National Aquaculture Development Authority of Sri Lanka and provides for the development of aquatic resources.	National Aquaculture Development Authority
Sri Lanka Sustainable Energy Authority Act No. 35 of 2007	Establishes the Sri Lanka Sustainable Energy Authority and provides for the development of renewable energy sources and the implementation of energy-efficiency measures and conservation programmes.	Sri Lanka Sustainable Energy Authority
Code of Criminal Procedure Act No. 15 of 1979 (as amended) – Section 98 and Section 261 of the Penal Code (as amended)	Provides for the removal or abatement of public nuisances.	Police
Nuisances Ordinance No. 15 of 1862 (as amended)	Provides for the preservation of public health and the suppression of various types of nuisances.	Urban Council Municipal Council and Pradeshiya Sabhas Police

### 3.2.3 Environmental Protection Licence (EPL) System

Domestic laws and policies related to each specific aspect of environmental quality will be covered in the following sections. Here, the Environmental Protection Licence (EPL) system for pollution prevention is explained.

Since the introduction of the licensing system for environmental protection in 1988, the CEA has been empowered to monitor all operators that could give rise to pollution. If the monitoring process reveals that necessary measures to prevent pollution have not been taken, the CEA can withdraw the EPL and limit the operation. There are an estimated 40,000 to 60,000 factories and production facilities in Sri Lanka, of which some 4,600 factories and production facilities are reportedly subject to the EPL requirement and must take measures to prevent pollution. Nevertheless, only 1,240 factories and production facilities have actually obtained an EPL. According to a CEA official, the rate of EPL acquisition was so low because it takes a long time to evaluate and assess proposals in order to issue the EPL, and this is due to an extreme shortage of personnel at the CEA.

The EPL plan is Sri Lanka's major regulatory programme for control of industrial pollution stipulated in the National Environmental Act No. 47 of 1980, which was amended by Acts No. 56 of 1988 and No. 53 of 2000. Industries and activities that have to be issued EPLs are classified under three categories: Category A, B and C. For details of each category, see Table A-31 in the Appendix. If a proposed project falls under Category A, the project proponent requires an EPL from the Central Environmental Authority, while Category C projects require EPLs from the respective local authorities. Like Category A, Category B projects require EPLs from the CEA, but the EPLs can be processed through the regional office of the CEA. EPLs issued during the period covered by the 2011 progress report are as follows:

**Table 3.2.2: Environment Protection Licensing (EPL) Scheme**

	Category A		Category B		Category C	
	Fresh	Renewal	Fresh	Renewal	Fresh	Renewal
Issued	789	1229	1335	68	84	150
Rejected	1	0	2	0	0	0

Source: Ministry of Environment, 2011. Progress Report 2011 and Action Plan, p. 128

### 3.3 Air Pollution

#### 3.3.1 Current Situation

In the face of urbanisation and industrialisation, air pollution poses a serious problem in urban areas and those that experience high levels of pollution from industries and vehicular traffic (MENR and UNEP 2009). Prior to the 1990s, the major contributor to air pollution had been emissions from the industrial sector (factories and production facilities), but pollution from the transport sector (vehicles) replaced it with the expansion of motorisation in the 1990s.

**Table 3.3.1: Total Vehicle Population (2002–2010)**

Year	MC	MT	MCY	B	DPV	L	TRC	TRL
2002	12,003	20,876	54,762	1,429	8,591	8,166	7,078	446
2003	21,184	36,204	86,877	1,949	13,268	11,158	10,004	858
2004	19,116	43,789	124,474	2,167	10,736	10,703	11,535	1,322
2005	17,283	41,085	130,696	2,069	6,851	14,262	15,597	1,826
2006	22,603	43,068	182,508	2,637	5,193	18,408	21,346	2,129
2007	20,237	44,804	155,952	1,180	2,856	14,038	24,357	1,775
2008	5,762	37,364	135,421	739	1,280	8,225	13,951	1,333
2009	23,072	85,648	204,811	2,491	11,712	11,845	17,363	2,301
2010	12,003	20,876	54,762	1,429	8,591	8,166	7,078	446

Notes: MC: motor car; MT: motor tyicycle; MCY: motorcycle; B: bus; DPV: dual purpose vehicle; L: lorry; TRC: land vehicle (tractor); TRL: land vehicle (trailer).

Source: Ministry of Environment. 2011. *Progress Report 2011 and Action Plan 2012*.

Emissions inventories are not routinely compiled in Sri Lanka, but are conducted mostly on an *ad hoc* basis for academic purposes. Emissions inventories compiled by different groups also vary in terms of sectors, pollutants and base years covered. It is also unclear whether those emissions inventories follow the same methodologies, making it very difficult to grasp the overall picture of air pollution in Sri Lanka. The mandate to monitor ambient air quality in Sri Lanka is the responsibility of the CEA, but other organisations are also involved in monitoring air quality in Sri Lanka. The following tables and figures indicate the current situation of air pollutants in Colombo and other major cities.

**Table 3.3.2: Maximum Time Average of Air Pollutants  
in Colombo and Other Major Cities (in 1999)**

Pollutant	Unit	City					
		Colombo	Galle	Kalutara	Kurunegala	Negombo	Katugastota
CO	ppm	2.270	0.870	0.380	1.933	0.750	2.750
SO <sub>2</sub>	ppm	0.100	0.003	0.021	0.005	0.018	0.009
NO <sub>2</sub>	ppm	0.093	0.006	0.008	0.013	0.018	0.010
NO	ppm	0.221	0.014	0.010	0.010	0.007	0.005
PM <sub>10</sub>	mg/m <sup>3</sup>	153	44	36	31	72	69

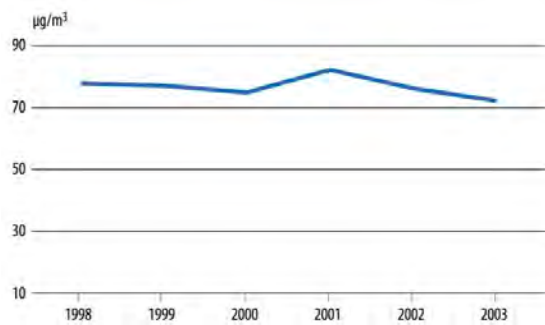
Source: CEA. 1999. (unpublished)

**Table 3.3.3: Actual and Estimated Air Pollutants  
Discharged from Motor Vehicles throughout Sri Lanka**

Year	Lead (t/yr)	Carbon Monoxide (kt/yr)	Carbon Dioxide (kt/yr)	Benzene (kt/yr)	Nitro Oxide (kt/yr)	SPM (kt/yr)	Sulfur Oxide (kt/yr)
1990	61.8	81.6	26.3	1.0	30.0	4.1	23.1
1995	67.3	108.0	38.0	1.6	38.3	5.7	31.4
2000	79.0	163.1	62.4	2.7	50.7	8.0	40.6
2005	6.3	241.3	95.2	4.1	66.9	10.8	52.0
2010	1.3	339.6	135.7	6.0	84.0	13.9	63.6
2015	1.0	456.2	182.8	8.1	106.7	17.8	79.3

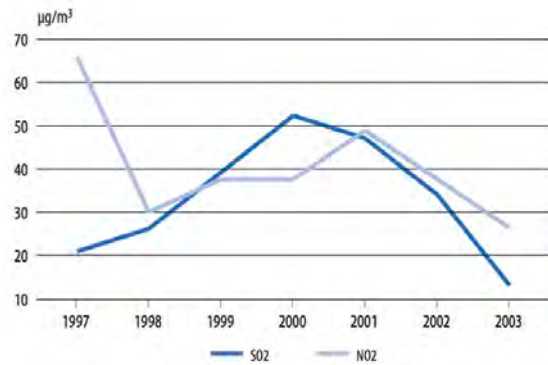
Note: The significant decrease of lead after 2005 is due to a blanket ban on leaded gasoline.

Source: AirMAC and Ministry of Environment and Natural Resources.



Source: Asian Development Bank and the Clean Air Initiative for Asian Cities Center. 2006. *Sri Lanka: Country Synthesis Report on Urban Air Quality Management (Discussion Draft)*.

**Figure 3.3.1: Annual Ambient Concentrations of PM<sub>10</sub> in Colombo (1998–2003)**



Source: Asian Development Bank and the Clean Air Initiative for Asian Cities Center. 2006. *Sri Lanka: Country Synthesis Report on Urban Air Quality Management (Discussion Draft)*.

**Figure 3.3.2: Annual Ambient Concentrations of SO<sub>2</sub> and NO<sub>2</sub> in Colombo (1998–2003)**

Annual average ambient PM<sub>10</sub> levels in Colombo over the years have remained relatively stable within the 72 to 82 µg/m<sup>3</sup> range, peaking in 2001. These values, however, consistently exceed the annual guideline of 20 µg/m<sup>3</sup> for PM<sub>10</sub> established by the World Health Organization (WHO) as well as that of Sri Lanka (50 µg/m<sup>3</sup>) established in 2008.

Despite high SO<sub>2</sub> emissions from industrial activities, especially power plants close to Colombo, the ambient SO<sub>2</sub> level in the city for 2003 was relatively low. Sri Lanka does not have an annual standard for SO<sub>2</sub>. Unlike PM<sub>10</sub>, which was fairly stable within a small range of values, SO<sub>2</sub> levels in Colombo have shown an increasing trend from 1997 to 2000 and then a general decreasing trend to 2003 (ADB and CAI-Asia Center 2006).

NO<sub>2</sub> concentration levels in Colombo over the years have experienced the same trends as with SO<sub>2</sub> — increasing from 1998 to sometime in 2001 and then decreasing to 2003. Unlike SO<sub>2</sub>, however, annual NO<sub>2</sub> in Colombo has exceeded the WHO (2006) guideline of 40 µg/m<sup>3</sup>. Sri Lanka does not have an annual standard for NO<sub>2</sub> (ADB and CAI-Asia Center 2006).



### 3.3.2 Relevant Laws and Organisations

Standards for air emissions from stationary sources have yet to be formulated, although the NEA was enacted as early as 1980. Currently in terms of the NEA, air emissions from stationary sources are controlled by the stipulations contained in the EPL (UNEP 2009).

The Motor Traffic (Emission Control) Regulations of 1994, which was published in Gazette No. 817/6 on 3 May 1994, formulated under the NEA, establishes the methodology for vehicle emission testing. The National Environmental (Air Emissions, Fuel and Vehicle Importation Standards) Regulations No. 1 of 2003, as amended by Regulations of 2008, establishes standards for emissions from vehicles in use. These emission standards for in-use vehicles are now being implemented with the establishment of the vehicle emission testing centres in different parts of the country. The National Environmental (Air Emission, Fuel and Vehicle Important Standards) Regulation No. 1 of 2003 establishes fuel standards and vehicle exhaust emission standards for the importation of vehicles (UNEP 2009).

Ambient Air Quality (AQ) standards specify the quality of the surrounding air as opposed to emission standards which specify the standard at the point of emission. Thus ambient AQ reflects the cumulative impact of the individual emission sources both stationary and mobile. As the following table shows, the National Environmental (Ambient Air Quality) Regulations of 1994 as amended in 2008 specify permissible ambient AQ standards and specify the maximum permissible amount in the ambient air of pollutants such as carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), sulphur dioxide (SO<sub>2</sub>) and particulate matters (PM<sub>10</sub> and PM<sub>2.5</sub>; usually expressed as PM with a diameter of 10 microns or smaller: PM<sub>10</sub>, or 2.5 microns or smaller: PM<sub>2.5</sub>) (UNEP 2009). The Sri Lanka national ambient AQ standards are more tolerant than those of WHO guidelines for almost all pollutants.

**Table 3.3.4: Sri Lanka National Ambient AQ Standards vs. WHO Guideline Values**

Pollutant	Averaging Time	Maximum Permissible Level		WHO Guidelines
		µg/m <sup>3</sup>	ppm	µg/m <sup>3</sup>
PM <sub>10</sub>	1 yr	50	–	20
	24 hrs	100	–	50
PM <sub>2.5</sub>	1 yr	25	–	10
	24 hrs	50	–	25
NO <sub>2</sub>	1 yr	–	–	40
	24 hrs	100	0.05	–

Pollutant	Averaging Time	Maximum Permissible Level		WHO Guidelines
		$\mu\text{g}/\text{m}^3$	ppm	$\mu\text{g}/\text{m}^3$
	8 hrs	150	0.08	–
	1 hr	250	0.13	200
	24 hrs	80	0.03	20
SO <sub>2</sub>	8 hrs	120	0.05	–
	1 hr	200	0.08	–
	10 mins	–	–	500
	8 hrs	–	–	100
O <sub>3</sub>	1 hr	200	0.10	–
	8 hrs	10,000	9.00	10,000
CO	1 hr	30,000	26.00	30,000
	Anytime	58,000	50.00	–

Source: Government of Sri Lanka. 2008. *The Gazette of the Democratic Socialist Republic of Sri Lanka* (1 Feb. 1 2008); WHO. 2000. *Air Quality Guidelines for Europe*, 2nd ed.; WHO. 2006. *WHO Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide*.

In addition to the above-specified provisions, the general provisions of the penal code as set out in Section 271 provide that whoever voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general, dwelling, carrying on business in the neighbourhood or passing along a public way, commits an offence in terms of the Code (UNEP 2009).

The MoE and the CEA are the major administrative bodies to protect and control AQ. They established the Air Resources Management Centre (AirMAC) in partnership with other stakeholders to provide leadership, guidance and facilitation in AQ management. Its objectives include the development of an effective coordination mechanism and the integration of all air pollution abatement programs. In 1996, AirMAC initiated a program for the continuous monitoring of ambient AQ in Colombo City (CEA, AECEN and ADB 2006).

Domestic laws and acts related to air quality are as follows:

- The National Environment Act (NEA) No. 47 of 1980 (amended in 1988 and 2000)
- The National Environmental (Protection and Quality) Regulation No. 1 of 1990
- Motor Traffic (Emission Control) Regulation No. 817/6 of 1994

- Ozone Depleting Substances and National Environmental (Ambient Air Quality) Regulations of 1994, Gazette Notification No. 850/4 dated 20th December 1994
- Amended Regulations (Air Emission, Fuel and Vehicle Importation standards), Gazette Notification No. 1137/35 dated 23rd June 2000
- Amendment to Gazette Notification No. 1295/11 dated 30th June 2000
- National Environmental (Air Emissions, Fuel and Vehicle Importation standards) Amended Regulations, Gazette Notification No. 1295/11 dated 30th June 2003
- Extraordinary Gazette No. 1557/14 dated 9th July 2008
- National Environmental (Ambient Air Quality) Regulations 850/4 dated 20th December 1994 (amended by extraordinary Gazette No. 1562/22 dated 15th August 2008)

### 3.3.3 Approaches and Efforts

Air pollution in Sri Lanka was recognised as a growing problem as far back as the early 1990s. As a response, a strategy and action plan named the ‘Clean Air 2000 Action Plan’ (CA2AP) was approved by the Cabinet in 1993. This plan was one of the results of the Metropolitan Environment Improvement Programme supported by the World Bank. It covered recommendations for vehicle inspection and maintenance, fuel reformulation, monitoring of emissions, setting of standards, institutional strengthening, transport planning and traffic management. The expected result of those steps was to reduce all air pollutants of concern to the Colombo Metropolitan Area by 2000. The reduction targets to be met by 2000 included a 40% reduction of particulates from 1990 levels; 40%, CO; 30%, NO<sub>x</sub>; 75%, oxides of sulphur and 20%, hydrocarbons. To reach these targets, 49 recommended actions under seven major issues were identified. The following table lists the status of those 49 action points as of 2000 (ADB and CIA-Asia Center 2006).

**Table 3.3.5: Status of 49 Action Points Identified under the CA2AP, as of 2000**

Issue	Number of Actions	Actions Completed	Actions in Progress	Actions Not Initiated
Vehicle inspection and maintenance	6	1	4	1
Fuel reformulation, pricing and fleet mix	10	4	3	3
Emission inventory and monitoring	5	3	2	0
Standard setting	9	2	3	4
Institutional framework and regulatory compliance	11	4	5	2

Issue	Number of Actions	Actions Completed	Actions in Progress	Actions Not Initiated
Economic instruments	5	3	0	2
Transportation planning and traffic management	3	0	2	1
Total	49	17	19	14

Source: Asian Development Bank and the Clean Air Initiative for Asian Cities Center. 2006. *Sri Lanka: Country Synthesis Report on Urban Air Quality Management (Discussion Draft)*.

The CEA has sole responsibility for the dissemination of data from the AQ monitoring program. Weekly AQ levels are reported in weekly average format as well as in the form of AQ indices produced by the CEA and disseminated to the media. The Sri Lanka Air Quality Index values were formulated to help the public understand what local AQ levels mean to their health (ADB and CAI-Asia Center 2006).

**Table 3.3.6: Sri Lanka Air Quality Index**

Sri Lanka Air Quality Index	Interpretation	Colour Code
0–50	Good	Green
51–100	Moderate	Yellow
101–150	Unhealthy for Sensitive Groups	Pink
151–200	Unhealthy	Red
201–300	Very Unhealthy	Dark Red
301–500	Hazardous	Maroon

Source: Asian Development Bank and the Clean Air Initiative for Asian Cities Center. 2006. *Sri Lanka: Country Synthesis Report on Urban Air Quality Management (Discussion Draft)*.

The CEA produces weekly reports which are disseminated to the media and prominently displayed on a bulletin board in the city. Although CEA prepares its own website to disclose the monitoring results of ambient AQ at the Fort Station Monitoring Site in Colombo (the monitored pollutants are CO, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub> and PM<sub>10</sub>), the recent data is not available. AirMAC is also engaged in the development of public-private partnerships, particularly in testing and issuing Vehicle Emission Certificates.

## 3.4 Water Pollution

### 3.4.1 Current Situation

There are 103 natural river basins in Sri Lanka, with a total length of about 4,500 km (UNESCO and Ministry of Agriculture, Irrigation and Mahaweli Development 2006). The largest river is the Mahaweli River, which measures 335 km long and occupies an area of 10,448 km<sup>2</sup> (MENR and UNEP 2009). In addition, there is a significant number of reservoirs, including ancient irrigation reservoirs and recently constructed multi-purpose reservoirs, with a total area of 169,941 ha (hectares) as the following table shows (WEPA 2012).

**Table 3.4.1: Estimated Reservoirs Area in Sri Lanka**

Type of Reservoir	Number	Area (ha)	Percentage (%)
Major irrigation reservoir (ancient)	73	70,850	41.7
Medium-scale reservoirs (ancient)	160	17,001	10
Minor-scale reservoirs (ancient)	> 10,000	39,271	23.1
Flood-plain lakes	N/A	4,049	2.4
Upland hydroelectric reservoirs (recent)	7	8,097	4.8
Mahaweli multipurpose system of reservoirs		13,650	8.0
Other		17,023	10
Total		169,941	100

Source: MENR and UNEP. 2009. Sri Lanka: Environment Outlook 2009.

Groundwater resources in the country are estimated at about 7,800 million m<sup>3</sup> per year. Groundwater is the major source of water, especially in rural areas, and it is estimated that about 72% of the rural population relies on groundwater for domestic use (WEPA 2012).

It is difficult to comprehend the trend of water quality in public water bodies because of a lack of monitoring data. Although the water quality of the Kelani River has been monitored at 12 monitoring points by the CEA and Water Board since 2004 for a project named Pavithra Ganga Project of the Ministry of Environment, the result has not been published. However, the Sri Lanka National Water Development Report (2006) pointed out a variety of quality concerns in Sri Lanka, including contamination by nitrate and bacteria in underground and surface waters, mainly due to poor sanitation and untreated or insufficiently treated wastewater, toxic chemicals from industrial and agricultural activities and eutrophication in lakes and reservoirs (WEPA 2012).

In Sri Lanka, the widespread use of pesticides and anthelmintics, urbanisation, industrialisation, rural development projects in agriculture and water pollution have become major issues nationwide. In particular, in large cities such as Colombo, Jaffna and Kandy, water pollution is one of the most significant issues. Although the Kelani River is the primary water source for the city of Colombo, it has become more polluted as wastewater from houses and factories has increased. Wastewater from the large cities also flows into the Mahaweli River. According to a survey of the surrounding irrigation area, cyanobacteria have been detected in 21 locations (UNEP 2001).

Maintaining water quality in the Kelani River is extremely important because of the river's role as the primary water supply to Colombo. However, a wastewater-monitoring system has not been established, and at present, it is difficult to determine the quality of the wastewater. According to a report by the Department of Environment and Natural Resources (Pollution Management Division), with respect to conservation of Kelani River water quality, the following four points were conducted in 2002:

- Determine the cause of river-water pollution in the Kelani River; propose measures for short-, medium- and long-term
- Install a bulletin board indicating establishment of water quality and river-water quality monitoring systems in the Kelani River; advise residents
- Formulate a plan for waste disposal at 13 municipalities of the Kelani River basin
- Implement "Water Day 2002" in order to educate residents (MENR 2002)

As an example of the most advanced water pollution in urban areas, the results of the water-quality survey of Beira Lake, located in the heart of Colombo, are shown in Table 3.4.2.

**Table 3.4.2: Water Quality of Beira Lake in Colombo (1999)**

Parameter	Unit	Sampling Point				
		Eemamalkay	Under the bridge of Mawan St.	Opposite side of Singithiuyan	Justicakbarear Elephant house	Galle Face Basin
pH		9.82	9.1	9.8	8.70	8.34
Electrical	mS/cm	0.31	0.35	0.31	0.35	0.45

conductivity										
Turbidity	NTU	207	158	220	128	94				
Dissolved oxygen	mg/l	9.55	8.9	9.45	8.2	7.5				
Temperature	°C	30.5	29.5	30.6	30.5	28.9				
BOD	mg/l	15	30	20	20	25				
COD	mg/l	80	90	90	85	100				
Phosphoric acid	mg/l	0.045	0.082	0.024	0.045	0.004				

Source: CEA. 1999. (unpublished)

As mentioned above, the Kelani River is extremely important because it is the primary water supply source of Colombo. Although the year of testing is unknown (perhaps in 2008), the data of the water quality of the Kelani River given by CEA are shown in Table 3.4.3.

**Table 3.4.3: Water Quality of the Kelani River**

Sampling Point	Parameter and unit									
	pH	EC	TURB	TEMP	DO	COD	BOD <sub>5</sub>	Cl <sup>-</sup>	NO <sup>3-</sup> as N	PO <sup>4</sup> <sup>3-</sup> as P
	–	mS/cm	NTU	°C	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Thalduwa Bridge	7.3	0.02	10	26.9	7.6	3	1	2	0.15	0.03
Seethawaka Ferry	7.2	0.40	10	27.1	4.5	9	4	23	0.57	0.15
Pugoda Ferry	7.3	0.04	10	28.3	7.1	3	1	6	0.13	0.04
Hanwella Bridge	7.1	0.03	10	26.5	6.5	9	<1	4	0.07	0.02
Weliwita Bridge	7.4	0.06	10	26.2	7.6	12	1	10	0.29	0.04
Kaduwela Bridge	7.1	0.03	10	26.6	6.7	11	<1	10	0.02	0.03
Japanese Friendship Bridge	7.2	1.34	10	27.2	6.6	8	<1	465	0.17	0.03

Notes: EC: electrical conductivity; TURB: turbidity; NTU: nephelometric turbidity units;

TEMP: temperature; DO: dissolved oxygen; COD: chemical oxygen demand; BOD5: biochemical oxygen demand over five days at 20 °C.

Source: CEA. 2008. Water Quality of the Kelani River. [http://www.cea.lk/pdf/water\\_page.pdf](http://www.cea.lk/pdf/water_page.pdf) (Accessed on 8 Jun 2012)

In addition to water pollution by discharges from industries and domestics, floods and droughts sometimes hit Sri Lanka. The most flood-prone districts are Galle, Kalutara and Ratnapura. As described later in Section 3.5.1, these areas are also susceptible to landslides. In contrast, drought-prone areas are located in the North Central Province, North Western Province, and Eastern Province.

### 3.4.2 Relevant Laws and Organisations

The State Lands Ordinance (as amended) recognises that the right to the use, flow, management and control of the water in any public lake or public stream is vested in the state. In the exercise of such right, the state may enter any land and take measures for the conservation and supply of such water, for its more equal distribution, beneficial use and protection from pollution (UNEP 2009).

The NEA provisions on ‘environmental protection’, ‘environmental quality’ and the ‘approval of projects’, as described earlier, are all relevant for the prevention of water pollution. The NEA mandates that, subject to the provisions pertaining to the EPL, the discharge or emission of waste into inland waters in contravention of prescribed standards is an offence. The provisions of the law also contain a general prohibition on the pollution of inland waters. In terms of Section 270 of the penal code, it is an offence to voluntarily corrupt or foul the water of any public spring or reservoir, so as to render it less fit for its ordinary purpose (UNEP 2009).

Besides the NEA, there are standards for water quality given by the Sri Lanka Standards (SLS) Institute. SLS are now used for testing whether or not water is suitable for drinking.

#### Sri Lanka Standards (SLS)

- SLS 614 (1983): Water-quality standards for drinking water
- SLS 652 (1984): Tolerance limits for industrial effluents discharged into inland surface waters
- SLS 721(1985): Tolerance limits for industrial and domestic effluents discharged into marine coastal areas
- SLS 722 (1985): Tolerance limits for inland surface waters used as raw water for public



water supply

SLS 614 is prescribed for the quality of drinking water standards. A comparison of the SLS 614 standard and the WHO reference values is shown in Table 3.4.3. Compared to the WHO reference value, Sri Lanka's drinking water standards includes parameters that focus on the five senses, i.e., taste, smell, colour, etc., as well as minerals that affect health. In particular, organic matter that affects human health is specified to be minimal. Although high and low values vary from one material to another, the reference value of the SLS is generally higher than that of the WHO standard in regard to the standards based on the five senses.

**Table 3.4.4: Drinking-water Standards  
(Sri Lanka Standards for Potable Water – SLS 614, 1983)**

No.	Parameter	Unit type of limit	Highest Desirable Level	Maximum Permissible Level	WHO
1.	Electrical conductivity at 25°C	µS/cm	750	3500	N/A
2.	Total solids	mg/l	500	2000	600
3.	Colour	Hazen Units.	5	30	N/A
4.	Taste	–	Unobjectionable	–	
5.	Odour		Unobjectionable		
6.	Turbidity	NTU	2	8	0.1 (A)
7.	Chloride (Cl <sup>-</sup> )	mg/l, max.	200	1200	
8.	Fluoride (F <sup>-</sup> )	mg/l, max.	–	1.5	1.5
9.	Iron (Fe)	Mg/l, max.	0.3	1	0.3 (A)
10.	Manganese (Mn)	mg/l, max.	0.05	0.5	0.4 (C)
11.	Copper (Cu)	mg/l, max.	0.05	1.5	2.0
12.	Zinc (Zn)	mg/l, max.	5	15	4.0(A).
13.	Calcium (Ca)	mg/l, max.	100	240	N/A
14.	Magnesium (Mg)	mg/l, max.	30	150	N/A
15.	Total phosphates (PO <sub>4</sub> <sup>3-</sup> )	mg/l, max.	–	2.0	N/A
16.	Sulphate (SO <sub>4</sub> <sup>2-</sup> )	mg/l, max.	200	400	N/A
17.	Total alkalinity (as	mg/l, max.	200	400	N/A

No.	Parameter	Unit type of limit	Highest Desirable Level	Maximum Permissible Level	WHO
	CaCO <sub>3</sub> )				
18.	Total hardness (as CaCO <sub>3</sub> )	mg/l, max.	250	600	300 (A)
19.	Free ammonia (as NH <sub>3</sub> )	mg/l, max.	–	0.06	N/A
20.	Nitrate (NO <sub>3</sub> -)	mg/l, max.	–	45	N/A
21.	Nitrite (NO <sub>2</sub> -)	mg/l, max.	–	0.01	N/A
22.	pH		7.0–8.5	6.5–9.0	6.5–8.0 (A)
23.	Arsenic (As)	mg/l, max.	–	0.05	0.01 (P)
24.	Cadmium (Cd)	mg/l, max.	–	0.005	0.003
25.	Chromium (Cr)	mg/l, max.	–	0.05	0.05 (P)
26.	Cyanide (CN-)	mg/l, max.	–	0.05	0.07
27.	Lead (Pb)	mg/l, max.	–	0.05	0.01
28.	Mercury (Hg)	mg/l, max.	–	0.001	0.006
29.	Selenium (Se)	mg/l, max.	–	0.01	0.01
30.	Free residual chlorine (as chlorine)	mg/l, max.	–	0.2	5
31.	Polynuclear aromatic hydrocarbons	mg/l, max.	–	0.0002	
32.	Phenolic compounds (as phenolic OH)	mg/l, max.	0.001	0.002	
33.	Greases and oil	mg/l, max.	–	1.0	
34.	COD (Chemical Oxygen Demand)	mg/l, max.	–	10	
35.	Radioactive materials Gross alpha radioactivity	pC/l	–	3	0.5 (Bq/l)

No.	Parameter	Unit type of limit	Highest Desirable Level	Maximum Permissible Level	WHO
	Gross beta radioactivity	pC/l	–	30	1 (Bq/l)
36.	Total coliforms	per/100ml	Absent in 95% of samples in a year and in any two consecutive samples	10	
37.	E. Coli	per/100 ml	absent	absent	absent

Source: Environmental Foundation Ltd. 2011. *Quick Reference Guide: Selected Gazette Notifications*.

There is no provision in the law that directly regulates the pollution of groundwater. However, the primary sources of groundwater pollution are through the pollution of soil (i.e. through leachate that results from the accumulation of garbage) and through the pollution of surface water bodies which are connected to groundwater. Both of these sources of pollution can be regulated through other means including those in the NEA, the penal code and the Code of Criminal Procedure Act. The Mines and Minerals Act empowers an owner or occupier of any land or a license authorised in terms of the act to produce and consume mineral water in or from such land for his or her personal use. The Water Resources Board established in terms of the Water Resources Board Act has the mandate of advising the Minister regarding the preparation of plans for the conservation, utilisation, control and development of groundwater (UNEP 2009).

Administration of the prevention of water pollution and the improvement of water quality are managed by the following entities:

- Central Environment Authority of the Ministry of Environment
- National Committee of the Ministry of Environment
- Ministry of Irrigation and Water Management
- Irrigation Departments related to Ministry of Livestock Promotion and Farm Infrastructure Development
- National Committee related to water resources and wastewater treatment
- National Water Supply and Drainage Board (NWSDB)
- Water Resources Board (WRB)

For details of standards for emitting wastewater, see Tables A-5 to A-12 in the Appendix.

## 3.5 Soil Pollution

### 3.5.1 Current Situation

In Sri Lanka, soil pollution is considered to be less problematic than air or water pollution. However, soil pollution can lead to groundwater pollution; it is no less serious than other types of pollution. In fact, large quantities of organic fertilizers are used to increase crop yield, inducing groundwater contamination. In addition to soil pollution by organic fertilizers or pesticides, soil erosion and land degradation are recognised as serious issues in Sri Lanka.

Human activities, when carried out haphazardly, can devastate and degrade land. The environment needs to be used productively, in a manner that its value is not depleted over time. Land degradation can occur due to myriad human activities such as mining, deforestation and irrigation, leading to various forms of land degradation such as erosion, coastal erosion, landslides and salinisation. The most landslide-prone areas are located in the south-eastern part of the country, namely, Ratnapura, Kulutara, Matara, Galle, Badulla, Nuwara-Eliya, Kegalle, Kandy and Matake.

### 3.5.2 Relevant Laws and Organisations

As with all other media such as air and water, the provisions of the NEA related to ‘environmental protection’, ‘environmental quality’ and ‘approval of projects’, as described above, will apply to soil pollution, too. The environmental quality provisions of the NEA provide for the regulation of soil pollution. Section 23M of the Act provides that no person shall discharge or deposit waste into the soil, except in accordance with such standards or criteria as may be prescribed under the Act. Section 23N(1) of the NEA contains general provisions for the prevention of soil pollution (UNEP 2009).

Although there is no standard for soil quality in Sri Lanka, one specific law pertaining to it exists: the Soil Conservation Act No. 25 of 1951 (amended in 1953 and 1981). The act aims at the conservation of soil resources for the prevention or mitigation of soil erosion and at the protection of land against damages by flood and drought rather than discharges from industries and agriculture. The main administrative entity of the act is the Ministry of Agriculture.

Agro-chemicals (especially pesticides) are regulated by the Control of Pesticides Act No.33 of 1980, which substantially amended by the Control of Pesticides (Amendment) Act No. 6 of 1994. The act is administered by the Registrar of Pesticides, who is responsible to the Director of Agriculture. A Pesticides Technical and Advisory Committee has been constituted to advise the Registrar on matters relating to the registration of pesticides; approval of containers; the storage, formulation, import, sale and use of pesticides and other matters that may be prescribed.

The act applies to ‘active ingredients and pesticides formulation with adjuvants’. An active ingredient is any substance, which gives a formulated product its pesticidal properties. The term ‘pesticide formulation’ is any product used:

- for destroying or repelling any pest as defined in the act or for preventing its growth or mitigating its effects;
- as a plant regulator defoliant or desiccant and
- as an adjuvant, and includes any similar product designated by regulations under the act as a pesticide formulation.

### 3.5.3 Approaches and Efforts

On the issue of overuse of organic fertilizer, the government finds itself in a difficult situation. Because it had long encouraged farmers to employ organic fertilizers, the government finds it difficult to now restrict their use. Although the act is administered by the Ministry of Agriculture, it is implemented by different agencies. In many cases, different agencies implementing the act have overlapping jurisdictions, as in the case of the Forest Department and the Mahaweli Authority. Such overlapping of jurisdictions, coupled with ambiguous definitions of responsibilities and the division of power among agencies, has adversely affected the conditions of forest and soil resources (FAO 2000).

## 3.6 Solid Waste

### 3.6.1 Current Situation

In a survey of local government institutions, waste disposal was cited as the most critical issue in the entire solid waste management (SWM) process. This problem has arisen due to difficulties in finding suitable disposal sites that conform to all required environmental,

economic, and social needs. Therefore, the Ministry of Environment (MoE) has now taken positive steps to deal with this issue through the ‘Pilisaru’ Waste Management Project. The Western Provincial Council, which faces the biggest waste disposal problem, enacted a statute in 1999 and established the Western Provincial Waste Management Authority in 2004. It has been further strengthened by Statute No. 1 of 2007 (MENR and UNEP 2009). While waste generation has increased in every part of the country, its disposal has not kept pace, except in a few areas.

**Table 3.6.1: Amount of Solid Waste Collected by Region**

Province	District	Gross weight of waste collected per day (ton)	District percentage	Provincial total (ton)	Provincial percentage for the entire island
Western	Colombo	1,257	44.3%	1,663	58.6%
	Gampaha	313	11.0%		
	Kalutara	93	3.3%		
Southern	Galle	103	3.6%	198	7.0%
	Matara	68	2.4%		
	Hambantota	28	1.0%		
Central	Kandy	145	5.1%	229	8.1%
	Atale	33	1.2%		
	Nuwara Eliya	51	1.8%		
Northwestern	Kurunegala	73	2.6%	170	6.0%
	Puttalam	97	3.4%		
Sabaragamuwa	Ratnapura	49	1.7%	92	3.2%
	Kegalle	43	1.5%		
Uva	Badulla	57	2.0%	86	3.0%
	Manaragala	28	1.0%		
North Central	Anuradhapura	52	1.8%	74	2.6%
	Polonnaruwa	22	0.8%		
Eastern	Ampara	57	2.0%	233	8.2%
	Batticaloa	119	4.2%		
	Trincomalee	56	2.0%		
Northern	Jaffna	71	2.5%	93	3.3%
	Mannar	4	0.1%		
	Kilinochchi	1	0.0%		

Province	District	Gross weight of waste collected per day (ton)	District percentage	Provincial total (ton)	Provincial percentage for the entire island
	Mullaitivu	9	0.3%		
	Vavuniya	9	0.3%		
Total		2,838	100.0%	2,838	100.0%

Source: NSWMSC and JICA. 2008. *National Solid Waste Management: Status Report 2007*.

In Sri Lanka, solid waste is categorised into three groups mainly according to the generation sites: Municipal solid waste, health-care waste and hazardous waste. In the actual disposal and treatment, health-care waste is divided into either municipal solid waste (non-hazardous waste) or hazardous waste (NSWMSC and JICA 2008).

**Table 3.6.2: Categories of Solid Wastes**

Category	Sub-category	Practical Category
Municipal solid waste	Municipal solid waste	Municipal solid waste (Non-hazardous waste)
Health-care waste	Non-risk health-care waste	
	Hazardous health-care waste	Hazardous waste
	Highly hazardous health-care waste	
Hazardous waste	Industrial hazardous waste	
	Domestic hazardous waste	

Municipal solid waste is managed by Local Authorities (LAs). While the disposal and treatment of hazardous waste is the responsibility of the discharger, the CEA is responsible for the supervision of hazardous waste management. As for municipal solid waste (non-hazardous waste), the CEA asks LAs for site clearance of municipal solid waste facilities, including landfills. A facility that receives over 100 tons/day has to perform an Environmental Impact Assessment (EIA) and receives approval while one that receives less than 100 tons/day needs only an environmental recommendation from the CEA (NSWMSC and JICA 2008). In addition to EIA, a facility that receives over 10 tons/day has to obtain an Environmental Protection License (EPL) mentioned in Section 3.2.3.

Under the Urban Council Ordinance, Municipal Council Ordinance and the Pradeshiya Sabha Act, it is the responsibility of the relevant local authorities to remove and dispose of all solid

waste in their jurisdiction. In practice, the Public Health Inspector of each LA is responsible for implementing and supervising the waste collection system, for which funds are provided by the LA. In some areas, the collection system has been partly or completely privatised. For example, Carekleen Ltd. operates in Colombo and Kandy (van Zon and Siriwardena 2000).

In the areas where roadside collection takes place, most households simply dump their garbage by the side of the road. The cleaners (waste collectors) then proceed along their scheduled route. The main roads are usually cleaned at least once a week, while smaller roads are usually cleaned once or twice a week. The cleaners (waste collectors) pick up, shovel up and/or sweep up most of the roadside litter, which is then deposited into a tractor, a trailer, a handcart, or a compacter truck. The cleaners (waste collectors) are supervised by one or more supervisors, and some Public Health Inspectors also perform checks. When there is no supervisor around, it is usually the tractor driver who decides where to pick up waste, and who ensures that not too much is left behind. The local residents also play an important role in supervision; they will often point out litter for the labourers to remove, and can complain to labourers or to the LAs if cleaning is done improperly. In some town areas, the cleaners (waste collectors) collect waste from shops, restaurants and the town hospital using either a handcart or a tractor, provided that the garbage is kept in a bag or a bin (van Zon and Siriwardena 2000).

Finding a suitable dumpsite for the disposal of collected waste is the responsibility of the LAs. Sites used for dumping are privately owned in most cases (rarely owned by LAs). Usually with private sites, a loose agreement is made with the landowner, in which the LA may dump their waste, provided it is properly distributed, levelled, and/or covered after dumping. However, sometimes these conditions are not kept, and the landowners sometimes disallow dumping, or ask dumping to be stopped. In many cases, LAs have difficulties in finding suitable sites close to the collection area (van Zon and Siriwardena 2000).

Industries have to properly dispose of their own waste. The Government of Sri Lanka developed Regulations for the Management of Hazardous Waste in 1996, as an amendment to the National Environmental Regulations No. 1 of 1990. In 1999, 'Guidelines for the Implementation of Hazardous Waste Management Regulations' was published. The guidelines intended to meet the needs of a wide range of government officials, industry managers and environmental protection associations, by providing information on the issues and methods of hazardous waste management relevant to various industrial sectors (NSWMS and JICA 2008).

In 2008, National Environmental (Protection & Quality) Regulation was enacted. Part II of the



regulation deals with Scheduled Waste. A Scheduled Waste Management License (SWML) should be obtained from the CEA for the management (generation, collection, transportation, storage, recovery, recycling or disposal of waste or establishment of any site or facility for disposal) of waste specified in the Schedule VIII of the Regulation. For details concerning Scheduled Waste, see Table A-32 in the Appendix. Industries and facilities which generate scheduled waste should obtain an SWML as a generator, in addition to the EPL. Every application for the SWML costs a fee, as shown in Table 3.6.3.

**Table 3.6.3: Fees of Application of SWML**

Activity	Fee
Generation	Rs. 1000
Collection	Rs. 1000
Storage	Rs. 10,000
Transportation	Rs. 2,000
Recycling	Rs. 5,000
Recovery	Rs. 5,000
Disposal	Rs. 100,000

Source: CEA. 2009. Guidelines for the Management of Scheduled Waste in Sri Lanka.

The application for an SWML for the emission of waste should be used with the following Form A, shown in Table 3.6.4.

**Table 3.6.4: Application for a License for the Emission of Waste: Form A**

Application No.: .....	
Date: .....	
Sector: .....	
Category: .....	
Name of Industry:	
Type of Industry: Manufacture/Assembly/Formulation/Repacking/Processing/other (specify)	
Name of Applicant:	
Postal Address:	
Telephone No.:	
1 General Description of Industry	
1.1 Nature of Industry:	
1.2 Location of Industry:	

(Location map and a clear route sketch with landmarks to the site to be annexed.)

Address:

1.3 Name of local authority:

1.4 Is the site within an approved Industrial Zone?

1.5 Amount of Capital Investment:

Local:

Foreign:

1.6 Date of commencement of operation:

1.7 No. of Shifts/Day and Times:

1.8 No. of Workers in Each Shift:

1.9 A List of permits obtained from Local or State Authorities permitting the Establishment and Operation of the Industry.

(Please attach photocopies):

	Name	Date of Issue	Date of Expiry
(a)	.....	.....	.....
(b)	.....	.....	.....
(c)	.....	.....	.....
(d)	.....	.....	.....
(e)	.....	.....	.....

1.10 Land use of the area within 5 km radius – Residential / Commercial / Agricultural / Open Space / Public area / Marshy lands / salt marshy Land / Mangrove / Natural Reserve / Other (specify):

1.11 List of existing industries / institutions / Agricultural land within 2 km radius:

1.12 Land available for treatment plant:

## 2 Manufacturing Process

2.1 List of main manufactured products and capacities:

2.2 List of by-products:

2.3 Process Details:

2.3.1 A brief description of the processes used (attach process flow diagram)

2.3.2 Raw materials used:

(State item wise quantity per day at all stages of manufacture)

2.3.3 Chemical used:

Chemical Name	Trade Name	Quantity / Day / (in kg)
---------------	------------	--------------------------

2.3.4 Precautionary measures adopted in the transport and handling of any hazardous / toxic / flammable / explosive materials:

2.3.5 Storage facilities for hazardous / toxic / flammable / explosive materials:

2.3.6 Do you have adequate fire fighting equipment?

2.3.7 If so, details of such equipment:

3 Water

3.1 Water – Requirement

Processing:  $m^3/day$

Cooling:  $m^3/day$

Washing:  $m^3/day$

Domestic:  $m^3/day$

3.2 Source of Water

1. Public Supply

2. Ground Water (Wells, springs)

3. Surface water (Stream, river)

3.3 Total daily discharge:  $m^3/day$

3.4 Method of discharge: Open Channel / Pipeline / Covered Drains / Other:

3.5 Final point of discharge of waste water: Agricultural land / Marshy land / Sewer / Lake / River / Ela / Estuary / Sea / Other:

3.6 What other specific toxic substances are discharged (specify nature and concentration –eg., inorganic and organic including pesticide, organic chlorine compounds, heavy metals etc).,

3.7 Methods of treatment of Waste Water (Diagrams of Treatment Process to be included);

3.8 Methods adopted for recording characteristics of waste water before and after treatment;

3.9 Give details of reuse of water or water recycling, if any;

4 Solid Waste

4.1 Type and Nature of Solid Waste:

4.2 Total quantity of solid waste-kg/day:

4.3 Methods of disposal of solid waste –Municipal collection system/Land Fill/ Incineration/ Composting/ Sold/ Recycle:

5 Atmospheric Emissions

Is there emission to the atmosphere: Yes/No – if “Yes” complete the following

5.1 Possible emissions:

(a) Oxides of Nitrogen-

(b) Oxides of Sulphur-

(c) Dust and Soot-

(d) Any other-

5.2 No. of Stacks/Chimneys:

Height:

6 Does your industry cause odour problems.

Source:

Method of Abatement:

7 Noise Pollution

7.1 Does your industry cause noise pollution: Yes/No

7.2 If "Yes", source:

Method of abatement:

8 Energy Requirements

8.1 Total Energy Consumption:

(a) In-plant generation:

(b) Public supply:

8.2 Details of Machinery used in the industry and their Horse Power Ratings:

8.3 Types of Fuel Used:

(a) Purpose:

(b) Daily consumption

9 Recycling/Reuse

9.1 Possible salvage of any waste material for reuse:

Specify

10 Expansion of Industry

Describe your plans for future expansion of the industry, state whether proposed expansion will alter the manufacturing process, raw material, usage and finished products.

I hereby certify that the particulars furnished by me in this application are true and correct. I am that if any particulars herein are found to be false or incorrect, my application will be refused and the license, if issued will be cancelled.

.....  
Signature of Applicant,

Date.

### 3.6.2 Relevant Laws and Organisations

In Sri Lanka, along with the development of regulations at the national level, various statutes have delegated administrative responsibilities to regional authorities. The following laws and

regulations pertain to the administration of solid waste:

- The National Government Act, 1980: Orientation of environmental administration at the national level
- Provincial Councils Act, 1987: Provision of administrative authority over the state government
- Local Government Ordinance, 1980: Provision of administrative authority over state and county governments
- Hazardous Waste Regulations, 1996: Definition of the responsibilities of central and local governments with respect to the disposal of hazardous waste
- Urban Councils Ordinance and the Pradeshiya Sabha Act No. 15, 1987 (The ‘Pradeshiya Sabha’ law): Establishment of local government ownership of collected waste, and local governments’ retainment of authority to formulate regulations for waste disposal
- National Environmental (Protection and Quality) Regulations, No. 1, 2008: Stipulation of ‘Scheduled waste’: Subjects the generation, collection, transportation, storage, recovery, recycling or disposal of scheduled waste to a license issued by the CEA, as well as standards and other criteria as may be specified by the CEA (UNEP 2009).
- National Environmental Act, No. 47 of 1980: EPL system and infrastructure relevant to solid waste management (e.g., sanitary landfills, incinerators).
- Code of Criminal Procedure, No. 15 of 1979: Public nuisances
- Public Nuisance Ordinance, No. 15 of 1982:
- Municipal Council Ordinance, No. 47 of 1947:
- Urban Development Authority Act, No. 41 of 1978

Table 3.6.5 summarises administrative entities are relevant to SWM and their roles.

**Table 3.6.5: Administrative Entities and Their Roles Relevant to Solid Waste Management**

Administrative entity	Its role
Ministry of Environment (MoE)	Formulation of overall SWM plan and policy
Ministry of Local Government and Provincial Councils (MOLGPC)	Implementing the policies, plans and programmes in respect of Provincial Councils (PCs) and Local Authorities (LAs)
National Solid Waste Management Support Centre (NSWMSC) (under MOLGPC)	Technical assistance to PCs and LAs
Local Loans and Development Fund (LLDF)	Provide LAs with fund for projects including

Administrative entity	Its role
(under MOLGPC)	projects for SWM
Sri Lankan Institute of Local Governance (SLILG) (under MOLGPC)	Enhancing the managerial capacities of PCs and LAs
National Coordinating Committee for implementation of the National Strategy for SWM	Coordination of activities undertaken by several administrative entities
Central Environmental Authority (under MoE)	Regulation and control SWM mainly by setting of national guidelines and standards
	Assistance of the PCs and LAs to formulate strategies and plans for PCs and LAs
	Provide implementation support for these plans and monitor achievement
	Approve solid waste sanitary landfill sites and admonish or issue directives to any LA disposing of waste in a harmful or inappropriate manner
Ministry of Health, Nutrition and Welfare (MOHNW)	Monitoring and inspection on sanitary aspects in the country and prepares a legal system, including guidelines. For the control and supervision of SWM, MOH (Medical Officer of Health) and PHI (Public Health Inspector) are often assigned to the LAs
Urban Development Authority (UDA)	Full authority on all towns declared as UDA areas by the Urban Development Authority Act. There are 150 UDA areas in the country. The UDA provides the following assistances to the LAs: technical assistance in the development of town planning; enforcement of standards and regulations for development projects; assistance for LAs to coordinate with other government authorities; project planning for small-scale projects (even free of charge) and large-scale ones (may impose a charge).
Provincial Councils	In a Provincial Council, the Senior Assistant Secretary and Commissioner of Local

Administrative entity	Its role
	Government, under the Chief Minister's Secretary, are responsible for the affairs of LAs, including SWM.
Waste Management Authority in Western Province	Assist LAs in the management and control of all categories (municipal, hazardous and healthcare) of their waste collection, transportation, treatment and disposal needs (within Western Province)
Local Authorities (LAs)	Implementation of municipal solid waste management
Ministry of Environment (MoE)	Formulation of overall SWM plan and policy
Ministry of Local Government and Provincial Councils (MOLGPC)	Implementing the policies, plans and programmes in respect of Provincial Councils (PCs) and Local Authorities (LAs)
National Solid Waste Management Support Centre (NSWMSC) (under MOLGPC)	Technical assistance to PCs and LAs
Local Loans and Development Fund (LLDF) (under MOLGPC)	Provide LAs with fund for projects including projects for SWM
Sri Lankan Institute of Local Governance (SLILG) (under MOLGPC)	Enhancing the managerial capacities of PCs and LAs
National Coordinating Committee for implementation of the National Strategy for SWM	Coordination of activities undertaken by several administrative entities
Central Environmental Authority (under MoE)	Regulation and control SWM mainly by setting of national guidelines and standards
	Assistance of the PCs and LAs to formulate strategies and plans for PCs and LAs
	Provide implementation support for these plans and monitor achievement
	Approve solid waste sanitary landfill sites and to admonish or issue directives to any LA disposing of waste in a harmful or inappropriate manner
Ministry of Health, Nutrition and Welfare	Monitoring and inspection on sanitary aspects

Administrative entity	Its role
(MOHNW)	in the country and prepares a legal system including guidelines. For the control and supervision of SWM, MOH (Medical Officer of Health) and PHI (Public Health Inspector) are often assigned to the LAs
Urban Development Authority (UDA)	Full authority on all towns declared as UDA areas by the Urban Development Authority Act. There are 150 UDA areas in the country. The UDA provides the following assistances to the LAs: Technical assistance in the development of town planning; Enforcement of standards and regulations for development projects; Assistance for LAs to coordinate with other government authorities; Project planning for small scale projects (even free of charge) and large scale ones (may impose a charge).
Provincial Councils (PCs)	In a Provincial Council, the Senior Assistant Secretary and Commissioner of Local Government, under the Chief Minister's Secretary, are responsible for the affairs of LAs including SWM.
Waste Management Authority in Western Province	Assist LAs in the management and control of all categories (municipal, hazardous and healthcare) of their waste collection, transportation, treatment and disposal needs (within Western Province)
Local Authorities (LAs)	Implementation of municipal solid waste management

In implementing regulations on hazardous waste, the CEA has also established a Hazardous Waste Management Unit, which has been fully staffed since 2003. Despite its mandate, however, the Unit focuses much of its attention on solid waste management, not on the management of hazardous waste (CEA, AECEN and ADB 2006).



### 3.6.3 Approaches and Efforts

To address the issues of solid waste, the National Strategy for Solid Waste Management (NSSWM) was issued in May 2002. In that strategy, an implementation structure and cooperation through shared responsibilities by the central and local governments were proposed. The Strategy has been carried out on the basis of a three-year action plan. The main challenges in waste management are as follows.

- Challenges for waste management in general
  - Implementation of waste management programs: develop and implement an action plan at the level of each local government.
  - Printing, distribution, and use of waste-separation stickers: in order to facilitate reuse of waste at collection, increase the use of stickers indicating separate collection and reuse.
  - Staff training and education in the environmental sector: with regard to waste-management planning, educate and train CEA personnel.
  - Cabinet approval: obtain for the private sector to get involved in waste management
  
- Issues related to hazardous waste
  - The National Coordination Committee (also known as the National Coordinating Committee) is positioned as a central body for the in country implementation of the Basel Convention and is engaged in activities related to coordination between ministries and agencies.
  - Develop a plan for Sri Lanka's hazardous waste.
  - Develop safety management guidelines for hazardous waste.
  - Select suitable areas for hazardous-waste treatment facilities.
  - Create a status report on the reuse and disposal of Persistent Toxic Substances (PTS, non-degradable toxic substances).
  
- Issues related to general waste
  - Low collection rate in rural areas
  - Insufficient separate collection of waste
  - Insufficient management of field-dumping, causing soil and water pollution, and leading to adverse effects on human health, flora, and fauna
  
- Issues related to medical and toxic waste

- Improper disposal of medical waste
- Inadequate waste separation
- Inappropriate location of disposal sites (MENR 2002)

At the beginning of 2008, the ‘Pilisaru’ Project was established by the CEA. The total estimated cost of the project is Rs 5.6 billion over a three-year period. The project duration has been further extended for a period of three years, starting from 2011. The project addresses the issue of improper solid-waste management through a nationally coordinated approach. The objectives of the project are as follows:

- Development of a national policy on Solid Waste Management (SWM);
- Development of a national strategy on SWM;
- Effective education and awareness of all stakeholders on SWM, including training and capacity building;
- Facilitation of local authorities for the implementation of SWM projects/programmes; and
- Legal reforms to strengthen effective law enforcement (MoE 2011).

By September 2011, the project had been implemented by roughly 80 local authorities, in terms of provision of SWM infrastructure, equipment, and trainings (MoE 2011).

### 3.7 Other Pollution and Contamination Problems

#### 3.7.1 Noise Pollution

In urban areas, particularly in Colombo, the number of vehicles has increased, leading to an increase in noise pollution. This problem has arisen in industrial areas as well. However, there is no dataset to offer a comprehensive picture of noise pollution in Sri Lanka. Gathering and collecting data on the status quo is an urgent task.

Noise pollution has traditionally been controlled by the laws pertaining to nuisance, e.g., the 1865 Police Ordinance. After the establishment of the National Environmental Act (NEA), the ordinance covers noise pollution additionally, defining noise pollution as ‘[t]he presence of sound at a level which causes irritation, fatigue, hearing loss or interferes with the perception of other sounds and with creative activity through distraction’. The CEA may require a local authority to comply with its recommendations for the regulation of noise pollution. The CEA has the mandate to ensure public compliance on noise pollution and deal with nuisances arising

from industries and other miscellaneous sources (UNEP 2009).

Subject to the provisions pertaining to the Environmental Protection License (EPL), the NEA prohibits emissions of excessive noise other than in compliance with prescribed standards or limitations. No person may emit noise greater in volume, intensity, or quality than the levels prescribed for objectionable noise and tolerable noise. The standards are shown in the tables below. In terms of the Police Ordinance, any person making any noise in the night that disturbs the repose of inhabitants, without having obtained a license for that purpose, commits an offence (UNEP 2009).

**Table 3.7.1: Permissible Noise Levels**

Maximum permissible noise levels (in  $L_{Aeq T}$ ) at the boundaries of the land on which the noise source is located shall not exceed the limits set out below:

Area	$L_{Aeq T}$ , dB(A)	
	Daytime	Nighttime
Low Noise (Pradeshiya Sabha area)	55	45
Medium Noise (Municipal Council/Urban Council area)	63*	50
High Noise (EPZZ of BOI & Industrial Estates approved under part IVC of the NEA)	70	60
Silent Zone (100m from the boundary of a courthouse, hospital, public library, school, zoo, sacred area, and area set apart for recreation or environmental purposes)	50	45

Note: \*Provided that the noise level should not exceed 60 dB(A) inside existing houses during the daytime.

Source: BOI. 2009. Environmental norms

**Table 3.7.2: Permissible Noise Levels of Construction Activities**

Maximum permissible noise levels (in  $L_{Aeq T}$ ) at the boundaries of the land on which the source of noise is located for construction activities:

$L_{Aeq T}$ , dB(A)	
Daytime	Nighttime
75	50

**Table 3.7.3: Permissible Noise Levels in Relatively Noisy Places**

The following noise levels will be allowed where the background noise level exceeds or is marginal to the given levels in the above table.

(a) For low-noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise level +3 dB(A)
(b) For medium-noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3 dB(A)
(c) For silent zones in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3dB(A)
(d) For high-noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise level +5dB(A) (for daytime) Measured Background Noise level +3dB(A) (for nighttime)

Note 1:  $L_{Aeq}$  means the equivalent, continuous, A-weighted sound pressure determined over a time interval (T) in dB. “Daytime” means from 6:00 a.m. to 6:00 p.m., except for the purposes of construction activities, where it means 6:00 a.m. to 9:00 p.m. “Nighttime” means from 6:00 p.m. to 6:00 a.m., except for the purposes of construction activities, where it means 9:00 p.m. to 6:00 a.m.

Note 2: Noise generated from machinery and processes should be controlled at the source as far as possible by one or more of the following methods: (a) vibration isolation, (b) noise insulation, (c) noise absorption, and/or (d) damping.

Attempts should be made to maintain noise levels as low as practicable within the working environment. However, in the event of a noise level exceeding 85 dB(A), suitable ear protection devices should be provided to all workers exposed to such noise levels. The wearing of these devices should be ensured during working times.

Source: BOI 2009. Environmental norms.

Noise pollution from traffic is a localised problem and affects those who are travelling on roads or who live near main roads. In general, traffic noise consists of intermittent use of vehicle horns, different types of silencer systems, two-stroke vehicles, as well as poorly maintained and overloaded vehicles. The lack of standard specifications for horns and silencer systems and a lack of signage for noise-sensitive areas aggravate the problem. At the time of writing, the CEA was finalising community noise standards and planning to issue them by gazette in 2012 (MENR and UNEP 2009).

**Chapter 4**  
**Social Environment**

## 4 Social Environment

### **Latest Development/Issues Regarding the Social Environment**

- Current issues related to child labour, other vulnerable groups, and workers' rights are described in Sections 4.2.2, 4.2.3 and 4.3.
- An archaeological Impact Assessment (AIA) Survey is required before development projects are implemented (Section 4.4.1).
- Central Highlands of Sri Lanka was added to the UNESCO World Heritage in 2010 (Section 4.4.2).

### 4.1 General Condition

According to the available population statistics, the population (excluding that of the Northern and Eastern Provinces) of Sri Lanka is estimated to be at approximately 19 million people in 2002 (in 2010, it was estimated to be 20.7 million, according to provisional estimates of the Department of Census and Statistics, 2011). The average annual population growth rate from 1981 to 2001 was 1.2%. The population density during the same period (national average) increased from 258 people / km<sup>2</sup> to 342 people of / km<sup>2</sup> (DCS 2003).

The area of Colombo City is 37.32 km<sup>2</sup>. From 1981 to 2001, the annual rate of population increase was 0.4%. The total population was 642,020 as of 2001. As shown in Table 4.2.1, the population has increased by 6.5 times in the past 130 years. However, from 1971 to 2001, while the population increased by 79,570, the growth rate was only 12%. This growth rate is presumed to be low in comparison with those of other developing Asian countries that have experienced heavy population concentrations after the Second World War.

**Table 4.2.1: Population and Population Density in Colombo**

Fiscal year	Population	Population density (person/ha)
1871	98,874	40
1901	154,691	56
1946	362,074	105
2009 (provisional)	686,779	184

Source: Department of Census and Statistics. 2001. Population by Sex, Age, Religion, Ethnicity according to District and D.S. Divisions (Provisional); Department of Census and Statistics. 2010. Area, Population, Registered Voters and Employees of Municipalities, 2008 – 2009.

Sri Lanka is a multi-ethnic and multi-religious country. According to statistics from 2001, the Sinhalese accounted for 82% of the total population, Tamils 9.4%, Moors 8.0% and others 0.6%. As for religion, Buddhists constituted 76.7% of the entire nation's population; the majority of these were Sinhalese. Hindus accounted for 8.7% of the population and consisted of mainly Tamils, followed by Muslims (8.5%) and Christians (7%). Sinhala and Tamil are the national languages, while English is considered to be a linking language.

It is said that the Sinhalese came to Sri Lanka from rural northern India during approximately the sixth century B.C. After the advent of Buddhism, urban civilisation developed in Anuradhapura and in Polonnaruwa. In the 14th century, Tamil forces from southern India attempted to subdue the northern part of Sri Lanka and eventually founded the Tamil kingdom. Then, after an era of Portuguese rule in the 16th century and of the Dutch in the seventeenth, Sri Lanka (then known as 'Ceylon') came under British rule in 1815.

After the Second World War, Ceylon obtained independence from British rule in 1948, and the name of the country was changed to Sri Lanka in 1972. Originally at the time of independence, there was virtually no social conflict along ethnic lines, but the 'Sinhalese-only' language policy of the Sri Lankan government in 1968 created tension between the Tamil minority and the Sinhalese majority and deepened the cracks gradually. The division between the two groups became an armed conflict in the early 1980s with the formation of the Liberation Tigers of Tamil Elam (LTTE) based in the north-eastern part of the country. Thus, Sri Lanka entered a state of civil war and a large number of soldiers and civilians were killed. After nearly 20 years, in February 2002, a ceasefire agreement between the government and the LTTE was signed.



Although peace talks were held six times during the ceasefire, progress toward peace was not seen and there were sporadic bouts of terrorism and assassinations of government officials. After the inauguration of President Rajapaksa in 2005, the conflict intensified again. In fact the ceasefire agreement was not observed, and it was formally revoked in January 2008. In May 2009, the government forces conquered the entire north-eastern region controlled by LTTE. Then, LTTE announced the end of their combat, which led to the declaration of the end of the civil war. Since then, there has been no terrorism in the northern region.

## 4.2 Trends and Initiatives Pertaining to Protection of the Rights of Socially Vulnerable Groups

### 4.2.1 Poverty

Sri Lanka has 9 provinces and 24 districts. The scope and extent of urban problems vary by district. As a typical example of urban problems, this section describes the current situation with regard to the living conditions of the poor in the largest city of Colombo (situated in Colombo District).

#### (1) Urban problems in the capital city of Colombo

According to the results of a survey conducted by the UK Department for International Development (DFID, Government of UK), Urban Management Program, and the United Nations Human Settlements Programme (UN-HABITAT), the following points were emphasised as important socioeconomic, environmental and administrative issues pertaining to the life of the poor in Colombo. The numbers shown as percentages (%), unless otherwise noted, indicate the percent of households of the poor residents. Metric poverty in Sri Lanka is generally measured using the criteria defined by the World Bank. In this report, the poor are defined as those living in households in which income does not reach 860 to 1,032 rupees/person/month, in accordance with the poverty criteria of the Sri Lanka Central Bank described by the reference.

1) Land tenure: Sixty-three percent of poor residents do not have the right to legitimately own housing and land. Of these, 10% are considered illegal residents. From the reviewed materials, 63% of poor households that do not have legitimate land ownership are comprised of the following two groups. 1) Residents in areas where occupancy is allowed and land ownership will be granted in future, but has not been granted yet, 2) Residents in areas where occupancy is prohibited by law, and the person is considered unlikely to be granted land ownership in future. Ten percent of "illegal residents" noted in the body text are categorized in 2).

2) Health and environmental deficiency: Fifty-six percent of poor households cannot gain access to hygienic tap water; 17% do not use the municipal waste collection service; 46% use the waste collection point in the town; 63% use a shared toilet; and 27 % have no roads leading to their houses in their areas of residence.

3) Unstable income: No more than 12% of poor households have members who hold steady jobs.

4) Unstable family life: In single-female-parent households where mothers have lost their husbands because of either death or divorce, mothers have to assume full responsibility for their families. Such households account for 22% of all poor households. The pressure placed on mothers in such households has become an important issue with regard to the condition of the poor.

5) Weak cooperation among community organisations: Sixty-seven percent of the settled areas for poor residents have no community-based organisations (CBO). While CBOs exist in 24% of the settled areas, they do not conduct activities actively or regularly.

6) Sixty percent of poor households have no roads leading to the community centre.

7) There is no financial loan system available: In 80% of the settled areas, regional savings loan plans are not available. No financing systems are available to the majority of poor households, and no livelihood improvement opportunities exist.

8) Lack of understanding among the poor of the mechanisms of administrative systems: Thirty percent of poor households have not paid municipal taxes. Since government agencies do not recognize these households, they do not provide them with administrative services such as education and health care.

9) Low priority given to finding solutions to social problems: Issues such as the use of narcotics, stimulants, and alcohol; high unemployment rates among young people; increased crime; and child labour have become more serious each year; these problems deeply affect the lives of the poor.

On the basis of the results of this study, the Agency for International Development UK (Department for International Development (DFID), Government of the UK), The Urban Management Programme of Sri Lanka, and UN-HABITAT created the 'Guiding Framework for Poverty Reduction Strategy'. The outline is listed below. For each item, a strategic action plan and an indicator to evaluate the results have been established.

- 1) Organisation of poor households to improve social relations and abilities of residents
- 2) Expansion of opportunities for community participation in urban management
- 3) Creation of opportunities to sustainably improve the livelihood of the poor
- 4) Guarantee of land ownership for the poor
- 5) Improvement of local environments in which residents of poor households live
- 6) Introduction of an operation and management (O&M) mechanism for proper administrative services at the local government and community levels

(2) Housing conditions of low-income families (living in slums and shanties)

In Colombo, the problems of slums and shanties (defined below) inhabited by poor residents are serious.

- Slum: This term refers to a low-level, run-down house. There are slum gardens and slum tenements. The right to reside in such places was approved in the 1980s.
- Shanty: This term refers to a low-level housing unit built on public land by squatters.

In the 1998 survey conducted by the Urban Development Authority (UDA), these two types of low-income housing were reported to comprise 38,800 households in the 1,250 places of Colombo. As there are approximately 400,000 houses in Colombo, approximately 10% of households live in slums or shanties.

In the entire city of Colombo, the average number of residents per household is 4.6 people; 26.0% of households have a floor area of less than 25 square meters per unit, 27.6% have less than 25 to 50 square meters, and 30.3% have less than 50 to 100 square meters, and 16.1% have more than 100 square meters. The majority, 86.7%, build individual houses. However, of approximately 430,000 housing units in urban areas, 11.6% are likely to be individual houses, while 8.2% are flat form apartments.

Since independence, non-governmental organisations (NGOs) in Sri Lanka have been active partners in national development in various sectors. In poverty alleviation, organisations such as Sewalanka have been promoting community development by helping towns build strong civil

society organisations that are capable of catalysing village-, or even regional-, level change. These efforts are especially important in regions where people have been displaced as a result of either conflict or natural disasters. Sewalanka assists with the emergency response and recovery process, provides psycho-social support services, and uses participatory approaches to help people transition from dependence on relief aid back to self-reliance and sustainable development.

#### 4.2.2 Child Labour

The National Survey on Child Labour, conducted in 1999, estimated that just over 900,000 children were economically active in Sri Lanka. Poverty at the household level is considered one of the primary reasons for the prevalence of child labour in Sri Lanka. The majority of the children engaged in economic activity are boys (62%). Furthermore, 95% of all working children reside in rural areas (ILO 2009).

During the last decade, the Sri Lankan government, employers and workers' organisations (Social Partners), and civil society, with the assistance of ILO-IPEC, undertook a wide range of concrete actions in an attempt to eliminate child labour. Sri Lanka has ratified the ILO Convention on Minimum Age to Employment, 1973 (No.138) and the Convention on the Worst Forms of Child Labour, 1999 (No.182). As of August 2010, it has identified 51 hazardous forms of child labour. The minimum age for employment has been raised in certain sectors, and a new education policy has been formulated that advocates increasing the age of compulsory education to 16 years. To address child labour issues, the ministry has also established an institutional framework in cooperation with other national ministries and agencies such as the Department of Labour, National Child Protection Authority, Police Department, and Judicial Services Commission, as well as provincial council offices. In addition, to achieve the above goals, the noteworthy Sri Lanka 2016 Road Map on Worst Forms of Child Labour Implementation Framework was implemented (MOL 2010).

(Source: Ministry of Labour)

#### 4.2.3 Other Vulnerable Groups

The Ministry of Social Services generally provides services to its main targets: the elderly, the disabled and single-parent families. For the elderly, the ministry provides support through day centres, home care workers, medical assistance and other resources.

For the disabled, the ministry provides assistance with regard to constructing houses and other accessible facilities, becoming self-employed, procuring medical help and assistive devices, accessing vocational training centres, among other activities. Community-based rehabilitation (CBR) was first introduced by the World Health Organization (WHO) in 1978. It has been defined as ‘a strategy for enhancing the quality of life of people with disabilities by promoting and protecting their rights’. The Sri Lanka Programme Action Plan for 2011–2016 was developed to ensure that people with disabilities have access to all the healthcare facilities they need to lead healthy lives.

Finally, for single-parent families, the ministry implemented the ‘Empowering Single Parent Families through Self-Employment’ project to create self-employment opportunities for women who have become destitute because of their husbands’ lack of income.

(Source: Ministry of Social Services)

Although the status enjoyed by Sri Lankan women compares favourably with other countries of the region, improvements are still needed. According to the Consumer Finances and Socio-Economic Surveys (CFSES) conducted by the Central Bank since 1953, income is still not equally distributed among genders. Hence, special programs for women empowerment are still important in Sri Lanka. Lanka Mahila Samiti, a women’s empowerment group, runs a programme, in association with UNICEF, on women’s rights. This is conducted in the form of a leadership training programme, and its main goal is to provide women with the knowledge to handle their own affairs and be aware of their rights.

### 4.3 Trends and Initiatives Pertaining to the Protection of Workers’ Rights

The population of Sri Lanka is 20.48 million. There are approximately eight million people in Sri Lanka’s labour force; of these, two million work for the government sector and six million for the private corporations sector. The number of employees on large-scale farms is 2.6 million, which, as of December 2010, is equivalent to 33% of the total labour force in the plantation sector.

About 2,000 trade unions have been registered in Sri Lanka to date. Of these, 1,059 unions serve the government, 562 serve the public corporation sector and 375 serve the private sector. However, the unionisation rate is 15 to 20% of the total labour force.

Two-thirds of the total labour force in Sri Lanka belongs to the informal sector. Examples of the informal sector include some domestic workers or migrant workers, contract workers or dispatched workers, and farmers. Such workers are not organized; hence, the relationship between the labour force and management is problematic, and forming organisations has been difficult. In addition, many multinational companies are currently active in the Free Trade Zone, but the establishment of a trade union in the zone is prohibited, and only welfare committees are allowed to function within the zone.

Wages are determined by the wages and salaries committees. However, the plantation sector wages are determined by collective bargaining agreements which are revised every two years. In accordance with the Store and Office Act and Labour Act, child labour (defined as labour performed by those less than 14 years of age) is prohibited. The Labour Dispute Law protects the interests of workers, and collective bargaining agreements decided every two years between the The Employers' Federation of Ceylon and labour unions are protected by the Workers' Compensation Law and the Health and Safety Law. However, public officials are exempt from the Labour Dispute Law. The Cabinet determines labour-related matters in the public sector.

Moreover, the labourers other than contract workers and domestic workers are legally covered under the Labour Law regulatory system. Although such laws are appropriate, they are not strictly enforced. In addition, labour inspectors do not perform their duties efficiently. When a plant grows exponentially, the number of employed workers increases, and any labour disputes and issues that emerge cannot be fully settled by independent parties. Thus, the role of labour unions has become increasingly important (JILAF 2011).

## 4.4 Cultural Heritage

### 4.4.1 Relevant Regulations and Relevant Government Agencies

Regulations that are particularly relevant to the protection of cultural heritage are shown in Table 4.4.1.

**Table 4.4.1: Relevant Regulations to the Protection of Cultural Heritages**

Document	Year
1. The Antiquities Ordinance, No. 9	1940
2. The Antiquities Act, No. 2	1955
3. The Antiquities Act, No. 22	1955
4. The Antiquities Act, No. 24	1940 (1998 Amendment)
5. National Museums Ordinance	1956
6. Urban Development Authority Law, No. 41	1978
7. National Environmental Act, No. 47	1980
8. Central Cultural Fund Act, No. 57	1980
9. Galle Heritage Foundation Act, No.7	1994

Source: Department of Archaeology. 2012; UNESCO. 2012.

<http://whc.unesco.org/en/statesparties/lk/laws/> (Accessed on 1 May 2012).

Given Sri Lanka's many valuable cultural heritage sites, the government has focused on preservation efforts for their tourism value. The Ministry of Cultural Affairs in Sri Lanka is responsible for preserving cultural heritage, and the Sri Lanka Tourist Board is responsible for managing tourism. The Department of Archaeology of the Ministry of Cultural Affairs and the Central Cultural Fund have been working to formulate policies, regulations and guidelines to preserve cultural heritage and ensure that its value is acknowledged by future generations.

In Sri Lanka, the Archaeological Impact Assessment (AIA) Survey is required before implementing any development project if the area to be used for a project exceeds 0.25 hectare in size to ascertain the existence of antiquities on the land where the development project is to be carried out. The objective is to assess the impact of the proposed project on these antiquities and to prepare a report detailing alternative measures. Usually, the Department of Archaeology conducts the survey on behalf of the developer. Information concerning the AIA survey process can be found in the orders made by the Minister of Cultural and Religious Affairs under Section 47, read with Section 43(b) of the Antiquities (Amendment) Act No. 24 of 1998 and published in the gazette No. 1152/14 dated 04.10.2000. These orders are cited as Project Procedure Orders No. 01 of 2000 (GIC 2009).

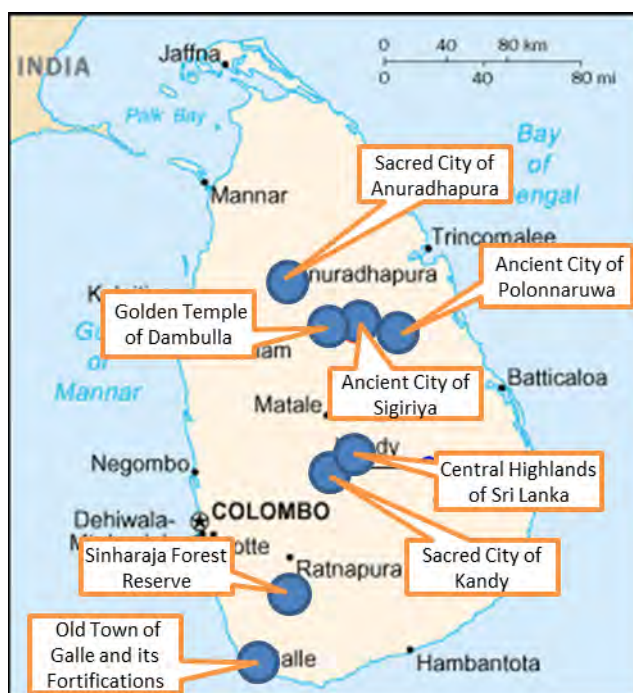
#### 4.4.2 Major Cultural Heritage Sites in Sri Lanka

As of June 2012, there are currently eight world heritage sites in Sri Lanka, of which six are cultural heritage sites and two are natural heritage sites (Table 4.4.2).

**Table 4.4.2: World Heritage Sites in Sri Lanka**

Site	Properties	Registered year
1. Sacred City of Anuradhapura	Cultural heritage	1982
2. Ancient City of Polonnaruwa	Cultural heritage	1982
3. Ancient City of Sigiriya	Cultural heritage	1982
4. Sinharaja Forest Reserve	Natural heritage	1988
5. Sacred City of Kandy	Cultural heritage	1988
6. Old Town of Galle and its Fortifications	Cultural heritage	1988
7. Golden Temple of Dambulla	Cultural heritage	1991
8. Central Highlands of Sri Lanka	Natural heritage	2010

Source: UNESCO. 2012. <http://whc.unesco.org/en/statesparties/lk> (Accessed on 1 May 2012).



Source: UNESCO. 2012. <http://whc.unesco.org/en/statesparties/lk> (Accessed on 1 May 2012);

Georgia State University. 2012. <http://www.phy-astr.gsu.edu> (Accessed on 1 May 2012).

**Figure 4.4.1: World Heritage Sites in Sri Lanka**



(1) Sacred City of Anuradhapura

This is the oldest capital city of Sri Lanka, founded 2500 years ago. The ruins are scattered over a 5km width north to south. The ruins are set against abundant reservoirs and dry ground during the dry season.

(2) Ancient City of Polonnaruwa

This was the capital of the Sinhalese Dynasty during the 10th to 12th centuries. The kings from generation to generation maintained irrigation facilities and provided support for the spread of Buddhism. Many Buddhist monks from Myanmar and Thailand are said to have visited this Buddhist city when it flourished.

(3) Ancient City of Sigiriya

There is a ruin of an old castle at the top of this rocky mountain. It was used as a royal palace for 11 years in the late fifth century and then became a monastery.

(4) Sinharaja Forest Reserve

Located in the south-west region of Sri Lanka, Sinharaja is the country's last viable area of primary tropical rainforest. More than 60% of the trees are endemic and many of them are considered rare. There is much endemic wildlife, especially birds, but the reserve is also home to over 50% of Sri Lanka's endemic species of mammals and butterflies, as well as many kinds of insects, reptiles and rare amphibians.

(5) Sacred City of Kandy

This city flourished as the capital for about 300 years until the Sinhalese dynasty was destroyed by Great Britain. The Temple of the Tooth Relic (the sacred tooth of the Buddha), which was a symbol of royal power at the time, has been a focus of Buddhist faith.

(6) Old Town of Galle and its Fortifications

This quaint town is surrounded by a fortress. It is the largest city in southern Sri Lanka and flourished in the 14th century as an eastern trade hub. Subsequently, the town was dominated by the Portuguese and subsequently by the Dutch who built the fort. Old Town is located in a small peninsula, and old churches and buildings remain the vestiges of the colonial era.

(7) Golden Temple of Dambulla

It is the largest cave temple in Sri Lanka. Murals are painted on the top of the rocky cave and many statues of Buddha are enshrined.

#### (8) Central Highlands of Sri Lanka

Sri Lanka's highlands are situated in the south-central part of the island. The property is comprised of the Peak Wilderness Protected Area, the Horton Plains National Park and the Knuckles Conservation Forest. These mountain forests, where the land rises to 2,500 meters above sea-level, are home to an extraordinary range of flora and fauna, including several endangered species such as the western-purple-faced langur, the Horton Plains slender loris and the Sri Lankan leopard. The region is considered a super biodiversity hotspot.

There are also the properties which either have been or are planned to be submitted on the tentative list of world heritage sites, as shown in Tables 4.4.3 and 4.4.4.

**Table 4.4.3: Properties Submitted on the Tentative List of World Heritage Sites**

Site	Category	Submitted year
1. Seruwila Mangala Raja Maha Vihara	Cultural heritage	2006
2. Seruwila to Sri Pada (Sacred Foot Print Shrine), ancient pilgrim route along the Mahaweli river in Sri Lanka	Mixed heritage	2010

Source: Department of Archaeology

**Table 4.4.4: Properties Planned to be Submitted on the Tentative List of World Heritage Sites**

Site	Category
1. Ritigala Forest Monastery	Cultural heritage
2. Mathota (ancient harbour)	Cultural heritage
3. Yoda Ela (irrigation canal)	Natural heritage
4. Knuckles (part of Central Highlands, natural heritage)	Mixed heritage
5. Horton Plains (part of Central Highlands, natural heritage)	Mixed heritage

Source: Department of Archaeology

#### 4.4.3 Issues Related to the Protection of Cultural Heritage

Currently, there are no endangered world heritage sites in Sri Lanka. Damage to the heritage sites is attributable mainly to human factors such as theft of artefacts rather than environmental factors such as air pollution. However, because of a workforce shortage, survey and

management plans for Sri Lanka's heritage sites have not been fully developed. Additionally, only 16,000 out of 250,000 archaeological sites have been fully surveyed. Nevertheless, as mentioned previously, the AIA does contribute to the conservation of neglected archaeological heritage sites.

**Chapter 5**  
**Environmental Assessment**



## 5 Environmental Assessment

### **Latest Development/Issues Regarding the Environmental Assessment**

- Several implementation cases of Strategic Environmental Assessment were identified (Section 5.2).
- The prescribed project list was slightly revised (Section 5.3.1).

### 5.1 Legal Framework

In Sri Lanka, the requirement for an Environmental Impact Assessment (EIA) was first introduced by the Coast Conservation Act, No. 57 of 1981. This act applied to projects that come within the Coastal Zone, a zone that encompasses everything lying within 300 metres landward of the mean high-water line and up to 2 kilometres seaward of the mean low-water line. Under the Act, the identification of projects that require an EIA is left to the discretion of the Director, Coast Conservation Department (CEA 2008).

In 1984, the Sri Lankan Parliament decided to expand the requirement for EIAs to all development projects in Sri Lanka, regardless of whether the proponent is a private organisation or a state agency. The National Environmental (Amendment) Act (NEA), No. 56 of 1988 (originally enacted in 1980) introduced EIAs as part of a strategy to achieve sustainable development for the entire country. The Central Environmental Authority (CEA) was assigned the regulatory functions. Part IV C of the amendment act mandated that all ‘prescribed’ development projects are required to be subjected to an EIA. Only large-scale development projects that are likely to have significant impacts on the environment are listed as prescribed projects. Projects in environmentally sensitive areas are also required to undergo EIA, irrespective of their magnitude (CEA 2008).

The NEA stipulates that a Project Approving Agency (PAA) must grant approval for every prescribed project before it starts. NEA has identified two levels in the EIA process. If the environmental impacts of the project do not appear to be significant, then the project proponent may be asked to do an Initial Environmental Examination (IEE), a short and simple study. However, if the potential impacts appear to be significant, the project proponent may be asked to do an EIA, a more detailed and comprehensive study of environmental impacts. Whether an

IEE is sufficient or not is ultimately up to the consideration of a PAA or the CEA, even though there is an overt lists of projects to which EIAs are required as shown in Table 5.3.1.

In 1987, provincial councils were introduced as a new level of intermediary governance between the Central Government and Local Governments. The 13th Amendment to the Constitution of Sri Lanka empowered provincial councils with legislative and executive power over the environment with the jurisdiction of the respective provinces, provided such laws are not in conflict with those of the Central Government. Accordingly, the North Western Provincial Council has already set up its own environmental statutes (the North Western Provincial Environmental Statute, No. 12 of 1990), while the Western Provincial Council passed its own environmental statutes for waste management in 2004. In the North Western Province, the Provincial Environmental Authority of the North Western Province acts in place of the CEA for this province. The EIA process for projects falling within that province is regulated under this statute as well (CEA 2008).

To summarise these establishments of laws and statutes, there are two systems under which EIAs are conducted in Sri Lanka. One is based on the NEA. In that case, the CEA is in charge of reviewing, regulating, and managing the process, as well as assigning an appropriate agency to be the PAA. Provincial Environmental Authorities can act in place of the CEA for the projects within their jurisdictions. The other system is based on the Coast Conservation Act. In that case, the Coast Conservation Department (CCD) is in charge of reviewing, regulating, and managing the process without being assigned as a PAA by the CEA. Although the administrative entity taking in charge is different, the major process and criteria of EIAs are almost equivalent.

EIA provisions are also in the Fauna and Flora (Amended) Act No. 49 of 1993. According to that Act, any development activity of any description whatsoever proposed within one mile from the boundary of any National Reserve is required to be subject to EIA. Written approval should also be obtained from the Director General, Department of Wildlife Conservation prior to implementation of such projects (CEA 2008).

The CEA has published the following guidelines for EIAs that are of direct relevance to the proposed project:

- *Guidance for Implementing the Environmental Impact Assessment Process, No. 1: A General Guide for Project Approving Agencies*
- *Guidance for Implementing the Environmental Impact Assessment Process, No. 2: A General*

*Guide for Conducting Environmental Scoping*

- *Guidance for Implementing the Environmental Impact Assessment Process, No. 3: Public Participation Handbook* (This document has been unofficially withdrawn, thus not circulated)
- *Environmental Guidelines for Road and Rail Development in Sri Lanka*

## 5.2 Strategic Environmental Assessment (SEA)

In Sri Lanka, environmental assessment has conducted based on the NEA since 1993, but the existing assessment system does not function adequately especially when several projects are implemented in one region. To address the accumulative effect, strategic environmental assessment (SEA) is currently being introduced. SEA is a system of incorporating environmental considerations into policies, plans, programmes and strategies before or simultaneously with the formulation of them. In May 2006, the Government of Sri Lanka endorsed that all policies and plans, programmes should be subjected to SEA in future. To promote the introduction of SEA, CEA formulated ‘*A Simple Guide to Strategic Environmental Assessment (SEA)*’ in 2009 to help all administrative entities understand the contents and implementation method.

According to the document *Progress Report 2011 and Action Plan 2012*, published by MoE, three comprehensive SEAs have been conducted for the Trincomalee, Hambantota and Gampaha districts. CEA played a leading role in implementation of these SEAs, and the University of Moratuwa (located in the Western Province) contracted for the assessment. Another was begun in the Northern Province, consisting of the five districts of Jaffna, Vavuniya, Kilinochchi, Mullaitivu and Mannar soon after the end of the conflict in May 2009. The SEA for the Northern Province was carried out with the participation of all relevant government agencies, such as the Forest Department, the Department of Wildlife Conservation, the Geological Survey and Mines Bureau, the Water Resource Board, the Tourism Development Authority, the Board of Investment and the Disaster Management Centre. Under the SEA, all such environmentally sensitive areas as forests, wildlife areas, elephant corridors and other unique ecosystems have been identified for conservation purposes (MoE 2011).



## 5.3 Environmental Impact Assessment (EIA)

### 5.3.1 Projects Subject to the EIA Requirement

The projects that need to be subject to the EIA requirement are referred to as 'prescribed projects'. The prescribed projects are listed in gazette no. 772/22 of the 24th of June 1993, 859/14 of the 23rd of February 1995, 1104/22 of the 5th of November 1999, and 1108/1 of the 29th of November 1999. In addition, 'prescribed projects' in 'environmentally sensitive areas' are required to undergo an EIA, irrespective of their magnitude. The environmentally sensitive areas are also listed (CEA 2008).

Prescribed projects are divided into two groups as listed in the Schedule. Part I of the Schedule includes 31 projects and undertakings located wholly or partly outside the Coastal Zone. The projects in this group, irrespective of size, must undergo the approval process laid down in the Coast Conservation Act due to being located wholly or partly within the Coastal Zone. In other words, only those projects located outside the Coastal Zone will be subject to the approval process laid down in the NEA, provided they are not located within the North western province.

Item 19 on the list of 31 projects and undertakings is described as the 'Development of Industrial Estates and Parks exceeding an area of 10 hectares' (See Table 5.3.1). Once an industrial estate or industrial park is approved under Part IV C of the NEA, any individual project or undertaking in it, even if prescribed, will be exempted from the approval process. The projects and undertakings listed as items 20 to 30 belong to the category of highly polluting industries. They will be required to go through the EIA process only if they are located outside an approved industrial estate or industrial park. Setting projects in the environmentally sensitive areas listed in Part III of the Schedule is not prohibited, but regardless of their magnitude, such projects and undertakings must go through the approval process. This acts as a disincentive to project proponents.

Similarly, even though Part I of the order exempts projects and undertakings proposed to be established within the Coastal Zone from the approval process set out in Part IV C of the NEA, the law declares such projects to be subject to the NEA approval process if they are in environmentally sensitive areas of the Coastal Zone. In short, the EIA process set out in the Coast Conservation Act applies to projects prescribed under the NEA only when they are located wholly within the Coastal Zone but not in any environmentally sensitive area.

Part II of the Schedule of prescribed projects includes 21 industries (items 33 to 52). Item 32 is

described as, ‘All projects and undertakings listed in Part I irrespective of their magnitudes and irrespective of whether they are located in the coastal zone or not, if located wholly or partly within the areas specified in Part III of the Schedule’. The industries included as items 33 to 52 are not described by magnitude and are subject to the approval process only if located within the environmental sensitive areas mentioned in Part III of the Schedule. Recently, some projects have been taken out of the prescribed project list through a government gazette notification.

The following table shows the projects subject to the EIA requirement.

**Table 5.3.1: The Projects Subject to the EIA Requirement (Part I)**

Projects and undertakings if located wholly or partly outside the coastal zone as defined by Coast Conservation Act, No. 57 of 1981.
<ol style="list-style-type: none"> <li>1. All river basin development and irrigation projects, excluding minor irrigation works (as defined by Irrigation Ordinance, Chapter 453)</li> <li>2. Reclamation of Land, wetland area exceeding 4 hectares</li> <li>3. Extraction of timber covering land area exceeding 5 hectares</li> <li>4. Conversion of forests covering an area exceeding 1 hectare into non-forest uses.</li> <li>5. Clearing of land areas exceeding 50 hectares</li> <li>6. Mining and Mineral Extraction <ul style="list-style-type: none"> <li>Inland deep mining and mineral extraction involving a depth exceeding 25 meter</li> <li>Inland surface mining of cumulative areas exceeding 10 hectares</li> <li>All off shore mining and mineral extractions</li> <li>Mechanized mining and quarrying operations of aggregate, marble, limestone, silica, quartz, and decorative stone within 1 kilometre of any residential or commercial areas</li> </ul> </li> <li>7. Transportation Systems <ul style="list-style-type: none"> <li>Construction of national and provincial highways involving a length exceeding 10 kilometres</li> <li>Construction of railway lines</li> <li>Construction of airports</li> <li>Construction of airstrips</li> <li>Expansion of airports or airstrips that increase capacity by 50 percent or more</li> </ul> </li> <li>8. Port and harbour development <ul style="list-style-type: none"> <li>Construction of ports</li> <li>Construction of harbours</li> <li>Port expansion involving an annual increase of 50% or more in handling capacity per annum</li> </ul> </li> </ol>

9. Power generation and transmission
  - Construction of hydroelectric power stations exceeding 50 megawatts
  - Construction of thermal power plants having generation capacity exceeding 25 megawatts at a single location or capacity addition exceeding 25 megawatts to existing plants
  - Construction of nuclear power plants
  - All renewable energy based electricity generating stations exceeding 50 megawatts
10. Transmission lines
  - Installation of overhead transmission lines of length exceeding 10 kilometres and voltage above 50 kilovolts
11. Housing and building construction of dwelling housing units exceeding 1000 units
  - Construction of all commercial buildings as defined by the Urban Development Authority, established by the Urban Development Authority Law, No. 41 of 1978 having built up area exceeding 10,000 square metres
  - Integrated multi-development activities consisting of housing, industry, commercial infrastructure covering a land area exceeding 10 hectares
12. Resettlement
  - Involuntary resettlement exceeding 100 families other than resettlement effected under emergency situations
13. Water supply
  - All ground water extraction projects of capacity exceeding 1/2 million cubic metres per day
  - Construction of water treatment plants of capacity exceeding 1/2 million cubic metres
14. Pipelines
  - Laying of gas and liquid (excluding water) transfer pipelines of length exceeding 1 kilometre
15. Hotels
  - Construction of hotels or holiday resorts or projects that provide recreational facilities exceeding 99 rooms or 40 hectares
16. Fisheries
  - Aquaculture development projects of extent exceeding 4 hectares
  - Construction of fisheries harbours
  - Fisheries harbour expansion projects involving an increase of 50% or more in fish handling capacity per annum
17. All tunnelling projects
18. Disposal of Waste
  - Construction of any solid waste disposal facility having a capacity exceeding 100 tons per day

- Construction of waste treatment plants treating toxic or hazardous waste
19. Development of all Industrial Estates and Parks exceeding an area of 10 hectares
  20. Iron and Steel Industries
    - Manufacture of iron and steel products of production capacity exceeding 100 tons per day using iron ore as raw material
    - Manufacture of iron and steel products of production capacity exceeding 100 tons per day using scrap iron as raw material
  21. Non-Ferrous Basic Metal Industries
    - Smelting of aluminium or copper or lead of production capacity exceeding 25 tons per day
  22. Basic Industrial Chemicals
    - Formulation of toxic chemicals or production capacity exceeding 50 tons per day
    - Manufacture of toxic chemicals of production capacity exceeding 25 tons per day
  23. Pesticides and Fertilizers
    - Formulation of pesticides of combined production capacity exceeding 50 tons per day
    - Manufacture of pesticides of combined production capacity exceeding 25 tons per day
  24. Petroleum and Petrochemical
    - Petroleum refineries producing gasoline, fuel oils, illuminating oils, lubricating oils and grease, aviation and marine fuel and liquefied petroleum gas from crude petroleum
    - Manufacture of petro-chemicals of combined production capacity exceeding 100 tons per day from raw materials obtained from production processes of oil refinery or natural gas separation
  25. Tyre and Tube Industries
    - Manufacture of tyre and tubes of combined production capacity exceeding 100 tons per day from natural or synthetic rubber
  26. Sugar Factories
    - Manufacture of refined sugar of combined production capacity exceeding 50 tons per day
  27. Cement and Lime
    - Manufacture of cement
    - Manufacture of lime employing kiln capacity exceeding 50 tons per day
  28. Paper and Pulp
    - Manufacture of paper or pulp of combined production capacity exceeding 50 tons per day
  29. Spinning, Weaving and Finishing of Textiles
    - Integrated cotton or synthetic textile mills employing spinning, weaving, dyeing and printing operations together, of combined production capacity exceeding 50 tons per day
  30. Tanneries and Leather Finishing
    - Chrome tanneries of combined production capacity exceeding 25 tons per day

Vegetable (bark) of combined production capacity exceeding 50 tons per day

Provided where the projects and undertaking set out in items 20 to 30 are located within Industrial Estates and parks as described at (19) above, the approval shall not be needed under the provisions of Part IV C of the Act

31. Industries that involve the manufacture, storage or use of Radioactive Materials as defined in the Atomic Energy Authority Act No. 19 of 1969 or Explosives as defined in the Explosives Act, No. 21 of 1956, except for national security reasons.

**Table 5.3.2: The Projects Subject to the EIA Requirement (Part II)**

32. All projects and undertaking listed in Part I, irrespective of their magnitudes and irrespective of whether they are in the coastal zone or not, if located wholly or partly within the areas specified in Part III of the Schedule.

32(a). Construction of all commercial buildings as defined by the Urban Development Authority Law, No. 41 of 1978 and the construction of dwelling housing units, irrespective of their magnitudes and irrespective of whether they are in the coastal zone or not, if located wholly or partly within the areas specified in Part III of this schedule.

The following industries if located wholly or partly within the areas specified in Part III of the Schedule.

33. Iron and Steel

34. Non-Ferrous Basic Metal

35. Basic Industrial Chemicals

36. Pesticides and Fertilizer

37. Synthetic Resins, Plastic materials and Man-made Fibres

38. Other Chemical Products

39. Petroleum and Petro-chemical products

40. Tyres and Tubes

41. Manufacturing and Refining of Sugar

42. Alcoholic Spirits

43. Malt Liquors and Malt

44. Cement and Lime

45. Non-metallic Mineral Products

46. Paper, Pulp and Paperboard

47. Spinning, Weaving and Finishing of Textile

48. Tanneries and Leather Finishing

49. Shipbuilding and Repairs

50. Railroad Equipment

51. Motor Vehicles

52. Air Craft

**Table 5.3.3: The Projects Subject to the EIA Requirement (Part III)**

1. Within 100 metres from the boundaries of or within any area declared under the National Heritage Wilderness Act No. 3 of 1988; the Forest Ordinance (Chapter 451; whether or not such areas are wholly or partly within the Coastal Zone as defined in the Coast Conservation Act, No. 57 of 1981.

2. Within the following areas whether or not the areas are wholly or partly within the Coastal Zone:

Any erodible area declared under the Soil Conservation Act (Chapter 450)

Any Flood Area declared under the Flood Protection Ordinance (Chapter 449) and any flood protection area declared under the Sri Lanka Land Reclamation and Development Corporation Act, No. 15 of 1968 as amended by Act, No. 52 of 1982.

60 metres from the bank of a public stream as defined in the Crown Lands Ordinance (Chapter 454) and having a width of more than 25 metres at any point of its course.

Any reservation beyond the full supply level of a reservoir.

Any archaeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance (Chapter 188)

Any area declared under the Botanic Gardens Ordinance (Chapter 446)

Within 100 metres from the boundaries of, or within, any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (Chapter 469).

Within 100 metres from the high flood level contour of, or within, a public lake as defined in the Crown Lands Ordinance (Chapter 454) including those declared under section 71 of the said Ordinance.

In these regulations unless the context otherwise requires:

‘Hazardous waste’ means any waste that has toxic, corrosive, flammable, reactive, radioactive or infectious characteristics.

‘Reservoir’ means an expanse of water resulting from man made constructions across a river or a stream to store or regulate water. Its ‘environs’ will include that area extending up to a distance of 100 metres from full supply level of the reservoir of all islands falling within the reservoir.

Source: CEA. 2006. *Guidance for Implementing the EIA Process, No. 1: A General Guide for Project Approving Agencies.*

## 5.3.2 Procedures and Relevant Organisations

### 5.3.2.1 EIA by PAA

Responsibility for the review of environmental impacts is delegated to various government bodies depending on the nature of the project. Such government agencies are referred to as the Project Approving Agency (PAA). Today, 23 government agencies have been designated as PAA, as shown in Table 5.3.4.

**Table 5.3.4: Candidate Agencies of PAA**

Ministries	Planning
	Irrigation
	Energy
	Agriculture
	Lands
	Forests
	Industries
	Housing
	Construction
	Transportation
	Highways
	Fisheries
	Aquatic Resources
	Plantation Industries
Departments	Coast Conservation
	Wildlife Conservation
	Forest
Others	Central Environmental Authority (CEA)
	Urban Development Authority
	Geological Survey and Mines Bureau
	Ceylon Tourist Board
	Mahaweli Authority of Sri Lanka
	Board of Investment of Sri Lanka

A single PAA is designated as responsible for administrating the EIA process for a particular project. When there is more than one PAA involved, one appropriate PAA is designated by the CEA. A project proponent cannot perform the functions of a PAA for their own project.

The PAA is designated according to the following unranked criteria, with the PAA either

- having jurisdiction over the largest area, or
- having jurisdiction over diverse or unique ecosystems, or
- having jurisdiction over areas where the environmental impacts (resource depletion) are likely to be the greatest, or
- having statutory authority to license or otherwise approve the prescribed project.

Which agency is best suited to serve as the PAA of a proposed project is to be considered based on the above criteria. Finally, the PAA is determined by ordinance of the Department of Environment. If more than one agency is involved, based on agreement between the ministries that are candidates for PAA, one of them is elected as the PAA. If the candidate PAAs are unable to reach an agreement amongst themselves as to which agency is most appropriate, or if there is an unreasonable delay in making a decision, any of the PAAs or a project proponent shall request the CEA to determine which agency should be the lead agency. All relevant ministries and PAA candidate agencies are obliged to assist in the review and evaluation of the environmental assessment process in cooperation with the designated PAA. When the project proponent is also the PAA, the CEA should instead function as the PAA (CEA 2006).

Once a project is started by a private or state agency, there are several stages in an EIA. They are as follows:

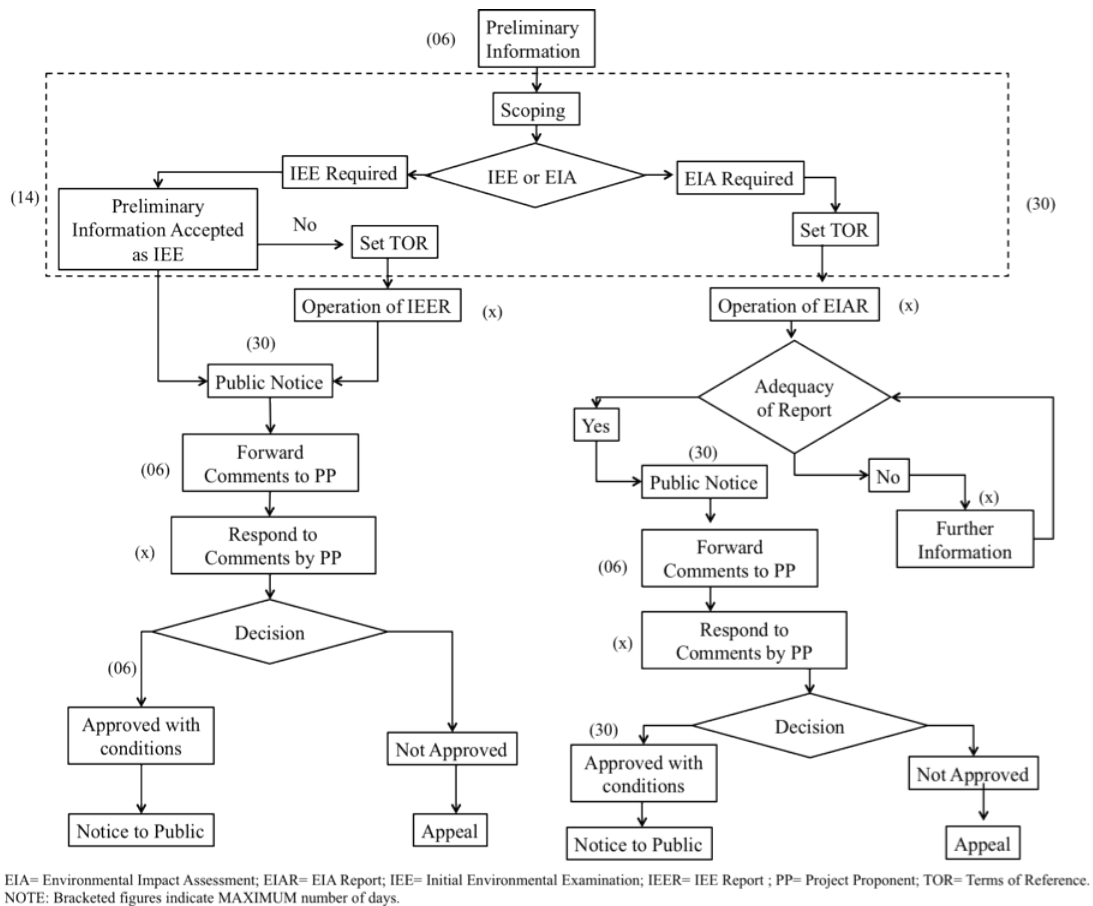
1. The project proponent provides preliminary information to the PAA.
2. Scoping is conducted by the PAA to determine the environmental impacts in a preliminary fashion. The PAA solicits the participation of those affected, queries the project proponent for clarifications, and then decides whether an EIA is required or whether the less comprehensive Initial Environmental Examination (IEE) would do. It will establish the 'Terms of Reference' for either of these options.
3. An EIA or IEE report in any of the national languages is prepared and submitted by the project proponent. If there is a request from the public, these reports are to be translated into any of the other two national languages. The PAA is required to announce in national newspapers of all three languages that the particular EIA is available for inspection by the public.
4. The PAA and the CEA review the EIA report. Queries can be directed to the project proponent through the PAA. The public is allowed to submit queries and observations for 30 working days, as explained below in Section 5.3.6. If the project is controversial, the PAA



and CEA may decide to have public hearings.

5. On review of the public comments the PAA may request the project proponent for clarifications and further details.
6. The PAA, in concurrence with the CEA, decides whether a project is to be approved or not. If approved, the conditions under which it can be allowed should be decided.
7. If the project is rejected, an appeal by the project proponent is allowed.
8. If the project is approved, the project proponent and the PAA should monitor the affected environmental characteristics as set out in the EIA (Zubair 2001).

The following flowchart shows the EIA procedure followed by the PAA.



Source: Road Development Authority. 2009. *Environmental and Social Safeguards Manual*.

**Figure 5.3.1: Flowchart of EIA Process by the PAA**

### Preliminary Information (PI)

It is the responsibility of the PAA to obtain from the project proponent at the earliest practical

stage information regarding the nature, location and potential impacts of a proposed project that requires an IEE or an EIA. The CEA has already compiled checklists and a questionnaire in order to help collect preliminary information (PI). The PAA may use them for obtaining PI from the project proponent. Information requested should

- help the PAA determine whether an IEE or EIA is required;
- help the PAA identify questions and issues for attention in the scoping process, including whether an IEE or EIA is required and what such documents should require; and
- to the extent possible, satisfy requirements for an IEE if no EIA is required (CEA 2006).

The PAA may obtain help on PI forms and questionnaires from the CEA and other PAAs. Once the PAA is satisfied that adequate PI has been received, the PAA should acknowledge its receipt in writing within six days. If any documents are found to be inadequate, the PAA should tell the project proponent as early as possible (CEA 2006).

## Scoping

There should be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process is termed “scoping.”

As part of the scoping process, the appropriate PAA should

- invite the formal and informal participation of all concerned agencies, the project proponent and other interested persons (including representatives of the affected public and others who might not be in accord with the action on environmental grounds);
- determine whether the project proponent should be asked to prepare an IEE or EIA, unless an adequate IEE has already been presented;
- determine the scope and significant issues to be analysed in depth in the IEE/EIA;
- determine reasonable alternatives that should be addressed in the IEE/EIA;
- identify and eliminate from detailed study the issues that are not significant or which have been covered by prior studies or environmental reviews;
- establish the Terms of Reference (ToR) for the IEE/EIA; and
- communicate regularly with the project proponent in the preparation of the required document.

As part of the scoping process, the responsible PAA may

- set page limits for the required documents,
- set schedules and time periods as needed,
- identify the sectors of required expertise for preparing the IEE/EIA, and
- hold an early scoping meeting or meetings that may be integrated with other early meetings or processes already established by the PAA.

Detailed guidelines on the scoping process have already been issued as *Guidance for Implementing the Environmental Impact Assessment (EIA) Process, No. 2: A General Guide for Conducting Environmental Scoping* by the CEA for assistance to PAAs.

PAAs should determine whether an IEE or EIA is required for a proposed project based on an assessment of the likely significance of the impacts of the proposed project to the environment. EIAs, rather than IEEs, should be required for prescribed projects that are likely to have significant impacts on the environment. PAAs should develop their own criteria for determining significant impacts in the form of checklists and other guides based on information from USAID, the World Bank, the Asian Development Bank and other sources. The following is the basic approach, provided for the sake of guidance.

Significant impacts should be determined based on considerations of *context* and *intensity*. “Context” means that the significance of an action should be analysed in several contexts, such as the impacts on the nation as a whole, impacts on a particular region or type of activity and impacts on a specific community. Significance varies with the setting of the proposed action. Short and long-term effects are relevant. “Intensity” refers to the severity, magnitude or impact likely from a proposed project. The following may be considered:

- Impacts that may be considered beneficial and adverse. A significant impact may occur even if the proponent or PAA believes that, on balance, the effect will be beneficial.
- The degree to which the proposed action affects public health or safety.
- The degree to which a proposed action would affect the unique characteristics of a geographical area, such as religious or cultural resources, archaeological resources (including those that may exist but have not been legally designated), nature reserves, wetlands, scenic areas, ecologically crucial areas, environmentally sensitive areas, or endangered or threatened species of plants or animals.
- The degree to which the impacts on the environment and related social conditions are likely to be highly controversial.
- The degree to which the possible effect on the environment is highly uncertain or involves unique or unknown risks.

- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- Whether the action is related to other actions whose impacts are individually insignificant but which, cumulatively, are apt to be significant. Significant impacts may occur if it is reasonable to anticipate a cumulatively significant impact on the environment. These impacts cannot be avoided by terming an action “temporary,” or by breaking it down into small component parts (for example, one segment of a large irrigation project). The degree to which a proposed action may affect the right of future generations to benefit from environmental and cultural resources (CEA 2006).

### Preparing the Terms of Reference (ToR)

Effective and efficient compliance with the NEA will require that IEEs undergo the simplest possible preparation process consistent with their basic purpose. Guidance on ToR preparation can be obtained from the CEA.

PAAs should prepare the ToR before assessing the EIA report created by the project proponent in order to achieve the following objectives:

- EIAs should be analytic, rather than encyclopaedic.
- EIAs should discuss impacts in proportion to their significance. There should be only brief discussion of anything other than significant issues.
- EIAs should be concise and should be not longer than needed to comply with the NEA and its regulations.
- EIAs should serve as the means to assess the environmental impacts of the proposed prescribed project and reasonable alternatives, rather than to justify decisions already made (CEA 2006).

The ToR should be concise and should follow a regular format to facilitate compliance by proponents, consulting entities, and efficient IEE/EIA review by the PAA. The ToR should ensure that EIAs are prepared to meet the EIA requirements and format mentioned in the following section.

### Timing of the EIA Process

A project proponent should start the IEE/EIA process as close as possible to the time when it develops the proposal. By ensuring that project proponents do this, the PAA can ensure that

IEE/EIA preparation can be finished in time to meet decision-making schedules and deadlines. The IEE/EIA should be prepared early enough so that it can contribute practically to the decision-making process and to ensure that it will not be used to rationalise or justify decisions already made (CEA 2006).

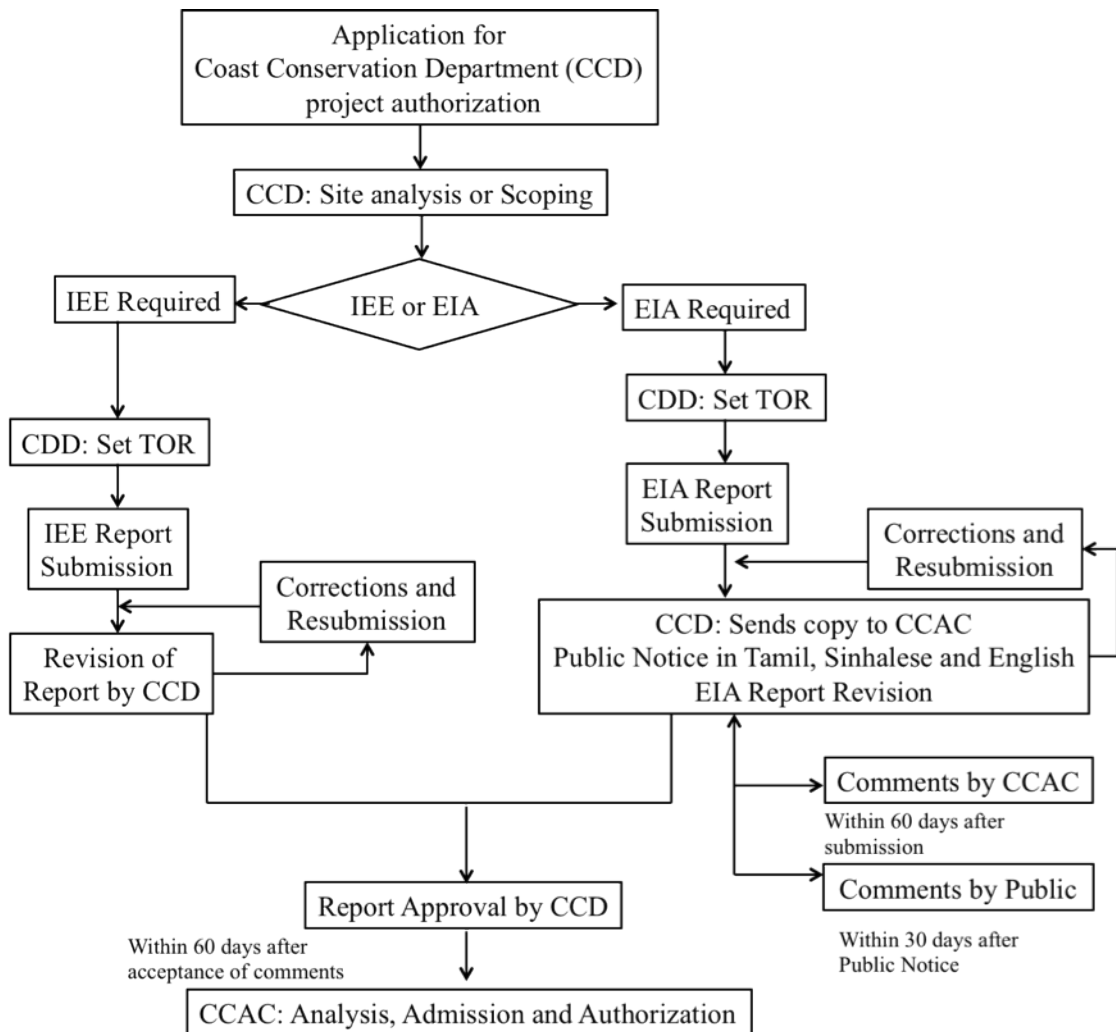
For projects directly undertaken by public entities, the IEE/EIA should be prepared at the feasibility ('go'/no-go) stage. The EIA may be supplemented at a later stage if needed. For applications made to the PAA by private proponents, appropriate environmental assessments should begin immediately after the application and preliminary information are received and as early in the planning stage as possible (CEA 2006).

The responsibilities and duties of the PAA in the EIA procedure are as follows:

- To monitor whether the EIA procedure is carried out properly by the PP.
- To promote public participation in the EIA process.
- To assess appropriate alternatives to mitigate environmental impacts.
- To advise and regulate the PP to take adequate environmental measures.
- To monitor whether the PP implements the project in accordance with the conditions of the permit, and to advise and give guidance if needed.
- To assist the CEA in the work of developing guidance.
- To communicate information clearly and concisely regarding environmental impacts and alternatives to political decision-makers and the public (CEA 2006).

#### 5.3.2.2 EIA by the Coast Conservation Department (CCD)

The Coast Conservation Act stipulates that development projects in the Coastal Zone should be reviewed and monitored by the Coast Conservation Department. The basic process is similar to that which the PAA conducts.



IEE: Initial Environmental Examination; EIA: Environmental Impact Assessment; CCAC: Coast Conservation Advisory Council; TOR: Terms of Reference

**Figure 5.3.2: Flowchart of EIA Process by the CCD**

5.3.3 Evaluation Criteria to be Addressed in the Environmental Impact Assessment  
 EIA should be prepared using a format that will encourage good analysis and clear presentation of the alternatives, including the proposed action. The following standard format for an EIA should be followed unless the agency determines that there is compelling reason to do otherwise (CEA 2006).

**Table 5.3.5: The Structure of an EIA Report**

- **Inside Cover Sheet**

The inside cover sheet should not exceed one page. It should include:

  - The title of the proposed action that is the subject of the assessment.
  - The list of preparers, including the consulting company or companies, if any, responsible for the preparation of the EIA report. The original document should be authenticated by the preparers or by a responsible individual or individuals from the consulting company (if any).
  - The name, address and telephone number of the responsible person at the agency who can supply further information on the document.
  - A paragraph abstract of the EIA (for use in public notices of EIA availability).
- **Table of Contents**
- **Executive Summary**

Each EIA should contain an adequate and accurate executive summary. It should emphasise the major choices to be made, major conclusions, topics of controversy (including issues raised by agencies and the public in the scoping process) and the issues to be resolved (including the choices among alternatives). Summaries should not normally exceed five pages.
- **Proposed Action's Purpose, Need and Legal Requirements**

The EIA should briefly specify the underlying purpose and need to which preparers are responding in proposing the alternatives including the proposed action. This section should include a concise description of the legal steps required and actions that must be taken (and findings that must be made) by specified government agencies in order to approve the project. In this way, the EIA can serve as a project-management tool to identify all information needed to meet various legal requirements for project approval.
- **Proposed Action and Reasonable Alternatives**

This section describes the proposed action and reasonable alternatives, which

  - should include those agreed upon in the scoping process. If subsequently determined to be unreasonable, the reasons should be discussed in this section.
  - may include reasonable alternatives not discussed at the scoping stage.
  - may be more restricted for private proposals than for government proposals, because realistic options may be more restricted.
  - should always include the "no action" alternative, meaning one based on current practices without approval of the proposed project.
  - should always state clear reasons for rejecting the alternatives in preference to the one recommended.

- **Affected Environment**  
The EIA should succinctly describe the environment(s) of the area(s) to be affected by the proposed project.
  - Descriptions should be no longer than is needed to understand the effect(s).
  - Data and analyses in an assessment should be commensurate with the importance of the impact.
  - Less-significant material should be summarised, consolidated or simply referenced.
  - Preparers should avoid useless bulk in assessments and should concentrate their efforts and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an EIA.
- **Environmental Consequences of Proposed Action**  
This important section provides the scientific and analytic basis for identifying and evaluating the environmental impacts of the proposed action. Impacts include:
  - Direct and indirect effects and their significance, including biological/ecological, health, historic, or cultural resource impacts.
  - Natural or depletable resource requirements of the project including irreversible or irretrievable commitments of resources affected if the proposal is implemented.
  - Adverse environmental effects that cannot be avoided if the proposal is implemented.
  - A statement evaluating the significance of impacts
  - Direct, indirect and cumulative impacts, irreversible and irretrievable commitments of resources together with an analysis on the significance of impacts.
- **Mitigatory Measures**  
Feasible and implementable mitigatory measures should be submitted.
- **Extended Cost-benefit Analysis**  
Include, if the project proponent has prepared one.
- **Proposed Monitoring Plan**  
This section should include followings:
  - Parametres to be monitored
  - Institutional responsibility and procedures for reporting
- **Appendices**  
If an agency prepares an appendix to the EIA, it should:
  - Consist of material prepared for an EIA (as distinct from material not prepared for the EIA and incorporated for reference).
  - Normally consist of material that substantiates any analysis fundamental to the impact assessment.
  - Normally be analytic and relevant to the decision to be made.



➤ Be circulated with the EIA or be readily available on request.

Source: CEA. 2006. *Guidance for Implementing the EIA Process, No. 1: A General Guide for Project Approving Agencies.*

The text of EIAs (excluding appendices) should normally be less than 50 pages. For proposals of unusual scope or complexity, it should normally be no more than 100 pages. EIAs should be written in plain language and may use appropriate graphics so that decision-makers and the public can readily understand them. For the sake of clarity, project proponents or consulting entities should employ writers or editors to write, review or edit assessments that will be based upon the analysis and supporting data from natural and social sciences. IEEs/EIAs may be in English, Sinhala or Tamil, but project proponents must be advised that it may become necessary for the document to be made available to the public in Sinhala and Tamil at the public-inspection stage (CEA 2006).

#### 5.3.4 Public Participation

Public participation is a novel feature introduced through the EIA in project planning. The public can participate at the “scoping” stage, review the EIA for 30 working days, request clarifications from the PP through the PAA and may, at the discretion of the PAA, participate at a public hearing.

PAAs should establish procedures for making the EIA readily available to the public for reading in Colombo and in the district or division in which the project is proposed. PAAs should establish an efficient process to allow copies of EIAs to be made for the public upon request and upon payment of the full reproduction costs by the requesting party or parties. PAAs should forward all comments received to the project proponent for review and response. Upon receipt of the project proponent’s written response to comments, the PAA should evaluate the responses before making a decision (CEA 2006).

The NEA states that a public hearing may be held at the discretion of the PAA when the PAA thinks it would be in the public interest to do so. A variety of situations may fall within the meaning of “in the public interest,” and these cannot be comprehensively defined. Factors for the PAA to consider include:

- Whether the proposed prescribed project is highly controversial.
- Whether more expressions of public views are essential to making a decision.
- Whether the proposed prescribed project might cause unusual national or regional impacts.

- Whether it might threaten a nationally important, environmentally sensitive area.
- Whether a formal request for a public hearing has been requested by any stakeholder, including the general public (CEA 2006).

If it is decided to hold a public hearing, the hearing should be held immediately *after* the expiration of the 30-working-day public-comment period and *before* the project proponent is formally asked to comment on public and agency comments (CEA 2006).

The project proponent should assess and consider comments by the public, agencies and the PAA and should respond by one or more of the means listed below, stating its response in the final assessment. Possible responses are to:

- Modify alternatives including the proposed action, and incorporate mitigating measures.
- Develop and evaluate alternatives not given serious consideration earlier by the project proponent.
- Supplement, improve or modify its analysis.
- Make factual corrections.
- Explain why the comments do not warrant further response by the project proponent, citing specific sources, authorities or reasons that support the project proponent's position and, if appropriate, specify any circumstances that would trigger the project proponent's reappraisal or further response (CEA 2006).

### 5.3.5 Participation of Experts, NGOs and Other Third Parties

On receipt of the IEE/EIA, the PAA should make a preliminary assessment of its adequacy as per the expectations set out in the ToR. If found adequate on *prima facie* review, the EIA document should be made available for public scrutiny for a period of 30 working days, and its availability must be announced by gazette and in one newspaper each in English, Sinhala and Tamil. The commenting period of 30 working days will begin on the day that the notice is published. The period of 30 days will be calculated excluding public holidays and Sundays (CEA 2006).

Cooperating agencies with either jurisdiction by law or special expertise with respect to any IEE/EIA, as well as agencies that are authorised to develop and enforce environmental standards, should comment on assessments within their jurisdiction, expertise or authority and within the time period specified for comment (CEA 2006).

### 5.3.6 Information Disclosure of the Result of the Environmental Impact Assessment

As described in Section 5.3.5, the results of the Environmental Impact Assessment reports have to be disclosed to receive public comment. If the PAA refuses to approve a prescribed project, the project proponent has the right to appeal to the Secretary of the Ministry of Environment. On the contrary, once the PAA approved a project, affected people by the project do not enjoy that right under the NEA.

### 5.3.7 Requirements for an Environmental Management Plan (EMP)

To date, there is no act or ordinance that stipulates the necessity of an Environmental Management Plan (EMP). However, consideration for impact mitigation should be in the EIA process. In the case of large-scale development, the proponent is sometimes requested to submit a list of specific mitigation measures, although this is not a legally binding requirement. According to an interview with an expert in the field in Sri Lanka, there seems to be some movement forward to institutionalise the process of preparing and submitting an EMP.

## 5.4 Monitoring

### 5.4.1 Legal Framework and Procedures

The PAA must make a plan to monitor the project and must submit the plan to CEA with the report provided by the proponent. Usually, the PAA commissions other bodies to carry out the monitoring of the project. The result of the monitoring is disclosed only when requested. Other monitoring processes (e.g., by the project proponent) are not mandated.

Mitigation and other conditions established in the IEE/EIA during its review and committed to as part of the decision should be implemented by the project proponent and monitored by the PAA. The PAA should:

- Include appropriate mitigation conditions in grants, permits or other approvals.
- Condition funding of government actions upon mitigation by the proponent.
- Establish monitoring processes and assign monitoring responsibilities to public or private entities.
- Establish a means for providing government compensation for monitoring costs through fees, bonds or other measures.
- Upon request, inform commenting agencies on progress in carrying out proposed mitigation measures adopted by the decision-making agency.

- Upon request, make available to the public the results of relevant monitoring (CEA 2006).

The PAA should follow the schedule requirements set forth in the EIA regulations. These time requirements are important to achieve the goals of the EIA process as an efficient management tool. Two other requirements are also critical:

- No decision on the proposed action should be made or recorded by a PAA during the 30-working-day public-review period
- No action by the PAA on the proposed action should be taken until the project proponent has responded to comments received on the EIA (CEA 2006).

#### 5.4.2 Information Disclosure of Monitoring Results

According to the *Guidance for Implementing the Environmental Impact Assessment (EIA) Process, No. 1: A General Guide for Project Approving Agencies*, information disclosure of monitoring results should be conducted by the PAA, as mentioned above.

#### 5.4.3 Prescription and Procedure to Address Issues Found in the Monitoring Process

To date, laws that specify penalties for the violation of EIA procedures do not exist in Sri Lanka. In cases of emergency (e.g., landslides or floods), in keeping with legal guidelines, the agency taking action should consult with the CEA about alternative arrangements (CEA 2006).

### 5.5 Major Issues and Challenges in the Current System

According to Zubair (2001), 10 major issues and challenges are pointed out. Table 5.5.1 summarises them:

**Table 5.5.1: Major Issues and Challenges in the EIA System of Sri Lanka**

Loopholes due to the list of prescribed projects	While a prescribed list is needed for legal enforceability, the use of a list of prescribed project scales has led to loopholes by which PPs circumvent EIA. Some entrepreneurs bypass the EIA requirement by constructing just below the threshold specified in the prescribed list. For example, some entrepreneurs have constructed 99-room hotels, which falls below the 100-room threshold. Immediately thereafter, they extended the hotels.
Consideration	The EIA legislation also does not have a mechanism to consider the

of multiple projects in one area	cumulative impact of many projects on a region. For example, around Hambantota, in Southern Sri Lanka, a refinery, a central tannery, a caustic soda processing plant and a prawn farm complex were all proposed in 1999 and were evaluated independently. The effluents from all of those enterprises led to a common estuary. The total potential ecological damage to the estuary might not have been evident when the projects were considered in isolation.
Consideration of unreasonable alternatives	The serious consideration of reasonable alternatives is a powerful feature in EIA evaluation. However, in some instances, the best alternatives were deliberately avoided. For example, the Upper Kotmale Dam and Hydropower proposal (CEA, 1994) would have inundated a part of Talawakelle township and would have involved risky tunnelling. As an alternative, a run of the river reservoir that would have reduced the power capacity from 125 to 90 MW was not considered. Instead, other non-viable alternatives, such as energy conservation or power generation with diesel or coal and were cursorily examined and dismissed. Similarly, the EIA for a tannery in Southern Sri Lanka (CT, 1996) cursorily considered a few alternative sites alone.
Conflicts of interests for the PAA	<p>The regulation that a PP cannot perform the functions of a PAA was tested in two instances. The Ministry of Highways evaluated the Colombo-Katunayake Expressway project, which was proposed by an agency under its purview (RDA, 1992). Similarly, there was a conflict of interest when the PAA for the Upper Kotmale Project, proposed by the Ceylon Electricity Board, was its parent ministry. In the latter case, the chief authority of the PAA, the secretary of the Ministry of Power, discarded the findings of the technical evaluation committee and indeed canvassed for the project. The CEA did not concur. The PAA appealed to the president of Sri Lanka to overrule the objections of the CEA.</p> <p>Another difficulty with the breakup of PAAs is the sectionalism of PAAs. Thus, the EIA of the Upper Kotmale Project pays less attention to the irrigation, fisheries, and tourism aspects of the project.</p>
Shortcomings in provisions for public participation	The provision for public participation is a significant strength of the EIA process that has been well used in Sri Lanka. Despite its success, there are several ways in which it needs to be strengthened. Given the difficulties in communication, the allowed public-comment period of 30 working days is insufficient, particularly for complex projects. During those 30 days, copies of the EIA report are available at the local government offices and in Colombo. In the ordinary course of events, the affected public often does not even know

	<p>about the project or the EIA report until it is too late.</p> <p>The training of personnel, the guidelines and the discussions on EIA are usually in English. Quite often, due to language barriers, the affected public is not adequately informed of the issues at hand or able to understand the EIA reports. These difficulties are partially alleviated by public hearings where explanations can be provided face- to-face by the PP and EIA consultants. At public hearings regarding the Upper Kotmale Project and the Colombo-Katunayake Expressway, discussions turned out to be in the vernacular. Even the EIA consultants expressed themselves more clearly. Hence, the limiting of public hearings to only a few projects is a serious drawback.</p>
Lack of tolerance standards	<p>The tolerance standards prescribed by the CEA for the discharge of effluents are not comprehensive as yet. The quality of the discharged effluent is only prescribed in terms of concentration and colour, but not volume. Thus, dilution of effluents seems to circumvent the need for treatment.</p>
Problems with environmental data	<p>Frequently, the environmental data needed to prepare EIA are not available or are inaccessible. This has even led to the fabrication of data. Sometimes, the pretext of inadequacy of data is used by the PP to short-circuit the EIA process. To alleviate these difficulties, the relevant PAA should develop databases of environmental data and identify and obtain missing data that are frequently required.</p>
Inadequate post-EIA monitoring	<p>Quite often, EIAs are approved on the basis of proposed mitigatory steps and monitoring, but post-EIA monitoring has been poorly implemented thus far. Many of the environmental cells of the PAA do not have full-time staff, space allocation, funds, or equipment (SLAAS, 1995). Even the CEA is understaffed and lacks many of the technical resources that it needs.</p>
Apprehension of EIA violators	<p>Some developers bypass the entire EIA process. The majority of the prawn farms that dot the coastal region in the North Western Province are illegal (SLAAS, 1995). Due to a variety of problems, such as political interference and understaffing, the EIA regulations have not been used to arrest the illegal prawn farmers. The proliferation of prawn farms without environmental safeguards led to conditions under which disease spread rapidly among the prawns, with severe financial losses to the entrepreneurs.</p>
Professional ethics for EIA consultants	<p>The EIA process relies heavily on the judgment of EIA consultants. This is a serious drawback for three reasons: First, the consultant works with a limited timeframe and, of necessity, can consider only a few impacts seriously.</p>

	<p>Second, requisite environmental data are not available or are not readily accessible. Third, the adverse impacts of some of the environmental impacts may not be immediately apparent. A PP who is intent on obtaining a favourable report is able to stack the EIA team with particular types of specialists who are predisposed in favour of the project. At present, consultants are not taken to task for unethical work.</p>
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Source: Zubair, L. 2001. Challenges for Environmental Impact Assessment in Sri Lanka. *Environmental Impact Assessment Review* 21:469–78.

Some of these downsides have been overcome by the recent revision of the guidelines (for example, the problem of ‘multiple projects in one area’ can be resolved in implementing SEAs), but the capacities of agencies involved and the lack of enforcement still remain more problematic than the legal framework of the EIA process itself.

## 5.6 Gap Analysis Between the Existing Domestic Regulations, the JICA Guideline for Environmental and Social Considerations and the World Bank Safeguard Policy

There are some gaps between the current domestic regulations and JICA Guideline, but they are rather insignificant. The governmental laws pay less attention to the social impacts than JICA’s Guideline or World Bank’s Safeguard Policy. Thus, the preparing of the Resettlement Action Plan (RAP) is not mandatory. The 30-day term for public comment that the government stipulates differs greatly from the recommended 120-day JICA policy. Although JICA’s guidelines suggest that the project proponents should disclose information related to it, under the Sri Lanka’s legislation, the responsibility of information disclosure is incurred not by the project proponent but by the PAA. The cost of copying an EIA report is imposed on the one who requests it, which may be an obstacle to more effective and equitable public participation. Moreover, there are no laws in Sri Lanka that overtly describe the prescription when some issues are found in the monitor process, or that overtly stipulate the penalties for violation of the EIA procedure.

## **Chapter 6**

# **Relevant Regulations and Procedures for Land Acquisition and Involuntary Resettlement**





## 6 Relevant Regulations and Procedures for Land Acquisition and Involuntary Resettlement

### **Latest Development/Issues Regarding the Land Acquisition and Involuntary Resettlement**

- Revised Regulations of the 2008 Land Acquisition Act, No. 9, were gazetted in 2009 (Section 6.1).
- The National Involuntary Resettlement Policy was established in 2001 (Section 6.1).
- Two case studies that focus on involuntary resettlement are presented in Section 6.2.3.2.
- A gap analysis of present domestic regulations, JICA's Guidelines, and World Bank's Safeguard Policy is presented in Section 6.5.

### 6.1 Relevant Regulations

Land acquisition and resettlement processes in Sri Lanka are defined by the following relevant regulations:

#### (1) Land acquisition law (enactment year/amendment year)

Land Acquisition Act, No. 9 (1950/1956)

This act stipulates general provisions for land acquisition procedures and makes no provision for involuntary resettlement. The latest of its several amendments are the 1986 version and the Revised Regulations of 2008, which were gazetted as No. 1585/7 in January 2009. It provides the basis for assessing the market value of land or compensation necessitated by the acquisition of land.

#### (2) Related laws (enactment year/amendment year)

##### 1) Land acquisition related laws

- Crown Lands Ordinance (1956/1960)
- Land Development (Amendment) Act, No. 9 (1995)
- Land Development (Amendment) Act, No. 20 (1996)
- A Reprint of the Land Development Ordinance (1935) (Chapter 464) as amended by Acts Nos. 60 of 1961 and 16 of 1969
- Temple Land Compensation Ordinance (publication year unknown)

## 2) Environmental impact assessment law

- National Environmental Act, No. 47 (1980)

## (3) Guideline (enactment year/amendment year)

- Guidance for Implementing the Environmental impact Assessment Process, Central Environmental Authority (1995), No. 1 - General Guide for Project Approving Agencies (PAA), No. 2 - General Guide for Conducting Environmental Scoping
- Environmental Guidelines for Road and Rail Development in Sri Lanka, Central Environmental Authority (1997)

## (4) Policy (enactment year/amendment year)

- National Involuntary Resettlement Policy (2001)  
Established not as an act but a policy, and there are no provisions for its implementation. Currently, a move to legalize this policy is in process.

## (5) Relevant organisations

### 1) Organisations that acquire/require land (examples)

- Ministry of Agriculture and Lands
- Road Development Authority
- Mahawelli Authority

### 2) Relevant departments and agencies in charge of land acquisition

- Survey department of the Ministry of Housing and Plantation Infrastructure
- Valuation department of the Ministry of Finance and Planning
- Registration office of the Ministry of Land and Land Development

## 6.2 Procedures for Land Acquisition and Involuntary Resettlement

### 6.2.1 Roles and Responsibilities of Relevant Organisations for Implementation Procedures, Land Acquisition and Involuntary Resettlement

The process for land acquisition and resettlement, which is based on the Land Acquisition Act, No. 9, is shown in Table 6.2.1. Institutions and the officers involved in the approval of land acquisition belong to the project implementation agencies. Compensation is paid to the Ministry of Land by the project implementation agency and then to residents of the relevant land from the Ministry of Land. After the receipt of compensation, no objection from residents will be

permitted. The resident is notified of the amount of compensation that will be paid for the land by the project implementation agency through relevant offices of the Divisional Secretariat.

**Table 6.2.1: Land Acquisition Process and Relevant Organisations**

Activity	Agency in Charge
Preparation and submission of land acquisition proposal	Project executing/implementing agency
Issuance of order to survey (LAA S. 2)	Ministry of Land and Land Development
Preparation and posting of notices (S. 2)	Divisional Secretary
Preparation of advance tracing	Survey Department
Issuance of order to acquire the land (S. 4)	Ministry of Land and Land Development
Section 04 posting and publication of notices (S. 4)	Divisional Secretary, Government Press
Objection inquiries	Project executing/implementing agency
Gazette notification (S. 5)	Divisional Secretary, Department of Government Printing
Preparation of preliminary plan	Survey Department
Gazette notification (S. 7)	Divisional Secretary
Inquiries (S. 9)	Divisional Secretary
Decision (S. 10-1)	Divisional Secretary
Valuation	Valuation Department
Award (S. 17)	Divisional Secretary
Payment of compensation	Divisional Secretary
Order (S. 38a)	Ministry of Land and Land Development, Department of Government Printing
Provision (S. 38a)	Ministry of Land and Land Development, Department of Government Printing
Taking over the vacant possession	Divisional Secretary, Project executing/implementing agency
Registration of land	Divisional Secretary, Project executing/implementing agency

Source: Social Assessment and Involuntary Resettlement Compliance Manual, Road Development Authority of the Ministry of Highways and Road Development, 2009

The roles and responsibilities of relevant organisations are as follows:

**Table 6.2.2: Summary of Institutional Responsibilities for Involuntary Resettlement**

Function	Responsibility
Overall policy implementation	Ministry of Land and Land Development (MLD)
Preparation (planning)	Project proponent (consultants, universities, or non-governmental organisations can be contracted)
Review of resettlement action plans (RAPs)	Project approving agency (PAA) and Central Environmental Authority (CEA)
Approval of RAPs	PAA and CEA
Implementation	Project executing agency (PEA), divisional administration, provincial administration, local government
Monitoring	PEA, with review by CEA and MLD
Evaluation	Independent organisation on behalf of MLD, PEA, and CEA

Source: NIRP

### 6.2.2 Contents of the Policy and Calculation of Compensation

Based on the relevant laws cited in section 6.1, methods for calculating the amount of compensation and payment method for compensation are defined as follows:

#### (1) Method for calculating the amount of compensation

- The acquiring officer (the Government Agent of the administrative district in which that land is situated, or any other prescribed officer, usually the Divisional Secretary of the area) conducts an assessment to determine the amount of compensation owed to landowners. To ensure fairness, the administrative agency cannot be involved in this assessment. The list of landowners is determined at this stage.
- The compensation breakdown consists of the market price of the land or usufruct (right of easement and right to collect) and other matters as necessary. Other matters may include three types of compensation: (i) damages caused by the division of land, (ii) damages to real estate caused by other than the division of land, and (iii) damage to business related to the land. The target is limited to changes in residence due to land acquisition. For the

amount of the compensation, (i) and (ii) are limited to less than 20% of the market value of the land, and (iii) must be less than three times the average annual profit. (Sec. 46, Land Acquisition Act, No. 9 (1950/1956))

(2) Method for payment of compensation

- The business agency will make the compensation payment to the Ministry of Land in a lump sum, and the Ministry of Land will pay each landowner.
- After the receipt of compensation, no objection will be permitted. (Sec. 37, Land Acquisition Act, No. 9 (1950/1956))

NIRP does not include a method for compensation calculation but it states that compensation for loss of land, structures, other assets and income should be based on full replacement cost and should be paid promptly. This should include transaction costs.

### 6.2.3 Contents of Livelihood Restoration

#### 6.2.3.1 Livelihood Restoration Plan

LAA considers two types of compensation: compensation for the acquisition of land and compensation of servitude over a land which refers mainly to the loss of earnings for any business carried on the land and the costs of changing residence. The following three elements of livelihood restoration are not mentioned in detail in the law listed under 6.1 Relevant Regulations:

- (1) Support method and system for resettlement
- (2) Support for recovery of livelihood and production base: compensation for unemployment, low-interest loan system, vocational training, job-placement, and others
- (3) Support for recovery and improvement of the standard of living: counselling, development of social infrastructure, community support, and others

The National Involuntary Resettlement Policy (NIRP) on the other hand, emphasises ‘that all efforts are made to minimize involuntary resettlement in projects and where it is unavoidable, affected people are assisted to re-establish their livelihoods.’ Along with the compensation for land acquisition, NIRP requires resettlement to be planned as a development activity for the affected peoples and ensure their economic and social integration to host communities.

### 6.2.3.2 Examples of Livelihood Restoration Plans

#### **(1) Moragahakanda Agriculture Development Project**

The Moragahakanda Agriculture Development Project is one of the key projects under the Mahinda Chinthana Policy of 2005. The government decided to commence work on this project in 2007. The project is located in the Naula Divisional Secretariat Division of the Matale District in the Central Province. The project is part of the development of the Mahaweli Ganga, which was preceded by a UNDP-sponsored comprehensive study (UNDP/FAO/ID, 1968) of the land and water resources of the Mahaweli and its tributaries. The study identified the need for the construction of several reservoirs across the Mahaweli River and its branches to store water for irrigation and to generate hydropower. The proposed reservoir, which is called Moragahakanda, will be constructed across the Amban Ganga River and will have a water storage capacity of 570 MCM. The investment cost for the construction of the Moragahakanda and Kaluganga Reservoirs was US \$ 382 million.

According to several socio economic surveys, the construction of this reservoir and other peripheral works will affect 1,581 groups of potentially affected families that were identified in the tank-bed area, road deviation, elephant corridor, electricity transmission line, and branch channel trace of the Kaudulla LB Extension Area. Because a majority of those affected belonged to the agriculture sector, it is considered appropriate to relocate them to a similar sector in the resettlement areas. The Mahaweli Authority of Sri Lanka (MASL), as the executing agency, was responsible for the implementation of the land acquisition and resettlement.

The size of the affected area is 4,153 ha, including the tank bed, road deviation, elephant corridor, electricity transmission line, and branch channel trace of Medirigiriya, of which 31% is developed, only 29% is under freehold tenure, and the balance constitutes state lands. There are 1,679 structures affected by the project. Of the 1,581 families, 161 families need special assistance.

In order to resettle these affected persons (APS) and to compensate them for their losses, a Resettlement Implementation Plan (RIP) was formulated to minimize the adverse effects of resettlement and restore livelihood to the APS.

The Mahaweli Authority of Sri Lanka (MASL) is responsible for implementation of the land acquisition and resettlement. A project director's (PD) office has been established in the field for efficient implementation of the programme. The Acquisition and Resettlement Division (A&R

Division) of this office will conduct the acquisition and initial functions of the resettlement activities.

Gradually, these resettlement activities will be handed over to respective RPMS, and the A&R Division will be confined to the acquisition process until its completion. Several community consultative groups (CCG) have been established for this project to facilitate proper implementation of A&R activities. The land acquisition and resettlement has been monitored both internally by MASL and externally by an independent body with the objective of giving feedback to the project management team on implementation and identifying problems, failures and successes.

Those consulted during the preparation of RIP included the main stakeholders of the project, namely the Divisional Secretaries of Naula/Elahera/Laggala and Pallegama/Medirigiriya, District Secretaries of Matale/Polonnaruwa, officials of the Ministry of Lands and Land Development, Land Commissioner General, Chief Valuer, Grama Niladaris (GNs) of the respective project area, other relevant officials from the affected institutions, Buddhist priests, and community leaders from the affected area.

- Resettlement Implementation Plan

The RIP deals with acquisition and compensation, relocation/resettlement, and economic rehabilitation processes of the APS for the Moragahakanda Project. The following assistance schemes were introduced for income restoration and livelihood improvement of the APS:

- Training
- Employment opportunities in the project
- Special assistance to vulnerable families
- Job restoration grants
- Business grants to owners of business establishments
- Ex-gratia payment for households opted for System 'D'

In addition, a revolving fund will be established for micro-financing facilities for needy people.

For the long-term sustainability and economic rehabilitation of the APS, the following new ventures were considered:

- i) Off-farm activities, such as fish farming or gem mining.
- ii) Establishment of small-scale, agro-based industries.
- iii) Market-oriented crop diversification.



- iv) Hi-tech agriculture.
- v) Involvement in other income-generating activities during off seasons.
- vi) Establishment of service provider entities.

The data contained in the RIP are based on the findings of the socio-economic surveys conducted by MASL in the years 2006 and 2008 and from the acquisition surveys (under Section 2 of the Land Acquisition Act) conducted by the Survey Department in 2009. The RIP was compiled by the officials of MASL with the assistance of a local resettlement consultant who had been closely associated with the resettlement activities of the Accelerated Mahaweli Development Program. (Mr. Y. G. Wijeratne, consultant to the FAO of the United Nation and Grade One Officer of the Sri Lankan Administration Service)

- Legal framework

The policy framework of the RIP is based on the NIRP and related enactments on land acquisition and land alienation. In addition, MASL has incorporated certain other provisions based on the powers and functions vested by the Mahaweli Authority Act of Sri Lanka, No. 23 of 1979. Furthermore, the land alienation and compensation policies adopted by MASL during the period of the Accelerated Mahaweli Development Program were taken into consideration for the preparation of RIP (MASL 2010).

## **(2) The Road Sector Assistance Project II**

The World Bank (WB) approved a loan in December 2005 in the amount of \$100 million U.S. to improve 620 km of national roads and reduce the percentage of national highways in poor condition from 52% in 2005 to 35% in 2010. The project sought to support lower transportation cost through the sustainable delivery of an efficient national road system that serves the needs of all of the Sri Lankan population. With the above project coming to a successful end in 2010, the Government of Sri Lanka (GOSL) requested financing from the World Bank to assist them in rehabilitating and improving about 134 km of additional roads in the national roads network. Therefore, The Road Sector Assistance Project II (RSAP II) which was approved in April 2011 is a continuation of the above mentioned project and aims at improving two sections of the A006 highway. The sections run through four provinces of the country at a cost of US\$100.00 million committed by World Bank.

The project affected persons (PAPs) belong to 407 households. Approximately 7% of the

households affected are reportedly woman-headed households. The remaining 93% of the households are male-headed units. Approximately only 1.5% of the affected PAPs have obtained higher education. The majority (25%) have studied to grades from six to ten. Approximately 10% of the PAPs have no formal education, whereas 19% reportedly have primary-level education (from grade one to grade five). Approximately 74% of the PAPs are Sinhala. The second largest ethnic group affected is Muslim (16%) and nearly 10% of PAPs are Tamils. Only 9% of the families reportedly receive small amounts of assistance from the government. Nearly 35% of the PAPs are involved in moderate and small business activities.

- Resettlement Plan

Through detailed study, further efforts were made to avoid and minimize the likely impacts identified during the census and baseline surveys. After the finalisation of designs, a joint verification exercise was conducted for the Kanthale-Trincomalee road section and the Perathuweli road to estimate the impacts for which the RAP should be prepared. The designs for the Ambepussa–Dambulla section are under review and should be finalized subsequently. According to the current designs, the project is likely to impact 578 persons belonging to 174 households. Research has found that small portions of the approximate 1,885 m<sup>2</sup> of land (1,075 m<sup>2</sup> of government owned land and 810 m<sup>2</sup> of privately owned land) must be purchased or acquired for this road construction; six households will lose their land. The total number of affected persons under this category is 22.

The RDA will follow a transparent process to purchase or acquire the land required for the project as follows:

- The land will be purchased on a willing buyer-willing seller basis.
- Its replacement value will be determined by current market prices.
- The seller will have the option to refuse the price.
- If any acquisition is conducted, it will follow normal acquisition procedures but will not follow the Section 38A Proviso, which is the emergency LAA procedure.
- Acquisition should not negatively impact the livelihood of any vulnerable group, and if it does, the community-developed mitigation measures must be acceptable to those affected.
- There should be no encumbrances on the lands.
- The lands should not belong to any person who is below the poverty line.

- Current status of the Resettlement Action Plan

Current status information is not available except on an individual project basis. The RDA's

Resettlement Branch has developed a database to enter data for monitoring the resettlement processes of all projects. The data are currently being entered, but the database is not complete. According to officers in charge of resettlement (RDA), the main issue is the absence of commitment to check the adequacy, implementation and monitoring of a resettlement plan. According to NIRP, the Ministry of Land should be responsible. However, the Ministry has no capacity to do this, and consequently monitoring is either assigned by donors to a third party and/or the Resettlement Branch handles it.

Generally it takes about 72 weeks to process compensation payments, but it may take longer. Therefore, delay is a key issue with regard to resettlement compensation. However, after the beneficiaries were identified, all received the compensation due to them.

- Implementation Framework

The policy framework and entitlements in this project build upon the requirements of the Government of Sri Lanka, principally the Land Acquisition Act (1950, revised in 1979) and the National Involuntary Resettlement Policy (2001), as well as the World Bank's Policy on Involuntary Resettlement (O.P. 4.12). Provisions and principles adopted in this RAP must meet the standards established by the National Involuntary Resettlement Policy and the World Bank's policy. The project entitlements were designed to provide compensation, resettlement, and rehabilitation for lost assets and restore or enhance the livelihoods of all categories of affected people (MHRD 2011).

In addition, although they do not pertain to land acquisition and resettlement, there are examples of projects that support the development of a settlement and livelihood for residents who live away from residential areas. These projects were conducted by the Resettlement and Rehabilitation Authority of the North (RRAN). According to the report, from 1996 to 1999, approximately 1.23 billion rupees were spent on settlement and livelihood recovery activities. In addition, the number of residents who received food aid over the six years from 1994 to 1999 reached 4,496,938 (RRAN 1996). The activities of the RRAN are detailed in Table 6.2.3.

**Table 6.2.3: Amount Spent on Settlement and Livelihood Recovery Project by RRAN**

Unit: million rupees

	1996	1997	1998	1999
Settlement cost	50.13	180.06	139.14	176.82
Construction cost of houses for settlement	10.33	19.10	71.43	276.00
Construction cost of temporary houses	0.05	5.31	9.94	22.72
Support to agriculture			6.19	3.67
Civil service allowance		50.53	93.43	70.16
Compensation for loss of property and house				36.70
Support to those devastated by civil war				5.47
<b>Total</b>	<b>60.50</b>	<b>255.00</b>	<b>320.32</b>	<b>591.81</b>

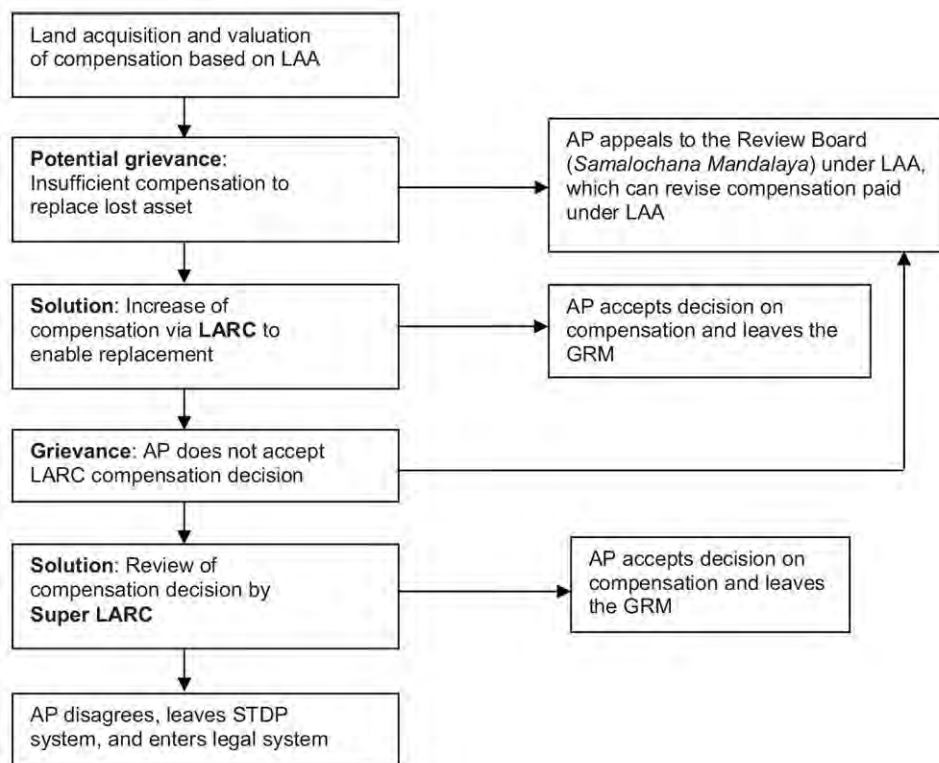
Source: RRAN. 1996. *Let There Be Light*.

#### 6.2.4 Grievance Redress Mechanism (GRM)

Although LAA allows affected peoples to object to land acquisition, its primary objective is to decide if the land will be acquired or not. No grievance redress system is included as part of the objections framework.

One of the objectives of the NIRP is to make all APs aware of the processes available for the redress of grievances that are easily accessible and immediately responsive. In addition, a system of internal monitoring should be established by PEAs to monitor the implementation of RAPs, including grievances.

In line with the NIRP policy, project proponents set up a GRM in implementation of the projects. The external GRMs available to APs in Sri Lanka, including the national legal system (district magistrate courts, the Supreme Court), the public administrative system (divisional secretariats, *grama niladharis*, the Central Environmental Authority (CEA)), people's representatives, the Parliament of Sri Lanka through its Public Petitions Committee, *pradeshiya sabhas*, and civil society organisations. However, these external systems, as they perform only generic functions, are not exclusively geared towards addressing project-specific grievances and circumstances. Additionally, the grievance redress processes within those external institutions are cumbersome and lengthy. In the effort to address these issues, international aid agencies provide project-specific GRMs. For example, in the Southern Transport Development Project (STDP), jointly funded by JBIC and ADB, a range of options for grievance resolution was introduced. Figure 6.2.1 shows the Land Acquisition and Grievance Procedures implemented in the project.



Note: AP = affected person, GRM = grievance redress mechanism, LAA = Land Acquisition Act, LARC = land acquisition and resettlement committee, STDP = Southern Transport Development Project.

Source: ADB. 2010. Designing and Implementing Grievance Redress Mechanisms.

**Figure 6.2.1: Land Acquisition and Grievance Procedures in STDP**

### 6.2.5 Provision of Information to the Public, Public Consultation, Procedure of Public Participation and Information Disclosure

According to the LAA, when the minister determines that a particular piece of land is suitable for a public purpose, the minister shall direct the acquiring officer to develop and distribute a notice in the Sinhalese, Tamil, and English languages. The notice should contain a description of the land that is to be acquired, and it should state that written objections may be submitted to the permanent secretary. The period within which objections must be submitted is no less than fourteen days. This provision only applies to affected peoples; there are currently no provisions in the existing laws pertaining to disseminating information to the public, public consultations, or procedures of public participation, and information disclosure. NIRP does not provide for public consultation either.

### 6.3 Monitoring

There is no specific monitoring process under the LAA. On the other hand NIRP specifies the following descriptions for the development of a monitoring system:

- A system of internal monitoring should be established by PEAs to monitor implementation of resettlement action plans, including budget, schedule, delivery of entitlements, consultation, grievances and benefits.
- PEAs should make adequate resources available for monitoring and evaluation.
- A further system of external monitoring and evaluation by an independent party should be established to assess the overall outcome of resettlement activities.
- Monitoring and evaluation reports should be reviewed by the PEA, CEA and MLD, and action should be taken to make improvements where indicated.
- Affected persons and other stakeholders should be consulted in monitoring and evaluation.
- Lessons thus learned from resettlement experiences should be used to improve resettlement policy and practice.

### 6.4 Issues and Problems

Key problems with the system related to the relocation of residents in Sri Lanka are as follows:

(1) In order to avoid intentional migration to the target area to receive compensation or for reasons related to political activities, until the Ministry of Land confirms the ownership of the land, the government does not generally announce the implementation of a project to residents. Hence, residents complain that information regarding eviction is provided too slowly.

(2) Under the current system, monetary compensation alone is required. However, each agency and each project have taken different compensation approaches depending on the conditions, and, in fact, it is thought that non-monetary compensation has also been made.

(3) Regarding the actual conditions for compensation for resettlement, differences can be seen in each project. In the case of irrigation projects, for example, residents are satisfied because, in many cases, they receive land that is better than the property they had before the transfer. On the other hand, in some cases, residents become dissatisfied since inadequate compensation is indicated for the construction of roads in urban areas. Construction of roads is usually covered

through cash compensation, and residents receive the amount determined by valuation of the land. However, this compensation has not always been enough to secure housing comparable to or better than residents had before the transfer. Moreover, there are many cases in which alternative land is not given to residents who lose land because of the construction of roads.

(4) Since land ownership is tied to social trust in Sri Lanka, land transfer will reduce the social status of the landowner. In this regard, adequate compensation measures have not yet been established. In cases where a road construction project causes many residents to lose their land, these residents may complain. Some argue that these complaints may also determine outcomes of elections, and in some cases, the government considers the relationship between the timing of an election and relocation of residents.

The following four problems were pointed out in interviews with Department of Agriculture personnel in October 2003.

1) Compared to the numbers of development projects and administrative procedures pertaining to land acquisition and resettlement, the number of staff is insufficient. Consequently, each project takes a long time from the application to the completion of the procedure.

2) Land prices for compensation are to be set at the same amount as the market price. This market price is often a lower price than had been expected by an owner.

3) After the land price has been set, the owner receives the amount equivalent to the price; however, documents and the evidence pertaining to the calculation are not given. For landowners, the land evaluation process is confusing and not transparent.

4) If a portion of land or housing is acquired, setting a market price is very difficult, and the amount of compensation tends to be very low. In addition, under the current compensation system, it is difficult to evaluate the social loss of the owner caused by the acquisition of land.

The current regulations relevant to land acquisition and resettlement under the LAA do not have any provision for involuntary resettlement, and they do not specify an appropriate organisation to review fully the resettlement action plan. Due to the lack of specific provisions in the regulations, a move to further revise the Land Acquisition Act is currently underway.

## 6.5 Gap Analysis between the Present Domestic Regulations, the JICA Guidelines for Environmental and Social Considerations and the World Bank Safeguard Policy

Significant differences exist between the policies of JICA and the World Bank and the national law in Sri Lanka regarding resettlement and land acquisition embodied in the Land Acquisition Act No. 9 (LAA), which has no provision for involuntary resettlement. Land acquisition, while covered by the LAA, does not provide for affected people who have no documented title to the land, and compensation is calculated using market cost rather than the full replacement cost that is included in JICA's and World Bank's guidelines. Involuntary resettlement currently follows the provisions from the NIRP which can be used as a guideline. However, NIRP does not have any provision regarding capacity building or grievance procedures and does not supersede the LAA. Additionally, at the time of the Moragahakanda Agriculture Development Project in 2005, the government formulated a RIP in order to resettle these affected persons (AP), compensate their losses, minimize the adverse effects of resettlement, and restore their livelihoods.

It is important to note that capacity-building schemes and grievance procedures are currently not available under Sri Lankan national laws (LAA). Hence, comparison with JICA's policies is not possible.

At the same time, there are still differences between NIRP, which was proposed as an instrument to bridge LAA's donor safeguard policies gap, and JICA's guidelines (along with the World Bank's safeguard policy). These differences are listed below:

- Resettlement plan: A comprehensive RP is required by Sri Lankan policies only for projects that involve resettlement of 20 or more families, while JICA and the World Bank do not specify the number of families in their guideline/safeguard policies.
- Compensation for non-title holders: Compensation is contemplated in the NIRP but not in the LAA. The JICA policy considers compensation for loss of assets other than land for those who occupied the land or structures prior to the cut-off date for eligibility for assistance.
- Public disclosure: The NIRP provides for public disclosure only if the project is subject to IEE or EIA. Moreover, the report should be available for public comments.
- Installments: LAA provides for statutory compensation to be paid in installments, but NIRP does not agree. The World Bank requires all compensation costs to be paid to displaced persons before any physical economic displacement occurs.



Chapter 8 provides further detailed analyses of gaps between the governmental laws of Sri Lanka and other donor guidelines, including case studies.

## **Chapter 7**

# **Legal Framework and Procedure Pertaining to Considerations for Indigenous Peoples and Ethnic Minority Groups**



## 7 Legal Framework and Procedure Pertaining to Considerations for Indigenous Peoples and Ethnic Minority Groups

### **Latest Development/Issues Regarding the Indigenous Peoples and Ethnic Minority Groups**

- Issues and problems pertaining to indigenous peoples are shown in Section 7.7.
- A gap analysis of the present domestic regulations, JICA's Guidelines, and World Bank's Safeguard Policy is stated in Section 7.8.

#### 7.1 Distribution and Historical Background of Indigenous Peoples and Ethnic Minority Groups

##### 7.1.1 Indigenous Peoples

According to 2010 census provisional data, the population of Sri Lanka is approximately 20,653,000, including indigenous and ethnic minority groups. The indigenous people are the Veddha. They are hunter-gatherers now reduced to a population of 1,000, who live in the mountains of Sri Lanka; very few of them use the Veddha language. In country statistics published after 1981, the Veddha have been included in the category 'Other' and not represented as a separate category. The Veddha began the cultivation of rice, perform Buddhist rituals, and are incorporated into the mainstream Sinhalese. However, there is a hard core of Veddha groups that speak the Veddha language, wear their traditional dress, and insist that they be given access to their traditional homelands and livelihood patterns based on hunting and gathering.

##### 7.1.2 Ethnic Minority Groups

There is no official definition of ethnic minorities in Sri Lanka—groups are defined primarily according to population, language, and religion. According to the 1981 statistics (accurate statistics have not been taken since 1983, owing to the intensification of ethnic conflicts), the population of Sri Lanka consists of Sinhalese (74%), Tamil (18%), Marakkara (Moors, 7%), and others—people of mixed race (Burghers), Eurasians, and the Veddha (1%).

The Tamils are divided into the Sri Lankan Tamil (13%), who immigrated from South India in ancient times, and the Indian Tamil (5%), who were brought from South India as labourers in the mid-19th century by British planters to work in their plantations. The Sri Lankan Tamils mainly live in the northern and eastern districts, and they also are scattered among the main population in the rest of the country. Most of the Tamils believe in Hinduism. The Tamils in the Northern Province are subject to the Thesawalamai law, and Jaffna is the centre of their culture.

On the other hand, the Tamils who work on the plantations of the central mountains are the descendants of the labourers who were brought from South India in the 19th century, and they are called 'People of Indian Tamil descent'. Until the 1980s, the Indian Tamils were denied civil rights by the government of Sri Lanka. Many Indian Tamils belong to a lower caste than the Sri Lankan Tamils and are Hindus by religion; there is hardly any social relationship, intermarriage, or communication between the Indian Tamils and the Sri Lankan Tamils.

The Moors (Muslims) are subject to Islamic law. They are said to be the descendants of Arab traders from the 10th century, who either came directly from India or were brought over via Arab countries. However, the native language of the majority of Muslims is Tamil, and many live in the Eastern Province. The final group ('Other') includes the Burghers (mixed-race descendants of Sinhalese and Europeans, who speak English and practice Christianity), Parsees (migrants from India), and Veddha (Karashima 2002).

A noticeable demographic trend has been the virtual disappearance of Indian Tamils and those in the 'Other' category from certain northern and eastern districts, and the increase of Sri Lankan Tamils in the Northern Province and of Sri Lankan Moors in the Eastern Province. For example, a special enumeration conducted by the Department of Census and Statistics provides the following table (7.1.1), which breaks down the distribution of ethnic groups in four districts: Jaffna in the Northern Province and Trincomalee, Ampara, and Batticaloa in the Eastern Province, between 1981 (year of census) and 2007 (year of special enumeration)

**Table 7.1.1: Distribution of Ethnic Groups in Four North-eastern Districts**

District	Ethnic Group (%)									
	Sinhalese		Sri Lankan Tamil		Indian Tamil		Sri Lankan Moor		Other	
Year	1981	2007	1981	2007	1981	2007	1981	2007	1981	2007
Jaffna	0.7	0.0	86.2	99.9	0.6	0.0	1.4	0.1	0.1	0.0
Trincomalee	33.4	25.4	34.3	28.6	2.1	0.1	29.3	45.4	0.9	0.5
Ampara	39.9	37.5	18.4	18.3	0.1	0.0	41.3	44.0	0.3	0.2
Batticaloa	3.4	0.5	70.8	74.0	1.2	0.0	23.9	25.0	0.7	0.5

Note: Three other districts in the Northern Province—Mullaitivu, Kilinochchi, and Vavuniya - were not covered by this special enumeration, due to on-going civil conflict.

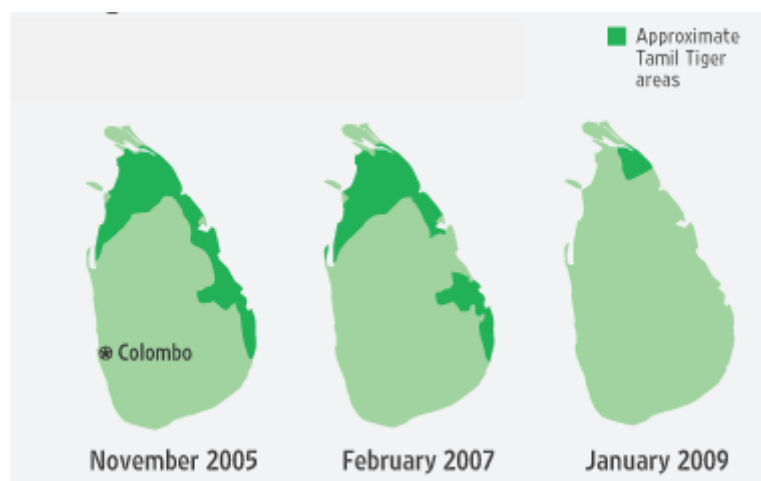
Source: Department of Census and Statistics

This demographic change can be attributed to the civil conflict that led to the displacement of large numbers of communities and families, from their original places of residence to other parts of the country.

The ethnic conflict in Sri Lanka began as an armed conflict between the Sinhalese government and the Tamils' anti-government guerrilla group, the LTTE, in 1983. The historical background of this conflict is complex; it occurred due to a variety of social and economic factors, such as the challenges stemming from British colonial rule; language conflicts and regional economic disparities between the Sinhalese and Tamil areas; and the construction of a nation-state after independence, which led to the composition of the nation with a Sinhalese majority and a Sinhalese-first policy in education and employment. Thus, ethnic minorities, such as the Tamils, have continued to feel discriminated against and oppressed; for example, in 1972, a constitutional amendment gave a privileged position to Buddhism.

The conflict between ethnic groups escalated in particular because the non-violent methods adopted by the Tamil minority were suppressed by force, leaving young Tamils no option but to take to violent methods, such as armed struggle. During the anti-Tamil riots of July 1983, thousands of Tamils were killed. Since then, there have been continuous armed anti-government attacks by the LTTE, which is based in the northeast, and by the Tamil independence movement. The conflict took many military and civilian lives and continued for 20 years, until the ceasefire agreement in February 2002. Despite the ceasefire agreement and the mediation of Norway, peace negotiations did not solve the conflict, as the LTTE insisted on having a separate state on October 31, 2002.

Although peace talks took place six times during the ceasefire, there was no progress toward peace; acts of sporadic terrorism and assassinations of government officials continued. After Mr. Mahinda Rajapaksa became president in 2005, fighting intensified again. The ceasefire agreement, not having been effectively followed, was formally revoked in January 2008. In May 2009, almost all LTTE-controlled areas of the northern and eastern sides of the country were conquered by government forces (Figure 7.1.2), which declared an end to the civil war, along with the announcement by the LTTE that they were abandoning combat, resulting in victory for the Sinhalese.



**Figure 7.1.1: Decreasing Area under the Control of LTTE**

Source: Ministry of Defence, Sri Lanka, 2009.

<http://online.wsj.com/article/SB123203075892985665.html> (Accessed on January 16, 2009).

The death toll from the 26-year-long civil war was more than 70,000 people. In addition, approximately 280,000 Tamils became internally displaced. President Rajapaksa announced to Parliament that a political solution acceptable to all citizens was being sought (MOFA 2009). The ethnic and religious conflict over Sri Lanka is described in detail in the JBIC report (JBIC 2003).

## 7.2 Social and Economic Condition of Ethnic Minority Groups

More than two years have passed since the end of the civil war, and the northern part of Sri Lanka has been the stage for ongoing post-war reconstruction. Of the nearly 300,000 people who had been housed in facilities such as camps, 270,000 returned to their original places of

residence. Security improved significantly following the end of the civil war; there has not been one act of terrorism in the north over the last two years, and some LTTE members are reported to have been freed after rehabilitation. However, it is believed that in the north and east, the main battlefield for the civil war, many Tamils are socially and economically insecure (NHK 2011).

In July 2011, a Parliament member, M.A. Sumanthiran of the Tamil National Alliance (TNA), submitted a report on the status of the north and east to the National Assembly. Although the report was intended to present the situation in northern and eastern Sri Lanka after the conflict, it was presented from the perspective of the Tamil. Key issues identified in the report are (IDE-JETRO 2011):

- Military occupation in more than one-third of the Tamil residential areas in the north and east;
- Military intervention in land-related disputes;
- Pressure on the economic activity of local residents from the economic activities conducted by the military in the area;
- Removal of Tamils from civil service;
- Lack of basic facilities and services to people who left the refugee camps;
- Hunger and malnutrition due to widespread unemployment; and
- Disappearances of people.

### 7.3 Relevant Regulations Pertaining to Considerations for Indigenous Peoples and Ethnic Minority Groups

Although recognition of the Tamil language and freedom of expression and religion are stipulated in the Constitution, Article 2 states that ‘the Republic of Sri Lanka is a single nation’ and thus does not accept the demand for federalism among some sections of Tamil people. Thus, a constitutional framework pertaining to the rights of indigenous peoples and ethnic minority groups needs further improvement.



## 7.4 Procedure Pertaining to Considerations for Indigenous Groups in Development Projects

Neither the constitution nor the legal system makes explicit provision guaranteeing the rights of ethnic minorities and indigenous people. However, implementing agencies, such as the Road Development Authority and the Mahaweli Authority, use a screening process based on a checklist provided by donors or initial poverty and social assessments. A sample checklist from the RDA is as follows:

- Are there indigenous peoples or ethnic minority groups present in the project location?
- Do they maintain distinctive customs or economic activities that may make them vulnerable to hardship?
- Will the project restrict their economic and social activity and make them particularly vulnerable in the context of the project?
- Will the project change their socioeconomic and cultural integrity?
- Will the project disrupt their community life?
- Will the project positively affect their health, education, livelihood, or social security status?
- Will the project alter or undermine the recognition of their knowledge, preclude customary behaviours, or undermine customary institutions?
- In case there is no disruption of indigenous community life as a whole, will there be loss of housing, strips of land, crops, trees, and other fixed assets owned or controlled by individual indigenous households?

According to the above checklist, the organisation categorizes the project as one of the following:

- Category A: an indigenous peoples development plan (IPDP) is required.
- Category B: a specific action favourable to indigenous peoples/ethnic minority groups is required and should be addressed through a resettlement action plan, a gender action plan, or a general community participatory plan.
- Involve the preparation and implementation of annual investment programmes or multiple subprojects. Screening indicators suggest that indigenous peoples are likely to be present in or have collective attachment to the project area, but their presence or collective attachment cannot be determined until the programmes or subprojects are identified; an indigenous peoples planning framework should be developed if needed.
- Category C: no IPDP or specific action required.

## 7.5 Affirmative Action for Indigenous Peoples and Ethnic Minority Groups

There is no particular affirmative action taken for indigenous peoples and ethnic minority groups in Sri Lanka, because ethnic minorities' rights are not legally recognized. For the language minorities, certain types of affirmative action, restricted in scope, were implemented in the past; however, they were unsuccessful. The Official Language Act enacted in 1956 stipulated Sinhala as the sole official language of Sri Lanka, but this passage led to the resignation of a large number of Tamils from civil service, because they did not fulfil the Sinhalese language requirement. Affirmative action in university admissions for students from poor educational facilities was intended to resolve purposeful discrimination by British colonialists, but, again, it was provided more for the majority Sinhala than for minorities. There were other attempts at affirmative action in the 1980s and 1990s, such as a move to include up to 10% Tamils in government posts, but the move was eventually held up.

## 7.6 Policies and Systems for Ethnic Minority Groups

In order to rebuild Sri Lankan society, which was historically divided for the 26 years of the civil war, reconciliation between the Sinhalese and the Tamil is essential. For this reason, President Rajapaksa, even while maintaining Sri Lanka as a single nation, is giving some thought to recognizing the autonomy of certain states, including those in the north and east, by delegating them a certain amount of authority. The re-establishment of the Senate for resolving the complaints of ethnic minority issues has also begun to be debated, so that the voices of ethnic minorities will be heard in government decision-making processes.

For the purpose of national reconciliation, President Rajapaksa established the 'Lessons Learnt and Reconciliation Commission (LLRC)' in May 2010. The LLRC conducted public hearings in different parts of the country beginning in August 2010, hearing the opinions of a wide range of government officials, experts, ex-LTTE-related personnel, and sections of the public, including the residents of northern and eastern districts. The LLRC submitted a final report to President Rajapaksa in November 2011, and the Sri Lankan government submitted and disclosed a report to the Parliament on December 16 of the same year. The final report recommends including investigations into human rights issues in the late stages of the civil war, promotion of national reconciliation, and improvement of the country's human rights situation.

In addition, the Sri Lankan government has been continuing to discuss the political resolution of ethnic disputes with the Tamil National Alliance (TNA), the largest Tamil political party. The government and the ruling party have proposed establishing the Parliamentary Select Committee (PSC), which would have the role of considering constitutional measures for national reconciliation. However, opposition parties—the TNA and the United National Party (UNP)—have not announced their participation (MOFA 2012).

## 7.7 Issues and Problems

For national reconciliation, it is necessary to amend the Constitution to expand the rights of indigenous peoples and ethnic minority groups. However, to the contrary, the current regime tends to intensify the centralisation framework. Material reconstruction is in progress, but social reconstruction is still slow. It is noted that ethnic conflict could occur again in the future.

In September 2011, the Sri Lankan government approved the National Action Plan for the Protection and Promotion of Human Rights. Based on the plan, over a period of five years, beginning in 2011, the human rights situation of the internally displaced persons will be monitored and reviewed as one of the eight key categories, including women, children, workers, and migrant workers. The steady development of cross-ethnic reconciliation beyond the ethnic conflict is expected to continue in the future (NHK 2011).

## 7.8 Gap Analysis between the Present Domestic Regulations, the JICA Guidelines for Environmental and Social Considerations and the World Bank Safeguard Policy

There is no official definition of ethnic minorities in Sri Lanka, and it is not possible to create an Indigenous Peoples Plan under the Sri Lankan national law only. However, as a supplement to initial poverty and social assessments, organisations such as the Road Development Authority and the Mahaweli Authority use a screening and categorisation form, adopted from the ADB, which includes the following questions:

- Are there indigenous peoples or ethnic minority groups present in the project location?
- Do they maintain distinctive customs or economic activities that may make them vulnerable to hardship?
- Will the project restrict their economic and social activity and make them particularly

vulnerable in the context of the project?

The information obtained from this questionnaire is used to determine the impact of the project in these communities.

Comprehensive comparisons between Sri Lankan policies and World Bank Safeguard policies to determine the impact of projects to indigenous communities are limited by the lack of specifications under Sri Lanka national laws. However, regarding ancestral domain, differences were identified. While ADB and other international donors emphasise the importance of protecting indigenous people's rights and minimising the impact on their ancestral lands, the government of Sri Lanka prioritises development over the protection of ancestral lands. ADB recognizes that to bridge the gap, for every project, the decision makers should always try to balance development and protection of ancestral domains/ lands as well as related natural resources of indigenous people. In projects involving Indigenous Peoples, World Bank ensures that projects meet its safeguard policies regarding Indigenous Peoples despite the lack of provisions in the national law.

Chapter 8 provides further detailed gap analysis information between the governmental laws of Sri Lanka and other donors guidelines, including case studies.

**Chapter 8**  
**Environmental and Social Considerations in**  
**Other Donors' Projects**

## 8 Environmental and Social Considerations in

### Other Donors' Projects

#### 8.1 Current Situation and Issues of Environmental and Social Considerations in the Projects by the World Bank

##### 8.1.1 Current Condition and Problems Related to Implementation of EIA

The World Bank undertakes environmental screening of each proposed project in order to determine the appropriate extent and type of environmental assessment (EA). World Bank classifies the proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts. These project categories are

- Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the 'without project' situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally an Environmental Impact Assessment (EIA) (or a suitably comprehensive regional or sectoral EA) that includes, as necessary, elements of the other instruments referred to in paragraph 7 of Operational Policy 4.01.
- Category B: A Category B project has potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - which are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A assessment. Like Category A, a Category B environmental assessment examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. The findings and results of EA

for Category B projects are described in the project documentation (Project Appraisal Document and Project Information Document). Category C: likely to have minimal or no adverse environmental impacts and therefore do not require further EA action beyond screening.

- Category FI: projects where World Bank provides funds to participating national banks, credit institutions, and other financial intermediaries (FIs) for lending at the FIs' risk to final borrowers. In the case of such projects, the FI screens each subproject proposed for financing and classifies it into one of the three categories A, B, or C (WB 2012).

For all Category A and B projects, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted (OP 4.01, 14).

In Sri Lanka, a comprehensive legal provision for environmental impact assessment (EIA) was not completed until 1988, after the National Environmental Act (NEA) passed. Before 1988, only coastal area projects required environmental assessments, as required by the Coast Conservation Act (1981, 1988). NEA applies to the whole of the country except the coastal zone and the North Western Province (NWP), which is still ruled by the Coast Conservation Act and the North Western Provincial Statute of 1990. Under these provisions, projects are categorized as either projects that require EIA or those with less adverse impacts that only require an initial environmental examination (IEE). Evaluation of environmental impact is delegated to various government bodies, referred to as the Project-Approving Agency (PAA), depending on the nature of the project. The Coast Conservation Department (CCD) assesses projects that affect the coastal zone (Zubair 2001). In contrast, the World Bank uses predetermined categories to decide if a project requires EIA or only an IEE and conducts the EA in four distinct stages: data collection and stakeholder consultation, data analysis and interpretation, impact identification, and report writing. Compared to World Bank and JICA's guidelines, Sri Lanka's governmental laws pay less attention to the social impacts. Thus for example, the 30-day term for public comment that the government stipulates differs greatly from the recommended 120-days of the World Bank policy. Although the World Bank's guidelines suggest that the project proponents should disclose information related to it, under the Sri Lanka's legislation, the responsibility of information disclosure is incurred not by the project proponent but by the PAA. Moreover, there are no laws in Sri Lanka that overtly describe the prescription when some issues are found in the monitor process, or that overtly stipulate the penalties for violation of the EIA procedure. It should be urgent to address this problem.

While an EIA is an effective tool to address environmental impacts at the project level, it often fails to take into account the cumulative impacts of several projects. Under such circumstances a strategic environment assessment (SEA) is a more effective tool in identifying the cumulative environmental impacts of a specific policy or programme of works. Currently, an SEA is not a mandatory requirement in Sri Lanka, but the Cabinet of Ministers has approved its implementation for policies, programmes, and plans.



**Table 8.1.1: Recent Projects with Environmental Assessment in Sri Lanka**

Project Name (ID)	Approval Date	Description
<p>Private Sector Infrastructure Development Project (P010517) <a href="http://www.worldbank.org/projects/P010517/private-sector-infrastructure-development-project?lang=en">http://www.worldbank.org/projects/P010517/private-sector-infrastructure-development-project?lang=en</a></p>	<p>13 Jun 1996</p>	<p>Environmental Category A</p> <p>Project objective: To develop a modern and efficient infrastructure system in Sri Lanka by promoting significant private sector participation. The EA identified four potentially significant adverse environmental impacts:</p> <ul style="list-style-type: none"> <li>▪ impact of dredge spoil disposal</li> <li>▪ impact of disturbance of sediment due to construction activities</li> <li>▪ impact due to inadequate facilities for waste oil reception</li> <li>▪ impact on navigation in a narrow harbour basin.</li> </ul> <p>The World Bank also reports that procurement requirements of the International Development Association for credit appeared unacceptable to some private sector contractors, and potential infrastructure providers were reportedly dissuaded from applying. The Bank recommends more involvement in the guidance process in future projects.</p>
<p>Renewable Energy For Rural Economic Development (P076702) <a href="http://www.worldbank.org/projects/P076702/renewable-energy-rural-economic-development?lang=en">http://www.worldbank.org/projects/P076702/renewable-energy-rural-economic-development?lang=en</a></p>	<p>20 Jun 2002</p>	<p>Environmental Category B</p> <p>Project objective: Improve the quality of rural life by utilizing off-grid renewable energy technologies to provide energy services to remote communities; and promote power generation in the private sector from renewable energy resources for the main grid.</p> <p>The original EIA report did not include the assessment of all subprojects because sites for all facilities had not yet been identified. The World Bank's policies require an EA of all subprojects. To address this discrepancy the Bank requested project implementing institutions to be responsible for subproject screening.</p>

Source: WB. <http://documents.worldbank.org/curated/en/docsearch/> (Accessed on 25 May 2012).

**Case Study: Second Community Water Supply and Sanitation Project (P058067)**

Approval Date: 06 May 2003

Closing date: 31 Dec 2006

The Second Community Water Supply and Sanitation Project was established to support the Government of Sri Lanka's Rural Water Supply and Sanitation (RWSS) programme, which focused on the North East, North West, and Central provincial councils.

The objective of the project was to increase service coverage and achieve effective and sustained use of water and sanitation services in rural communities and improve livelihood, generate time savings that could be used for productive purposes, and enhance health and productivity, resulting in significant poverty reduction.

The project was planned to strengthen local governance by empowering local communities to plan, implement, and manage their own water and sanitation investments. It was expected to support the peace process in Sri Lanka through the inclusion of the North East Provincial Council as one of the beneficiary areas (WB 2011a).

The project originally required B categorisation, but after conducting an SEA the Hambantota district part of the project was promoted to Category A, requiring a full EIA; this triggered a revision of the project proposal for funding. To avoid delays on other parts of the project and in order to expedite the process, the Government of Sri Lanka decided to fund the EIA with its own funds and finally finish the project without World Bank assistance.

The beneficiary communities were able to choose the type of water supply facilities. The project used simple technologies that could be operated and maintained by the community. The RWSS project implementation was based on a participatory approach that promoted active participation from beneficiary communities who took decisions, contributed towards the construction (a minimum of 20% of construction cost, mainly with unskilled labour was set as the target), and were entirely responsible for operation and maintenance of the scheme after the completion of the project (WB 2003). The World Bank evaluated the project as unsatisfactory because the project did not contribute in any significant way to developing a modern and efficient infrastructure system in Sri Lanka by promoting significant private sector participation.

One negative impact identified in this project was that different uses of water came from the same source. This impact was a result of the participatory approach since each household was involved in planning and deciding the use of water and this led to some conflicts.

Many conflicts like this could be resolved amicably within the community or among the communities involved. If it could not be solved among them, the Pradeshiya Sabha (the local authority) of the area could guide the process (WB 2011a).

**Case Study:** Renewable Energy for Rural Economic Development (P076702)

Date of Approval: 20 Jun 2002

Closing Date: 31 Dec 2011

This project was providing support to the Government of Sri Lanka to find meaningful and sustainable solutions to meet the challenge of rural development, by the provision of electricity through grid-connected renewable energy, solar photovoltaic's investments, independent grid systems, energy efficiency, and demand-side management.

For the EA, the World Bank considers that Sri Lanka's environmental clearance process, in principle, is consistent with its own environmental and public disclosure requirements. The exception is the screening criteria adopted in the process used by the Government of Sri Lanka regarding project classification, where project thresholds are used to determine the type of clearance required and the content of public consultation. However, in line with other projects, the assessment of subprojects followed World Bank's Safeguard Operation Guidelines (OP/BP/GP 4.01), and all subprojects, except for solar home systems, were subject to the EA process described in the operation guidelines, regardless of project thresholds used by the Government of Sri Lanka.

Although the Centralized Environmental Agency's (CEA) regulated EA procedure is less than a decade old, substantial progress has been made by the CEA and PAAs in evaluating EIAs. Institutional strengthening of the CEA has been supported by projects financed by USAID, NORAD, the Government of the Netherlands, the Asian Development Bank (ADB), and the World Bank. However, while implementation experience has been reasonably good, the development agency decided to review the first two EAs prepared for mini hydropower, biomass, and wind power projects and provide concurrence prior to disbursements for associated investments.

In addition, EAs of mini hydropower projects exceeding 5 MW and wind energy projects exceeding 10 MWs as well as biomass projects were reviewed by the IDA to ensure conformity with World Bank safeguard policies and were accepted prior to disbursement of funds from the credit line for these projects.

### 8.1.2 Current Condition and Problems Related to Implementation of Land Acquisition and Involuntary Resettlement

According to World Bank safeguard policies, in cases where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits.

The resettlement plan must include all the necessary measures to ensure that the displaced persons are

- informed about their options and rights pertaining to resettlement;
- consulted and provided with technically and economically feasible resettlement alternatives; and
- provided prompt and effective compensation at full replacement cost for losses of assets attributable directly to the project (WB 2011b).

The WB also emphasizes the importance of conducting regular monitoring by an external monitoring agent to confirm

- results of internal monitoring;
- that the compensation process has been accomplished adhering to procedures communicated to project-affected families and Indigenous Peoples during consultation;
- whether the resettlement entitlements were suitable to the objectives and whether the objectives were suited to the project-affected families and if livelihood and standard of living were restored or enhanced;
- the affected enterprises have received enough assistance to re-establish themselves;
- in the case where vulnerable groups were provided with effective and sustainable income earning opportunities that helped to restore pre-project income levels.

## **Current Condition and Problems Related to Implementation of Land Acquisition and Involuntary Resettlement**

Sri Lanka has a highly developed legal system to manage land acquisition and regulate land use through the Land Acquisition Act (LAA) of 1950 as amended in 1979; this provides for compensation for land, structure, and crops. However, it does not require project executing agencies to address key resettlement issues, such as exploring alternative project options that avoid or minimize impacts on people; compensating those who do not have title to land; consulting affected people and hosts on resettlement options; providing for successful social and economic integration of the affected people and their hosts; paying for full replacement cost of all losses; and full social and economic rehabilitation of the affected people. Therefore, the existing legal provisions do not fully meet World Bank's safeguard requirements when it comes to land acquisition and resettlement. One significant countermeasure to bridge the gap between the LAA and WB safeguard policies is embodied in the National Involuntary Resettlement Policy (NIRP), which is aligned with World Bank policies but does not supersede the LAA. The NIRP is a statement of policy intention without specific rules and prescriptions to guide safeguard implementation. By using the NIRP in previous projects involving land acquisition and involuntary resettlement, the Government of Sri Lanka has been applying policies acceptable to external donors, such as the ADB, JICA, and World Bank.

**Table 8.1.2: World Bank Projects with Resettlement Plan in Sri Lanka**

Project name (ID)	Approval Date	Description
Metro Colombo Urban Development Project (P122735) <a href="http://www.worldbank.org/projects/P122735/metro-colombo-urban-development-project?lang=en">http://www.worldbank.org/projects/P122735/metro-colombo-urban-development-project?lang=en</a>	15 Mar 2012	The objective of the project is to reduce flooding in the catchment of the Colombo Water Basin and strengthen the capacity of local authorities in the Colombo Metropolitan Area through rehabilitation, improvement, and maintenance of local infrastructure and services.
Provincial Roads Project (P107847) <a href="http://www.worldbank.org/projects/P107847/provincial-roads?lang=en">http://www.worldbank.org/projects/P107847/provincial-roads?lang=en</a>	17 Dec 2009	The proposed project is for improvement of provincial roads in Uva Province (UP) and in the Ampara district of Eastern Provinces (EP), Sri Lanka, and is being prepared to provide beneficiaries with improved sustainable road transport by enhancing quality, durability, efficiency, and economic benefits from the provincial road network. Furthermore, the project will enhance the accessibility to the national road network in UP and EP.
North East Housing Reconstruction Program (P083932) <a href="http://www.worldbank.org/projects/P083932/sri-lanka-north-east-housing-reconstruction-program?lang=en">http://www.worldbank.org/projects/P083932/sri-lanka-north-east-housing-reconstruction-program?lang=en</a>	14 Dec 2004	To facilitate the reconstruction of 46,000 houses in the northeast over a 4-year period through the provision of housing support cash grants. In doing so the project will support return of displaced populations in the northeast and regularisation of land title to targeted beneficiaries.

Source: WB. <http://documents.worldbank.org/curated/en/docsearch/> (Accessed on 24 May 2012).

In all three projects, the LAA was used as the main legal procedure for acquiring any private land required for each project. However, a Social Management Framework (SMF) in compliance with Bank OP 4.11 and 4.12 was prepared, and the affected persons and households received eligible compensation and resettlement benefits as per the SMF, irrespective of their title or occupancy status prior to losing shelter, business, assets, and income due to the projects.

### **Case Study: Moragahakanda Development Project**

Closing date: June 2010

The project was established based on a survey of the irrigation and hydropower potential of the Mahaweli Ganga and adjoining river basins during the 4-year period of 1965–1968 by a UNDP/FAO team. This is a key project in the Mahinda Chinthana Policy of 2005. In accordance with the policy, the Government decided to commence work on this project in 2007. The chosen area for the project was the Naula Divisional Secretary's division of the Matale district of Central Province. The area affected by the project covered 4,153 ha, including tank bed, road deviation, elephant corridor, electricity transmission line, and branch channel trace of Medirigiriya. The percentage of development was 31%, whereas only 29% was under tenureship; the remaining 2% constituted lands owned by the state. There were 1,679 families affected by the project.

A detailed project approach was taken as indicated in the following:

- A draft RIP was prepared in November 2008 to fulfil the requirements of National Involuntary Resettlement.
- Possession of land and payment of compensation was scheduled for the 4th quarter of 2011.
- Completion of construction of Thorapitiya tank was planned for the 4th quarter of 2011.
- Provision of infrastructure during the 4th quarter of 2011.
- Handing over of farmsteads for the 1st quarter of 2012.
- Handing over of homesteads conducted during the 1st quarter of 2012.

The RIP from this project concluded that the project would cause two negative impacts on the social life of the people in the inundated and surrounding areas. These were that

- they would lose their land and properties with their religious places and their livelihood;
- some common facilities around Kongahawela Bazaar would also be affected.

This was based on data collected during two socioeconomic surveys in 2006 and 2008; interviews with community leaders and priests in the area; Grama Niladaris; divisional secretaries of Naula, Laggala-Pallegama, and Elahera and Medirigiriya; divisional and village level government officials; and data from the documents of the Survey Department, Census and Statistics Department, and Divisional Secretariat, which were all used in preparing the RIP (MASL 2010).

Land acquisition and resettlement were monitored both internally by the Mahaweli Authority of Sri Lanka (MASL) and externally by an independent body, with the objective of receiving feedback for project management on implementation and identifying problems, failures, and successes. According to officers in charge of resettlement (RDA), the main issue in Sri Lanka is the absence of commitment to check the adequacy and implementation and to monitor a resettlement plan, although according to the NIRP, the Ministry of Land should do this. However, the Ministry has no capacity to do this, and consequently monitoring is either given by donors to a third party and/or the Resettlement branch handles it on its own. While it generally takes about 72 weeks to process compensation payments, delays were one of the key issues with regard to resettlement compensation. However, after beneficiaries were identified, all of them received the compensation due.

### 8.1.3 Current Condition and Problems Related to Considerations for Indigenous Peoples

In the WB's safeguard policies related to considerations for Indigenous Peoples, the following procedures are stipulated:

- screening by the Bank to identify whether Indigenous Peoples are present or have collective attachment to the project area;
- social assessment by the borrower. The assessment should include baseline information on the demographic, social, cultural, and political characteristics of the affected Indigenous Peoples' communities;
- free, prior, and informed consultation with the affected Indigenous Peoples' communities at each stage of the project and particularly during project preparation to fully identify their views and ascertain their broad community support for the project;
- preparation of an Indigenous Peoples Plan or an Indigenous Peoples Planning Framework; World Bank assumes the responsibility of disclosing the information to the public in accordance with World Bank Policy on Disclosure of Information, while the borrower should make them available to the affected Indigenous Peoples' communities in a culturally appropriate form, manner, and language.



### **Current Condition and Problems related to Planning for Considerations for Indigenous Peoples**

There is no rule to prepare the Indigenous Peoples Plan under Sri Lankan regulations as there is no official definition of ‘ethnic minorities’ in Sri Lanka although the Veddha, hunter-gatherers who live in the mountains of Sri Lanka are considered the Indigenous Peoples of Sri Lanka. Census classifies Veddha people under the category “others” making their identification more difficult. In supplement to initial poverty and social assessment, organisations, such as the Road Development Authority or Mahawelli Authority have been using a form of screening and categorisation adopted from the ADB to bridge the gap with donor’s requirements. The screening includes questions such as: are there Indigenous Peoples or ethnic minority groups present in the project location? Do they maintain distinctive customs or economic activities that may make them vulnerable to hardship? Will the project restrict their economic and social activity and make them particularly vulnerable in the context of the project?

Comparisons between Sri Lankan policies and World Bank safeguard policies to determine the impact of projects to indigenous communities are limited by the lack of specifications under Sri Lankan national laws. Given the lack of local regulations regarding indigenous peoples, the World Bank conducted the impact assessment to follow its own operational policy.

**Table 8.1.3: World Bank Projects with Indigenous Peoples Plan in Sri Lanka**

Project Name (ID)	Approval Date	Description
Eco-Systems Conservation and Management Project (P112933) <a href="http://www.worldbank.org/projects/P112933/eco-systems-conservation-management-project-escamp?lang=en">http://www.worldbank.org/projects/P112933/eco-systems-conservation-management-project-escamp?lang=en</a>	29 Nov 2011	The Eco-Systems Conservation and Management Project (ESCOMP) intends to support the Government of Sri Lanka (GOSL) in its attempts to strengthen biodiversity conservation and ensure sustainability of its development process in the landscapes dominated by protected areas. The objective of the project and its description are provided in sections below. Overall, the project does not focus solely on Indigenous Peoples (Veddha). However, in order to safeguard Indigenous Peoples that may likely to get impacted due to project activities, an IP framework has been prepared as part of the Social Management Framework

<p>Provincial Road Project (P107847)  <a href="http://www.worldbank.org/projects/P107847/provincial-roads?lang=en">http://www.worldbank.org/projects/P107847/provincial-roads?lang=en</a></p>		<p>The proposed project is for the improvement of provincial roads in the Uva Province (UP), the Ampara district of Eastern Provinces (EP) and Jaffna in the Northern Province (NP), of Sri Lanka, that will provide beneficiaries with improved sustainable road transport by enhancing quality, durability, efficiency, equity, and economic benefits from the provincial road network. This project covers regions which are considered as a homeland of Sri Lankan Indigenous People called 'Veddha'</p>
<p>Second North East Housing Reconstruction Program (P110317)  <a href="http://www.worldbank.org/projects/P110317/sri-lanka-second-north-east-housing-reconstruction-program?lang=en">http://www.worldbank.org/projects/P110317/sri-lanka-second-north-east-housing-reconstruction-program?lang=en</a></p>	<p>05 Jun 2008</p>	<p>Indigenous Peoples (Veddha) who live in the area were considered as a separate category. A family unit for this community is the extended family where parents live with all the children and their families within one house. They require special housing designs, in the case of Muraththanai, the houses have to be built in clusters a semi circle formation, each of which are designed in a longitudinal shape. The space in front of these houses enables rituals performed in belief of residing (ancestral) Spirits.</p>

Source: WB. <http://documents.worldbank.org/curated/en/docsearch/document-type/642113>  
(Accessed on 25 May 2012).

World Bank prepares project-specific Indigenous People Planning Frameworks consistent with its own policies to address the impact of all projects in which there might be Indigenous Peoples affected. These frameworks have been effective mechanisms to bridge the gap between ADB's safeguard policies regarding Indigenous populations and the lack of specifications in Sri Lankan national laws.

#### 8.1.4 Confirmation System for Monitoring

Based on World Bank safeguard guidelines, in any project the borrower is responsible for reporting on

- (a) compliance, with measures agreed with the Bank on the basis of the findings and results of the EA, including implementation of any EMP
- (b) status of mitigation measures
- (c) findings of monitoring programs.

In Sri Lanka, monitoring is the responsibility of the PAA and monitoring is not actively enforced. To date, laws that prescribe actions when issues are found in the monitoring process or that stipulate the penalties of violation of the EIA procedure do not exist.

#### 8.1.5 Implementation of Information Disclosure during Project Formulation, Project Screening and Project Implementation

World Bank's safeguard policies state that for meaningful consultations between the borrower and project-affected groups and local nongovernmental organisations (NGOs) on all Category A and B projects, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted.

For a Category A project, the borrower provides a summary of the proposed project's objectives, description, and potential impacts for the initial consultation. In addition, the borrower makes the draft EA report available for public review, which is accessible to project-affected groups and local NGOs. In the case of a Category B project, a report on a project proposed for IDA financing is made available to project-affected groups and local NGOs (WB 2012).

National law in Sri Lanka places the responsibility of information disclosure on the PAA not by the project proponent. Further, the cost of copying the EIA report is imposed on the one who requests it. It is recommended that not only the PAA but also the project proponent should be responsible for disclosing the EIA reports.

## 8.2 Current Situation and Issues of Environmental and Social Considerations in the Projects by the ADB

### 8.2.1 Current Condition and Problems Related to Implementation of EIA

#### **Current Condition and Issues Related to the EIA**

ADB Environmental Guidelines were updated in 2003 in order to address the following points:

- incorporate the increasing expectations of EA that reflect the growing environmental concerns around the globe;
- have a more transparent procedure for determining the environment category;
- formalize approaches for ADB's lending activities to financial intermediaries;
- refine approaches to sector lending where the subprojects and specific locations may not be known in advance;
- strengthen requirements for environmental management plans (ADB 2004).

In accordance with the assessed environmental impact by the project's potential environmental impacts, a project is categorized into:

- Category A - likely to have significant adverse environmental impacts and requires EIA. While no specific category exists in Sri Lanka, there is a list of industries that require EIA;
- Category B - potentially adverse environmental impacts less than those of category A. An IEE is required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final EA report (ADB 2004); IEE;
- Category C - does not require EIA or IEE, although environmental implications are still reviewed;
- Category FI Projects are classified as category FI if they involve a credit line through a financial intermediary or an equity investment in a financial intermediary.

**Table 8.2.1: Recent EIA Reports of ADB Projects**

Project Name (ID)	Date of Approval	Description
North Central Province Rural Development	24 Sep 1996	Category B, IEE. The project was designed to assist the Government in addressing the economic development problems in North Central Province, through rehabilitation

<p>Project (27186)  <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=27186%29&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=27186%29&amp;submit=Submit</a></p>		<p>and improvement of tank irrigation, inland fisheries development, and provision of credit for small and medium enterprises. The final assessment of the project reports that the number of irrigation tank schemes rehabilitated was less than targeted but that there was more area covered. Most of the gains were in low-value minor systems, and there was a shortfall in the high-performance Mahaweli schemes. Fisheries and the credit program performed below expectations. The road targets were attained and increased in some cases, but there were design, quality, and maintenance shortcomings.</p>
<p>Sri Lanka:  Third Water Supply and Sanitation Sector Project (28153)  <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=28153&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=28153&amp;submit=Submit</a></p>	<p>16 Sep 2009</p>	<p>Category B, IEE. Objective was to ensure sustainability of water and sanitation sector development through policy reforms and project investments in six selected districts (Anuradhapura, Hambantota, Kalutara, Kegalle, Monaragala, and Puttalam). Currently the project provides improved water supply and sanitation services to about 1.4 million people, exceeding its target of 1 million people at appraisal. However, noncompliance with key water policy covenants, particularly the creation of an acting independent regulatory body, approval of a water resources policy, and private sector participation, impacted negatively on achieving the full effectiveness of the project with potential implications on the long-term sustainability of the sector (ADB 2009).</p>
<p>Road Sector Development Project (31280)  <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=31280&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=31280&amp;submit=Submit</a></p>	<p>19 Dec 2002</p>	<p>Category B, IEE. The objective of the project was to improve transport efficiency and contribute to the expansion of economic opportunities and the reduction of poverty. ADB reports that the project achieved its intended target to a large extent. Rehabilitation was completed without major environmental or land acquisition issues. However, almost 3 years lapsed between the feasibility study for the project and the actual start of project construction. During that period, roads further deteriorated, causing increases in cost above the estimates based on the conditions described in the feasibility study.</p>

Source: ADB. <http://www2.adb.org/Projects/reports.asp> (Accessed on 25 May 2012).

**Case Study: Colombo Port Expansion Project**

Closing date: 31 Dec 2017

The project is to install breakwaters, terminals, and channels—all within SLPA port limits. The project contains the following characteristics:

- (i) considered under category A according to ADB's EA Guidelines (2003);
- (ii) listed as a 'prescribed project' according to the National Environmental Act 47 of 1980 as amended by Act 56 of 1988.

Based on the points above, EIA was prepared. As the project is under the jurisdiction of the CCD according to the Government's Coast Conservation Act 57 of 1981, environmental approval and the permit for development activity have been obtained from the CCD. The EIA report for the project was approved by the CCD on 12 December 2005.

Major challenges of the project include inability to fulfil the original approach to make the landlord port model. As the dominant model through corporatisation of the Jaya Container Terminal did not succeed, ADB carried out intensive policy dialogue with the Government to use the public-private partnership (PPP) approach as an alternative method, but this has not been implemented yet. The Government agreed to employ the PPP approach for future container terminals in Colombo Port and to make the breakwater construction a public sector responsibility, while terminal operations would be carried out by terminal concessionaires.

The ongoing project allows for three new container terminals to be developed, i.e., south, west, and east terminals. The prospective terminal operator will be a corporate entity selected through open competitive bidding to ensure that transportation competitiveness between the different terminals is enhanced and thus improve the overall efficiency of Colombo Port. Open competitive bidding will also be used for the second terminal to be built as part of the project, tentatively in 2015. The third terminal to be developed in 2024 will also follow the PPP scheme. This project will therefore make the landlord port model the dominant model in Colombo Port by using a PPP approach.

The second significant policy covenant of the 2001 ADB loan was to reform the regulatory structure for the ports sector through legislation, especially to curb any anticompetitive behaviour on the part of established operators. The Government's long-term objective in this regard is to enact a Port Competition Act. Prior experience with both the World Bank and the ADB assistance indicate that changing the regulatory structure by legislation needs to be done in incremental steps with the agreement of all parties. Hence, in the interim, using a regulation

by contract approach, the Government through a Cabinet decision on 11 October 2006 approved the establishment of an advisory committee to consider any grievances or complaints that current and future container terminal operators may have regarding fair competition issues (ADB 2007).

## 8.2.2 Implementation of Land Acquisition and Involuntary Resettlement

According to the ADB, Category A and B projects may involve land acquisition, which may result in adverse social impacts, including displacement of individuals and communities under the following stipulations:

- The project proponent is required to avoid involuntary resettlement wherever possible, to minimize involuntary resettlement by exploring design alternatives (ADB 2007).
- The borrower/client conducts a social impact assessment and sets the cut-off date to identify the affected persons as well as structures to be affected. Based on the results, a Resettlement Plan is formulated with the following items:
  - scope of land acquisition and resettlement;
  - objectives, policy framework, and entitlements: describe key national and local land, compensation and resettlement policies, laws, and guidelines that apply to project;
  - consultation, and grievance redress participation;
  - compensation, relocation, and income restoration: describe arrangements for valuing and disbursing compensation, arrangements for housing relocation, including transfer and establishment, as well as income restoration measures to be implemented;
  - institutional framework;
  - resettlement budget and financing (implementation schedule and monitoring and evaluation [ADB 1998]).

The monitoring and evaluation of projects according to ADB's policies should include

- budget and timeframe: whether the resources are being allocated on time and if land has been acquired and occupied in time for project implementation;
- delivery of entitlements: whether all affected people (AP) received entitlements according to numbers and categories of loss set out in the entitlement matrix. If all AP received payments on time, including compensation to business and wage earners affected by the project; and if relocation sites have been developed as per agreed standards;
- consultation, grievances and special issues;
- livelihood development.

## **Current Condition and Problems Related to Implementation of Land Acquisition and Involuntary Resettlement**

There are significant differences between ADB's policies and the national law in Sri Lanka regarding involuntary resettlement and land acquisition. In Sri Lanka, both involuntary resettlement and land acquisition are prescribed by the Land Acquisition Act No.9 (1950/1956), which has no provision for involuntary resettlement. However, involuntary resettlement currently follows the provisions from the NIRP (from 2000), which is aligned with ADB's and other agencies' safeguard policies, although it does not have any provision regarding capacity building or grievance procedures. The confirmation methods of compensation of ADB are basically similar to that of the World Bank. The independent or external monitoring agents employed by project proponents are tasked with the same assignments and submission of compliance monitoring reports. An independent land appraiser or a specialist in property appraisal is employed particularly to confirm means of compensation and property valuation or land pricing.



**Table 8.2.2: Discrepancies between Sri Lankan National Law/Policies and ADB Safeguard Policy Statement**

Aspect	Discrepancies between National Policy and ADB Safeguard Policy Statement
Resettlement plan (RP)	A comprehensive RP is only required by Sri Lankan policies for projects that involve resettlement of 20 or more families.
Compensation for nontitle holders	It is contemplated in the NIRP but not in the LAA. ADB does consider compensation for loss of assets other than land for those who have occupied the land or structures prior to the cut-off date for eligibility for assistance.
Consultation with stakeholders	LAA does not include consultations with stakeholders, although it is included in the NIRP. ADB does require consultation with displaced persons.
Public disclosure	Provided in the NIRP, only if the project is subject to IEE or EIA, the report should be available for public comment.
Income restoration	Only included in the NIRP, the provision is congruent with ADB.
Taking possession before compensation	Act provides but NIRP does not allow. NIRP is aligned with ADB.
Grievance redress mechanism	No provision in LAA; ADB requires under the Safeguard Policy Statement, 2009.
Acquisition within 48 hours on an urgency basis	It is possible under 38(a) of LAA even without paying compensation. While NIRP does not allow without paying replacement cost, it does not supersede the LAA. ADB does not allow unless it ensures that no physical or economic displacement will occur until full compensation has been paid and other entitlements listed in the RP have been provided to the DPs.
Replacement cost	Only provided in the NIRP according to the regulation gazette on 20 January 2009. ADB only considers full replacement cost.
Assistance for vulnerable people	No provision in LAA but NIRP requires special treatment for vulnerable groups, as does ADB.
Compensation by instalments	LAA provides statutory compensation to be paid in instalments, but NIRP does not agree. ADB requires all compensation costs to be paid to the displaced before any physical economic displacement occurs.

Source: ADB, Resettlement Plan for Nugegoda to Homagama Road

**Table 8.2.3: Recent Projects with Involuntary Resettlement Plan**

<b>Project Name (ID)</b>	<b>Approval Date</b>	<b>Description</b>
Southern Transport Corridor (26522) <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=26522&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=26522&amp;submit=Submit</a>	Oct 1999	The Southern Transport Development Project was approved on 25 November 1999 and declared effective on 30 October 2002 with ADB approval of the RIP. The resettlement process is long (minimum time required is 70 weeks) and it can take longer if the title is not clear, survey and valuations are delayed, funds are not available.
South Harbor Development in the Port of Colombo (33019) <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=33019&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=33019&amp;submit=Submit</a>	13 Oct 1999	The objective was to assist the Government in improving the existing infrastructure in response to domestic and international market signals, to reorient its productive structure towards higher value-added sectors to be spearheaded by the private sector.
Road Sector Master Plan (37263) <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=37263&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=37263&amp;submit=Submit</a>	20 Jan 2004	The purpose of this TA will be to assist the Government prepare a road master plan through a prioritized plan to develop the road network for the next 20 years. A Grievance Redress Committee was formed for issues not related to the LAA as a way to bridge the gap with ADB policies.

Source: ADB. <http://www2.adb.org/Projects/reports.asp> (Accessed on 24 May 2012).

**Case Study:** Independent External Monitoring of Resettlement Activities of the Southern Transport Development Project (STDP)

**Description:** The STDP is the first access-controlled expressway project in Sri Lanka; it covers a distance of 128 km from Kottawa in Western Province to Matara in Southern Province. The consultants submitted the Inception Report on 18 May 2006. The monitoring framework included monitoring activities, time frame, and impact of the overall monitoring process. They also recommended corrective measures on:

- disparities in compensation payment

- issues in resettlement sites
- problems in livelihood restoration and grievances of affected persons.

Also, two major workshops were organized, and experiences of resettlement monitoring and resettlement best practices were discussed in the sessions. Field verification activities were conducted, including

- surveys with 200 household samples
- 96 case studies
- observations, which indicated that the performance of ADB and EA was satisfactory. ADB and EA effectively managed the TA by providing timely instructions to the consultants.

### **Current Problems Related to Land Acquisition and Involuntary Resettlement**

As reported by the ADB, currently some provisions in Sri Lankan laws and regulations are not consistent with ADB's resettlement policy. For example, compensation rights are limited only to the AP who have legal rights; hence rights of encroachers are neglected. Also, it was identified that there is a need for new laws and regulations. For example, compensation rights are limited only to the AP who have legal rights and rights of encroachers are neglected. Additional land acquisition caused affected party unrest on the resettlement process and hence project implementation delay. Therefore, additional land acquisition should be minimized as much as possible (ADB 2006).

The existing compensation process is unnecessarily complex and time consuming. AP can receive up to four different payments, with payments for each being made at different times. Further, there is a provision in Sri Lanka's law allowing compensation payment to be paid in instalments, therefore further delaying the receipt of full compensation. (Since the monetary compensation is not being practiced in this project, it is not a significant issue.) This prolongs the land acquisition process, effectively prevents APs from being able to make an immediate start on restoration of their livelihoods, and incurs project costs, which can end up being significant, in the form of the interest payments. (Land acquisition is not a significant issue for this project due to land donated by the communities for the project. Therefore, compensation for land is not an issue.)

### 8.2.3 Considerations for Indigenous Peoples

ADB in its Safeguard Policy Statement (2009) defines Indigenous Peoples as a distinct, vulnerable, social, and cultural group possessing the following four characteristics in varying degrees:

1. self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
2. collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
3. customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
4. a distinct language, often different from the official language of the country or region.

ADB policy on Indigenous Peoples considers that as socioeconomic development takes place, many development initiatives are expanding into geographically remote areas, often considered the traditional homelands of Indigenous Peoples, which offer resources, such as forests, minerals, and hydropower potential. Physical intrusions of development interventions into the traditional domains of Indigenous Peoples and social intrusions into indigenous cultures can be viewed by Indigenous Peoples and others as a violation of human rights, rights to land, and rights associated with the maintenance of culture.

ADB's policy on Indigenous Peoples ensures that ADB interventions are

- consistent with the needs and aspirations of affected Indigenous Peoples;
- compatible in substance and structure with affected Indigenous Peoples' culture and social and economic institutions;
- conceived, planned, and implemented with the informed participation of affected communities;
- equitable in terms of development efforts and impacts; and
- not imposing the negative effects of development on Indigenous Peoples without appropriate and acceptable compensation.

In accordance with ADB policy on Indigenous Peoples, an Initial Social Assessment (ISA) is conducted as part of project design. The assessment should include specific considerations for indigenous Peoples as a potentially affected population. If the ISA identifies Indigenous Peoples specifically as a significantly and adversely affected population, or vulnerable to being so

affected, an Indigenous People's Development Plan (IPDP) must be prepared by the government or other project sponsors for ADB approval.

The IPDP should include key elements, such as specific measures to mitigate negative effects, and provide necessary and appropriate assistance and compensation so that the circumstances of the affected peoples would be as favourable as would have existed before the intervention (ADB 2004).

If necessary, pertinent sections of the IPDP should be included in the EA report to complete the description of the physical environment, the potential impacts of the project, and the measures to mitigate, offset, or compensate for adverse impacts.

The IPDP also confirms the social acceptability of the proposed project as the plan could not have been prepared without prior consultations with, and involvement of, the affected Indigenous Peoples.

### **Current Condition and Issues related to Considerations for Indigenous Peoples**

Sri Lanka does not have any specific statements on Indigenous Peoples under Sri Lankan national laws; therefore comparison with ADB's policy regarding these ethnic minorities cannot be conducted. However, regarding Ancestral Domains, differences were identified. While ADB and other international donors emphasize the importance of protecting indigenous people's rights and minimize the impact on their ancestral lands, the government of Sri Lanka prioritizes development over protection of ancestral lands. ADB recognizes that to bridge the gap, for every project, the decision makers should always try to balance development and protection of ancestral domains/ lands as well as related natural resources of indigenous people.

Given the history of ethnic conflicts in Sri Lanka, having a more comprehensive approach to the impact of projects on Indigenous Peoples communities is recommended. As a mechanism to bridge the gap between ADB's safeguard policies and the lack of a specific law that safeguards the rights of Indigenous Peoples, ADB-funded projects prepare project-specific Indigenous Peoples Planning Framework that are consistent with its requirements.

**Table 8.2.4: ADB Projects with Indigenous Peoples Planning Report**

Project Name (ID)	Approval Date	Description
National Highways (NH) Sector Project (38357) <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=38357&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=38357&amp;submit=Submit</a>	15 Dec 2005	The main objective of the project is to improve transport efficiency, which will expand economic opportunities by enabling Road Development Agency to manage the NH network, upgrading and increasing capacity of about 270 km of key national highways, and piloting a performance-based maintenance contract. Communities affected by the Project will be mainly Sinhalese, Muslims, and Tamil; however, a section on special actions is included in the Resettlement Framework. The Project will support equal treatment of all groups.
Lagging Local Authorities Infrastructure Development Project (42459) <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=42459&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=42459&amp;submit=Submit</a>	29 Sep 2011	The project will improve the effective delivery of local infrastructure and services by local authorities in less-developed areas of Sri Lanka. It will implement subprojects for roads and bridges, water supply and sanitation, drainage, solid waste management, and other basic facilities, including building or enhancing health-care centres and public markets. The physical work associated with subprojects will take place primarily in geographic locations outside areas where most indigenous peoples live (Uva and Eastern Provinces).
Human Resource Investment Project (35197) <a href="http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=35197&amp;submit=Submit">http://www2.adb.org/Projects/summaries.asp?mode=1&amp;browse=1&amp;type=&amp;ctry=&amp;query=35197&amp;submit=Submit</a>	21 Nov 2005	The objective is the development of more mid-level and highly skilled human resources who will contribute to economic growth and social development. The project supports the Government's poverty reduction strategy and economic goals by improving the country's skill-based competitiveness. The project's envisioned outcome is improved access and strengthened capacity of the technical education and vocational training system in technical and technological education to meet labour market needs.

Source: ADB. <http://www2.adb.org/Projects/reports.asp> (Accessed on 24 May 2012).

#### 8.2.4 Monitoring Procedure

Upon its reorganisation in 2002, ADB established systems for monitoring projects' compliance with its safeguard policies. With the support of the Environment and Social Safeguard Division, ADB's Chief Compliance Officer is responsible for advising management and operations departments on safeguard compliance and related operational procedures and guidelines. Compliance with the safeguard policies is monitored throughout the project cycle. If a project poses risks of noncompliance, actions to ensure compliance are recommended at the management review meeting, and project compliance is reviewed again at a staff review committee meeting. Operations departments take steps to ensure that outstanding safeguard requirements are met before Board approval. As stated in the ADB Safeguard Policy Statement (SPS), ADB assumes the responsibility for conducting due diligence and for reviewing, monitoring, and supervising projects throughout the ADB's project cycle in conformity with the principles and requirements embodied in the SPS (ADB 2009). Likewise, ADB requires borrowers/clients to (SPS Section57)

- establish and maintain procedures to monitor the progress of implementation of safeguard plans;
- verify the compliance with safeguard measures and their progress towards intended outcomes;
- document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports;
- follow up on these actions to ensure progress toward the desired outcomes;
- retain qualified and experienced external experts or qualified NGOs to verify monitoring information for projects with significant impacts and risks;
- use independent advisory panels to monitor project implementation for highly complex and sensitive projects;
- submit periodic monitoring reports on safeguard measures as agreed with the ADB.

In Sri Lanka, the responsibility of monitoring is incurred by the PAA, and currently there is no law that stipulates the penalties of violation of EIA procedure. Monitoring results are disclosed only when requested. The prescription on how to address issues found on the monitoring process have not yet been established.

## 8.2.5 Implementation of Information Disclosure during Project Formulation, Project Screening and Project Implementation

According to ADB's 2009 SPS, the borrower/client will submit to the ADB the following documents for disclosure on ADB's website (ADB 2009):

- a draft full EIA (including the draft EMP) at least 120 days prior to ADB Board consideration, and/or EA and review frameworks before project appraisal, where applicable;
- the final EIA/IEE;
- a new or updated EIA/IEE and corrective action plan prepared during project implementation, if any; and
- environmental monitoring reports.

As with World Bank policies, ADB policies differ from those in Sri Lankan national law regarding information disclosure. In order to bridge this gap, referring to NIRP is suggested. (While not explicitly identified in the NIRP, many of the principles espouse participatory methods, which should include disclosure of information). While information on the projects is available at the ADB website, most of it is only available in English.



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TABLE A-1

**Major Acts and Ordinances Related to Environmental and Social Considerations in Sri Lanka**

No.	Name	Year
1.	National Environmental Act	1980
2.	Forest Ordinance	1907
3.	Fauna and Flora Protection Ordinance	1937
4.	Mahaweli Development Board Act	1970
5.	Coast Conservation Act	1981
6.	National Heritage Wilderness Act	1988
7.	Botanic Gardens Ordinance	1928
8.	Motor Traffic Act	1994
9.	Colombo Municipal Council Waterworks Ordinance	1907
10.	Water Resources Board	1964
11.	National Water Supply and Drainage Board Law	1974
12.	National Aquatic Resources Research and Development Agency Act	1981
13.	Marine Pollution Prevention Act	1981
14.	Ceylon Electricity Board Act	1967
15.	Atomic Energy Authority Act	1969
16.	National Resources, Energy and Science Authority Of Sri Lanka Act	1981
17.	Irrigation Ordinance	1900
18.	Control of Pesticides Act	1980
19.	Land Development Ordinance	1935
20.	Crown Land Ordinance	1947
21.	Land Acquisition Act	1950
22.	Urban Development Authority Law	1978
23.	Sri Lanka Land Reclamation and Development Corporation Act	1982
24.	National Environment (Noise Control) Regulation	1996
25.	Antiquities Ordinance	1940
26.	Cultural Property Act	1988
27.	Flood Protection Ordinance	1924
28.	Mines and Minerals Law	1973
29.	Crown Lands Ordinance	1947
30.	Thorough Fares Ordinance	1861
31.	River Valleys D.B. Act	1965
32.	Nuisance Ordinance	1964
33.	Colombo Municipal Council Water Works Ordinance	1907
34.	Mines and Minerals Law	1947
35.	Soil Conservation Act	1951
36.	Fauna and Flora Protection Ordinance	1937
37.	Water Hyacinth Ordinance	1909
38.	Plant Protection Ordinance	1924
39.	Felling of Trees Ordinance	1951
40.	Fishing Ordinance	1940

No.	Name	Year
41.	Chank Fisheries Act	1890
42.	Pearl Fisheries Act	1925
43.	Penal Code	1883
44.	Housing and Town Improvement Ordinance	1915
45.	Town and Country Planning Ordinance	1946
46.	Tourist Development Act	1968
47.	Ayurveda Act	1961
48.	Ceylon Tourist Board Act	1968
49.	State Gem Corporation Act	1971
50.	Coconut Development Act	1971
51.	Agricultural Productivity Law	1972
52.	Agricultural Lands Law	1973
53.	National Science Council Law	1968
54.	Maritime Zone Law	1976
55.	Wells and Pits Ordinance	1864
56.	Factories Ordinance	1942
57.	Gas Ordinance	1869
58.	Petroleum Ordinance	1887
59.	Cosmetic, Devices and Drugs Act	1980
60.	Food Act	1980
61.	Marine Pollution Prevention Act	1981

TABLE A-2

**Status of Sri Lanka with Regard to Major International Conventions, Protocols and Treaties Related to the Environment**

No.	Environment Related International Conventions, Protocols, and Treaties	Signature	Ratification (R) Acceptance (AT) Adherence (AD) Accession (AC) Approval (AP)	Entry into force
1.	International Plant Protection Convention (Rome, 1951)	7 Dec 1951	12 Feb 1982 (R)	
2.	Plant Protection Agreement for the South East Asia and Pacific Region (as amended) (Rome, 1956)	13 Feb 1985 (definitive)	27 Feb 1956 (R)	
3.	Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (Moscow, 1963)	22 Aug 1963	5 Feb 1964	
4.	International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (Brussels, 1969)		12 Apr 1983 (AC)	11 Jul 1983
5.	Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971)		15 Jun 1990 (AC)	15 Oct 1990
6.	Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons, and on Their Destruction (London, Moscow, Washington, 1972)		18 Nov 1986 (R)	
7.	Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)		6 Jun 1980 (R)	
8.	Convention on International Trade in Endangered Species of Wild Fauna and flora (Washington, 1973)		4 May 1979 (AC)	2 Aug 1978
9.	United Nations Convention on the Law of the Sea (Montego Bay, 1982.)	10 Dec 1982	19 Jul 1994	
10.	Vienna Convention for the Protection of the Ozone Layer (Vienna, 1985)		15 Dec 1989 (AC) 15 Dec 1989 (R)	15 Dec 1989
11.	Montreal Protocol on Substances that Deplete the ozone Layer (Montreal 1987)		15 Dec 1989 (AC) 15 Dec 1989 (R)	15 Dec 1989
12.	Convention on Early Notification of a Nuclear Accident (Vienna, 1986)		11 Jan 1991 (R)	11 Feb 1991
13.	Agreement on the Network of Aquaculture Centres in Asia and the Pacific (Bangkok,		5 Jan 1989 (R)	

No.	Environment Related International Conventions, Protocols, and Treaties	Signature	Ratification (R) Acceptance (AT) Adherence (AD) Accession (AC) Approval (AP)	Entry into force
	1988)			
14.	Basel Convention on the Control of Trans boundary Movements Wastes and Their Disposal (Basel, 1989)		28 Aug 1992 (AC)	28 Nov 1992
15.	United Nations Framework Convention on Climate Change (New York, 1992)		23 Nov 1993 (R)	16 Feb 2005 21 Mar 1994
16.	Convention on Biological Diversity, (Rio De Janeiro, 1992)	10 Jun 1992	23 Mar 1994 (R)	23 Mar 1994
17.	International Convention to Combat Desertification (Paris, 1994)			
18.	Convention on the Prohibition of Military or Any Other Hostile Use of Modification Techniques (Geneva, 1976)		25 Apr 1978	5 Oct 1978
19.	Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (New York, 1994)		28 Jul 1995 (R)	28 Jul 1996
20.	Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, 1995)		24 Oct 1996 (R)	
21.	United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, 1994)		9 Dec 1998 (AC) 9 Dec 1998 (R)	9 Mar 1999
22.	Cartagena protocol on Biosafety to the Convention on Biological Diversity (Cartagena, 2000)	24 May 2000	28 Apr 2004 (R)	28 Jul 2004
23.	Convention on Persistent Organic Pollutants (Stockholm, 2001)	5 Sep 2001	22 Dec 2005 (R)	22 Dec 2005
24.	Kyoto protocol to the United Nations Framework Convention on Climate Change (Kyoto, 1997)		3 Sep 2002 (R)	16 Feb 2005
25.	Convention on Conservation of Migratory Species (Bonn, 1979)		6 Jun 1990 (R)	1 Sep 1990
26.	International Convention on Civil Liability for Oil Pollution Damage (1969)		12 Apr 1983(AC)	11 Jul 1983
27.	International Convention on the Establishment of an International Funds for		12 Apr 1983 (R)	11 Jul 1987

No.	Environment Related International Conventions, Protocols, and Treaties	Signature	Ratification (R) Acceptance (AT) Adherence (AD) Accession (AC) Approval (AP)	Entry into force
	Compensation for Oil pollution Damage			
28.	International Convention for the Prevention of Pollution from Ships (MARPOL-1973) and Protocol 1978		24 Jun 1997 (R)	24 Sep 1997
29.	The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam, 1998)		19 Jan 2006 (R)	-
30.	United Nations Convention on the Law of Seas		19 Jul 1994 (R)	28 Jul 1995
31.	Convention Concerning the Protection of Workers against Ionizing Radiations		18 Jun 1986	-

TABLE A-3

**Sri Lanka National Ambient Air Quality Standards vs. WHO Guideline Values**

Pollutant	Averaging Time	Maximum Permissible Level		WHO Guidelines
		$\mu\text{g}/\text{m}^3$	ppm	$\mu\text{g}/\text{m}^3$
PM <sub>10</sub>	1 yr	50	–	20
	24 hrs	100	–	50
PM <sub>2.5</sub>	1 yr	25	–	10
	24 hrs	50	–	25
NO <sub>2</sub>	1 yr	–	–	40
	24 hrs	100	0.05	–
	8 hrs	150	0.08	–
	1 hr	250	0.13	200
SO <sub>2</sub>	24 hrs	80	0.03	20
	8 hrs	120	0.05	–
	1 hr	200	0.08	–
	10 mins	–	–	500
O <sub>3</sub>	8 hrs	–	–	100
	1 hr	200	0.10	–
CO	8 hrs	10,000	9.00	10,000
	1 hr	30,000	26.00	30,000
	Anytime	58,000	50.00	–

Source: ADB and the Clean Air Initiative for Asian Cities Center. 2006. Sri Lanka: Country Synthesis Report on Urban Air Quality Management (Discussion Draft).; The Gazette of the Democratic Socialist Republic of Sri Lanka. Feb. 1, 2008.; WHO. 2005. WHO Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide.

TABLE A-4

**Sri Lanka National Drinking Water Standards vs. WHO Guideline Values**

No.	Parameter	Unit	Highest Desirable Level	Maximum Permissible Level	WHO
01	Electrical conductivity at 25°C	$\mu\text{S}/\text{cm}$	750	3500	na
02	Total solids	mg/l	500	2000	600
03	Colour	Hazen Units.	5	30	na
04	Taste	–	Unobjectionable	-	
05	Odour		Unobjectionable		
06	Turbidity	NTU	2	8	0.1 (A)
07	Chloride (Cl)	mg/l, max.	200	1200	
08	Fluoride (F <sup>-</sup> )	mg/l, max.	-	1.5	1.5
09	Iron (Fe)	Mg/l, max.	0.3	1	0.3 (A)
10	Manganese (Mn)	mg/l, max.	0.05	0.5	0.4 (C)

11	Copper (Cu)	mg/l, max.	0.05	1.5	2.0
12	Zinc (Zn)	mg/l, max.	5	15	4.0(A).
13	Calcium (Ca)	mg/l, max.	100	240	n.a.
14	Magnesium (Mg)	mg/l, max.	30	150	n.a.
15	Total Phosphates (PO <sub>4</sub> <sup>3-</sup> )	mg/l, max.	-	2.0	n.a.
16	Sulphate (SO <sub>4</sub> <sup>2-</sup> )	mg/l, max.	200	400	n.a.
17	Total Alkalinity (as CaCO <sub>3</sub> )	mg/l, max.	200	400	n.a.
18	Total Hardness (as CaCO <sub>3</sub> )	mg/l, max.	250	600	300 (A)
19	Free Ammonia (as NH <sub>3</sub> )	mg/l, max.	-	0.06	n.a.
20	Nitrate(NO <sub>3</sub> -)	mg/l, max.	-	45	n.a.
21	Nitrite (NO <sub>2</sub> -)	mg/l, max.	-	0.01	n.a.
22	pH		7.0-8.5	6.5-9.0	6.5-8.0 (A)
23	Arsenic (As)	mg/l, max.	-	0.05	0.01 (P)
24	Cadmium (Cd)	mg/l, max.	-	0.005	0.003
25	Chromium (Cr)	mg/l, max.	-	0.05	0.05 (P)
26	Cyanide (CN-)	mg/l, max.	-	0.05	0.07
27	Lead (Pb)	mg/l, max.	-	0.05	0.01
28	Mercury (Hg)	mg/l, max.	-	0.001	0.006
29	Selenium (Se)	mg/l, max.	-	0.01	0.01
30	Free Residual Chlorine (as Chlorine)	mg/l, max.	-	0.2	5
31	Polynuclear aromatic hydrocarbons	mg/l, max.	-	0.0002	
32	Phenolic compounds (as phenolic OH)	mg/l, max.	0.001	0.002	
33	Greases & Oil	mg/l, max.	-	1.0	
34	COD (Chemical Oxygen Demand)	mg/l, max.	-	10	
35	Radioactive materials Gross alpha radioactivity	pC/l	-	3	0.5 (Bq/l)
	Gross beta radioactivity	pC/l	-	30	1 (Bq/l)
36	Total Coliforms	per/100ml	Absent in 95% of samples in a year and in any two consecutive samples	10	
37	E.Coli	per/100ml	absent	absent	absent

Notes:

(A) Normal threshold value, no health based guideline in WHO Guidelines for Water Quality, 3<sup>rd</sup> Edition)

(C) Concentration of the substrates at this level or below may affect taste or odour resulting in consumer complaints.

(P) Provisional guideline, evidence of hazard exists but limited information on health effects are available.  
 Source: Board of Investment of Sri Lanka. 2011. *Environmental Norms*; WHO. 2008. *Guidelines for Drinking-water Quality*, 3rd ed.

TABLE A-5

**Tolerance Limits for the Discharge of Industrial Waste into Inland Surface Waters**

No.	Parameter	Unit type of limit	Tolerance limit values
1.	Total suspended solids	mg/l, max.	50
2.	Particle size of the total suspended solids	µg, less than	850
3.	pH at ambient temperature	–	6.0–8.5
4.	Biochemical Oxygen Demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	30
5.	Temperature of discharge	°C, max.	Shall no exceed 40 in any section of the stream within 15 m down stream from the effluent outlet
6.	Oils and greases	mg/l, max.	10
7.	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l, max.	1
8.	Chemical oxygen demand (COD)	mg/l, max.	250
9.	Colour	Wavelength Range 436 nm (Yellow range)	Maximum spectral absorption coefficient 7 m <sup>-1</sup>
		525 nm (Red range)	5 m <sup>-1</sup>
		620 nm (Blue range)	3 m <sup>-1</sup>
10.	Dissolved phosphates (as P)	mg/l, max.	5
11.	Total Kjeldahl nitrogen (as N)	mg/l, max.	150
12.	Ammoniacal nitrogen (as N)	mg/l, max.	50
13.	Cyanide (as CN)	mg/l, max.	0.2
14.	Total residual chlorine	mg/l, max.	1.0
15.	Fluorides (as F)	mg/l, max.	2.0
16.	Sulphide (as S)	mg/l, max.	2.0
17.	Arsenic (as As)	mg/l, max.	0.2
18.	Cadmium (as Cd)	mg/l, max.	0.1
19.	Chromium, total (as Cr)	mg/l, max.	0.5
20.	Chromium, Hexavalent (as Cr <sup>6+</sup> )	mg/l, max.	0.1
21.	Copper (as Cu)	mg/l, max.	3.0
22.	Iron (as Fe)	mg/l, max.	3.0
23.	Lead (as Pb)	mg/l, max.	0.1
24.	Mercury (as Hg)	mg/l, max.	0.0005
25.	Nickel (as Ni)	mg/l, max.	3.0
26.	Selenium (as Se)	mg/l, max.	0.05
27.	Zinc (as Zn)	mg/l, max.	2.0



28.	Pesticides	mg/l, max.	0.005
29.	Detergents/surfactants	mg/l, max.	5
30.	Faecal Coliform	MPN/100ml, max.	40
31.	Radio Active Material (a) Alpha emitters	μCi/ml, max.	10 <sup>-8</sup>
	(b) Beta emitters	μCi/ml, max.	10 <sup>-7</sup>

Notes:

1. All efforts should be made to remove unpleasant odour as far as practicable.
2. These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.
3. The above mentioned general standards shall cease to apply with regard to a particular industry when industry specific standards are notified for that industry.
4. Pesticides as per World Health Organization (WHO) and Food and Agriculture Organization (FAO) requirements.

Source: *The Gazette of the Democratic Socialist Republic of Sri Lanka*. Feb. 1, 2008.

TABLE A-6

**Tolerance Limits for Industrial Waste Discharged on Land for Irrigation Purpose**

No.	Parameter	Unit type of limit	Tolerance limit value
1.	Total dissolved solids	mg/l, max.	2100
2.	pH at ambient temperature	–	5.5–9.0
3.	Biochemical oxygen demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	250
4.	Oils and greases	mg/l, max.	10
5.	Chemical Oxygen Demand (COD)	mg/l, max.	400
6.	Chlorides (as Cl)	mg/l, max.	600
7.	Sulphates (as SO <sub>4</sub> )	mg/l, max.	1000
8.	Boron (as B)	mg/l, max.	2.0
9.	Arsenic (as As)	mg/l, max.	0.2
10.	Cadmium (as Cd)	mg/l, max.	2.0
11.	Chromium, total (as Cr)	mg/l, max.	1.0
12.	Lead (as Pb)	mg/l, max.	1.0
13.	Mercury (as Hg)	mg/l, max.	0.01
14.	Sodium adsorption ratio (SAR)	–	10–15
15.	Residual sodium carbonate (RSC)	mol/l, max.	2.5
16.	Electrical conductivity	μS/cm, max.	2250
17.	Faecal coliform	MPN/100ml, max.	40
18.	Copper (as Cu)	mg/l, max.	1.0
19.	Cyanide (as CN)	mg/l, max.	0.2
20.	Radio Active Material (a) Alpha emitters	μCi/ml, max.	10 <sup>-9</sup>
	(b) Beta emitters	μCi/ml, max.	10 <sup>-8</sup>

**Hydraulic Loading Applicable for Different Solis:**

No.	Soil Texture Class	Recommended dosage of settled Industrial Effluents (m <sup>3</sup> /h/day)
1.	Sandy	225–280
2.	Sandy loam	170–225
3.	Loam	110–170
4.	Clay loam	55–110
5.	Clay	35–55

Source: *The Gazette of the Democratic Socialist Republic of Sri Lanka*. Feb. 1, 2008.

TABLE A-7

**Tolerance Limits for Industrial and Domestic Waste Discharged into Marine Coastal Areas**

No.	Parameter	Unit type of limit	Tolerance limit values
1.	Total suspended solids	mg/l, max.	150
2.	Particle size of (a) Floatable solids	mm, max.	3
	(b) Settable solids	µm, max.	850
3.	pH at ambient temperature	–	5.5–9.0
4.	Biochemical Oxygen Demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	100
5.	Temperature	°C, max.	45 at the point of discharge
6.	Oils and greases	mg/l, max.	20
7.	Phenolic compounds (as Phenolic OH)	mg/l, max.	5
8.	Chemical Oxygen Demand (COD)	mg/l, max.	250
9.	Total residual chlorine	mg/l, max.	1.0
10.	Ammoniacal nitrogen (as N)	mg/l, max.	50
11.	Cyanide (as CN)	mg/l, max.	0.2
12.	Sulphide (as S)	mg/l, max.	5.0
13.	Fluorides (as F)	mg/l, max.	1.5
14.	Arsenic (as As)	mg/l, max.	0.2
15.	Cadmium (as Cd)	mg/l, max.	2.0
16.	Chromium, total (as Cr)	mg/l, max.	2.0
17.	Chromium, Hexavalent (as Cr <sup>6+</sup> )	mg/l, max.	1.0
18.	Copper (as Cu)	mg/l, max.	3.0
19.	Lead (as Pb)	mg/l, max.	0.1
20.	Mercury (as Hg)	mg/l, max.	0.01
21.	Nickel (as Ni)	mg/l, max.	5.0
22.	Selenium (as Se)	mg/l, max.	0.1
23.	Zinc (as Zn)	mg/l, max.	5.0
24.	Pesticides	mg/l, max.	0.005
25.	Organo-Phosphorus compounds	mg/l, max.	1.0
26.	Chlorinated hydrocarbons (as Cl)	mg/l, max.	0.02

No.	Parameter	Unit type of limit	Tolerance limit values
27.	Faecal coliform	MPN/100ml, max.	60
28.	Radio Active Material (a) Alpha emitters	μCi/ml, max.	10 <sup>-8</sup>
	(b) Beta emitters	μCi/ml, max.	10 <sup>-7</sup>

Note 1: All efforts should be made to remove unpleasant odour and colours as far as practicable.

Note 2: These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

Source: *The Gazette of the Democratic Socialist Republic of Sri Lanka*. Feb. 1, 2008.

TABLE A-8

**Tolerance Limits for Waste from Rubber Factories Being Discharged into Inland Surface Water**

No.	Parameter	Unit type of limit	Tolerance limit values	
			Type I Factories	Type II Factories
1.	pH at ambient temperature	–	6.5–8.5	
2.	Total suspended solids	mg/l, max.	100	
3.	Total Solids	mg, max.	1500	1000
4.	Biochemical Oxygen Demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	60	50
5.	Chemical oxygen demand (COD)	mg/l, max.	400	
6.	Total Nitrogen (as N)	mg/l, max.	300	60
7.	Ammoniacal nitrogen (as N)	mg/l, max.	300	40
8.	Sulphide (as S)	mg/l, max.	2.0	

Notes: Type I Factories: Latex Concentrate; Type II Factories: Standard Lanka Rubber; Crepe Rubber and Ribbed Smoked Sheets; All efforts should be made to remove unpleasant odour as far as practicable; These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

Source: *The Gazette of the Democratic Socialist Republic of Sri Lanka*. Feb. 1, 2008.

TABLE A-9

**Tolerance Limits for Waste from Textile Industry Being Discharged into Inland Surface Waters**

No.	Parameter	Unit type of limit	Tolerance limit values
1.	pH at ambient temperature	–	6.5–8.5
2.	Temperature	°C, max.	40 measured at site of sampling
3.	Total suspended solids	mg/l, max.	50
4.	Biochemical Oxygen Demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	60
5.	Colour	Wavelength Range 436 nm (Yellow range)	Maximum spectral absorption coefficient 7 m <sup>-1</sup>
		525 nm (Red range)	5 m <sup>-1</sup>

No.	Parameter	Unit type of limit	Tolerance limit values
		620 nm (Blue range)	3 m <sup>-1</sup>
6.	Oils and grease	mg/l, max.	10
7.	Phenolic compounds (as Phenolic OH)	mg/l, max.	1.0
8.	Chemical Oxygen Demand (COD)	mg/l, max.	250
9.	Sulphides (as S)	mg/l, max.	2.0
10.	Chromium, total (as Cr)	mg/l, max.	2.0
11.	Chromium, Hexavalent (as Cr <sup>6+</sup> )	mg/l, max.	0.5
12.	Copper, total (as Cu)	mg/l, max.	3.0
13.	Zinc, total (as Zn)	mg/l, max.	5.0
14.	Ammoniacal nitrogen (as N)	mg/l, max.	60
15.	Chloride (as Cl)	mg/l, max.	70

Note 1: All efforts should be made to remove unpleasant odour and colour as far as practicable.

Note 2: These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

Source: *The Gazette of the Democratic Socialist Republic of Sri Lanka*. Feb. 1, 2008.

TABLE A-10

**Tolerance Limits for Waste Being Discharged from Tanning Industries**

No.	Parameter	Unit type of limit	Tolerance limit values	
			Into Inland Surface Waters	Into Marine Coastal Areas
1.	pH at ambient temperature	–	5.5–9.0	
2.	Total suspended solids	mg/l, max.	100	150
3.	Biochemical Oxygen Demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	60	100
4.	Chemical Oxygen Demand (COD)	mg/l, max.	250	300
5.	Colour	Wavelength Range 436 nm (Yellow range)	Maximum spectral absorption coefficient 7 m <sup>-1</sup>	–
		525 nm (Red range)	5 m <sup>-1</sup>	–
		620 nm (Blue range)	3 m <sup>-1</sup>	–
6.	Alkalinity (as CaCO <sub>3</sub> )	mg/l, max.	750	–
7.	Chloride (as Cl)	mg/l, max.	1000	–
8.	Chromium, Hexavalent (as Cr <sup>6+</sup> )	mg/l, max.	0.5	
9.	Chromium, total (as Cr)	mg/l, max.	2.0	
10.	Oils and grease	mg/l, max.	10	20
11.	Phenolic compounds (as Phenolic OH)	mg/l, max.	1.0	5.0
12.	Sulphides (as S)	mg/l, max.	2.0	5.0

Note 1: All efforts should be made to remove unpleasant odour and colour as far as practicable.

Note 2: These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

Source: The Gazette of the Democratic Socialist Republic of Sri Lanka. Feb. 1, 2008.

TABLE A-11

**Tolerance Limits for Discharge of Effluents into Public Sewers with Central Treatment Plants**

No.	Parameter	Unit type of limit	Tolerance limit values
1.	Total suspended solids	mg/l, max.	500
2.	pH at ambient temperature	–	5.5–10.0
3.	Temperature	°C, max.	45
4.	Biochemical Oxygen Demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	350
5.	Chemical Oxygen Demand (COD)	mg/l, max.	850
6.	Total Kjeldahl nitrogen (as N)	mg/l, max.	500
7.	Free ammonia (as N)	mg/l, max.	50
8.	Ammoniacal nitrogen (as N)	mg/l, max.	50
9.	Cyanide (as CN)	mg/l, max.	2
10.	Total residual chlorine	mg/l, max.	3.0
11.	Chlorides (as Cl)	mg/l, max.	900
12.	Fluorides (as F)	mg/l, max.	20
13.	Sulphides (as S)	mg/l, max.	5.0
14.	Sulphates (as SO <sub>4</sub> )	mg/l, max.	1000
15.	Arsenic (as As)	mg/l, max.	0.2
16.	Cadmium (as Cd)	mg/l, max.	1.0
17.	Chromium, total (as Cr)	mg/l, max.	2.0
18.	Copper (as Cu)	mg/l, max.	3.0
19.	Lead (as Pb)	mg/l, max.	1.0
20.	Mercury (as Hg)	mg/l, max.	0.005
21.	Nickel (as Ni)	mg/l, max.	3.0
22.	Selenium (as Se)	mg/l, max.	0.05
23.	Zinc (as Zn)	mg/l, max.	5.0
24.	Pesticides	mg/l, max.	0.2
25.	Detergents/surfactants	mg/l, max.	50
26.	Phenolic compounds (as Phenolic OH)	mg/l, max.	5
27.	Oil and Grease	mg/l, max.	30
28.	Radio Active Material: (a) Alpha emitter	μCi/ml, max.	10 <sup>-8</sup>
	(b) Beta emitter	μCi/ml, max.	10 <sup>-7</sup>

Notes: The following conditions should be met:

- \* Discharge of high viscous material should be prohibited.
- \* Calcium Carbide sludge should not be discharged.
- \* Substances producing inflammable vapours should be absent.

Source: *The Gazette of the Democratic Socialist Republic of Sri Lanka*. Feb. 1, 2008.

TABLE A-12

**Tolerance Limits for Discharge of Effluents into Public Sewers with Central Treatment Plants**

No.	Parameter	Unit type of limit	Tolerance limit values
1.	Total suspended solids	mg/l, max.	500
2.	pH at ambient temperature	–	5.5-10.0
3.	Temperature	°C, max.	45
4.	Biochemical Oxygen Demand (BOD <sub>5</sub> in five days at 20°C or BOD <sub>3</sub> in three days at 27°C)	mg/l, max.	350
5.	Chemical Oxygen Demand (COD)	mg/l, max.	850
6.	Total Kjeldahl nitrogen (as N)	mg/l, max.	500
7.	Free ammonia (asN)	mg/l, max.	50
8.	Ammonical nitrogen (as N)	mg/l, max.	50
9.	Cyanide (as CN)	mg/l, max.	2
10.	Total residual chlorine	mg/l, max.	3.0
11.	Chlorides (as Cl)	mg/l, max.	900
12.	Fluorides (as F)	mg/l, max.	20
13.	Sulphide (as S)	mg/l, max.	5.0
14.	Sulphate (as SO <sub>4</sub> )	mg/l, max.	1000
15.	Arsenic (as As)	mg/l, max.	0.2
16.	Cadmium (as Cd)	mg/l, max.	1.0
17.	Chromium, total (as Cr)	mg/l, max.	2.0
18.	Copper (as Cu)	mg/l, max.	3.0
19.	Lead (as Pd)	mg/l, max.	1.0
20.	Mercury (as Hg)	mg/l, max.	0.005
21.	Nickel (as Ni)	mg/l, max.	3.0
22.	Selenium (as Se)	mg/l, max.	0.05
23.	Zinc (as Zn)	mg/l, max.	5.0
24.	Pesticides	mg/l, max.	0.2
25.	Detergents/surfactants	mg/l, max.	50
26.	Phenolic compounds (as phenolic OH)	mg/l, max.	5
27.	Oil and greases	mg/l, max.	30
28.	Radio Active Material: (a) Alpha emitters	μCi/ml, max	10 <sup>-8</sup>
	(b) Beta emitters	μCi/ml, max	10 <sup>-7</sup>

Notes : The following conditions should be met :

- \* Discharge of high viscous material should be prohibited.
- \* Calcium Carbide sludge should not be discharged.
- \* Substances producing inflammable vapours should be absent.

Source: *The Gazette of the Democratic Socialist Republic of Sri Lanka*. Feb. 1, 2008.

TABLE A-13

**Permissible Noise Levels in Accordance with Noise Control Regulations**

Area	L <sub>Aeq</sub> T, dB(A)	
	Daytime	Nighttime
Low Noise (Pradeshiya Sabha area)	55	45
Medium Noise (Municipal Council/Urban Council area)	63*	50
High Noise (EPZZ of BOI & Industrial Estates approved under part IVC of the NEA)	70	60
Silent Zone (100m from the boundary of a courthouse, hospital, public library, school, zoo, sacred areas and areas set apart for recreation or environmental purposes)	50	45

\*Provided that the noise level should not exceed 60 dB(A) inside existing houses during daytime.

**Construction Activities**

L <sub>Aeq</sub> T, dB(A)	
Daytime	Nighttime
75	50

The following noise levels will be allowed where the background noise level exceed or is marginal to the given levels in the above table.

(a) For low-noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise level +3 dB(A)
(b) For medium-noise areas in which the background noise level exceed or is marginal to the given level	Measured Background Level +3 dB(A)
(c) For silent zone in which the background noise level exceeds or is marginal to the given level	Measured Background noise Level +3dB(A)
(d) For high-noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background noise level +5dB(A) (for daytime) Measured Background noise level +3dB(A) (For nighttime)

Note 1. L<sub>Aeq</sub> means the equivalent continuous, A-weighted sound pressure determined over a time interval T (in dB). 'Daytime' means from 6:00 a.m. to 6:00 p.m., except for the purposes of construction activities, where it means 6:00 a.m. to 9:00 p.m. 'Nighttime' means from 6:00 p.m. to 6:00 a.m., except for the purposes of construction activities, where it means 9:00 p.m. to 6:00 a.m.

Note 2. Noise generated from machinery and processes should be controlled as far as possible at the source by one or more of the following methods: (a) Vibration isolation, (b) noise insulation, (c) noise absorption, (d) damping.

Attempts should be made to maintain noise levels as low as practicable within the working environment. However, in the event noise level exceeds 85 dB(A), suitable ear-protection devices should be provided to all workers exposed to such noise levels. Wearing of these devices should be ensured during working times.

Source: Board of Investment of Sri Lanka. 2009. *Environmental Norms*.

TABLE A-14  
**IUCN Categories**

EXTINCT (EX)	A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
EXTINCT IN THE WILD (EW)	A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
CRITICALLY ENDANGERED (CR)	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (see another table below), and it is therefore considered to be facing an extremely high risk of extinction in the wild.
ENDANGERED (EN)	A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see another table below), and it is therefore considered to be facing a very high risk of extinction in the wild.
VULNERABLE (VU)	A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see another table below), and it is therefore considered to be facing a high risk of extinction in the wild.

Source: IUCN. 2001. *IUCN Red List Categories and Criteria: Version 3.1*.

TABLE A-15  
**Criteria for Critically Endangered, Endangered and Vulnerable**

CRITICALLY ENDANGERED (CR)
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing an extremely high risk of extinction in the wild:
A. Reduction in population size based on any of the following:



1. An observed, estimated, inferred or suspected population size reduction of  $\geq 90\%$  over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
    - (a) direct observation
    - (b) an index of abundance appropriate to the taxon
    - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
    - (d) actual or potential levels of exploitation
    - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
  2. An observed, estimated, inferred or suspected population size reduction of  $\geq 80\%$  over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
  3. A population size reduction of  $\geq 80\%$ , projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
  4. An observed, estimated, inferred, projected or suspected population size reduction of  $\geq 80\%$  over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:
1. Extent of occurrence estimated to be less than 100 km<sup>2</sup>, and estimates indicating at least two of (a)–(c):
    - (a) Severely fragmented or known to exist at only a single location.
    - (b) Continuing decline, observed, inferred or projected, in any of the following:
      - (i) extent of occurrence
      - (ii) area of occupancy

- (iii) area, extent and/or quality of habitat
  - (iv) number of locations or subpopulations
  - (v) number of mature individuals.
- (c) Extreme fluctuations in any of the following:
- (i) extent of occurrence
  - (ii) area of occupancy
  - (iii) number of locations or subpopulations
  - (iv) number of mature individuals.
2. Area of occupancy estimated to be less than 10 km<sup>2</sup>, and estimates indicating at least two of (a)–(c):
- (a) Severely fragmented or known to exist at only a single location.
- (b) Continuing decline, observed, inferred or projected, in any of the following:
- (i) extent of occurrence
  - (ii) area of occupancy
  - (iii) area, extent and/or quality of habitat
  - (iv) number of locations or subpopulations
  - (v) number of mature individuals.
- (c) Extreme fluctuations in any of the following:
- (i) extent of occurrence
  - (ii) area of occupancy
  - (iii) number of locations or subpopulations
  - (iv) number of mature individuals.

- C. Population size estimated to number fewer than 250 mature individuals and either:
1. An estimated continuing decline of at least 25% within three years or one generation, whichever is longer, (up to a maximum of 100 years in the future) OR
  2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a)–(b):
    - (a) Population structure in the form of one of the following:
      - (i) no subpopulation estimated to contain more than 50 mature individuals, OR
      - (ii) at least 90% of mature individuals in one subpopulation.
    - (b) Extreme fluctuations in number of mature individuals.
- D. Population size estimated to number fewer than 50 mature individuals.
- E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer (up to a maximum of 100 years).

#### ENDANGERED (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a very high risk of extinction in the wild:

- A. Reduction in population size based on any of the following:
1. An observed, estimated, inferred or suspected population size reduction of  $\geq 70\%$  over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
    - (a) direct observation
    - (b) an index of abundance appropriate to the taxon
    - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
    - (d) actual or potential levels of exploitation
    - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of  $\geq 50\%$  over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
  3. A population size reduction of  $\geq 50\%$ , projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
  4. An observed, estimated, inferred, projected or suspected population size reduction of  $\geq 50\%$  over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:
1. Extent of occurrence estimated to be less than 5000 km<sup>2</sup>, and estimates indicating at least two of (a)–(c):
    - (a) Severely fragmented or known to exist at no more than five locations.
    - (b) Continuing decline, observed, inferred or projected, in any of the following:
      - (i) extent of occurrence
      - (ii) area of occupancy
      - (iii) area, extent and/or quality of habitat
      - (iv) number of locations or subpopulations
      - (v) number of mature individuals.
    - (c) Extreme fluctuations in any of the following:
      - (i) extent of occurrence
      - (ii) area of occupancy
      - (iii) number of locations or subpopulations

- (iv) number of mature individuals.
2. Area of occupancy estimated to be less than 500 km<sup>2</sup>, and estimates indicating at least two of (a)–(c):
- (a) Severely fragmented or known to exist at no more than five locations.
  - (b) Continuing decline, observed, inferred or projected, in any of the following:
    - (i) extent of occurrence
    - (ii) area of occupancy
    - (iii) area, extent and/or quality of habitat
    - (iv) number of locations or subpopulations
    - (v) number of mature individuals.
  - (c) Extreme fluctuations in any of the following:
    - (i) extent of occurrence
    - (ii) area of occupancy
    - (iii) number of locations or subpopulations
    - (iv) number of mature individuals.
- C. Population size estimated to number fewer than 2500 mature individuals and either:
- 1. An estimated continuing decline of at least 20% within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future) OR
  - 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a)–(b):
    - (a) Population structure in the form of one of the following:
      - (i) no subpopulation estimated to contain more than 250 mature individuals, OR
      - (ii) at least 95% of mature individuals in one subpopulation.

(b) Extreme fluctuations in number of mature individuals.

D. Population size estimated to number fewer than 250 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).

#### VULNERABLE (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a high risk of extinction in the wild:

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of  $\geq 50\%$  over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are: clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
  - (a) direct observation
  - (b) an index of abundance appropriate to the taxon
  - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
  - (d) actual or potential levels of exploitation
  - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
2. An observed, estimated, inferred or suspected population size reduction of  $\geq 30\%$  over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
3. A population size reduction of  $\geq 30\%$ , projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
4. An observed, estimated, inferred, projected or suspected population size reduction of  $\geq 30\%$  over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to

(e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 20,000 km<sup>2</sup>, and estimates indicating at least two of (a)–(c):

- (a) Severely fragmented or known to exist at no more than 10 locations.
- (b) Continuing decline, observed, inferred or projected, in any of the following:
  - (i) extent of occurrence
  - (ii) area of occupancy
  - (iii) area, extent and/or quality of habitat
  - (iv) number of locations or subpopulations
  - (v) number of mature individuals.
- (c) Extreme fluctuations in any of the following:
  - (i) extent of occurrence
  - (ii) area of occupancy
  - (iii) number of locations or subpopulations
  - (iv) number of mature individuals.

2. Area of occupancy estimated to be less than 2000 km<sup>2</sup>, and estimates indicating at least two of (a)–(c):

- (a) Severely fragmented or known to exist at no more than 10 locations.
- (b) Continuing decline, observed, inferred or projected, in any of the following:
  - (i) extent of occurrence
  - (ii) area of occupancy
  - (iii) area, extent and/or quality of habitat

- (iv) number of locations or subpopulations
- (v) number of mature individuals.
- (c) Extreme fluctuations in any of the following:
  - (i) extent of occurrence
  - (ii) area of occupancy
  - (iii) number of locations or subpopulations
  - (iv) number of mature individuals.
- C. Population size estimated to number fewer than 10,000 mature individuals and either:
  - 1. An estimated continuing decline of at least 10% within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future) OR
  - 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a)–(b):
    - (a) Population structure in the form of one of the following:
      - (i) no subpopulation estimated to contain more than 1000 mature individuals, OR
      - (ii) all mature individuals are in one subpopulation.
    - (b) Extreme fluctuations in number of mature individuals.
- D. Population very small or restricted in the form of either of the following:
  - 1. Population size estimated to number fewer than 1000 mature individuals.
  - 2. Population with a very restricted area of occupancy (typically less than 20 km<sup>2</sup>) or number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period.
- E. Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.



Source: IUCN. 2001. IUCN Red List Categories and Criteria version 3.1.

<http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria#critical> (Accessed on 10 May 2012).

TABLE A-16

**IUCN Red List of Sri Lanka (List of Threatened Amphibian)**

Phylum	Class	Order	Family	Species	IUCN Category
CHORDATA	AMPHIBIA		Bufoidea	<i>Adenomus kandianus</i>	EX
			Ranidae	<i>Nannophrys guentheri</i>	EX
				<i>Philautus adspersus</i>	EX
				<i>Philautus dimbullae</i>	EX
				<i>Philautus eximius</i>	EX
				<i>Philautus extirpo</i>	EX
				<i>Philautus halyi</i>	EX
				<i>Philautus hypomelas</i>	EX
				<i>Philautus leucorhinus</i>	EX
				<i>Philautus maia</i>	EX
				<i>Philautus malcolmsmithi</i>	EX
				<i>Philautus nanus</i>	EX
				<i>Philautus nasutus</i>	EX
				<i>Philautus oxyrhynchus</i>	EX
				<i>Philautus pardus</i>	EX
				<i>Philautus rugatus</i>	EX
				<i>Philautus stellatus</i>	EX
				<i>Philautus temporalis</i>	EX
				<i>Philautus variabilis</i>	EX
				<i>Philautus zal</i>	EX
				<i>Philautus zimmeri</i>	EX
	ACTINOPTERIGII		Cyprinidae	<i>Devario pathirana</i>	CR
				<i>Labeo fisheri</i>	CR

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Labeo lankae</i>	CR
				<i>Puntius asoka</i>	CR
				<i>Puntius bandula</i>	CR
				<i>Puntius martenstyni</i>	CR
			Gobiidae	<i>Stiphodon martenstyni</i>	CR
			Mastacembelidae	<i>Macrogathus aral</i>	CR
			Synbranchidae	<i>Ophisternon bengalense</i>	CR
				<i>Monopterus desilvai</i>	CR
			Cyprinidae	<i>Rasboroides vaterifloris</i>	EN
				<i>Rasbora wilpita</i>	EN
				<i>Puntius srilankensis</i>	EN
			Cobitidae	<i>Lepidocephalichthys jonklaasi</i>	EN
			Gobiidae	<i>Sicyopterus griseus</i>	EN
				<i>Sicyopterus halei</i>	EN
				<i>Schismatogobius deraniyagalai</i>	EN
			Cyprinidae	<i>Puntius cuningii</i>	VU
				<i>Puntius cuningii</i>	VU
				<i>Puntius nigrofasciatus</i>	VU
				<i>Puntius pleurotaenia</i>	VU
				<i>Puntius titteya</i>	VU
			Balitoridae	<i>Acanthocobitis urophthalmus</i>	VU
			Siluridae	<i>Wallago attu</i>	VU
			Belontiidae	<i>Malpulutta kretseri</i>	VU
			Gobiidae	<i>Sicyopus jonklaasi</i>	VU
			Aplocheilidae	<i>Aplocheilus weneri</i>	VU
			Anguillidae	<i>Anguilla nebulosa</i>	VU
			Channidae	<i>Channa ara</i>	VU
	AMPHIBIA		Bufonidae	<i>Adenomus dasi</i>	CR
			Microhylidae	<i>Microhyla karunaratnei</i>	CR

Phylum	Class	Order	Family	Species	IUCN Category
			Ranidae	<i>Nannophrys marmorata</i>	CR
				<i>Nannophrys naeyakai</i>	CR
				<i>Philautus limbus</i>	CR
				<i>Philautus lunatus</i>	CR
				<i>Philautus macropus</i>	CR
				<i>Philautus nemus</i>	CR
				<i>Philautus papillosus</i>	CR
				<i>Philautus procax</i>	CR
				<i>Philautus simba</i>	CR
				<i>Polypedates fastigo</i>	CR
			Bufo	<i>Bufo kotagamai</i>	EN
				<i>Bufo noellerti</i>	EN
			Microhylidae	<i>Microhyla zeylanica</i>	EN
				<i>Ramanella palmata</i>	EN
				<i>Fejervarya greenii</i>	EN
				<i>Philautus alto</i>	EN
				<i>Philautus asankai</i>	EN
				<i>Philautus auratus</i>	EN
				<i>Philautus caeruleus</i>	EN
				<i>Philautus cavirostris</i>	EN
				<i>Philautus cuspis</i>	EN
				<i>Philautus decoris</i>	EN
				<i>Philautus femoralis</i>	EN
				<i>Philautus folicola</i>	EN
				<i>Philautus frankenbergi</i>	EN
				<i>Philautus fulvus</i>	EN
				<i>Philautus hoffmanni</i>	EN
				<i>Philautus microtympanum</i>	EN
				<i>Philautus mittermeieri</i>	EN

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Philautus mooreorum</i>	EN
				<i>Philautus ocularis</i>	EN
				<i>Philautus pleurotaenia</i>	EN
				<i>Philautus poppiae</i>	EN
				<i>Philautus reticulatus</i>	EN
				<i>Philautus sarasinorum</i>	EN
				<i>Philautus schmarda</i>	EN
				<i>Philautus silus</i>	EN
				<i>Philautus silvaticus</i>	EN
				<i>Philautus steineri</i>	EN
				<i>Philautus stuarti</i>	EN
				<i>Philautus viridis</i>	EN
				<i>Philautus zorro</i>	EN
				<i>Polypedates eques</i>	EN
				<i>Polypedates longinasus</i>	EN
			Microhylidae	<i>Ramanella nagaoi</i>	VU
			Ranidae	<i>Nannophrys ceylonensis</i>	VU
				<i>Rana aurantiaca</i>	VU
				<i>Philautus hallidayi</i>	VU
			Ichthyophiidae	<i>Ichthyophis orthoplicatus</i>	VU
				<i>Ichthyophis pseudangularis</i>	VU
	REPITILIA		Agamidae	<i>Calotes desilvai Bahir</i>	CR
				<i>Ceratophora erdeleni</i>	CR
				<i>Ceratophora karu</i>	CR
				<i>Cophotis dumbara</i>	CR
			Gekkonidae	<i>Cyrtodactylus edwardtaylori</i>	CR
				<i>Cyrtodactylus ramboda</i>	CR
				<i>Cyrtodactylus subsolanus</i>	CR
				<i>Cyrtodactylus cracens</i>	CR

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Cyrtodactylus fraenatus</i>	CR
				<i>Cnemaspis ranwellai</i>	CR
			Scincidae	<i>Chalcidoseps thwaitesii</i>	CR
				<i>Nessia hickanala</i>	CR
			Colubridae	<i>Aspidura deraniyagalae</i>	CR
				<i>Aspidura drummondhayi</i>	CR
				<i>Boiga ranawanei</i>	CR
				<i>Gerarda prevostianus</i>	CR
			Agamidae	<i>Calotes liocephalus</i>	EN
				<i>Ceratophora aspera</i>	EN
				<i>Ceratophora stoddartii</i>	EN
				<i>Ceratophora tennentii</i>	EN
				<i>Cophotis ceylanica</i>	EN
			Gekkonidae	<i>Calodactylodes illingworthorum</i>	EN
				<i>Cnemaspis podihuna</i>	EN
				<i>Cnemaspis samanalensis</i>	EN
				<i>Cnemaspis tropidogaster</i>	EN
				<i>Cyrtodactylus soba Batuwita</i>	EN
				<i>Hemiphyllodactylus typus</i>	EN
				<i>Hemidactylus lugubris</i>	EN
			Scincidae	<i>Lankascincus deignani</i>	EN
				<i>Lankascincus deraniyagalae</i>	EN
				<i>Mabuya beddomii</i>	EN
				<i>Mabuya bibronii</i>	EN
				<i>Nessia bipes</i>	EN
				<i>Nessia didactylus</i>	EN
				<i>Nessia layardi</i>	EN
				<i>Nessia monodactylus</i>	EN
				<i>Nessia sarasinorum</i>	EN

Phylum	Class	Order	Family	Species	IUCN Category
			Acrochordidae	<i>Acrochordus granulatus</i>	EN
			Viperidae	<i>Hypnale walli</i>	EN
			Testudinidae	<i>Geochelone elegans</i>	VU
			Trionychidae	<i>Lissemys punctata</i>	VU
			Agamidae	<i>Calotes ceylonensis</i>	VU
				<i>Calotes liolepis</i>	VU
				<i>Calotes nigrilabris</i>	VU
			Lacertidae	<i>Ophisops leschenaultii</i>	VU
			Scincidae	<i>Lankascincus taylori</i>	VU
				<i>Mabuya floweri</i>	VU
			Boidae	<i>Gongylophis conica</i>	VU
			Colubridae	<i>Cerberus rynchops</i>	VU
				<i>Balanophis ceylonensis</i>	VU
				<i>Dendrelaphis caudolineolatus</i>	VU
				<i>Cercaspis carinata</i>	VU
				<i>Liopeltis calamaria</i>	VU
				<i>Oligodon calamarius</i>	VU
				<i>Chrysopelea taprobanica</i>	VU
			Viperidae	<i>Echis carinatus</i>	VU
	AVES		Phasianidae	<i>Francolinus pictus</i>	CR
				<i>Perdicula asiatica</i>	CR
			Anatidae	<i>Anas poecilorhyncha</i>	CR
			Alcedinidae	<i>Alcedo meninting</i>	CR
			Columbidae	<i>Columba livia</i>	CR
				<i>Treron phoenicoptera</i>	CR
			Glareolidae	<i>Cursorius coromandelicus</i>	CR
			Laridae	<i>Sterna saundersi</i>	CR
			Accipitridae	<i>Aviceda jerdoni</i>	CR
			Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	CR

Phylum	Class	Order	Family	Species	IUCN Category
			Coraciidae	<i>Eurystomus orientalis</i>	EN
			Apodidae	<i>Hirundapus giganteus</i>	EN
				<i>Tachymarptis melba</i>	EN
			Phodilinae	<i>Phodilus badius</i>	EN
			Strigidae	<i>Otus thilohofmanni</i>	EN
			Rallidae	<i>Porzana fusca</i>	EN
			Glareolidae	<i>Glareola maldivarum</i>	EN
			Muscicapidae	<i>Myophonus blighi</i>	EN
				<i>Zoothera dauma</i>	EN
				<i>Turdus merula</i>	EN
				<i>Saxicola caprata</i>	EN
			Sturnidae	<i>Sturnus albofrontatus</i>	EN
			Hirundinidae	<i>Hirundo tahitica</i>	EN
			Sylviidae	<i>Bradypterus palliseri</i>	EN
				<i>Garrulax cinereifrons</i>	EN
			Picidae	<i>Dendrocopos mahrattensis</i>	VU
				<i>Picus xanthopygaeus</i>	VU
				<i>Chrysocolaptes festivus</i>	VU
			Cuculidae	<i>Surniculus lugubris</i>	VU
				<i>Phaenicophaeus pyrrhocephalus</i>	VU
			Centropodidae	<i>Centropus chlororhynchus</i>	VU
			Strigidae	<i>Glaucidium castanonotum</i>	VU
			Cololombidae	<i>Columba torringtoni</i>	VU
			Glareolidae	<i>Glareola lactea</i>	VU
			Accipitridae	<i>Accipiter trivirgatus</i>	VU
				<i>Accipiter virgatus</i>	VU
				<i>Spizaetus nipalensis</i>	VU
			Falconidae	<i>Falco peregrinus</i>	VU
			Ciconiidae	<i>Leptoptilos javanicus</i>	VU

Phylum	Class	Order	Family	Species	IUCN Category
			Corvidae	<i>Urocissa ornata</i>	VU
			Muscicapidae	<i>Eumyias sordida</i>	VU
			Sturnidae	<i>Gracula ptilogenysb</i>	VU
			Pycnonotidae	<i>Pycnonotus penicillatus</i>	VU
			Sylviidae	<i>Turdoides rufescens</i>	VU
			Nectariniidae	<i>Dicaeum vincens</i>	VU
			Passeridae	<i>Lonchura kelaarti</i>	VU
	MAMMALIA		Molossidae	<i>Chaerephon plicatus</i>	CR
			Vespertilionidae	<i>Kerivoula hardwickii</i>	CR
				<i>Miniopterus schreibersii</i>	CR
				<i>Myotis hasseltii</i>	CR
				<i>Murina cyclotis</i>	CR
				<i>Scotophilus heathii</i>	CR
			Muridae	<i>Mus fernandoni</i>	CR
				<i>Vandeleuria nolthenii</i>	CR
			Peromyidae	<i>Petinomys fuscocapillus</i>	CR
			Soricidae	<i>Crocidura horsfieldi</i>	EN
				<i>Crocidura miya</i>	EN
				<i>Feroculus feroculus</i>	EN
				<i>Solisorex pearsoni</i>	EN
				<i>Suncus fellowes-gordoni</i>	EN
				<i>Suncus montanus</i>	EN
				<i>Suncus zeylanicus</i>	EN
			Hipposideridae	<i>Hipposideros fulvus</i>	EN
				<i>Hipposideros galeritus</i>	EN
			Pteropodidae	<i>Cynopterus brachyotis</i>	EN
			Rhinolophidae	<i>Rhinolophus beddomei</i>	EN
			Vespertilionidae	<i>Kerivoula picta</i>	EN
				<i>Pipistrellus ceylonicus</i>	EN



Phylum	Class	Order	Family	Species	IUCN Category
			Lorisidae	<i>Loris tardigradus</i>	EN
			Felidae	<i>Prionailurus rubiginosus</i>	EN
			Ursidae	<i>Melursus ursinus</i>	EN
			Cervidae	<i>Axis porcinus</i>	EN
			Muridae	<i>Rattus montanus</i>	EN
				<i>Srilankamys ohiensis</i>	EN
			Peromyidae	<i>Petaurista philippensis</i>	EN
			Cercopithecidae	<i>Semnopithecus vetulus</i>	VU
			Felidae	<i>Felis chaus Gueldenstaedt</i>	VU
				<i>Panthera pardus</i>	VU
				<i>Prionailurus viverrinus</i>	VU
			Mustelidae	<i>Lutra lutra (</i>	VU
			Viverridae	<i>Paradoxurus zeylonensis</i>	VU
			Elephantidae	<i>Elephas maximus</i>	VU
			Bovidae	<i>Bubalus arnee</i>	VU
			Muridae	<i>Mus mayori</i>	VU
			Sciuridae	<i>Funambulus layardi</i>	VU
				<i>Funambulus sublineatus</i>	VU
				<i>Ratufa macroura</i>	VU
MOLLUSCA			Charopidae	<i>Thysanota elegans</i>	CR
			Ariophantidae	<i>Euplecta binoyaensis</i>	CR
				<i>Euplecta gardeneri</i>	CR
				<i>Euplecta prestoni</i>	CR
				<i>Euplecta colletti</i>	CR
				<i>Euplecta isabellina</i>	CR
				<i>Ratnadvipia karu</i>	CR
				<i>Ravana politissima</i>	CR
				<i>Macrochlamys nepas</i>	CR
				<i>Macrochlamys woodiana</i>	CR

Phylum	Class	Order	Family	Species	IUCN Category
			Glessulidae	<i>Glessula veruina</i>	CR
			Corillidae	<i>Corilla beddomeae</i>	CR
			Cyclophoridae	<i>Japonia vesca</i>	CR
				<i>Leptopomoides poecilus</i>	CR
			Pupinidae	<i>Tortulosa decora</i>	CR
				<i>Tortulosa marginata</i>	CR
			Buliminidae	<i>Mirus stalix</i>	EN
			Ariophantidae	<i>Euplecta hyphasma</i>	EN
				<i>Euplecta layardi</i>	EN
				<i>Euplecta scobinoides</i>	EN
			Subulinidae	<i>Allopeas layardi</i>	EN
			Acavidae	<i>Oligospira waltoni</i>	EN
			Corillidae	<i>Corilla carabinata</i>	EN
			Cyclophoridae	<i>Theobaldius layardi</i>	EN
				<i>Theobaldius parma</i>	EN
				<i>Theobaldius subplicatulus</i>	EN
			Pupinidae	<i>Tortulosa haemastoma</i>	EN
				<i>Tortulosa pyramidata</i>	EN
			Pupillidae	<i>Pupisoma longstaffae</i>	VU
			Corillidoidea	<i>Corilla adamsi</i>	VU
				<i>Corilla colletti</i>	VU
				<i>Corilla erronea</i>	VU
			Pupinidae	<i>Tortulosa nevilli</i>	VU
ARTHROPODS	INSECTA	LEPIDOPTERA	Pieridae	<i>Cepora nadina</i>	CR
				<i>Appias indra</i>	CR
			Nymphalidae	<i>Phalanta alcippe</i>	CR
				<i>Libythea celtis</i>	CR
				<i>Mycalesis visala</i>	CR
			Lycaenidae	<i>Arhopala abseus</i>	CR

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Catapaecilma major</i>	CR
				<i>Tajuria arida</i>	CR
				<i>Tajuria jehana</i>	CR
				<i>Pratapa deva</i>	CR
				<i>Virachola perse</i>	CR
				<i>Tarucus nara</i>	CR
				<i>Azanus ubaldus</i>	CR
				<i>Udara singalensis</i>	CR
			Hesperiidae	<i>Bibasis oedipodea</i>	CR
				<i>Bibasis sena</i>	CR
				<i>Hasora badra</i>	CR
				<i>Tapena thwaitesi</i>	CR
				<i>Caprona alida</i>	CR
				<i>Gomalia elma</i>	CR
				<i>Halpe decorata</i>	CR
				<i>Baoris penicillata</i>	CR
			Papilionidae	<i>Pachliopta jophon</i>	EN
				<i>Pathysa antiphates</i>	EN
			Pieridae	<i>Prioneris sita</i>	EN
				<i>Eurema andersoni</i>	EN
			Nymphalidae	<i>Junonia orithya</i>	EN
				<i>Doleschallia bisaltide</i>	EN
				<i>Symphaedra nais</i>	EN
				<i>Euthalia lubentina</i>	EN
				<i>Discophora lepida</i>	EN
				<i>Lethe dynaste</i>	EN
				<i>Lethe drypetis</i>	EN
				<i>Lethe daretis</i>	EN
				<i>Mycalesis rama</i>	EN

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Ypthima singala</i>	EN
				<i>Elymnias singala</i>	EN
			Lycaenidae	<i>Iraota timoleon</i>	EN
				<i>Cheritra freja</i>	EN
				<i>Spindasis lohita</i>	EN
				<i>Bindahara phocides</i>	EN
				<i>Rapala lankana</i>	EN
				<i>Prosotas noreia</i>	EN
				<i>Jamides coruscans</i>	EN
				<i>Udara lanka</i>	EN
			Hesperiidae	<i>Halpe ceylonica</i>	EN
				<i>Udaspes folus</i>	EN
				<i>Hyaroitis adrastus</i>	EN
				<i>Pelopidas conjuncta</i>	EN
				<i>Cattoris kumara</i>	EN
				<i>Suastus minuta</i>	EN
			Pieridae	<i>Colotis fausta</i>	VU
				<i>Colotis aurora</i>	VU
			Nymphalidae	<i>Parantica taprobana</i>	VU
				<i>Kallima philarchus</i>	VU
			Lycaenidae	<i>Hypolycaena nilgirica</i>	VU
				<i>Rapala manea</i>	VU
				<i>Deudorix epijarbas</i>	VU
				<i>Anthene lycaenina</i>	VU
				<i>Chilades parrhasius</i>	VU
			Hesperiidae	<i>Tagiades litigiosa</i>	VU
				<i>Badamia exclamationis</i>	VU
				<i>Hasora chromus</i>	VU
				<i>Celaenorrhinus spilothyrus</i>	VU

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Notocrypta curvifascia</i>	VU
				<i>Telicota ancilla</i>	VU
		ODONATA	Lestidae	<i>Sinhalestes orientalis</i>	CR
			Platystictidae	<i>Drepanosticta adami</i>	CR
				<i>Drepanosticta austeni</i>	CR
				<i>Drepanosticta hilaris</i>	CR
				<i>Drepanosticta montana</i>	CR
				<i>Drepanosticta submontana</i>	CR
			Protoneuridae	<i>Disparoneura ramajana</i>	CR
				<i>Elatoneura leucostigma</i>	CR
			Gomphidae	<i>Anisogomphus solitaris</i>	CR
				<i>Heliogomphus ceylonicus</i>	CR
				<i>Heliogomphus lyratus</i>	CR
				<i>Heliogomphus nietneri</i>	CR
			Corduliidae	<i>Macromia flinti</i>	CR
			Protoneuridae	<i>Elatoneura caesia</i>	EN
			Gomphidae	<i>Gomphidia pearsoni</i>	EN
				<i>Microgomphus wijaya</i>	EN
			Libellulidae	<i>Hylaeothemis fruhstorferi</i>	EN
				<i>Tetrathemis yerburii</i>	EN
			Gomphidae	<i>Cyclogomphus gynostylus</i>	VU
				<i>Macrogomphus lankanensis</i>	VU
	CRUSTACEA	DECAPODA	Parathelphusidae	<i>Ceylonthelphusa callista</i>	CR
				<i>Ceylonthelphusa diva</i>	CR
				<i>Ceylonthelphusa durrelli</i>	CR
				<i>Ceylonthelphusa kotagama</i>	CR
				<i>Ceylonthelphusa nata</i>	CR
				<i>Ceylonthelphusa orthos</i>	CR
				<i>Ceylonthelphusa sanguinea</i>	CR

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Ceylonthelphusa savitriae</i>	CR
				<i>Clinothelphusa kakoota</i>	CR
				<i>Mahatha helaya</i>	CR
				<i>Mahatha iora</i>	CR
				<i>Mahatha lacuna</i>	CR
				<i>Mahatha regina</i>	CR
				<i>Oziothelphusa intuta</i>	CR
				<i>Oziothelphusa kodagoda</i>	CR
				<i>Perbrinckia cracens</i>	CR
				<i>Perbrinckia enodis</i>	CR
				<i>Perbrinckia fido</i>	CR
				<i>Perbrinckia morayensis</i>	CR
				<i>Perbrinckia punctata</i>	CR
				<i>Perbrinckia quadratus</i>	CR
				<i>Perbrinckia rosae</i>	CR
				<i>Perbrinckia scitula</i>	CR
				<i>Ceylonthelphusa alpina</i>	EN
				<i>Ceylonthelphusa armata</i>	EN
				<i>Oziothelphusa dakuna</i>	EN
				<i>Oziothelphusa gallicola</i>	EN
				<i>Oziothelphusa populosa</i>	EN
				<i>Pastilla ruhuna</i>	EN
				<i>Spiralothelphusa fernandoni</i>	EN
				<i>Spiralothelphusa parvula</i>	EN
				<i>Ceylonthelphusa cavatrix</i>	VU
				<i>Oziothelphusa ritigala</i>	VU
				<i>Perbrinckia fenestra</i>	VU
				<i>Perbrinckia gabadage</i>	VU
				<i>Perbrinckia glabra</i>	VU

Phylum	Class	Order	Family	Species	IUCN Category
				<i>Perbrinckia uva</i>	VU
	ARACHNIDA	Araneae	Theraphosidae	<i>Poecilotheria smithi</i>	VU
CHORDATA	CHONDRICHTHYES		Pristidae	<i>Anoxypristis cuspidata</i>	CR
				<i>Pristis microdon</i>	CR
				<i>Pristis zijsron</i>	CR
			Rhinobatidae	<i>Rhina ancylostoma</i>	VU
				<i>Rhinobatus granulatus</i>	VU
			Myliobatidae	<i>Aetomylaeus maculatus</i>	EN
				<i>Aetomylaeus nichofii</i>	VU
			Dasyatidae	<i>Taeniura meyeri</i>	VU
			Rhinopterae	<i>Rhinoptera javanica</i>	VU
			Carcharhinidae	<i>Carcharhinus longimanus</i>	VU
			Rhiniodontidae	<i>Rhincodon typus</i>	VU
			Stegostomatidae	<i>Stegostoma fasciatum</i>	VU
	ACTINOPTERYGII		Labridae	<i>Cheilinus undulatus</i>	EN
			Scombridae	<i>Thunnus obesus</i>	VU
			Serranidae	<i>Epinephelus lanceolatus</i>	VU
			Syngnathidae	<i>Hippocampus spinosissimus</i>	VU
	REPTILIA		Dermochelidae	<i>Dermochelys coriacea</i>	CR
			Cheloniidae	<i>Eretmochelys imbricata</i>	CR
				<i>Caretta caretta</i>	EN
				<i>Chelonia mydas</i>	EN
				<i>Lepidochelys olivacea</i>	EN
	AVES		Fregatidae	<i>Fregata andrewsi</i>	CR
	MAMMALIA		Dugongidae	<i>Dugong dugon</i>	VU
			Balaenopteridae	<i>Megaptera novaeangliae</i>	VU
				<i>Balaenoptera musculus</i>	EN
				<i>Balaenoptera physalis</i>	EN
			Physeteridae	<i>Physeter macrocephalus</i>	VU

Phylum	Class	Order	Family	Species	IUCN Category
	AVES		Scolopacidae	<i>Eurynorhynchus pygmeus</i>	EN
				<i>Tringa guttifer</i>	EN
				<i>Gallinago nemoricola</i>	VU
			Falconidae	<i>Falco naumanni</i>	VU
			Muscicapidae	<i>Ficedula subrubra</i>	VU
			Charadriidae	<i>Vanellus gregarius</i>	CR

Source: IUCN Sri Lanka and the Ministry of Environment and Natural Resources. 2007. The 2007 Red List of Threatened Fauna and Flora of Sri Lanka.



TABLE A-17

**CITES-Listed Animals in Sri Lanka (APPENDIX I)**

#	Phylum	Class	Order	Family	Scientific Name
1.	CHORDATA	MAMMALIA	PRIMATES	CERCOPITHECIDAE	<i>Semnopithecus priam</i> (Blyth, 1844)
2.			CETACEA	ZIPHIIDAE	<i>Hyperoodon planifrons</i> (Flower, 1882)
3.				DELPHINIDAE	<i>Sousa chinensis</i> (Osbeck, 1765)
4.			CARNIVORA	URSIDAE	<i>Melursus ursinus</i> (Shaw, 1791)
5.				FELIDAE	<i>Panthera pardus</i> (Linnaeus, 1758)
6.					<i>Prionailurus rubiginosus</i> (I. Geoffroy Saint-Hilaire, 1831)
7.			ARTIODACTYLA	CERVIDAE	<i>Axis porcinus</i> (Zimmermann, 1780)
8.				BOVIDAE	<i>Bos gaurus</i> (C. H. Smith, 1827)
9.		AVES	PELECANIFORMES	FREGATIDAE	<i>Fregata andrewsi</i> (Mathews, 1914)
10.		REPTILIA	TESTUDINES	CHELONIIDAE	<i>Caretta caretta</i> (Linnaeus, 1758)
11.			SERPENTES	PYTHONIDAE	<i>Python molurus</i> (Linnaeus, 1758)
12.		ELASMOBRANCHII	PRISTIFORMES	PRISTIDAE	<i>Anoxypristis cuspidata</i> (Latham, 1794)
13.					<i>Pristis pectinata</i> Latham, 1794
14.					<i>Pristis zijsron</i> Bleeker, 1851

**CITES-LISTED ANIMALS IN SRI LANKA (APPENDIX I/r)**

#	Phylum	Class	Order	Family	Scientific Name
1.	CHORDATA	MAMMALIA	CETACEA	PHYSETERIDAE	<i>Physeter macrocephalus</i> Linnaeus, 1758
2.				BALAELOPTERIDAE	<i>Balaenoptera acutorostrata</i> Lacépède, 1804
3.					<i>Balaenoptera musculus</i> (Linnaeus, 1758)
4.					<i>Balaenoptera physalus</i> (Linnaeus, 1758)
5.					<i>Megaptera novaeangliae</i> (Borowski, 1781)
6.			CARNIVORA	FELIDAE	<i>Prionailurus rubiginosus</i> (I. Geoffroy Saint-Hilaire, 1831)
7.			SIRENIA	DUGONGIDAE	<i>Dugong dugon</i> (P. L. S. Müller, 1776)
8.		AVES	FALCONIFORMES	FALCONIDAE	<i>Falco peregrinus</i> Tunstall, 1771
9.		REPTILIA	TESTUDINES	CHELONIIDAE	<i>Chelonia mydas</i> (Linnaeus, 1758)
10.					<i>Eretmochelys imbricata</i> (Linnaeus, 1766)
11.				DERMOCHELYIDAE	<i>Dermochelys coriacea</i> (Vandelli, 1761)
12.			CROCODYLIA	CROCODYLIDAE	<i>Crocodylus porosus</i> Schneider, 1801

**CITES-Listed Animals in Sri Lanka (APPENDIX I/w)**

#	Phylum	Class	Order	Family	Scientific Name
1.	CHORDATA	MAMMALIA	CETACEA	PHOCOENIDAE	Neophocaena phocaenoides (G. Cuvier, 1829)
2.				BALAENOPTERIDAE	Balaenoptera edeni Anderson, 1879
3.			CARNIVORA	MUSTELIDAE	Lutra lutra (Linnaeus, 1758)
4.			PROBOSCIDEA	ELEPHANTIDAE	Elephas maximus Linnaeus, 1758
5.		REPTILIA	TESTUDINES	CHELONIIDAE	Lepidochelys olivacea (Eschscholtz, 1829)
6.			CROCODYLIA	CROCODYLIDAE	Crocodylus palustris Lesson, 1831
7.			SAURIA	VARANIDAE	Varanus bengalensis (Daudin, 1802)
8.			SERPENTES	PYTHONIDAE	Python molurus (Linnaeus, 1758) ssp. molurus (Linnaeus, 1758)

Source: CITES. <http://www.cites.org/eng/resources/species.html>

TABLE A-18

## CMS-Listed Animals in Sri Lanka

No.	Appendix	Class	Order	Family	Taxon and any Qualification
1.	I	Mammalia	Cetacea	Balaenopteridae	<i>Balaenoptera musculus</i>
2.	I	Mammalia	Cetacea	Balaenopteridae	<i>Megaptera novaeangliae</i>
3.	I/II	Mammalia	Cetacea	Physeteridae	<i>Physeter macrocephalus</i>
4.	I/II	Mammalia	Cetacea	Balaenopteridae	<i>Balaenoptera physalus</i>
5.	I/II	Aves	Charadriiformes	Charadriidae	<i>Vanellus gregarius</i>
6.	I/II	Aves	Charadriiformes	Scolopacidae	<i>Tringa guttifer</i>
7.	I/II	Aves	Charadriiformes	Scolopacidae	<i>Eurynorhynchus pygmeus</i>
8.	I/II	Reptilia	Testudinata	Cheloniidae	<i>Chelonia mydas</i>
9.	I/II	Reptilia	Testudinata	Cheloniidae	<i>Caretta caretta</i>
10.	I/II	Reptilia	Testudinata	Cheloniidae	<i>Eretmochelys imbricate</i>
11.	I/II	Reptilia	Testudinata	Cheloniidae	<i>Lepidochelys olivacea</i>
12.	I/II	Reptilia	Testudinata	Dermochelidae	<i>Dermochelys coriacea</i>
13.	I/II	Pisces (Elasmobranchii)	Rajiformes	Mobulidae	<i>Manta birostris</i>
14.	II	Mammalia	Chiroptera	Vespertilionidae	<i>Miniopterus schreibersii</i>
15.	II	Mammalia	Cetacea	Phocoenidae	<i>Neophocaena phocaenoides</i>
16.	II	Mammalia	Cetacea	Delphinidae	<i>Sousa chinensis</i>
17.	II	Mammalia	Cetacea	Delphinidae	<i>Orcaella brevirostris</i>
18.	II	Mammalia	Cetacea	Delphinidae	<i>Orcinus orca</i>
19.	II	Mammalia	Cetacea	Balaenopteridae	<i>Balaenoptera edeni</i>
20.	II	Mammalia	Sirenia	Dugongidae	<i>Dugong dugon</i>
21.	II	Aves	Ciconiiformes	Threskiornithidae	<i>Platalea leucorodia</i>
22.	II	Aves	Falconiformes	Pandionidae	<i>Pandion haliaetus</i>
23.	II	Aves	Falconiformes	Accipitridae	<i>Aviceda jerdoni</i>
24.	II	Aves	Falconiformes	Accipitridae	<i>Aviceda leuphotes</i>
25.	II	Aves	Falconiformes	Accipitridae	<i>Pernis ptilorhynchus</i>
26.	II	Aves	Falconiformes	Accipitridae	<i>Milvus migrans</i>
27.	II	Aves	Falconiformes	Accipitridae	<i>Circus aeruginosus</i>
28.	II	Aves	Falconiformes	Accipitridae	<i>Circus macrourus</i>

No.	Appendix	Class	Order	Family	Taxon and any Qualification
29.	II	Aves	Falconiformes	Accipitridae	<i>Circus melanoleucos</i>
30.	II	Aves	Falconiformes	Accipitridae	<i>Circus pygargus</i>
31.	II	Aves	Falconiformes	Accipitridae	<i>Accipiter badius</i>
32.	II	Aves	Falconiformes	Accipitridae	<i>Accipiter virgatus</i>
33.	II	Aves	Falconiformes	Accipitridae	<i>Buteo buteo</i>
34.	II	Aves	Falconiformes	Accipitridae	<i>Buteo rufinus</i>
35.	II	Aves	Falconiformes	Accipitridae	<i>Hieraaetus pennatus</i>
36.	II	Aves	Falconiformes	Accipitridae	<i>Spizaetus nipalensis</i>
37.	II	Aves	Falconiformes	Falconidae	<i>Falco tinnunculus</i>
38.	II	Aves	Falconiformes	Falconidae	<i>Falco amurensis</i>
39.	II	Aves	Falconiformes	Falconidae	<i>Falco severus</i>
40.	II	Aves	Falconiformes	Falconidae	<i>Falco peregrines</i>
41.	II	Aves	Strigiformes	Strigidae	<i>Ninox scutulata</i>
42.	II	Aves	Strigiformes	Strigidae	<i>Asio flammeus</i>
43.	II	Aves	Gruiformes	Rallidae	<i>Fulica atra atra</i>
44.	II	Aves	Charadriiformes	Burhinidae	<i>Burhinus oedicephalus</i>
45.	II	Aves	Charadriiformes	Glareolidae	<i>Glareola pratincola</i>
46.	II	Aves	Charadriiformes	Laridae	<i>Sterna bergii</i>
47.	II	Aves	Charadriiformes	Laridae	<i>Sterna bengalensis</i>
48.	II	Aves	Charadriiformes	Laridae	<i>Sterna albifrons</i>
49.	II	Aves	Charadriiformes	Laridae	<i>Sterna saundersi</i>
50.	II	Reptilia	Crocodylia	Crocodylidae	<i>Crocodylus porosus</i>
51.	II	Pisces (Elasmobranchii)	Orectolobiformes	Rhincodontidae	<i>Rhincodon typus</i>
52.	II	Pisces (Elasmobranchii)	Lamniiformes	Lamnidae	<i>Isurus oxyrinchus</i>

Source: CMS. LIST OF RANGE STATES OF MIGRATORY SPECIES INCLUDED IN THE CMS APPENDICES.

[http://www.cms.int/pdf/en/CMS\\_Range\\_States\\_by\\_Species.pdf](http://www.cms.int/pdf/en/CMS_Range_States_by_Species.pdf)

TABLE A-19

**List of Mammals and Reptiles That Are Not Protected Under Fauna and Flora Protection (Amendment) Act, No.22 of 2009.**

Class	Family	Species
Mammalia	Suidae	<i>Sus scrofa</i>
	Leporidae	<i>Lepus nigricollis</i>
	Hystriidae	<i>Hystrix indica</i>
	Muridae	<i>Rattus rattus</i>
		<i>Rattus norvegicus</i>
		<i>Mus musculus</i>
	Cercopithecidae	<i>Macaca sinica</i>
		<i>Semnopithecus entellus</i>
Reptilia	Elapidae	<i>Naja naja</i>
		<i>Bungarus caeruleus</i>
		<i>Bungarus ceylonicus</i>
	Viperidae	<i>Daboia russelli</i>
		<i>Echis carinata</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.

TABLE A-20

**List of Mammals and Reptiles That Are Strictly Protected Under Fauna and Flora Protection (Amendment) Act, No.22 of 2009.**

Class	Family	Species
Mammalia	Lorisidae	<i>Loris tardigradus</i>
	Felidae	<i>Felis chaus</i>
		<i>Panthera pardus</i>
		<i>Prionailurus rubiginosus</i>
		<i>Prionailurus viverrinus</i>
	Mustelidae	<i>Lutra lutra</i>
	Ursidae	<i>Melursus ursinus</i>
	Sciuridae	<i>Petaurista philippensis</i>
		<i>Petinomys fuscocapillus</i>
	Manidae	<i>Manis crassicaudata</i>
	Cervidae	<i>Cervus unicolor</i>
		<i>Muntiacus muntjak</i>
	Balaenopteridae	<i>Balaenoptera musculus</i>
		<i>Balaenoptera physalus</i>
		<i>Megaptera novaengliae</i>
	Physeteridae	<i>Physeter macrocephalus</i>
		<i>Kogia breviceps</i>
		<i>Kogia simus</i>
	Delphinidae	<i>Delphinus delphis</i>
	Dugongidae	<i>Dugong dugon</i>
Reptilia	Crocodylidae	<i>Crocodylus palustris</i>
		<i>Crocodylus porosus</i>
Reptilia	Bataguridae	<i>Melanochelys trijuga</i>

Class	Family	Species
	Trionychidae	<i>Lissemys punctata</i>
	Testudinidae	<i>Geochelone elegans</i>
	Cheloniidae	<i>Caretta caretta</i>
		<i>Chelonia mydas</i>
		<i>Eretmochelys imbricata</i>
		<i>Lepidochelys olivacea</i>
	Dermochelyidae	<i>Dermochelys coriacea</i>
	Agamidae	<i>Ceratophora spp</i>
		<i>Cophotis ceylanica</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.

TABLE A-21

**List of Birds That Are Not Protected Under Fauna and Flora Protection (Amendment) Act, No.22 Of 2009.**

Class	Family	Species
Aves	Corvidae	<i>Corvus macrorhynchos</i>
		<i>Corvus splendens</i>
	Passeridae	<i>Lonchura punctulata</i>
		<i>Lonchura striata</i>
	Psittacidae	<i>Psittacula krameri</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.

TABLE A-22

**List of Birds That Are Strictly Protected Under Fauna and Flora Protection (Amendment) Act, No.22 Of 2009.**

Class	Family	Species
Aves	Pelecanidae	<i>Pelecanus philippensis</i>
	Phalacrocoracidae	<i>Phalacrocorax carbo</i>
	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>
		<i>Leptoptilos javanicus</i>
	Acciptridae	<i>Aviceda jerdoni</i>
		<i>Hieraaetus kienerii</i>
		<i>Spizaetus nipalensis</i>
	Falconidae	<i>Falco peregrinus</i>
		<i>Falco tinnunculus</i>
	Phasianidae	<i>Francolinus pictus</i>
		<i>Francolinus pondicerianus</i>
		<i>Perdicula asiatica</i>
	Rallidae	<i>Fulica atra</i>
		<i>Gallirallus striatus</i>
		<i>Porzana fusca</i>
	Charadriidae	<i>Vanellus malabaricus</i>
	Rostratulidae	<i>Rostratula benghalensis</i>
	Glareolidae	<i>Burhinus recurvirostris</i>
	Tytonidae	<i>Phodilus badius</i>
		<i>Tyto alba</i>

Class	Family	Species
	Apodidae	<i>Tachymarptis melba</i>
		<i>Hirundapus giganteus</i>
	Alcedinidae	<i>Alcedo meninting</i>
	Coraciidae	<i>Eurystomus orientalis</i>
	Picidae	<i>Celeus brachyurus</i>
	Picidae	<i>Chrysocolaptes festivus</i>
		<i>Picus xanthopygaeus</i>
	Hirundinidae	<i>Hirundo tahitica</i>
	Laniidae	<i>Lanius schach</i>
	Columbidae	<i>Columba livia</i>
		<i>Streptopelia decaocto</i>
		<i>Treron phoenicoptera</i>
		<i>Columba torringtoni</i>
	Muscicapidae	<i>Saxicola caprata</i>
		<i>Turdus merula</i>
		<i>Zoothera dauma</i>
	Passeridae	<i>Lonchura kelaarti</i>
		<i>Lonchura malabarica</i>
	Cuculidae	<i>Hierococcyx varius</i>
		<i>Phaenicophaeus leshenaulti</i>
		<i>Phaenicophaeus pyrrhocephalus</i>
	Phasianidae	<i>Galloperdix bicalcarata</i>
	Strigidae	<i>Glaucidium castanonotum</i>
	Bucerotidae	<i>Ocyrceros gingalensis</i>
	Megalaimidae	<i>Megalaima flavifrons</i>
	Psittacidae	<i>Loriculus beryllinus</i>
		<i>Psittacula calthropae</i>
	Centropodidae	<i>Gracula ptilogenys</i>
	Sturnidae	<i>Gracula ptilogenys</i>
	Corvidae	<i>Urocissa ornate</i>
	Pycnonotidae	<i>Pycnonotus penicillatus</i>
	Sylviidae	<i>Bradypterus palliseri</i>
		<i>Garrulax cinereifrons</i>
		<i>Pellorneum fuscicapillum</i>
		<i>Turdoides rufescens</i>
	Muscicapidae	<i>Eumyias sordida</i>
		<i>Myophonus blighi</i>
		<i>Zoothera spiloptera</i>
	Nectariniidae	<i>Dicaeum vincens</i>
	Zosteropidae	<i>Zosterops ceylonensis</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.

TABLE A-23

**List of Amphibians That Are Not Protected Under Fauna and Flora Protection (Amendment) Act, No.22 Of 2009.**

Class	Family	Species
Amphibia	Bufonidae	<i>Bufo melanostictus</i>
	Microhylidae	<i>Kaloula taprobanica</i>
		<i>Microhyla ornate</i>
		<i>Uperodon systoma</i>
	Ranidae	<i>Euphlyctis cyanophlyctis</i>
		<i>Euphlyctis hexadactylus</i>
		<i>Hoplobatrachus crassus</i>
		<i>Limnonectes limnocharis</i>
		<i>Rana temporalis</i>
		<i>Hoplobatrachus tigerinus</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.

TABLE A-24

**List of Fish That Are Protected Under Fauna and Flora Protection (Amendment) Act, No.22 Of 2009.**

Class	Family	Species
	Scorpaenidae	<i>Pterois radiate</i>
	Pomacanthidae	<i>Centropyge bispinosus</i>
		<i>Pygoplites diacanthus</i>
	Labridae	<i>Coris aygula</i>
		<i>Labroides bicolor</i>
	Chaetodontidae	<i>Chaetodon semion</i>
	Ephippidae	<i>platax pinnatus</i>
Order: Cypriniformes	Cyprinidae	<i>Labeo porcellus</i>
		<i>Labeo fisheri</i>
		<i>Puntius asoka</i>
		<i>Puntius martenstyni</i>
		<i>Puntius Sri lankensis</i>
		<i>Rasbora wilpita</i>
		<i>Danio pathirana</i>
		<i>(Devario pathirana) puntius handula</i>
	Cobitidae	<i>Lepidocephalichthys jonklaasi</i>
	Channidae	<i>Channa orientalis</i>
	Gobiidae	<i>Schismatogobius deraniyagalai</i>
		<i>Sicyopterus halei</i>
		<i>Sicyopus jonklaasi</i>
		<i>Stiphodon martenstyni</i>
	Mastacembelidae	<i>Macrogathus aral</i>
	Synbranchidae	<i>Ophisternon bengalense</i>
		<i>Ophisternon desilvai</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.



TABLE A-25

**List of Invertebrates That Are Protected Under Fauna and Flora Protection (Amendment) Act, No.22 of 2009.**

Class	Family	Species
	Lepidoptera	<i>All species</i>
	Hymenoptera	<i>Aneuretus simioni</i>
	Odonate	<i>All species</i>
Order: Crustacea		<i>Ceylonthelphusa callista</i>
		<i>Ceylonthelphusa diva</i>
		<i>Ceylonthelphusa durrelli</i>
		<i>Ceylonthelphusa kotagama</i>
		<i>Ceylonthelphusa nata</i>
		<i>Ceylonthelphusa orthos</i>
		<i>Ceylonthelphusa sanguinea</i>
		<i>Ceylonthelphusa savitriae</i>
		<i>Ceylonthelphusa kakoota</i>
		<i>Mahatha helaya</i>
		<i>Mahatha lora</i>
		<i>Mahatha lacuna</i>
		<i>Mahatha regina</i>
		<i>Oziothelphusa intuta</i>
		<i>Oziothelphusa Kodagoda</i>
		<i>Perbrinckia cracens</i>
		<i>Perbrinckia enodis</i>
		<i>Perbrinckia fido</i>
		<i>Perbrinckia morayensis</i>
		<i>Perbrinckia punctata</i>
		<i>Perbrinckia quadratus</i>
		<i>Perbrinckia rasae</i>
		<i>Perbrinckia scitula</i>
	Cladocera	<i>Ghardaglaia ambigua</i>
		<i>Stenocypris fernandoni</i>
		<i>Chrissa ceylonica</i>
		<i>Chrissa halyi</i>
		<i>Centrocypris viridis</i>
	Podocopa	<i>Darwinula lundii</i>
	Decapoda	<i>caridina singhalensis</i>
		<i>caridina pristis</i>
		<i>Caridina fernandoni</i>
		<i>Caridina zeylanica</i>
		<i>Caridina costai</i>
		<i>Macrobrachium srilankense</i>
		<i>Ceylonthelphusa sorrow</i>
		<i>Ceylonthelphusa inflatissima</i>
		<i>Oziothelphusa minneriyansis</i>
	Family	<i>Dardanus magistos</i>
	Diogenidae	<i>Dardanus magistos</i>

Class	Family	Species
	Hymenoceridae	<i>Hymenocera elegans</i>
	Enoplometopodidae	<i>Enoplometopus spp</i>
Phylum	Order	
Ceolenterata	Ceriantharia	<i>Cerianthus spp.</i>
Class	Family	
Anthozoa	Pocilloporidae	<i>Pocillopora spp.</i>
		<i>Stylophora spp.</i>
		<i>Seriatopora spp.</i>
	Acroporidae	<i>Acropora spp</i>
		<i>Montipora spp.</i>
		<i>Astreopora spp.</i>
	Agriciidae	<i>Pavona spp.</i>
		<i>Leptoseris spp.</i>
		<i>Pachyseris speciosa</i>
	Siderastreidae	<i>Conscinaraea spp.</i>
	Fungiidae	<i>Cycloseri spp.</i>
		<i>Fungia spp.</i>
		<i>Herpolitha limax</i>
		<i>Polyphyllila talpina</i>
		<i>Sandalolitha robusta</i>
		<i>Zoopilus echinatus</i>
		<i>Diaseris fragilis</i>
		<i>Diaseris distorta</i>
	Faviidae	<i>Favia spp</i>
		<i>Favites spp.</i>
		<i>Montastrea spp.</i>
		<i>Cyphastrea chalcidicum</i>
		<i>Cyphastrea serailia</i>
		<i>Oulophyllia crispa</i>
		<i>Platygyra spp.</i>
		<i>Leptoria phrygia</i>
		<i>Diploastrea heliopora</i>
		<i>Echinopora lamellosa</i>
		<i>Clesiastrea versipora</i>
		<i>Goniastrea spp.</i>
	Merulinidae	<i>Hydnophora</i>
		<i>Merulina</i>
	Mussidae	<i>Symphyllia spp.</i>
		<i>Labophyllia spp.</i>
		<i>Labophyllia hemprichii</i>
		<i>Acanthastrea spp.</i>
	Pectiniidae	<i>Echinophyllia spp.</i>
		<i>Pectinia spp.</i> -
		<i>Mycedium elephantotus</i>
	Euphyllidae	<i>Euphyllia spp.</i>
		<i>Plerogyra sinuosa spp.</i>

Class	Family	Species
		<i>Physogyra spp.</i>
		<i>Catalaphyllia jardinei</i>
	Dendrophylliidae	<i>Tubastrea spp.</i>
	Dendrophylliidae	<i>Dendrophyllia micrantha-</i>
		<i>Dendrophyllia peltata</i>
		<i>Turbinaria spp.</i>
		<i>Heteropsammia cochlea</i>
		<i>Balanophyllia spp.</i>
	Poritidae	<i>Porites spp.</i>
		<i>Goniopora stokesi</i>
		<i>Goniopora fruticosa</i>
		<i>Goniopora astreated</i>
Hydrozoa	Milleporidae	<i>Millepora spp.</i>
	Stylasteriidae	<i>Distichopra violacea</i>
		<i>Stylaster spp.</i>
	Antipathria	<i>All species</i>
	Ceriatharia	<i>All species</i>
	Alcyonacea	<i>All species</i>
	Ellisellidae	<i>All species</i>
	Gorgonacea	<i>All species</i>
Phylum : Annelida	Sabellidae	<i>Sabellestarte spp.</i>
	Serpulidae	<i>Spirobranchus spp.</i>
Phylum : Mollusca		<i>Bulimus inconspicua</i>
		<i>Paludomus chilinoides</i>
		<i>Paludomus transchauricus nasuts</i>
		<i>Paludomus bicinctus</i>
		<i>Paludomus decussates</i>
		<i>Paludomus nigricans</i>
		<i>Paludomus regalis</i>
		<i>Paludomus sulcatus</i>
		<i>Paludomus loricatus</i>
		<i>Thysanota elegans</i>
		<i>Euplecta binoyaensis</i>
		<i>Euplecta colletti</i>
		<i>Euplecta gardeneri</i>
		<i>Euplecta isabellina</i>
		<i>Euplecta prestoni</i>
		<i>Ratnadvipia karu</i>
		<i>Ravana politissima</i>
		<i>Macrochlamys neaps</i>
		<i>Macrochlamys woodiana</i>
		<i>Glesula veruina</i>
		<i>Corilla beddomeae</i>
		<i>Japonia vesca</i>

Class	Family	Species
		<i>Leptopomoides poecilus</i>
		<i>Tortulosa decora</i>
		<i>Tortulosa marginata</i>
		<i>Paludomus neritoides</i>
		<i>Paludomus solidus</i>
		<i>Paludomus palustris</i>
		<i>Tibia insulae</i>
		<i>Charonia tritonis</i>
		<i>Strombus listeri</i>
		<i>Lambis lambis</i>
		<i>Lambis chiragra</i>
		<i>Cypraea tigris</i>
		<i>Cypraea talpa</i>
		<i>Cypraea mappa</i>
		<i>Cypraea argus</i>
		<i>Cypraecassis rufa</i>
		<i>Cassis cornutus</i>
		<i>Chicoreus palmarosae</i>
	Order : Nudibranchia	<i>Hexabranchnus spp.</i>
Bivalvia		<i>Tridachna spp.</i>
Cephalopoda	Sub Class : Nautiloidea	<i>Nautilus spp.</i>
	Sub Class : Coleoidea	<i>Argonauta spp.</i>
Echinoidea	Echinometridae	<i>Heterocentrotus mammillatus</i>
Holothuroidea	Cucumariidae	<i>Pseudocolochirus spp.</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.

TABLE A-26

**List of Plants That Are Protected Under Fauna and Flora Protection (Amendment) Act, No.22 of 2009.**

Class	Family	Species
	Sphagnaceas	<i>Sphagnum ceylonicum</i>
	Equisetaceae	<i>Equisetum debile</i>
	Isoetaceae	<i>Isoetes coromandelina</i>
	Lycopodiaceae	<i>Huperzia hamiltonii</i>
		<i>Huperzia phlegmaria</i>
		<i>Huperzia pinifolia</i>
		<i>Huperzia ceylanica</i>
		<i>Huperzia phyllantha</i>
		<i>Huperzia pulchemima</i>
		<i>Huperzia serrata</i>
		<i>Huperzia squarrosa</i>
		<i>Huperzia subulifolia</i>
		<i>Huperzia vemica</i>
		<i>Lycopodiella caroliniana</i>
		<i>Lycopodium japonicum</i>
		<i>Lycopodium wightianum</i>

Class	Family	Species
	Psilotacea	<i>Psilotum udum</i>
	Selaginellaceae	<i>Selaginella calostachya</i>
		<i>Selaginella cochleata</i>
		<i>Selaginella praetermissa</i>
		<i>Selaginella wightii</i>
	Pterodaceae	<i>Actiniopteris radiata</i>
		<i>Cheilanthes thwaitesii</i>
		<i>Idiopteris hookeriana</i>
		<i>Pellaea boivini</i>
		<i>Pellaea falcata</i>
		<i>Pteris argyraea</i>
		<i>Pteris confusa</i>
		<i>Pteris Gongalensis</i>
		<i>Pteris praetermissa</i>
		<i>Pteris reptans</i>
	Aspleniaceae	<i>Asplenium disjunctum</i>
		<i>Asplenium longipes</i>
		<i>Asplenium nitidum</i>
		<i>Asplenium obscurum</i>
		<i>Asplenium pellucidum</i>
	Cyatheaceae	<i>Cyathea Hookeri</i>
		<i>Cyathea sinuata</i>
		<i>Cyathea crinita</i>
		<i>Cyathea gigantes</i>
		<i>Cyathea walkerar</i>
	Dennstaedtiaceae	<i>Microlepia majuscula</i>
		<i>Lindsaea repens var. pectinata</i>
	Dryopteridaceae	<i>Polystichum anomalum</i>
		<i>Pteridrys zeylanica</i>
		<i>Tectaria thwaitesii</i>
	Woodsiaceae	<i>Deparia Ployrhizos</i>
		<i>Deparia zeylanica</i>
		<i>Diplazium cognatum</i>
		<i>Diplazium paradoxum</i>
	Grammitidaceae	<i>Chrysogrammitis glandulosa</i>
		<i>Ctenopteris repandula</i>
		<i>Ctenopteris thwaitesii</i>
		<i>Grammitis wallii</i>
		<i>Scleroglossum sulcatum</i>
		<i>Xiphopteris cornigera</i>
	Hymenophyllaceae	<i>Crepidomanes bilabiatum</i>
		<i>Crepidomanes intramarginale</i>
		<i>Crepidomanes kurzii</i>
		<i>Didymoglossum exiguum</i>
		<i>Didymoglossum wallii</i>
		<i>Gonocormus saxifragoides</i>

Class	Family	Species
		<i>Microgonium motleyi</i>
		<i>Microtrichomanes nitidulum</i>
		<i>Pleuromanes pallidum</i>
	Lomariopsidaceae	<i>Bolbitis appendiculata</i>
		<i>Teratophyllum aculeatum</i>
	Marattiaceae	<i>Marattia fraxinea</i>
	Ophioglossaceae	<i>Botrychium daucifolium</i>
		<i>Botrychium lanuginosum</i>
		<i>Helminthostachys zeylanica</i>
		<i>Ophioglossum costatum</i>
		<i>Ophioglossum gramineum</i>
		<i>Ophioglossum nudicaule</i>
		<i>Ophioglossum pendulum</i>
		<i>Ophioglossum petiolatum</i>
		<i>Ophioglossum reticulatum</i>
	Thelypteridaceae	<i>Amauroplta hakgalensis</i>
		<i>Ampelopteris prolifera</i>
		<i>Christella meeboldii</i>
		<i>Christella subpubescens</i>
		<i>Christella zeylanice</i>
		<i>Pronephrium gardneri</i>
		<i>Sphaerostephanos subtruncatus</i>
		<i>Thelypteris confluens</i>
		<i>Trigonospora angustifrons</i>
		<i>Trigonospora calcarata</i>
		<i>Trigonospora ciliata</i>
		<i>Trigonospora glandulosa</i>
		<i>Trigonospora obtursiloba</i>
		<i>Trigonospora zeylanica</i>
	Osmundaceae	<i>Osmunda collina</i>
	Polypodiaceae	<i>Belvisia mucronata</i>
		<i>Leptochilus decurrens</i>
		<i>Microsorium insigne</i>
		<i>Pleopeltis lanceolata</i>
	Cycadaceae	<i>Cycas nathorstii</i>
		<i>Cycas zeylanica</i>
	Acanthaceae	<i>Andrographis macrobotrys</i>
		<i>Barleria nitida</i>
		<i>Barleria nutans</i>
		<i>Barleria vestita</i>
		<i>Barleria lanceata</i>
		<i>Gymnostachyum hirsutum</i>
		<i>Gymnostachyum thwaitesii</i>
		<i>Strobilanthes caudata</i>
		<i>Strobilanthes gardneriana</i>
		<i>Strobilanthes nigrescens</i>

Class	Family	Species
		<i>Strobilanthes nockii</i>
		<i>Strobilanthes punctata</i>
		<i>Strobilanthes rhytisperma</i>
		<i>Strobilanthes stenodon</i>
		<i>Strobilanthes thwaitesii</i>
		<i>Strobilanthes zeylanica</i>
		<i>Strobilanthes arnottiana</i>
		<i>Strobilanthes deflexa</i>
		<i>Strobilanthes hypericoides</i>
		<i>Strobilanthes pentandra</i>
		<i>Strobilanthes rhamnifolia</i>
	Amaranthaceae	<i>Achyranthes bidentata</i>
		<i>Achyranthes diandra</i>
		<i>Centrostachys aquatica</i>
		<i>Cyathula ceylanica</i>
	Anacardiaceae	<i>Semecarpus moonii</i>
		<i>Semecarpus obovata</i>
		<i>Semecarpus parvifolia</i>
		<i>Semecarpus pseudo-emarginata</i>
	Ancistrocladaceae	<i>Ancistrocladus hamatus</i>
	Annonaceae	<i>Alphonsea hortensis</i>
		<i>Alphonsea zeylanica</i>
		<i>Anaxagorea luzonensis</i>
		<i>Artabotrys hexapetalus</i>
		<i>Goniothalamus thomsonii</i>
		<i>Goniothalamus gardneri</i>
		<i>Miliusa zeylanica</i>
		<i>Orophea polycarpa</i>
		<i>Phoenicanthus coriacea</i>
		<i>Polyalthia moonii</i>
		<i>Polyalthia persicaefolia</i>
		<i>Uvaria cordata</i>
		<i>Xylopia nigricans</i>
	Anthericaceae	<i>Chlorophytum heynei</i>
	Apiaceae (Umbelliferae)	<i>Heracleum ceylanicum</i>
		<i>Peucedanum ceylanicum</i>
		<i>Sanicula elata</i>
	Apocynaceae	<i>Anodendron rhinosporum</i>
		<i>Cleghornia acuminata</i>
		<i>Petchea ceylanica</i>
		<i>Rauwolfia serpentina</i>
		<i>Vallis solanacea</i>
		<i>Wrightia flavido-rosea</i>
	Aponogetonaceae	<i>Aponogeton jacobsenii</i>
		<i>Aponogeton rigidifolius</i>
	Apostasiaceae	<i>Apostasia wallichii</i>

Class	Family	Species
	Araceae	<i>Arisaema constrictum</i>
		<i>Cryptocoryne alba</i>
		<i>Cryptocoryne bogneri</i>
		<i>Cryptocoryne thwaitesii</i>
		<i>Cryptocoryne walkeri</i>
		<i>Lagenandra bogneri</i>
		<i>Lagenandra jacobsenii</i>
		<i>Lagenandra koenigii</i>
		<i>Lagenandra lancifolia</i>
		<i>Lagenandra praetermissa</i>
		<i>Lagenandra thwaitesii</i>
		<i>Lagenandra erosa</i>
		<i>Rhaphidophora decursiva</i>
		<i>Rhaphidophora pertusa</i>
		<i>Typhonium flagelliforme</i>
		<i>Pothos remotiflorus</i>
	Araliaceae	<i>Polyscias acuminata</i>
	Areaceae (Palmae)	<i>Areca concinna</i>
		<i>Loxococcus rupicola</i>
		<i>Oncosperma fasciculatum</i>
		<i>Calamus delicatulus</i>
		<i>Calamus digitatus</i>
		<i>Calamus ovoideus</i>
		<i>Calamus pachystemonus</i>
		<i>Calamus radiatus</i>
		<i>Calamus rivalis</i>
		<i>Calamus zeylanicus</i>
		<i>Nypa fruticans</i>
	Asclepiadaceae	<i>Bidaria cuspidata</i>
		<i>Brachystelma lankana</i>
		<i>Caralluma adscendens</i>
		<i>Caralluma umbellata</i>
		<i>Ceropegia candelabrum</i>
		<i>Ceropegia elegans</i>
		<i>Ceropegia parviflora</i>
		<i>Ceropegia taprobanica</i>
		<i>Ceropegia thwaitesii</i>
		<i>Cosmostigma racemosum</i>
		<i>Cynanchum alatum</i>
		<i>Dischidia nummularia</i>
		<i>Gymnema rotundatum</i>
		<i>Heterostemma tanjorensis</i>
		<i>Hoya ovalifolia</i>
		<i>Hoya pauciflora</i>
		<i>Marsdenia tenacissima</i>
		<i>Oxystelma esculentum</i>



Class	Family	Species
		<i>Toxocarpus kleinii</i>
		<i>Tylophora fasciculata</i>
		<i>Tylophora multiflora</i>
		<i>Tylophora pauciflora</i>
		<i>Tylophora zeylanica</i>
	Asteraceae	<i>Anaphalis fruticosa</i>
		<i>Anaphalis pelliculata</i>
		<i>Anaphalis thwaitesii</i>
		<i>Blepharispermum petiolare</i>
		<i>Blumea angustifolia</i>
		<i>Blumea aurita</i>
		<i>Blumea barbata</i>
		<i>Blumea crinita</i>
		<i>Blumea lanceolaria</i>
		<i>Glossogyne bidens</i>
		<i>Gynura hispida</i>
		<i>Gynura zeylanica</i>
		<i>Notonia grandiflora</i>
		<i>Notonia walkeri</i>
		<i>Senecio gardneri</i>
		<i>Sphaeranthus amaranthoides</i>
		<i>Vernonia anceps</i>
		<i>Vernonia pectiniformis</i>
		<i>Vernonia thwaitesii</i>
	Balanophoraceae	<i>Balanophora fungosa</i>
	Balsaminaceae	<i>Impatiens acaulis</i>
		<i>Impatiens appendiculata</i>
		<i>Impatiens arnottii</i>
		<i>Impatiens ciliifolia</i>
		<i>Impatiens cornigera</i>
		<i>Impatiens cuspidata</i>
		<i>Impatiens elongata</i>
		<i>Impatiens grandis</i>
		<i>Impatiens janthina</i>
		<i>Impatiens leptopoda</i>
		<i>Impatiens leucantha</i>
		<i>Impatiens linearis</i>
		<i>Impatiens macrophylla</i>
		<i>Impatiens oppositifolia</i>
		<i>Impatiens repens</i>
		<i>Impatiens subcordata</i>
		<i>Impatiens taprobanica</i>
		<i>Impatiens thwaitesii</i>
		<i>Impatiens truncata</i>
		<i>Impatiens walkeri</i>
	Begoniaceae	<i>Begonia dipetala</i>

Class	Family	Species
		<i>Begonia subpeltata</i>
		<i>Begonia tenera</i>
	Boraginaceae	<i>Cordia subcordata</i>
		<i>Heliortropium supinum</i>
		<i>Rotula aquatica</i>
	Burmanniaceae	<i>Burmannia championii</i>
		<i>Thismia gardneriana</i>
	Campanulaceae	<i>Campanula canescens</i>
		<i>Campanula fulgens</i>
	Capparaceae	<i>Cadaba fruticosa</i>
		<i>Capparis divaricata</i>
		<i>Capparis floribunda</i>
		<i>Capparis moonii</i>
		<i>Capparis tenera</i>
		<i>Cleome chelidonii</i>
	Caryophyllaceae	<i>Cerastium fontanum</i>
		<i>Stellaria pauciflora</i>
	Celastraceae	<i>Cassine congylus</i>
		<i>Celastrus paniculatus</i>
		<i>Euonymus thwaitesii</i>
		<i>Glyptopetalum zeylanicum</i>
		<i>Kokoona zeylanica</i>
		<i>Maytenus fruticosa</i>
	Clusiaceae (Guttiferae)	<i>Calophyllum calabe</i>
		<i>Calophyllum bracteatum</i>
		<i>Calophyllum cordato-oblongum</i>
		<i>Calophyllum cuneifolium</i>
		<i>Calophyllum moonii</i>
		<i>Calophyllum thwaitesii</i>
		<i>Calophyllum tomentosum</i>
		<i>Calophyllum trapezifolium</i>
		<i>Calophyllum walkeri</i>
		<i>Calophyllum zeylanicum</i>
		<i>Garcinia hermonii</i>
		<i>Garcinia terpnophylla</i>
		<i>Garcinia thwaitesii</i>
		<i>Garcinia zeylanica</i>
		<i>Mesua stylosa</i>
	Combretaceae	<i>Luminitzera littorea</i>
	Commelinaceae	<i>Cyanotis obtusa</i>
	Connaraceae	<i>Ellipanthus unifolius</i>
	Convolvulaceae	<i>Argyreia choisyana</i>
		<i>Argyreia hancorniaefolia</i>
		<i>Argyreia pomacea</i>
		<i>Argyreia splindens</i>
		<i>Bonamia semidigyna</i>

Class	Family	Species
		<i>Ipomoea coptica</i>
		<i>Ipomoea jucunda</i>
		<i>Ipomoea staphylina</i>
		<i>Ipomoea wightii</i>
	Cornaceae	<i>Mastixia congylos</i>
		<i>Mastixia montana</i>
		<i>Mastixia nimalii</i>
	Cucurbitaceae	<i>Mukia leiosperma</i>
		<i>Kedrostis foetidissima</i>
	Cyperaceae	<i>Baeothryon subcapitatum</i>
		<i>Carex breviscapa</i>
		<i>Carex taprobanensis</i>
		<i>Cyperus articulatus</i>
		<i>Cyperus cephalotes</i>
		<i>Eleocharis confervoides</i>
		<i>Eleocharis lankana</i>
		<i>Fimbristylis monticola</i>
		<i>Fimbristylis zeylanica</i>
		<i>Hypolytrum longirostre</i>
		<i>Mapania immersa</i>
		<i>Mapania zeylanica</i>
		<i>Mariscus compactus</i>
		<i>Pycreus stramineus</i>
		<i>Rhynchospora gracillima</i>
		<i>Scirpodendron ghaeri</i>
		<i>Scleria pilosa Boeckeler</i>
		<i>Tricostularia undulata</i>
	Dilleniaceae	<i>Acrotrema dissectum</i>
		<i>Acrotrema lyratum</i>
		<i>Acrotrema thwaitesii</i>
		<i>Schumacheria alnifolia</i>
	Dioscoreaceae	<i>Dioscorea koyamae</i>
		<i>Dioscorea trimenii</i>
		<i>Trichopus zeylanicus</i>
	Dipterocarpaceae	<i>Balanocarpus brevipetiolaris</i>
		<i>Balanocarpus kitulgallensis</i>
		<i>Dipterocarpus glandulosus</i>
		<i>Dipterocarpus insignis</i>
		<i>Doona congestiflora</i>
		<i>Doona gardneri</i>
		<i>Doona macrophylla</i>
		<i>Doona nervosa</i>
		<i>Doona oblonga</i>
		<i>Doona ovalifolia</i>
		<i>Doona trapezifolia</i>
		<i>Doona venulosa</i>

Class	Family	Species
		<i>Doona zeylanica</i>
		<i>Hopea cordifolia</i>
		<i>Hopea discolor</i>
		<i>Hopea modesta</i>
		<i>Shorea dyeri</i>
		<i>Shorea hulanidda</i>
		<i>Shorea lissophylla</i>
		<i>Shorea oblongifolia</i>
		<i>Shorea pallescens</i>
		<i>Shorea stipularis</i>
		<i>Stemonoporus spp.</i>
		All species belonging to <i>stemonoporus</i> genus
		<i>Sunaptea scabriuscula</i>
		<i>Vatica affinis</i>
		<i>Vatica lewisiana</i>
		<i>Vatica obscura</i>
		<i>Vatica paludosa</i>
	Ebenaceae	<i>Diospyros acuminata</i>
		<i>Diospyros acuta</i>
		<i>Diospyros albiflora</i>
		<i>Diospyros atrata</i>
		<i>Diospyros attenuata</i>
		<i>Diospyros chaetocarpa</i>
		<i>Diospyros crumenata</i>
		<i>Diospyros crumenata</i>
		<i>Diospyros ebenoides</i>
		<i>Diospyros hirsuta</i>
		<i>Diospyros koenigii</i>
		<i>Diospyros melanoxylon</i>
		<i>Diospyros montana</i>
		<i>Diospyros moonii</i>
		<i>Diospyros nummulariifolia</i>
		<i>Diospyros oblongifolia</i>
		<i>Diospyros oppositifolia</i>
		<i>Diospyros pemasai Jayasuriya</i>
		<i>Diospyros quaesita</i>
		<i>Diospyros rheophytica</i>
		<i>Diospyros thwaitesii</i>
		<i>Diospyros trichophylla</i>
		<i>Diospyros walkeri</i>
	Elaeocarpaceae	<i>Elaeocarpus montanus</i>
		<i>Elaeocarpus zeylanicus</i>
	Ericaceae	<i>Rhododendron arboreum</i> <i>zeylanicum</i>
		<i>Eriocaulon collinum</i>

Class	Family	Species
		<i>Eriocaulon fluviatile</i>
		<i>Eriocaulon longicuspe</i>
		<i>Eriocaulon philippo-coburgi</i>
		<i>Eriocaulon walkeri</i>
		<i>Chaetocarpus pubescens</i>
		<i>Chrozophora plicata</i>
		<i>Cleidion nitidum</i>
		<i>Cleidion spiciflorum</i>
		<i>Croton moonii</i>
		<i>Dalechampia indica</i>
		<i>Euphorbia cristata</i>
		<i>Trigonostemon diplopetalus</i>
	Fabaceae (Leguminosae)	<i>Acacia ferruginea</i>
		<i>Adenanthera bicolor</i>
		<i>Albizia amara</i>
		<i>Bauhinia scandens</i>
		<i>Cassia italica</i>
		<i>Cassia senna</i>
		<i>Caesalpinia crista</i>
		<i>Caesalpinia digyna</i>
		<i>Caesalpinia hymenocarpa</i>
		<i>Crotalaria berteroaana</i>
		<i>Crotalaria linifolia</i>
		<i>Crotalaria montana</i>
		<i>Crotalaria mysorensis</i>
		<i>Crotalaria triquetra</i>
		<i>Crotalaria wightiana</i>
		<i>Crotalaria willdenowiana</i>
		<i>Crudia zeylanica</i>
		<i>Cynometra iripa</i>
		<i>Desmodium gangeticum</i>
		<i>Desmodium jucundum</i>
		<i>Desmodium zonatum</i>
		<i>Dioclea javanica</i>
		<i>Dunbaria ferruginea</i>
		<i>Eleiotis monophyllos</i>
		<i>Galactia striata</i>
		<i>Indigofera constricta</i>
		<i>Indigofera glabra</i>
		<i>Indigofera parviflora</i>
		<i>Indigofera trifoliata</i>
		<i>Indigofera wightii</i>
		<i>Mucuna gigantea</i>
		<i>Mucuna monosperma</i>
		<i>Pericopsis mooniana</i>
		<i>Rhynchosia acutissima</i>

Class	Family	Species
		<i>Rhynchosia densiflora</i>
		<i>Rhynchosia nummularia</i>
		<i>Rhynchosia suaveolens</i>
		<i>Sesbania sericea</i>
		<i>Smithia conferta</i>
		<i>Sophora violacea</i>
		<i>Sophora zeylanica</i>
		<i>Strongylodon siderospermus</i>
		<i>Tephrosia senticosa</i>
		<i>Tephrosia spinosa</i>
	Flacourtiaceae	<i>Chlorocarpa pentaschista</i>
	Gentianaceae	<i>Crawfordia championii</i>
		<i>Exacum axillare</i>
		<i>Exacum petiolare</i>
		<i>Exacum sessile</i>
		<i>Exacum trinervium</i>
		<i>Exacum trinervium</i>
		<i>Exacum walkeri</i>
	Geraniaceae	<i>Geranium nepalense</i>
	Gesneriaceae	<i>Aeschynanthus ceylanica</i>
		<i>Chirita angusta</i>
		<i>Chirita moonii</i>
		<i>Chirita walkeri</i>
		<i>Chirita zeylanica</i>
		<i>Didymocarpus floccosus</i>
		<i>Didymocarpus zeylanicus</i>
		<i>Epithema carnosum</i>
	Goodeniaceae	<i>Scaevola plumieri</i>
	Haloragidaceae	<i>Laurembergia zeylanica</i>
	Hippocrateaceae	<i>Loeseneriella arnottiana</i>
		<i>Loeseneriella macrantha</i>
		<i>Salacia oblonga</i>
		<i>Salacia reticulata</i>
		<i>Salacia diandra</i>
		<i>Salacia chinensis</i>
	Hyacinthaceae	<i>Dipcadi montanum</i>
		<i>Dipcadi rupicola</i>
	Hydrocharitaceae	<i>Nechamandra alternifolia</i>
	Icacinaceae	<i>Pyrenacantha volubilis</i>
	Lamiaceae (Labiatae)	<i>Anisochilus paniculatus</i>
		<i>Coleus elongatus</i>
		<i>Coleus inflatus</i>
		<i>Coleus kanneliyensis</i>
		<i>Leucas longifolia</i>
		<i>Plectranthus capillipes</i>
		<i>Plectranthus glabratus</i>

Class	Family	Species
		<i>Scutellaria robusta</i>
	Lauraceae	<i>Actinodaphne albifrons</i>
		<i>Cassytha capillaris</i>
		<i>Cinnamomum capparucoronde</i>
		<i>Cinnamomum citriodorum</i>
		<i>Cinnamomum litseaefolium</i>
		<i>Cryptocarya membranaces</i>
		<i>Litsea ligustrina</i>
		<i>Litsea nemoralis</i>
	Lemnaceae	<i>Lemna gibba</i>
	Lentibulariaceae	<i>Utricularia scandens</i>
	Loranthaceae	<i>Barathranthus mabaeoides</i>
		<i>Barathranthus nodiflorus</i>
		<i>Dendrophthoe ligulata</i>
		<i>Dendrophthoe lonchiphyllus</i>
		<i>Dendrophthoe suborbicularis</i>
		<i>Helixanthera ensifolia</i>
		<i>Helixanthera hookeriana</i>
		<i>Macrosolen albicaulis</i>
		<i>Macrosolen barlowii</i>
		<i>Scurrula cordifolia</i>
		<i>Taxillus sclerophyllus</i>
		<i>Tolypanthus gardneri</i>
	Malvaceae	<i>Abutilon pannosum</i>
		<i>Cullenia ceylanica</i>
		<i>Cullenia rosayroana</i>
		<i>Dicellostyles axillaris</i>
		<i>Julostylis angustifolia</i>
		<i>Pavonia procumbens</i>
		<i>Thespesia lampas</i>
	Melastomataceae	<i>Medinilla cuneata</i>
		<i>Medinilla maculata</i>
		<i>Memecylon ellipticum</i>
		<i>Memecylon gracillimum</i>
		<i>Memecylon grande</i>
		<i>Memecylon leucanthemum</i>
		<i>Memecylon macrocarpum</i>
		<i>Memecylon orbiculare</i>
		<i>Memecylon ovoideum</i>
		<i>Memecylon phyllanthifolium</i>
		<i>Memecylon revolutum</i>
		<i>Memecylon rotundatum</i>
		<i>Sonerila cordifolia</i>
		<i>Sonerila firma</i>
		<i>Sonerila gardneri</i>
		<i>Sonerila lanceolata</i>

Class	Family	Species
		<i>Sonerila pilosula</i>
		<i>Sonerila robusta</i>
		<i>Sonerila tomentella</i>
		<i>Sonerila wightiana</i>
	Menispermaceae	<i>Coscinium fenestratum</i>
	Menyanthaceae	<i>Nymphoides aurantiaca</i>
	Monimiaceae	<i>Hortonia angustifolia</i>
		<i>Hortonia floribunda</i>
		<i>Hortonia ovalifolia</i>
	Moraceae	<i>Broussonetia zeylanica</i>
		<i>Dorstenia indica</i>
		<i>Ficus costata</i>
		<i>Ficus trimenii</i>
		<i>Maclura cochinchinensis</i>
	Musaceae	<i>Musa acuminata</i>
		<i>Musa balbisiana</i>
	Myristicaceae	<i>Myristica ceylanica</i>
		<i>Myristica dactyloides</i>
	Myrtaceae	<i>Eugenia amoena</i>
		<i>Eugenia cotinifolia</i>
		<i>Eugenia fulva</i>
		<i>Eugenia glabra</i>
		<i>Eugenia mabaeoides</i>
		<i>Eugenia rivulorum</i>
		<i>Eugenia rotundata</i>
		<i>Eugenia rufo-fulva</i>
		<i>Eugenia terpnophylla</i>
		<i>Syzygium assimile</i>
		<i>Syzygium cordifolium</i>
		<i>Syzygium cylindricum</i>
		<i>Syzygium fergusonii</i>
		<i>Syzygium firmum</i>
		<i>Syzygium garneri</i>
		<i>Syzygium hemisphericum</i>
		<i>Syzygium lanceolatum</i>
		<i>Syzygium lewisii</i>
		<i>Syzygium micranthum</i>
		<i>Syzygium oliganthum</i>
		<i>Syzygium operculatum</i>
		<i>Syzygium revolutum</i>
		<i>Syzygium sclerophyllum</i>
		<i>Syzygium spathulatum</i>
		<i>Syzygium turbinatum</i>
		<i>Syzygium umbrosum</i>
	Nepenthaceae	<i>Nepenthes distillatoria</i>
	Oleaceae	<i>Jasminum bignoniaceum</i>



Class	Family	Species
		<i>Olea paniculata</i>
	Orchidaceae	All species belonging to <i>Orchidaceae</i> family
	Orobanchaceae	<i>Aeginetia pedunculata</i>
		<i>Legocia aurantiaca</i>
		<i>Christisonia thwaitesii</i>
	Phyllanthaceae	<i>Antidesma thwaitesianum</i>
		<i>Bridelia stipularis</i>
		<i>Cleistanthus accuminatus</i>
		<i>Cleistanthus collinus</i>
		<i>Glochidion nemorale</i>
		<i>Phyllanthus cinereus</i>
		<i>Phyllanthus hakgalensis</i>
		<i>Phyllanthus heyneanus</i>
		<i>Phyllanthus rotundifolius</i>
		<i>Phyllanthus zeylanicus</i>
		<i>Sauropus assimilis</i>
		<i>Sauropus retroversus</i>
	Podostemaceae	<i>Farmeria metzgerioides</i>
		<i>Polypleurum stylosum</i>
		<i>Polypleurum elongatum</i>
		<i>Zeylanidium lichenoides</i>
		<i>Zeylanidium olivaceum</i>
		<i>Zeylandidium subulatum</i>
	Polygalaceae	<i>Polygala leptalea</i>
	Portulacaceae	<i>Portulaca wightiana</i>
	Proteaceae	<i>Helicia ceylanica</i>
	Putranjivaceae	<i>Drypetes lanceolata</i>
		<i>Putranjiva zeylanica</i>
	Rhizophoraceae	<i>Ceriops decandra</i>
	Rosaceae	<i>Alchemilla indica</i>
		<i>Sanguisorba indicum</i>
	Rubiaceae	<i>Byrsophyllum ellipticum</i>
		<i>Canthium macrocarpum</i>
		<i>Ceriscoides turgida</i>
		<i>Dichilanthe zeylanica</i>
		<i>Diplospora erythrospora</i>
		<i>Hedyotis evania</i>
		<i>Hedyotis gardneri</i>
		<i>Hedyotis inamoena</i>
		<i>Hedyotis quinquinervia</i>
		<i>Hedyotis rhizophylla</i>
		<i>Hedyotis srilankensis</i>
		<i>Lasianthus rhizophyllus</i>
		<i>Lasianthus thwaitesii</i>
		<i>Nargedia macrocarpa</i>

Class	Family	Species
		<i>Neurocalyx gardneri</i>
		<i>Ophiorrhiza Pallida</i>
		<i>Psychotria glandulifera</i>
		<i>Psychotria longipetiolata</i>
		<i>Psychotria plurivenia</i>
		<i>Psychotria stenophylla</i>
		<i>Saprosma glomeratum</i>
		<i>Saprosma scabridum</i>
		<i>Scyphiphora hydrophyllacea</i>
		<i>Scyphostachys pedunculatus</i>
	Rutaceae	<i>Atalantia racemosa</i>
		<i>Glycosmis cyanocarpa</i>
		<i>Naringi crenulata Wal-beli (S)</i>
		<i>Zanthoxylum caudatum</i>
	Santalaceae	<i>Santalum album</i>
	Sapindaceae	<i>Cardiospermum canescens</i>
		<i>Dimocarpus gardneri</i>
		<i>Lepisanthes simplicifolia</i>
	Family Sapotaceae	<i>Madhuca clavata Jayasuriya</i>
		<i>Madhuca moonii</i>
		<i>Palaquium canaliculatum</i>
		<i>Palaquium thwaitesii</i>
	Scrophulariaceae	<i>Adenosma subrepens</i>
		<i>Lindernia viscosa</i>
		<i>Verbascum chinense</i>
	Sonneratiaceae	<i>Sonneratia apetala</i>
	Stemonaceae	<i>Stemona curtisii</i>
	Sterculiaceae	<i>Eriolaena hookeriana</i>
		<i>Pentapetes phoenicea</i>
		<i>Pterygota thwaitesii</i>
		<i>Sterculia zeylanica</i>
	Stylidiaceae	<i>Stylidium uliginosum</i>
	Surianaceae	<i>Suriana maritima</i>
	Symphoremaceae	<i>Symphorema involucreatum</i>
	Symplocaceae	<i>Symplocos diversifolia</i>
		<i>Symplocos elegans</i>
		<i>Symplocos kurgensis</i>
	Taccaceae	<i>Tacca Leontopetaloides</i>
	Theaceae	<i>Gordonia speciosa</i>
	Thymelaeaceae	<i>Phaleria capitata</i>
	Tiliaceae	<i>Corchorus trilocularis</i>
		<i>Triumfetta glabra</i>
	Triuridaceae	<i>Hyalisma janthina</i>
		<i>Sciaphila tenella</i>
		<i>Sciaphila secundiflora</i>
	Urticaceae	<i>Elastostema acuminatum</i>

Class	Family	Species
		<i>Elastostema walkerae</i>
		<i>Lecanthus peduncularis</i>
	Vahliaceae	<i>Vahlia dichotoma</i>
	Valerianaceae	<i>Valeriana moonii</i>
	Verbenaceae	<i>Premna divaricata</i>
		<i>Premna purpurascens</i>
		<i>Premna thwaitesii</i>
		<i>Priva cordifolia</i>
		<i>Svensonia hyderabadensis</i>
	Violaceae	<i>Hybanthus ramosissimus</i>
	Viscaceae	<i>Ginalloa spathulifolia</i>
		<i>Korthalsella japonica</i>
		<i>Notothixos floccosus</i>
		<i>Viscum ramosissimum</i>
		<i>Viscum monoicum</i>
	Zingiberaceae	<i>Alpinia fax</i>
		<i>Alpinia rufescens</i>
		<i>Amomum acuminatum</i>
		<i>Amomum benthamianum</i>
		<i>Amomum graminifolium</i>
		<i>Amomum hypoleucum</i>
		<i>Amomum trichostachyum</i>
		<i>Curcuma albiflora</i>

Source: Fauna and Flora Protection (Amendment) Act, No. 22 of 2009.

TABLE A-27

**Strict Natural Reserves**

No.	Name	Area (ha)	Date of Declaration
1.	Hakgala	1,141.6	25 Feb 1938
2.	Yala	28,904.7	1 Mar 1938
3.	Ritigala	1,528.1	7 Nov 1941
Total		31,579.8	

Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

TABLE A-28

**National Parks**

No.	Name	Area (ha)	Date of Declaration
1.	Ruhunu (Yala)	97,880.7	25 Feb 1938
2.	Wilpattu	131,667.1	25 Feb 1938
3.	Gal Oya	25,900.0	12 Feb 1954
4.	Udawalawe	30,821.0	30 Jun 1972
5.	Maduru Oya	58,849.6	9 Nov 1983
6.	Wasgomuwa	37,062.9	7 Aug 1984
7.	Flood Plains	17,350.0	7 Aug 1984

8.	Somawathiya	37,645.5	2 Sep 1986
9.	Horton Plains	3,159.8	16 Mar 1988
10.	Bundala	6,216.0	4 Jan 1993
11.	Lunugamwehera	23,498.8	8 Dec 1995
12.	Minneriya	8,889.4	12 Aug 1997
13.	Kaudulla	6,900.0	1 Apr 2002
14.	Hikkaduwa	101.6	8 Oct 2002
15.	Pigeon Island	471.429	24 Jun 2003
16.	Horagolla	13.36	24 Jun 2004
17.	Gallwaysland	26.76	18 May 2006
18.	Angamedille	7,528.95	6 Jun 2006
19.	Lahugala-Kitulana	5,131.0	20 Jul 2006
20.	Yala East (Kumana)	35,664.74	5 Sep 2006
21.	Ussangoda	349	10 Jun 2010
22.	Mullativu	–	1 Dec 2010

Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

TABLE A-29

**Nature Reserves**

No.	Name	Area (ha)	Date of Declaration
1.	Trikonamadu	25,019.3	24 Oct 1986
2.	Riverine	824.1	31 Jul 1991
3.	Minneriya-Giritale		
	- block 2	1,923.6	25 Jun 1993
	- block 3	4,745.3	7 Jul 1995
	- block 4	8,335.5	1 Sep 1997
4.	Wetahirakanda	3,229.0	7 Jun 2002

Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

TABLE A-30

**Sanctuaries**

No.	Name	Area (ha)	Date of Declaration
1.	Chundikulam	11,149.1	25 Feb 1938
2.	Wilpattu North	632.0	25 Feb 1938
3.	Telwatta	1,424.5	25 Feb 1938
4.	Wirarila – Tissa	4,164.2	27 May 1938
5.	Katagamuwa	1,003.6	27 May 1938
6.	Polonnaruwa	1,521.6	27 May 1938
7.	Tangamale	131.5	27 May 1938
8.	Mihintale	999.6	27 May 1938
9.	Kataragoma	837.7	27 May 1938
10.	Anuradhapura	3,500.5	27 May 1938
11.	Udawattakele	104.0	29 Jul 1938
12.	Rocky Islet – Ambalangoda	1.2	25 Oct 1940
13.	Peak Wilderness (Samanala Adawiya)	22,379.1	25 Oct 1940

14.	Kegalle (Kuruluकेले)	113.3	14 Mar 1941
15.	Pallemalala	13.7	23 Oct 1942
16.	Welhella – Kategilla	134.3	18 Feb 1949
17.	Kokkilai	1,995.0	18 Mar 1951
18.	Senanayake Samudra	9,324.0	12 Feb 1954
19.	Gal Oya Valley North-East (Ampara Sanctuary)	12,432.0	12 Feb 1954
20.	Gal Oya Valley South-East (Sellaka Oya Sanctuary)	15,281.0	12 Feb 1954
21.	Giant’s Tank	4,330.1	24 Sep 1954
22.	Vavumikulam	4,856.2	21 Jun 1963
23.	Sagamam	616.4	21 Jun 1963
24.	Padawiya Tank	6,475.0	21 Jun 1963
25.	Trincomalee Naval Headworks	18,130.0	21 Jun 1963
26.	Great Sober Island	64.7	21 Jun 1963
27.	Little Sober Island	6.5	21 Jun 1963
28.	Kimbulwana Oya	492.1	21 Jun 1963
29.	Mahakanadara Wewa	519.3	9 Dec 1966
30.	Madhu Road	26,677.0	28 Jun 1968
31.	Seruwila-Allai	15,540.0	9 Oct 1970
32.	Partitivu Island	97.1	18 May 1973
33.	Honduwa Island	8.5	19 Nov 1973
34.	Buddangala	1,841.3	1 Nov 1974
35.	Rawana Ella	1,932.0	18 May 1979
36.	Madinduwa	0.8	6 Jun 1980
37.	Kalametiya Kalapuwa	2,525.2	28 Jun 1984
38.	Sri Jayewardenepura Bird Sanctuary	449.2	9 Jan 1985
39.	Victoria – Randenigala – Rantambe	42,087.3	30 Jan 1987
40.	Maimbulkanda – Nittambuwa	25.1	8 Jun 1988
41.	Parapuduwa Nun’s Island	189.6	17 Aug 1989
42.	Kahalla – Pallekele	21,690.0	1 Jul 1989
43.	Sigiriya	5,099.0	26 Jan 1990
44.	Bellanwila – Attidiya	372.0	25 Jul 1990
45.	Bar – Reef	30,669.9	3 Apr 1992
46.	Nimalawa	1,065.8	18 Feb 1993
47.	Madunagala	995.2	30 Jun 1993
48.	Muthurajawela – block 1	1,028.6	31 Oct 1996
	– block 2	256.8	31 Oct 1996
49.	Anawilundawa	1,397.0	11 Jun 1997
50.	Elahera – Giritale	14,035.2	13 Jan 2000
51.	Dahayyagala	2,685.1	7 Jun 2002
52.	Tabbowa	2,193.3	19 Jul 2002
53.	Rumassala	170.7	3 Jan 2003
54.	Kirilakele	310.0	8 Sep 2003
55.	Eluwilayaya	186.0	11 Sep 2003
56.	Kaudulla – Minneriya	8,777.3	1 Jun 2004
57.	Kirama	45.7	6 Oct 2004

58.	Kudumbigala – Panama	6,533.9	20 Feb 2006
59.	Rekawa	–	25 May 2006
60.	Godawaya	–	25 May 2006
61.	Bundala – Wilmanna	3,339.4	30 Jun 2007
62.	Maduganga	2,300.0	17 Jul 2006
63.	Bogahapattiya	–	

Source: Survey Department of Sri Lanka. 2007. *The National Atlas of Sri Lanka*.

TABLE A-31

**Categories of Environmental Protection Licence**

Category A	
1	Chemicals manufacturing or formulating or repacking industries.
2	Soaps, detergents, softener or any other cleansing preparations manufacturing industries having a production capacity of 1,000 kilograms per day or more.
3	Bulk petroleum Liquid or liquefied petroleum gas storage or filling facilities having a total capacity of 150 or more metric tons excluding vehicle fuel filling stations.
4	Industries involved in the use of fibreglass as a raw material where 10 or more workers are employed.
5	Synthetic rubber, natural rubber manufacturing or processing or rubber based industries excluding industries which manufacture less than 100 kilograms of ribbed smoke rubber sheets per day
6	Activated carbon or carbon black manufacturing industries or charcoal manufacturing industries having a production capacity one or more metric ton per batch.
7	Industries involved in manufacturing, extracting or formulating Ayurvedic, Indigenous medicinal products where 25 or more workers are employed.
8	Chemical fertilizer manufacturing, formulating, processing or repacking Industries.
9	Pesticides, insecticides, fungicides and herbicides manufacturing, formulating or repacking industries.
10	Oil (mineral oil or petroleum) refineries.
11	Dye and dye intermediate manufacturing or formulating industries
12	Paints (emulsion or enamel), inks, pigments, varnish, polish manufacturing or formulating industries.
13	Petrochemical (basic or intermediates) manufacturing or formulating industries.
14	Industrial gas manufacturing, processing or refilling industries.
15	Asphalt processing plants
16	Industries involved in the manufacture of polymers or polymer based products (i.e. polyethylene, polyvinyl chloride (PVC), polyurethane, polypropylene, polyester, nylon, polystyrene, resins, fibreglass or other manmade fibers etc.) or polymer or polymer based products recycling industries.
17	All types of tyres, tubes manufacturing or tyre retreading industries.
18	Industries involved in manufacturing or reconditioning of batteries.
19	Any industry involved in the use of asbestos fibres as a raw material.
20	Industries involved in manufacturing, extracting or formulating pharmaceuticals or cosmetic products including intermediates.
21	Adhesives manufacturing industries excluding natural gums.
22	Match sticks manufacturing industries and explosives manufacturing or formulating industries.
23	Batik industries where 10 or more workers are employed.
24	Textile processing (i.e. bleaching, dyeing, printing) industries or garment washing industries or textile sand blasting industries or commercial laundries where 10 or more workers are employed.
25	Tanneries
26	Leather finishing industries having effluent generating operations.

27	Jute processing industries.
28	Industries involved in bleaching or dyeing of natural fibre or natural fibre based industries where 25 or more workers are employed.
29	Power looms having 25 or more machines or power looms with sizing activities
30	Sugar manufacturing industries or sugar refineries.
31	Fermentation industries (Distilleries, Breweries) or alcoholic beverages bottling plants or bottling plants having bottle washing operations.
32	Food manufacturing and processing industries including bakery products and confectioneries where 25 or more workers are employed
33	Abattoirs.
34	Coconut oil or cinnamon oil extraction industries where 25 or more workers are employed.
35	Plants or animal oil/fats extraction industries having production capacity of 10 litres or more per day excluding coconut oil and cinnamon oil extraction industries.
36	Instant tea or coffee processing industries
37	Non-alcoholic beverages manufacturing industries where 25 or more workers are employed.
38	Desiccated coconut mills or coconut processing industries where 10 or more workers are employed.
39	Rice mills having wet process and having a production capacity of 5,000 kilograms or more per day.
40	All hatcheries or poultry farms having 2,500 or more birds or piggery, cattle, goats farms having animals 50 or more or having rating* for mixed farming 2,500 or more. *Rating for Mixed Farming = No. of Birds + 50 x (No. of Pigs + No. of Cattle + No. of Goats)
41	Animal feed manufacturing industries having a capacity of 25 or more metric tons per day.
42	Cigarettes or other tobacco products manufacturing industries where 50 or more workers are employed.
43	Industries involved in Surface treatment of metal or plastic including electroplating, galvanizing and powder coating industries.
44	Iron and steel mills.
45	Foundries with any type of furnaces.
46	Non-ferrous metal processing industries including secondary process, smelting and recovery of metals.
47	Metal fabricating industries or machinery, machinery parts or hardware items or electrical and electronic goods and equipment manufacturing or assembling industries where 25 or more workers are employed. (Including lathe workshops, welding shops, spray painting industries).
48	Cement industries (clinker grinding, manufacturing or repacking)
49	Concrete batching plants having a production capacity of 50 or more cubic meters per day.
50	Glass or glass based product manufacturing industries.
51	Lime kilns having a production capacity of 20 or more metric tons per day.
52	Ceramic industries where more than 25 or more workers are employed.
53	Mechanized mining activities with multi bore hole blasting or single bore hole blasting activities with production capacity having 600 or more cubic meters per month.
54	Crushing or processing of non-metallic minerals (i.e. limestone, dolomite, apatite, rock phosphate, sand stone, feldspar, quartz, ilmenite, rutile, zircon, mica, graphite, kaolin, etc.) excluding lime shell and granite crushing activities.
55	Granite boulders, making or processing industries (extracting, blasting, slicing, polishing).
56	Granite crushing (Metal crushing) industries having a total production capacity of 25 or more cubic meters per day.
57	Common wastewater or sewage treatment plants.
58	Incinerators having a feeding capacity of 5 or more metric tons per day.

59	Water treatment plants having a treatment capacity of 10,000 or more cubic meters per day.
60	Municipal solid waste and other solid waste composting plants having a capacity of 10 or more metric tons per day.
61	Solid waste disposal facility having a disposal capacity of 10 or more metric tons per day.
62	Solid waste recovery/recycling or processing plants having a capacity of 10 or more metric tons per day.
63	All toxic and hazardous waste treatment facility or disposal facilities or recycling/recovering or storage facilities.
64	Industries involved in chemical or oil treatment and preservation of wood excluding Boron treatment.
65	Saw mills having a milling capacity of 50 or more cubic meters per day or wood based industries where 25 or more workers are employed.
66	Hotels, guest houses, rest houses having 20 or more rooms.
67	Hostels and similar dwelling places where occupancy level is exceeding 200 or more.
68	Health care service centres generating infectious wastes, including medical laboratories and research centres.
69	Automobile or bicycle manufacturing or assembling industries.
70	Vehicle service stations or container yards having vehicle service activities excluding three wheeler and motor cycles services and interior cleaning.
71	Railway workshops or all bus depots having vehicle servicing activities.
72	All vehicle emission testing centres.
73	Electrical power generating utilities excluding standby generators or hydro or solar or wind power generation.
74	Printing presses with lead smelting or newspaper printing or printing process which generates wastewater or colour photographs processing centres.
75	Paper and Pulp Industries or corrugated cartons manufacturing industries.
76	Any industry where 200 or more workers per shift are employed.
77	Industrial Estates approved under the part IVC of the National Environmental Act including Katunayake and Biyagama Export Processing Zone.
78	Zoological gardens.
79	Transmission towers providing facilities for telecommunication and broadcasting.
80	Any industry not included above which discharges 10 or more cubic meters of wastewater per day or using toxic chemicals in its process.
<b>Category B</b>	
1	Soaps, detergents, softener or any other cleansing preparations manufacturing industries having a production capacity less than 1,000 kilogram per day.
2	Bulk petroleum liquid storage facilities excluding filling stations or liquefied petroleum gas (LP gas) storage or filling facilities having a total capacity less than 150 metric tons.
3	Industries involved in the use of fibre glass as a raw material where less than 10 workers are employed.
4	Ribbed smoke rubber sheets manufacturing industries having a production capacity of more than 50 kilograms per day and less than 100 kilograms per day.
5	Activated carbon or carbon black manufacturing industries or charcoal manufacturing industries having a production capacity less than one metric ton per batch.
6	Industries involved in manufacturing, extracting or formulating Ayurvedic Indigenous medicinal products where more than 10 workers and less than 25 workers are employed.
7	Batik industries where less than 10 workers are employed.
8	8. Commercial laundries where less than 10 workers are employed.
9	9. Leather finishing industries having dry process operations.
10	Natural fibre based industries where less than 25 workers are employed excluding industries involved in



	bleaching or dyeing of natural fibre.
11	Power looms having less than 25 machines.
12	Hand looms or knitting or embroidery industry having more than 10 looms.
13	Garment industries where 25 or more workers and less than 200 workers per shift are employed.
14	Sugar cane based industries excluding sugar factories or sugar refineries
15	Food manufacturing and processing industries including bakery products and confectioneries where 5 or more workers and less than 25 workers are employed.
16	Cinnamon oil extracting industry where less than 25 workers are employed.
17	Rice mills having wet process with a production capacity of less than 5,000 kilograms per day.
18	Grinding mills having production capacity of more than 1000 kilograms per month.
19	Poultry farms having 250 or more and less than 2,500 birds or piggery, cattle, goats farms having animals 5 or more and less than 50 or having rating* for mixed farming 250 and less than 2,500. * Rating for Mixed Farming = No. of Birds + 50 x (No. of Pigs + No. of Cattle + No. Goats)
20	Animal feed manufacturing industries, having a capacity of less than 25 metric tons per day.
21	All ice manufacturing industries.
22	Metal fabricating industries or machinery, machinery parts or hardware items or electrical and electronic goods and equipment manufacturing or assembling industries where less than 25 workers are employed. (Including lathe workshops, welding shops, spray painting industries)
23	Concrete batching plants having a capacity less than 50 cubic meters per day.
24	Single borehole blasting with industrial mining activities using explosives, having a production capacity of less than 600 cubic meters per month.
25	Granite crushing (Metal crushing) industries having a total production capacity of less than 25 cubic meters per day excluding manual crushing operations using hand tools
26	Municipal solid waste and other solid waste composting plants (excluding household composting) having a capacity of less than 10 metric tons per day.
27	Solid waste recovery/recycling or processing plants having a capacity of less than 10 metric tons per day.
28	Solid waste disposal facility having a disposal capacity of less than 10 metric tons per day.
29	Hostels and similar dwelling places where occupancy level of 25 or more boarders and less than 200 borders.
30	Vehicle repairing and maintaining garages including spray painting or mobile air conditioning activities.
31	Recycling or recovering centres of refrigerants from air-conditioners or refrigerators.
32	Three wheeler or motor cycle servicing activities or vehicle interior cleaning activities.
33	Any Industry not included above which discharges 3 or more and less than 10 cubic meters of industrial processing wastewater per day.
<b>Category C</b>	
1	All vehicle filling stations (liquid petroleum and liquefied petroleum gas).
2	Manufacturing of candles where 10 or more workers are employed.
3	Coconut oil extraction industries where 10 or more workers and less than 25 workers are employed.
4	Non-alcoholic beverages manufacturing industries where 10 or more workers and less than 25 workers are employed.
5	Rice mills having dry process operations.
6	Grinding mills having production capacity of less than 1000 kilograms per month.
7	Tobacco barns.
8	Cinnamon fumigating industries with sulphur fumigation having capacity of 500 or more kilogram per batch.
9	Edible salt packing and processing industries.
10	Tea factories excluding instant tea processing.

11	Concrete pre-cast industries.
12	Mechanized cement blocks manufacturing industries.
13	Lime kilns having a production capacity of less than 20 metric tons per day.
14	Plaster of Paris industries where less than 25 workers are employed.
15	Lime shell crushing industries.
16	Tile and brick kilns.
17	Single borehole blasting with artis nary mining activities using explosives, having capacity of less than 600 cubic meters per month.
18	Saw mills having a milling capacity of less than 50 cubic meters per day or Industries involved in Boron treatment of wood or timber seasoning.
19	Carpentry workshops which use multipurpose carpentry machine or wood based industries where more than 5 workers and less than 25 workers are employed.
20	Residential hotels, guest houses, rest houses with 05 or more and less than 20 rooms.
21	Vehicle repairing or maintaining garages excluding spray-painting or mobile air conditioning activities.
22	Repairing, maintaining or installation centres of refrigerators and air-conditioners.
23	Container yards excluding where vehicle servicing activities are carried out.
24	All electrical and electronic goods repairing centres where more than 10 workers are employed.
25	Printing presses and letter press machines excluding lead smelting.

Source: CEA. 2008. Implementation of Environmental Protection License Scheme.

[http://www.cea.lk/pdf/List\\_A\\_B\\_&\\_C.pdf](http://www.cea.lk/pdf/List_A_B_&_C.pdf) (Accessed on 10 May 2012).

TABLE A-32

**Schedule VIII**

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
<b>PART I - Scheduled Waste from Non-Specific Sources</b>			
1. Mineral Oil and Oil-Contaminated Waste			
N011	Spent oil or grease used for lubricating industrial machines	Any industry using lubricating oil	Toxic, Flammable
N012	Spent hydraulic oil from machines, including plastic injection moulding machines, turbines and die-casting machine	Any industry using Hydraulic oil	
N013	Spent oil-water emulsion used as coolants	Any industry using coolants	
N014	Oil tanker sludge	A3, B2	
N015	Oil-water mixture such as ballast water	Waste accepting facilities operating at ports and harbour	
N016	Sludge from oil storage tank		
2. Waste containing polychlorinated biphenyls (PCBs) or polychlorinated triphenyls (PCTs)			
N021	Spent oil contaminated with PCBs and/or PCTs		Toxic
N022	Electrical equipment or parts containing or contaminated with PCBs and/or PCTs	A73	
N023	Retrofilled transformer contaminated with PCBs and/or PCTs	Including capacitors	
N024	Containers and all waste materials		

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
	contaminated with PCBs and/or PCTs		
3. Spent organic solvents containing halogen or sulphur, including methylene chloride, 1,1,1-trichloroethane, perchloroethylene and dimethyl sulphide			
N031	Spent halogenated solvents from cleaning and degreasing processes	Metal finishing, laundry operations, garment industry, Electronic product manufactures, Laboratories	Toxic
4. Spent aromatic organic solvents not containing compounds of organic halogen or sulphur, including toluene, xylene, turpentine and kerosene			
N041	Spent aromatic organic solvents from washing, cleaning, or degreasing processes	Metal Cleaning, Petroleum Products storing & Distribution	Flammable /Toxic
5. Spent non-aromatic organic solvents without containing compounds of organic halogen or sulphur, including acetone, ketones, alcohols, cleaning-benzene, and dimethyl formamide			
N051	Spent non-aromatic organic solvents from washing, cleaning or degreasing processes	B8,A34,B16, laboratories	Toxic, Flammable
6. Residues from recovery of halogenated solvents, may contain oil, fat and solvents			
N061	Residues from recovery of halogenated solvents	Metal Finishing, Any industry /facility on recovery /recycling of solvents	Toxic, Flammable
7. Residues from recovery of non-halogenated solvents, may contain oil, fat and solvents			
N071	Residues from recovery of non-halogenated solvents	A34,B16 Any industry /facility on recovery /recycling of solvents	Toxic Flammable
8. Spent organometallic compounds may be mixed with benzene excluding mercury compounds			
N081	Residues of organometallic compounds, including tetraethyl lead, tetramethyl lead and organotin compounds from mixing process of anti-knock compound with gasoline	Antifouling paints	Toxic, Flammable
9. Flux wastes, may contain mixture of organic acids, solvents or compounds of ammonium chloride			
N091	Flux wastes from fluxing bath of metal treatment processes	Metal finishing Industries including galvanizing	Toxic, Reactive, Corrosive
10. Spent aqueous alkaline solutions not containing cyanide, may contain heavy metals			
N101	Spent aqueous alkaline solutions from treatment process of metal or plastic surfaces	Metal finishing Industries including galvanizing	Toxic, Reactive, Corrosive
N102	Spent aqueous alkaline solutions from bleaching process of textile materials	Textile garment Industry	
11. Spent aqueous alkaline solutions containing cyanide, may contain heavy metals			
N111	Spent aqueous alkaline solution containing cyanide from treatment process of metal or	Metal finishing Industries	Toxic, Reactive

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
	plastic surfaces		
12. Spent aqueous chromic acid solutions			
N121	Spent aqueous chromic acid solutions from treatment process of metal or plastic surfaces	Metal finishing Industries, laboratories, Cooling towers using Chromium additives	Toxic, Reactive, Corrosive, Oxidizing
N122	Spent aqueous chromic acid solution from leather tannery processes	A25, A26	Toxic
13. Spent aqueous inorganic acid solutions other than spent chromic acid solutions, may contain heavy metals			
N131	Spent aqueous acid solutions from treatment process of metal or plastic surfaces	Metal finishing Industries	Toxic Corrosive,
N132	Spent aqueous inorganic acid solutions from industrial equipment cleaning		
14. Spent aqueous or discarded photographic waste from film processing or plates mixing			
N141	Spent aqueous or discarded photographic waste from film processing or plate making	Studios & Photo printing & processing facilities	Toxic
15. Metal hydroxide sludge containing one or several metals, including chromium, copper, nickel, zinc, lead, cadmium, aluminium and tin			
N151	Metal hydroxide sludge from wastewater treatment system	A43 this includes sludge containing above metal in other forms	Toxic
16. Plating bath sludge containing cyanide			
N161	Plating bath sludge containing cyanide from metal finishing processes	A43	Toxic, Reactive
17. Spent salt containing cyanide			
N171	Spent salt containing cyanide from heat treating process		Toxic, Reactive
18. Sludge of inks, paints, dyes, pigments, lacquer with or without organic solvent			
N181	Paint sludge from solvent recovery of solvent based paint waste	A11, A24, A23, A28, B7, A61	(depends on the constituents)
N182	Ink sludge from solvent recovery of solvent-based ink waste		
N183	Lacquer sludge from solvent recovery of solvent based lacquer waste		
N184	Paint sludge from paint wastewater treatment system		
N185	Ink sludge from ink wastewater treatment system		
N186	Pigment sludge from pigment wastewater treatment system		
N187	Dye sludge from dye wastewater treatment system		
19. Wastes from the production, formulation and use of printing ink, paint, pigment, lacquer or varnish containing			

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
organic solvents			
N191	Discarded or off-specification ink, pigment and paint products	A11, A24, A23, A28, B7, A61	(depends on the constituent)
20. Sludge, dust, slag, dross and ashes, may contain oxides or sulphate or one of several metals, including lead, cadmium, copper, zinc, chromium, nickel, iron, vanadium, and aluminium			
N201	Dross, slag, ash, dust from metal smelting process or dust emission control system	A45, A46	Toxic, Reactive, Corrosive
N202	Dross from soldering process	Electrical & Electronic Industry	
N203	Residues from recovery of acid pickling liquor	Metal finishing industry	Corrosive
N204	Hydroxide or sulphate sludge from wastewater treatment system		Corrosive
21. Spent or discarded strong acids or alkalis			
N21	Spent or discarded acid of pH less or equal to 2	Acid & Alkali producing industries	Toxic, Corrosive
N212	Spent or discarded alkali of pH greater or equal to 12.5		
22. Spent oxidizing agents			
N221	Spent oxidizing agent	Industries/Laboratories using oxidising agents such as chlorine, Manganese based oxidizers, Ethylene Oxides .	Oxidizing,
23. Contaminated soil, water, debris or matter resulting from clean-up of a spill or chemical or scheduled waste			
N231	Contaminated soil, water debris or matter resulting from cleanup of a spill or chemical or scheduled waste		(depends on the constituents)
24. Immobilized scheduled wastes, including chemically fixed or encapsulated sludge			
N241	Immobilized scheduled wastes		(Based on the original waste used)
25. Discarded drugs except living vaccines and euphoric compounds			
N251	Discarded drugs except living vaccines and euphoric compounds	Any health care facility	Toxic
26. Pathogenic and clinical wastes and quarantined materials			
N261	Pathogenic and clinical wastes and quarantined materials		Infectious
27. Containers and bags containing hazardous residues and material			
N271	Used containers or bags contaminated with scheduled waste and residues.		(depending on the composition)
28. Mixtures of scheduled wastes			
N281	A mixture of scheduled wastes	A57	(depending on the composition)
N282	A mixture of scheduled and non-scheduled		

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
	wastes		
29. Mercury wastes containing metallic mercury, organic and inorganic mercury compounds			
N291	Discarded, Used, fused, broken and off specified fluorescent lamps/bulbs	A61,	Toxic
30. Waste Electrical and Electronic Equipments			
N301	Discarded Computers and accessories	Training schools, Institutions, repair shops	
N302	Discarded Mobile phones		
<b>PART II - Scheduled Wastes from Specific Sources</b>			
1. Mineral Oil and Oil-Contaminated Wastes			
S011	Waste oil or oily sludge from waste water treatment plant of oil refinery or crude oil terminal	A10	Toxic, Flammable
S012	Oily residue from automotive workshop or service station oil grease interceptor	A70, A71, B30, B32, A15	
S013	Oil contaminated earth from re - refining of used lubricating oil		
S014	Oil or sludge from oil refinery maintenance operation	A10	
2. Tar or tarry residues from oil refinery or petrochemical plant			
S021	Tar or tarry residues from oil refinery or petrochemical plant	A10, A13, A15	Toxic, Flammable
3. Waste of printing inks, paints, dyes, pigments, lacquer, varnish or wood preservative containing organic solvents			
S031	Ink waste from washing of reaction tank or container of ink manufacturing plant.	A12	(depending on the constituents)
S032	Paint waste from washing of reaction tank or container of paint manufacturing plant.	A12	
S033	Dyes waste from washing of reaction tank or container of dyes manufacturing plant.	A11	
S034	Pigment waste from washing of reaction tank or container of pigment manufacturing plant.	A12	
S035	Lacquer or varnish Pigment waste from washing of reaction tank or container of lacquer or varnish manufacturing plant.	A12	
4. Clinker, slag and ashes from scheduled wastes incinerator			
S041	Clinker, slag and ashes from scheduled wastes incinerator	A58, A62, A63, A68, A77	Toxic
5. Waste of printing inks, paints, dyes, pigments, lacquer without containing solvents			
S051	Water based Paint waste from the washing of reaction tank or container of paint manufacturing plant.	A12	Toxic
S052	Water based Ink waste from the washing	A12	

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
	of reaction tank or container of ink manufacturing plant.		
S053	Water based dye and pigment waste from the washing of reaction tank or container of dye and pigment manufacturing plant.	A11, A12	
S054	Ink waste from the washing of cleaning of printing machine of printing works.	A24, A74,	
S055	Pigment waste from brick and tile works		
S056	Paint waste from the paint spraying or dipping process of metal works, motor vehicle assembly plant or electrical appliances manufacturing plant	A47, A69, B22, B30	
<b>6. Spent tars or anti-corrosion oils</b>			
S061	Anti-corrosion oils or tar residues from the sealing or spraying or casting processes of motor vehicle assembly plant or automotive workshop.	A69	Toxic
<b>7. Spent ethylene glycol</b>			
S071	Contaminated ethylene glycol from gas processing plant.	A14	Toxic
S072	Unhardened ethylene glycol from polyester manufacturing plant	A16	
<b>8. Waste containing phenol or formaldehyde</b>			
S081	Phenol or formaldehyde waste from the washing or reaction or mixing tank of adhesive or glue or resin manufacturing plant	A16, A21	Corrosive, Toxic, Flammable?
S082	Sludge containing phenol or formaldehyde waste from waste water treatment systems of adhesive or glue or resin manufacturing plant	A16, A21	
<b>9. Residues of isocyanate compounds, excluding solid polymeric materials</b>			
S091	Residues of isocyanate compounds from foam manufacturing process.	A5, A16, A17	Reactive, Toxic, Flammable
<b>10. Adhesive or glue waste may contain organic solvents, excluding solid polymeric materials</b>			
S101	Off-specification adhesive or glue products from adhesive or glue manufacturing plant	A16, A21	Flammable
S102	Effluent from the washing of the reaction or processing tank of adhesive or glue manufacturing plant.	A16, A21	
<b>11. Uncured resin waste, may contain organic solvents or heavy metals including epoxy resin, phenolic resin</b>			
S111	Uncured resin residues form electronic or semiconductor, electrical appliances,	A4, A16, A47, B3, B22	Reactive, Toxic Flammable

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
	"fiberglass manufacturing plants and metal works.		
S112	Effluents from washing of reactor of resin manufacturing plant	A16	
S113	Resin sludge from waste water treatment system of resin manufacturing plant	A16	
12. Latex effluent, rubber or latex sludge containing organic solvents or heavy metals			
S121	Rubber or latex sludge containing heavy metals from the waste water treatment system of rubber products manufacturing plant.	A5	Toxic
S122	Rubber or latex sludge containing organic solvents from rubber products manufacturing plant.		Toxic, Flammable
S123	Latex effluent from rubber products manufacturing plant.		Toxic
13. Sludge from the re-refining of used oil products including oily sludge containing acid or lead compounds			
S131	Acid sludge from the re-refining of used lubricating oil.	A10	Corrosive, Toxic
14. Sludge containing fluoride			
S141	Sludge containing fluoride from the waste water treatment system of electronic or semiconductor manufacturing plant.	A47, B22	Toxic
15. Mineral sludges, including calcium hydroxide sludge, phosphating sludge, calcium sulphite sludge and carbonate sludge			
S151	Sludge from phosphating process of motor vehicle assembly, air conditioning, electrical appliances and electronic or semiconductor plants.	A43, A47, A69, B22	Toxic
S152	Sludge from the waste water treatment system of plant producing ceramic or tiles, industrial gas and bleaching earth containing heavy metals.	A52,	Toxic
16. Asbestos waste			
S161	Asbestos sludge from the waste water treatment system of Asbestos/ cement products manufacturing plant.	A19	Toxic
S162	Asbestos sludge from the waste water treatment system of Asbestos/ cement products manufacturing plant.		
S163	Empty bags or sack containing loose asbestos fibers from asbestos/cement products manufacturing plant.		
S164	Waste arising from repairing/renovation processes and demolition/construction		



Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
	debris containing asbestos.		
17. Waste from the production, formulation, repacking, and trade of pesticides; including herbicides, Insecticides, rodenticides, and fungicides			
S171	Dust from air emission control equipment, or exhaust systems of pesticides production, formulation and repacking plants.	A9	Toxic
S172	Sludge from wastewater treatment systems of pesticides production, formulation and repacking plants.	A9	Toxic
S173	Residues from filtering process of intermediate products at pesticides production and formulation plants.	A9	Toxic
S174	Waste from washing of reaction tank or mixing tank and spillages at pesticide production and formulation plants and spillages at pesticides repacking plants	A9	Toxic
S175	Solid residues resulting from stamping process of mosquito coil production plant	A9	Toxic
S176	Off-specification and out dated products and contaminated containers from pesticides formulation and repacking plants and trade of pesticides	A9	Toxic
18. Press cake from pre-treatment of glycerol soap lye			
S181	Press cake from pre-treatment of glycerol soap lye from detergent or soap or toiletries plants.	A2, B1	Toxic
19. Wastes containing dye			
S191	Waste water containing dye from textile manufacturing plant.	A23, A24, A28, B7	Toxic
20. Waste from wood preserving operations using inorganic salts containing copper, chromium as well as arsenic of fluoride compounds or using compound containing chlorinated phenol or creosote			
S201	Waste from wood preserving operations using inorganic salts containing copper, chromium as well as arsenic of fluoride compounds or using compound containing chlorinated phenol or creosote	A64	Toxic, Corrosive
21. Mercury wastes containing metallic mercury, organic and inorganic mercury compounds			
S211	Mercury wastes containing metallic mercury form manufacturing of fluorescent lamps	Not available in Sri Lanka and not encouraged	
S212	Activated carbon waste containing mercury from hydrogen gas purification	A14	Toxic

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
	process.		
S213	Mercury bearing sludge from brine treatment and Mercury bearing brine purification mud from chlorine production plant.	Not available in Sri Lanka and not encouraged Toxic	
22. Spent catalysts			
S221	Spent industrial catalysts from chemical plant manufacturing detergent or soap or toiletries plants.	A2, B1	Toxic
S222	Spent industrial catalysts from petroleum and petrochemical processes	A10, A13	
S223	Spent industrial catalysts from sulphuric acid and other inorganic acid manufacturing process	A1	
23. A63Leach from scheduled waste landfills.			
S231	Leach from scheduled waste landfills.	A63	Toxic, Corrosive
24. Rags, papers plastics or filters contaminated with organic solvents			
S241	Rags, papers plastics or filters contaminated with paint or ink or organic solvent from motor vehicle assembly plants, metal works, electronic or semiconductor plants and printing or packaging plants	A16, A47, A69, A74, B30	Toxic, Flammable
25. Containers and bags containing hazardous residues			
S251	Used containers or bags contaminated with residues of raw materials and products of pesticide formulation plant	A9	Toxic
26. Discarded or off specification batteries containing lead, mercury, nickel, cadmium, lithium and Electrolyte from batteries and accumulators.			
S261	Discarded or off specification batteries from battery manufacturing plant.	A18	Corrosive, Toxic
S262	Used or off specified batteries and accumulators	A18, C24	Corrosive, Toxic
27. Pharmaceutical waste			
S271	Waste water from washing of reaction vessels and floors of Pharmaceutical products manufacturing plant.	A7, A20, B6	Toxic
S271	Sludge containing pharmaceutical material from waste water treatment plants of pharmaceutical manufacturing/formulation plants	A7, A20, B6	Corrosive, Toxic, Reactive
28. Bio Medical & Health Care Waste from Health Care Institutions including Medical Laboratories and Research Centres.			

Waste Code	Scheduled Waste	Typical Industry	Symbols for the Characteristics Scheduled Waste
S281	Infectious health care waste including laboratory cultures; waste from isolation wards; tissues (swabs), materials or equipment that have been in contact with infected patients; Human tissues or fluids	A68	Infectious
S282	Sharps including needles and scalpels	A68	Infectious
S283	Biological and Anatomical waste including tissues, organs, body parts, human fetuses and animal carcasses, blood, and body fluids	A68	Infectious
S284	Outdated and discarded drugs including cytotoxic drugs and chemical reagents	A7, A20, B6	Infectious ,Toxic
S285	Materials and containers contaminated with the above specified waste	A7, A20, B6	Toxic, Infectious

Source: CEA. 2009. *Guidelines for the Management of Scheduled Waste in Sri Lanka In accordance to the National Environmental (Protection & Quality) Regulation No. 1 of 2008.*