



# **Joint GEF/Sri Lanka Country Portfolio Evaluation: (1991–2012)**

## **Volume 2:**

## **Technical Documents**

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**TECHNICAL DOCUMENT A:**  
**Country Environmental Legal Framework**

## 1. The National Development Agenda

The development and service-centered efforts of successive governments in Sri Lanka since independence in 1948 have led to an increase in the standard of living among the people, but some actions have also resulted in numerous environmental challenges. Sri Lanka today is experiencing rapid demographic and social change after ending a debilitating 30 year internal conflict. The country is now moving into a trajectory of aggressive development with ambitious targets. Consequently national development plans anticipate rapid development (DoNP and MoFP, 2010; MoFP, n.d; NPPD & MUDSAD, 2007). This includes urbanization and growth of satellite towns and connecting rural area (ibid). The government has plans to strategize Sri Lanka as a knowledge hub, a commercial hub, a naval & maritime hub, an aviation hub, and an energy hub, taking into account Sri Lanka's strategic location & resources (CB, 2011). Recognizing the vast potential for tourism in post war Sri Lanka, expanding tourism is given high priority (MoE, 2010a).

### Social Wellbeing in Sri Lanka

Sri Lanka today has achieved remarkable progress in health and social welfare due to a large share of public expenditure being redistributed for free education (at 6.3 schools per sq km) and free health services, coupled with food subsidies and subsidized credit to improve living standards. Consequently the adult literacy rate in the country is high at 91.4% with comparable literacy rates for men and women. The net enrolment ratio for primary education exceeds 90%, and secondary education is free of charge to all students in state schools (numbering 9,675 in 2010) since 1945. University education in 15 state universities is also free of charge. The island's national health indicators are comparable with those of developed countries, resulting in an average life expectancy at birth of 70 yrs for males and 78 yrs for females. The Government provides free health care services through an extensive network of health care institutions – dispensing both western and traditional medicines. However, malnutrition remains a problem for poor and vulnerable groups. While western medication is widely used, there are presently over 20,000 traditional Ayurvedic physicians in the country who depend almost entirely on biological resources for their medicines, and many who live near forests collect their raw materials from natural forests.

Source: (CB, 2011)

The government is also committed to increasing external trade competitiveness, creating an enabling environment for private sector investment, and facilitating power sector and infrastructure/reconstruction development projects to sustain the momentum for economic growth (FD, 2012) while meeting the domestic needs of a population exceeding 21 million (CB, 2011). Accordingly Sri Lanka faces the critical challenge of ensuring that national development is systematic, equitable and environmentally sustainable.

The government of Sri Lanka also made commitments to achieve the Millennium Development Goals (MDGs) at national level with the support of various Ministries and UN agencies (IPS/NCED/UNDP 2010). Targets with regard to goals 1-6 were well on track during reporting, while progress was being made with regard to goal #7: to ensure environmental sustainability by increasing protected areas, reduction of green-house gasses and CFCs, and formulating and initiating a range of policies plans and programmes (ibid).

## 2. Constitutional provisions for environmental management

With regard to natural resources, sovereignty is given to the State, but it is vested in the hands of the people and the State cannot contravene the interests of citizens. This means that the “State shall hold all natural resources in guardianship for the people and ensure that it be used in a cautionary manner.” (interpreted in MoENR, 2007a)<sup>1</sup>. Thus, the constitution vests “sovereignty” in the “people” which is inalienable (Article 3), and sovereign rights are exercised and enjoyed (according to Article 4) by: (a) the legislative power of the people exercised by Parliament consisting of representatives elected by the people and/or by the people at a Referendum; (b) the executive powers exercised by a President elected by the people, and (c) judicial power of the people exercised through courts and other institutions recognized by the constitution (Guneratne, 2005). This makes the state the trustee or guardian of all natural resources which are vested in the people, rendering the executive, the legislature and the judicial system merely the instruments through which “sovereignty” is expressed (interpreted in MoENR, 2007a).

Chapter IV of the constitution titled “Directives Principles of State Policy and Fundamental Duties (Guneratne, 2005; MoENR, 2007a) declares State Policy to “protect, preserve and improve the environment for the benefit of the community” while Article 28 in the same chapter “states that it is the duty of every person in Sri Lanka to protect nature and conserve its riches” (Guneratne, 2005). While these provisions do not confer legal rights to either State or citizen, they have been used in cases where environmental protection has been contravened (ibid).

The Constitution guarantees fundamental civil and political rights to all citizens Article 14(1) (g) guarantees the right of a citizen to engage in any lawful occupation and Article 14 (1) (h) guarantees freedom of movement and choosing one’s residence within Sri Lanka (Guneratne, 2005). The latter has been invoked when environmental damage prevents people from residing in a particular locality (ibid).

### Provisions for devolution

Within the unitary state of Sri Lanka, devolution of powers is provided via the 13th Amendment to the Constitution of Sri Lanka in 1987, which introduced Provincial Councils (PCs) as a new level of governance between the Central and Local Government levels (Guneratne, 2005). This caused a major shift in government policy. While some subjects are only under the Central Government in the ‘Reserved List’, some are in the ‘Concurrent List’ for which both the Parliament and the PCs can legislate in consultation with each other. A PC can legislate on subjects in the ‘Provincial Council List’ with regard to its own province (ibid). Environmental conservation and also intra-provincial projects relating to irrigation, land development, road development, transport, agricultural services, health and education are among the subjects that PCs have legislative and executive powers within their provincial boundaries (FD, 2012). However, this is only “to the extent permitted by, or under, any law made by Parliament (Guneratne, 2005). In addition, ‘protection of the environment is also in the Concurrent List, so that the powers of PCs to legislate regarding environmental matters is somewhat uncertain (ibid). Further, forest and wildlife related policies are the responsibility of the Forest

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<sup>1</sup>There are several documents/reports as the outcome of the National Capacity Needs Self-Assessment - NCSA (GEF project ID # 2417) that are used in this section - referred to as MoENR, 2006 a & d and MoENR 2007 a,b,c,d.

Department and the Department of Wildlife Conservation (and their respective Ministries), and are thus under the central government.

### **Provisions for gender equality**

With regard to gender, men and women are granted equal status under the Constitution of Sri Lanka. Even in rural societies women have a distinct role in the community and play a significant part in livelihood activities. Their activities are not limited to domestic chores, although this constitutes an important aspect of their daily lives. Rural women play a major role in agricultural activities, rural development and cottage industries, and in general are not overly undervalued in their communities and families (MoENR, 2007a).

### **3. Incorporating environment into the development agenda**

As an island nation with high biodiversity and considerable reliance on agriculture and tourism, Sri Lanka is vulnerable to the loss of biodiversity, land degradation, and the negative impacts of climate change and pollution, as they retard socio-economic development, and affect human health and wellbeing (MoE 2010 a, b & c). Environmental considerations are being incorporated into plans and policies governing Sri Lanka's national development agenda. Notably, the *Mahinda Chinthana: A 10 Year Horizon Development Framework* envisions "an economy with a green environment and rapid development" (DoNP and MoFP, 2010).<sup>2</sup> It recognizes the need for "sustainable development principles to avoid costly remediation measures" and concurs that enhancement of rural economies with natural resources will contribute towards reduction of poverty related environmental degradation (MoFPn.d.). The vision for 'Environment' conservation is to promote sustainable development in close liaison with the land, fauna and flora and to bestow this natural heritage to future generation - to be achieved through administration based on policies aimed at conserving the environment, both nationally and internationally. Specific emphasis is given for activities in the following areas, some of which are also relevant to GEF focal areas:

- Development of forest cover and forest conservation
- Conservation of biodiversity, threatened species and endemics
- Mitigation of the human-elephant conflict
- Air quality management
- Solid waste management
- Disaster management
- Watershed and water resources and water services
- Coastal conservation and management

The policy vision in other sectors such as agriculture, fisheries, energy, industry, transport, tourism, urban development, and housing, have taken into account environmental considerations. The overall policy for science and technology addresses the need to entrench sustainability principles in all spheres of scientific activities, and to ensure environmental sustainability in all areas of such work. While seeking to establish regionally equitable economic development, the *Mahinda Chintana* envisages a healthy nation that contributes to its economic, social, mental and spiritual well-being.

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<sup>2</sup>Previously communicated via the Presidential election manifestos *Mahinda Chintana: towards a New Sri Lanka* (2005) and *Mahinda Chintana: vision for the Future* (2010).

The environmentally sensitive concepts in the *Mahinda Chintana*, are reflected in the National Physical Planning Policy and Plan (NPPP&P), which provide a broad framework for economic growth to secure Sri Lanka's place in the global economy by 2030. This Plan provides vision and direction for structural physical development in Sri Lanka up to 2030, with the underlying theme of preserving equilibrium between conservation and production, such as encouraging urban centre development while protecting areas of environmental and archaeological significance. Notably, the Plan concurs that preservation of fragile areas and the natural environment is important for the sustainable development of the country (DoNP and MoFP, 2010). In conformity, the National Road Master Plan (2007-2017) of 2007 considers the path of minimum environmental damage and adherence to EIA procedures (MoH&RD/RDA, 2007b). The *Randora* National Infrastructure Development Programme complements the development vision of the *Mahinda Chintana* and provides details of plans and financing requirements for all major infrastructure investment across the country between 2006 and 2016 (MoFP, n.d.).

The “*Haritha Lanka*” programme chaired by the President provides high-level support to coordinate sectoral and cross-sectoral environmental activities in keeping with the *Mahinda Chintana* (NCS and PS, 2009). A National Council for Sustainable Development has been established under this Programme (within the Sustainable Development Division of the MoE&RE). This Council is responsible for policy integration and overseeing and guiding the implementation of the *Haritha Lanka* Programme to ensure sustainability of socio-economic development programmes. A large number of state institutions engaged in a participatory process to develop the framework and the specific sectoral activities that are the backbone of the *Haritha Lanka* programme.

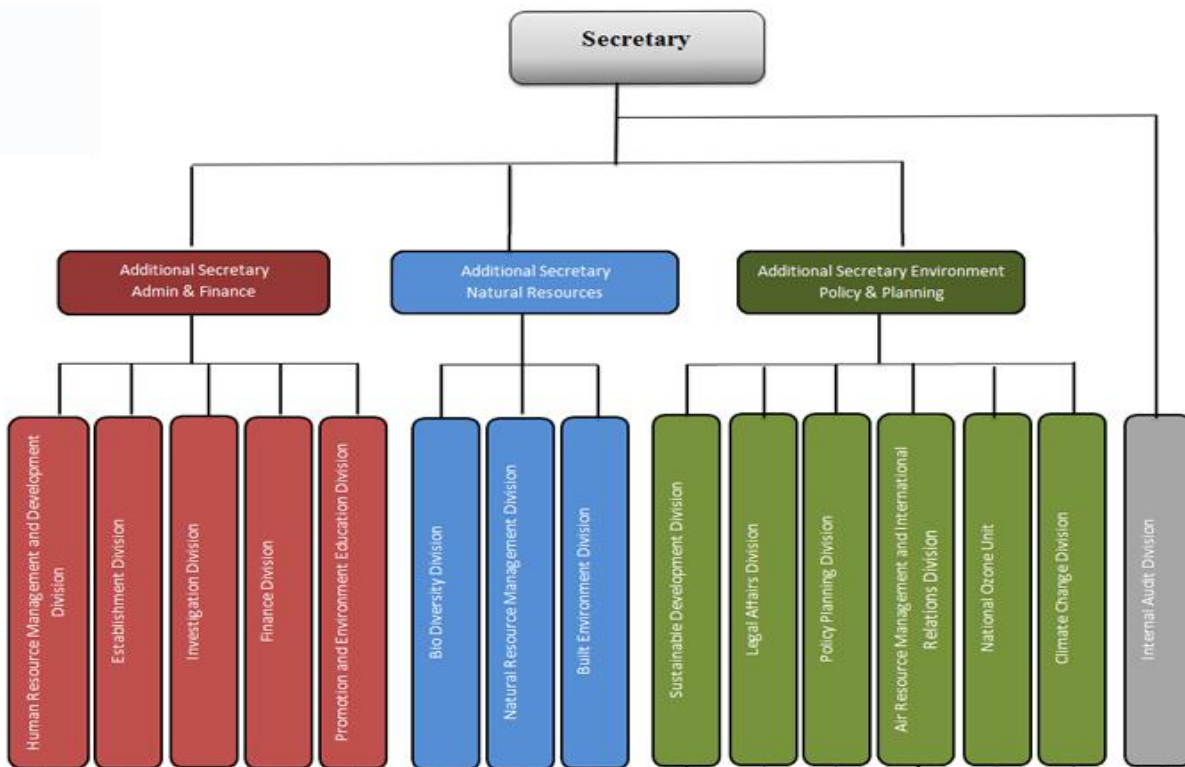
#### **4. Institutional background for environmental management**

The creation of a separate Cabinet Ministry for environmental affairs in 1990 was a landmark achievement for environmental management and conservation in a holistic manner. The Ministry dealing with Environment (currently termed the Ministry of Environment and Renewable Energy or MoE&RE<sup>3</sup>) is mandated with preparing, monitoring and reporting progress of the National Environmental Action Plan (NEAP) and its periodic revision to facilitate sustainable development, ensure sound environmental management, and formulate policies at the national level for environmental protection, management and monitoring (MoENR, 2007a). The MoE&RE currently is structured as shown in figure 1. Thus far a new division has not been suggested to handle renewable energy. This ministry also services the large number of international conventions related to the environment.

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<sup>3</sup> Over time the Ministry responsible for the environment has been integrated with other areas such as transport, women and most recently – in 2013, with renewable energy.

**Figure 1: Current structure of the Ministry of Environment and Renewable Energy**



Source: Ministry website

Overall there are about 50 state institutions involved with some aspect of management and protection of the environment and natural resources in Sri Lanka (Table 1). Chief among them are the Central Environmental Authority, Department of Forest Conservation and Marine Environment Protection Authority (MEPA) that function under the MoE&RE; the Department of Wildlife Conservation (DWLC) located under the Ministry of Wildlife Resources Conservation; the Coast Conservation Department (CCD) located under the Ministry of Ports and Aviation; and the Urban Development Authority (UDA) which is under the Ministry of Defense and Urban Development. The Ministry dealing with Fisheries, the Department of Fisheries and Aquatic Resources (DFAR), the Department of Agriculture (DOA), the Department of Animal Production and Health (DAPH) and the Veterinary Research Institute (VRI) also have major roles to play in environmental/biodiversity conservation and management (MoENR, 2007a; MoE, 2010, a, b, c, d).

The Sri Lanka Land Reclamation & Development Corporation (SLLRDC) is mandated with some aspects of wetland conservation while land related policy is the responsibility of the Department of Land Use Policy Planning established under the Ministry of Lands and Land Development. Land management falls within the purview of about 30 institutions, such as the Land Commissioners Department, The *Hadabima* Authority, The *Mahaweli* Authority, The Department of Agriculture (mainly its Natural Resources Management Centre), Agrarian Services Department, and the Land Settlement Department. The Activities and mandates of the DWLC, FD, CEA, UDA and CCD also impact on the use of land in the country.

The Ministry of Finance and Planning, which deals with policy planning and implementation, is the key agency responsible for formulation of national development policies. Many non-state sector groups also influence Sri Lanka's environment, such as media institutions and personnel (press, TV,



radio), civil society organizations, national and regional environmental NGOs and Community Based Organizations (CBOs). Several private sector business organizations also support environmental and biodiversity conservation mainly under their CSR projects and programmes (MoENR, 2007a; MoE, 2010b).

Within the Provinces, there is a decentralized administrative system to accommodate the devolution of powers vested by the Constitution. This comprises District Secretariats (for each district in a Province), and under them Divisional Secretariats which reach out to communities via *Grama Niladharis* or “village officers” (MoENR, 2002; 2007a). At the local level, coordination of all activities is addressed through the District Coordinating Committees chaired by the District Secretaries and attended by representatives from a range of departments (i.e. administration, services, environment etc). Inadequate understanding of environmental needs during regional and local coordination often cause conflicts of interest between state agencies (FD, 2012).

Many state departments have also decentralized their activities for greater effectiveness: notably the FD, DWLC, CEA, UDA, DoA and MEPA (MoENR, 2007a). The CEA has stationed staff in the Divisional Secretariats (DSs) to facilitate local level environmental management and the CCD has officers working with coastal DS Divisions (MoENR, 2007a).<sup>4</sup>

Devolution of environmental management is also achieved through Local Authorities (LAs) with representatives elected by the people (ibid). They comprise Municipal Councils and Urban Councils in urban areas, and *Pradeshiya Sabhas* in rural areas. LAs have a key role to play in management and improvement of the environment, especially in relation to the built environment, public health, waste collection and disposal (ibid). LAs have been awarded the authority to issue Environmental Protection Licenses (EPLs) for 15 low polluting industries by the Central Environmental Authority (MoENR, 2007a).

### **Coordination and monitoring**

While it is a positive factor that many institutions are mandated for environmental management and conservation, this requires a very efficient and effective coordination mechanism for environmental policy and plan formulation and implementation of activities and projects. The GEF funded National Capacity Needs Self-Assessment (NCSA – GEF ID 2417) clearly showed the need for capacity building to effectively integrate actions to address biodiversity conservation, land degradation and climate change into (a) plans, policies and programmes of development sector agencies, and (b) sectoral plans at regional and local levels (MoENR 2007a,b,c,d). This was reiterated during consultations for preparation of the 4<sup>th</sup> National Report to the CBD (MoENR, 2009<sup>5</sup>). However, the remedial measures identified through wide consultation during the NSCA have not been adequately addressed so far mainly due to funding constrains.

Formerly, the Ministry dealing with environment monitored and coordinated the implementation of the National Environmental Action Plan (NEAP) through Committees on Environment Policy and Management (CEPOMs) established as per the National Environmental action Plan (NEAP) of 1998-2001. The CEPOMs were linked to an apex Committee on Integrating Environment and Development

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<sup>4</sup> From institutional assessments carried out through the National Capacity Needs Self-Assessment Project (GEF ID 2417)

<sup>5</sup>The reports to the CBD state that they were funded by GEF, however no further details of GEF IDs, project details are known, and are not shown in the GEF database.

(CIEDP) and the decision of the CEPOMS were conveyed to the sectoral agencies, a National Environmental Legislation Enforcement Committee, the Provincial Councils and Local Authorities (MoENR 2006a). While not all CEPOM were functional, this structure did provide a means of coordinating environmental policies, plans and programmes at the national, regional and local levels (MoENR, 2003). However, much of the inter-institutional coordination relied (and continues to rely) on membership of advisory, expert committees and/or steering Committees for environment related projects, programmes and activities (MoENR 2006a).

The CEPOM system had mixed success. It has been replaced by the National Council for Sustainable Development under the *Haritha Lanka* programme. This relies on each sector/department/institution deciding how to incorporate environmental aspects into their work, while the MoE&RE provides guidance. The Action Plan for the *Haritha Lanka* programme includes short term, medium term, and long term targets spanning 2009 to 2016, with comprehensive achievable and measurable 82 strategies and 375 actions. The Plan is implemented by 36 Ministries and 70 governmental and non-governmental institutions. Coordinating Committees have been established to cooperate in activities identified under the 10 missions of the *Haritha Lanka* Programme. It has been suggested that the National Action Plan for this Programme be revised, as the activities of the line agencies have now changed with the introduction of new actions (MoE, 2012) One major impediment in the implementation of this programme has been the absence of a separate financing mechanism for these activities which are intended to be incorporated in the annual budgets of the respective state institutions. Additionally the NEAP is now replaced by the *Haritha Lanka* Programme.

Overall, the National Physical Plan provides the policy framework for integrated physical planning in the country. As its principles and strategies are implemented by a number of line ministries and specialist authorities, the National Physical Planning Department has to ensure that any new or amended policy or plan of Government takes account of, and is consistent with, the National Physical Plan (DoNP and MoFP, 2010). Inconsistency of policies and laws with the National Physical Plan are required to be amended in consultation with the National Physical Planning Department, and issues that may result have to be resolved by the National Physical Planning Council (ibid).

#### **Key elements of the National Physical Policy and Plans**

- Incorporating potential internal development opportunities.
- Implementing environmentally friendly sustainable development across the country.
- Strengthening the ethnic integration between the communities.
- Introduction of a planned settlement net-work.
- Conservation of valuable environmentally sensitive areas.
- Mitigating the natural disasters by limiting development in areas prone to natural disasters.
- Evolving compact cities with modern urban facilities and utilities
- Transforming small urban centers into strong service centers.
- Development of sufficient services and infrastructure facilities to cater the expected population.
- Providing proper linkages among land use, transport and economic activities.
- Reducing regional disparities.
- Reducing income disparities and increasing employment opportunities
- Protecting valuable rural areas along with agricultural lands.
- Protecting the forest reserves, wildlife sanctuaries and archaeological reserves.

(Source: NPPD & MUDSAD , 2007).

**Table 1: Institutions connected with environmental conservation and management**

Ministries with a role to play in environmental conservation and management	Key agencies involved with environmental management and conservation
<p><b>Key ministries</b></p> <ul style="list-style-type: none"> <li>● Ministry of Environment and Renewable Energy</li> <li>● Ministry of wildlife Resources and Conservation</li> <li>● Ministry of Agriculture</li> <li>● Ministry of Lands and Land Development</li> <li>● Ministry of Fisheries and Aquatic Resources Development</li> <li>● Ministry of Ports and Aviation</li> <li>● Ministry of Indigenous Medicine</li> <li>● Ministry of External Affairs</li> <li>● Ministry of Finance and Planning</li> <li>● Minister of Botanical Gardens and Public Recreation.</li> <li>● Ministry of Irrigation and Water Resources Management</li> <li>● Ministry of Water Supply and Drainage</li> <li>● Ministry of Technology, Research and Atomic Energy</li> <li>● Ministry of Disaster Management</li> <li>● Ministry of Power &amp; Energy</li> </ul> <p><b>Other ministries with impact</b></p> <ul style="list-style-type: none"> <li>● Ministry of Economic Development</li> <li>● Ministry of Defense and Urban Development</li> <li>● Ministry of Livestock and Rural Community Development</li> <li>● Ministry of Construction, Engineering Services, Housing and Common Amenities</li> <li>● Ministry of Industry and Commerce</li> <li>● Ministry of Education (and relevant institutions under it)</li> <li>● Ministry of Defense</li> <li>● Ministry of Resettlements</li> <li>● Ministry of Coconut Development and <i>Janatha</i> State Development</li> <li>● Ministry of Petroleum Industries</li> <li>● Ministry of Social Services</li> <li>● Ministry of Justice</li> <li>● Ministry of Minor Export Crop Promotion</li> <li>● Ministry of Transport</li> </ul>	<p><b>Key Departments</b></p> <ul style="list-style-type: none"> <li>● Department of Forest Conservation (FD)</li> <li>● Department of Wildlife Conservation (DWLC)</li> <li>● Urban Development Authority (UDA)</li> <li>● Central Environmental Authority (CEA),</li> <li>● Coast Conservation Department (CCD)</li> <li>● Department of Fisheries &amp; Aquatic Resources (DFAR)</li> <li>● Marine Environmental Protection Authority (MEPA)</li> <li>● National Aquatic Resources Research and Development Agency</li> <li>● Sri Lanka Ports Authority (SLPA)</li> <li>● Department of Agriculture (DOA) and associated research institutions plus other divisions including: The Seed Certification and Plant Protection Centre (SCPPC), Natural Resources Management Centre (NRMC), Field Crops Research and Development Institute (FCRDI), Horticultural Crops Research and Development Institute (HORDI), Rice Research and Development Institute (RRDI), Plant Genetic Resources Centre (PGRC), Registrar of Pesticides.</li> <li>● Department of National Zoological Gardens (DNZG)</li> <li>● Department of National Botanic Gardens (DNBG)</li> <li>● The National Science Foundation (NSF)</li> <li>● Department of National Planning</li> <li>● National Agricultural Diversification and Settlement Authority (<i>Hadabima</i>)</li> <li>● Mahaweli Authority of Sri Lanka</li> <li>● Irrigation Department</li> <li>● Water Resources Board</li> <li>● Department of Land Use Policy Planning</li> <li>● Department of Land Settlement</li> <li>● Land Reform Commission (LRC)</li> <li>● Land Commissioner General's Department</li> <li>● Department of Meteorology</li> <li>● Disaster Management Centre (DMC)</li> <li>● National Disaster Relief Services Centre</li> <li>● Sri Lanka Land Reclamation Development Authority (SLRDA)</li> <li>● Geological Survey and Mines Bureau (GSMB)</li> </ul>

Ministries with a role to play in environmental conservation and management	Key agencies involved with environmental management and conservation
	<p><b><i>Other departments with impact</i></b></p> <ul style="list-style-type: none"> <li>● Department of Agrarian Development</li> <li>● Department of Export Agriculture (DEA)</li> <li>● Department of Animal Production &amp; Health (DAPH)</li> <li>● National Livestock Development Board (NLDB)</li> <li>● The Veterinary Research Institute (VRI)</li> <li>● Sri Lanka Sustainable Energy Authority</li> <li>● Attorney General's Department</li> <li>● Legal Draftsman's Department</li> <li>● Sri Lanka Customs</li> <li>● Sri Lanka Standards Institute (SLSI)</li> <li>● National Housing Development Authority (NHDA)</li> </ul> <p><b><i>Institutions carrying out research with relevance to environmental/biodiversity conservation</i></b></p> <ul style="list-style-type: none"> <li>● National Aquatic Resources Research and Development Agency (NARA)</li> <li>● Coconut Research Institute (CRI)</li> <li>● Tea Research Institute (TRI)</li> <li>● Rubber Research Institute (RRI)</li> <li>● Sugarcane Research Institute (SRI).</li> <li>● Veterinary Research Institute (VRI)</li> <li>● Universities</li> <li>● National Building Research Organization (NBRO)</li> </ul> <p><b><i>Regional/local level institutions:</i></b></p> <ul style="list-style-type: none"> <li>● Provincial Councils (PCs)</li> <li>● District/Divisional Secretariats</li> <li>● Local Authorities (LAs)</li> <li>● Provincial Environmental Authority of the North-western Province</li> <li>● Provincial Environmental ministries and Agricultural Ministries</li> </ul>

Source: Adapted from MoENR,2007a,b,c and MoE, 2010 a,b,c, & d

## 5. International Environmental Commitments

Sri Lanka made a significant international commitment for environmental conservation and management by adopting Agenda 21 and Rio Principles of the United Nations Conference on Environment and Development (UNCED) during the Rio Earth Summit in 1992. The political commitment to environmental conservation is also reflected by the fact that Sri Lanka has actively participated in global environment partnership process and has ratified more than 40 MEAs.

Among the key environmental related treaties (Table 2) are the three Rio Conventions: the United Nations Framework Convention on Climate Change (**UNFCCC**), the United Nations Convention on Biological Diversity (**UNCBD**), and the United Nations Convention to Combat Desertification (**UNCCD**) which were ratified by Sri Lanka in 1993, 1994 and 1998 respectively. The Government of Sri Lanka accords high priority for implementation of these international conventions and the designated national focal points are responsible for servicing the requirements of each at the national level (MoE, 2012)

Several other conventions ratified by Sri Lanka too have a strong bearing on national and global biodiversity. They are the **Bonn Convention** to protect species of wild animals that migrate across or outside national boundaries, the **CITES Convention** to protect certain endangered species from over-exploitation through trade by a system of import/export permits, the **World Heritage Convention** which establishes an effective system for collective protection of the cultural and natural heritage of outstanding universal value, the **Ramsar Convention** which seeks to stem the progressive encroachment on and loss of global wetlands, and the **Cartagena Protocol on Biosafety** (stemming from Article 19 of the CBD) to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity and human health (MoENR, 2007b, MoENR 2009).

### Managing conventions

The Air Resources Management & International Relations Division of the MoE&RE manages the international liaisons with conventions in general. They also oversee the Stockholm POPs Convention and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989).

The Biodiversity Division deals with all aspects of policy and plans related to national biodiversity conservation and national responses to obligations under the Convention on Biological Diversity and the Cartagena Protocol.

The Climate Change Division houses the Climate Change Secretariat to service the United Nations Framework Convention on Climate Change and its related protocols.

The Natural Resources Division services the World Heritage Convention and the United Nations Convention to Combat Desertification and is engaged in developing policies and plans to prevent land degradation and to promote better land management.

The Marine Environment Protection Authority (MEPA) is the focal point for MARPOL (Convention for the Prevention of Pollution from Ships) and several other international conventions dealing with offshore waters, and is responsible for some functions under the Basel Convention for control of transboundary movements of hazardous wastes and their disposal.

The Foreign Ministry is the focal point for UNCLOS (United Nations Convention on the Law of the Sea).

*Source: MoENR 2009*

Sri Lanka's commitment to contribute towards the control of global pollution is demonstrated by ratifying the **Basel Convention** on Control of Trans-boundary Movement of Hazardous Wastes and for sound in-country management of such wastes, and the **Stockholm Convention** to eliminate or restrict the production and use of persistent organic pollutants (POPs). Sri Lanka is also a Party to the **Vienna Convention** to help protect human health and the environment against adverse effects resulting from modification of the Ozone layer, and the **Montreal Protocol** (as well as the London, Copenhagen and Montreal amendments) to protect the Ozone layer by taking precautionary measures to control global emissions from Ozone Depleting Substances. Since Sri Lanka is a non-Annex 1 developing nation, there is no direct commitment under the **Kyoto protocol** to the UNFCCC, but Sri Lanka acceded to it and volunteered to participate in several CDM projects, especially through the renewable energy sector (MoENR, 2007b).

Being an island nation, Sri Lanka is also a Party to the **United Nations Convention on the Law of the Sea** (UNCLOS) which helps set up a comprehensive legal regime for the sea and oceans and to establish material rules concerning environmental standards and enforcement provisions dealing with pollution of the marine environment. Sri Lanka also ratified the **MARPOL Convention** to preserve the marine environment by eliminating international pollution by oil and other harmful substances and to minimize the accidental discharge of such substances.

**Table 2: Most important international environmental conventions Sri Lanka is party to**

Name of Convention	Year *	Focal Point
Convention on International Trade in Endangered Species Of Wild Fauna and Flora (1973)- CITES	1979	Department of Wildlife Conservation
Convention concerning the protection of the World Cultural and Natural Heritage (1972)	1980	Ministry dealing with Environment and Ministry dealing with Cultural Affairs
Vienna Convention for the Protection of the Ozone Layer (1985)	1989	Ministry dealing with Environment
Montreal Protocol on Substances that Deplete the Ozone Layer (1987)	1989	Ministry dealing with Environment
Bonn Convention on the conservation of Migratory Species of Wild Animals (1979)	1990	Department of Wildlife Conservation
Ramsar Convention on Wetlands of International Importance Especially As Waterfowl Habitat (1971)	1990	Department of Wildlife Conservation
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Disposal (1989)	1992	Ministry dealing with Environment
United Nations Framework Convention on Climate Change (1992) - UNFCCC	1993	Ministry dealing with Environment
United Nations Convention on Biological Diversity (1992) – CBD	1994	Ministry dealing with Environment
United Nations Convention on The Law of the Sea. (1982)	1994	Ministry of Foreign Affairs
The International Convention for the Prevention of Pollution from the ships (1973/78) – MARPOL	1997	Marine Environment Protection Authority
United Nations Convention to Combat Desertification (1994) – UNCCD	1998	Ministry dealing with Environment
Kyoto Protocol on Climate Change (2005)	2002	Ministry dealing with Environment
Cartagena Protocol on Biosafety (2000)	2004	Ministry dealing with Environment
Stockholm Convention on Persistent Organic Pollutants (2001).	2005	Ministry dealing with Environment

\* Year refers to any of the following: Ratification/Acceptance, Accession/Succession

Sri Lanka is also party to regional agreements such as the Dhaka Declaration and SAARC Action Plan on Climate Change, Male' Declaration on transboundary air pollution, and the South Asian Seas Action Plan. A SAARC Convention on Cooperation on Environment was also signed by Sri Lanka during the 16<sup>th</sup> SAARC Summit in Thimphu, April 2010<sup>6</sup> to provide cooperation in the field of environment and sustainable development through exchange of best practices and knowledge, capacity building and transfer of eco-friendly technology in a wide range of areas related to the environment. It will enter into force when ratified by all Member States. Sri Lanka is also signatory to two MoUs developed under the Convention on Migratory Species for protecting Marine Turtles and Dugongs.

## 6. Timeline analysis

The timeline showing Sri Lanka's commitment to global environmental related conventions, formulation of national environment related laws, policies and plans, and GEF funded projects (**Figure 2**) reveals noteworthy links.

- The GEF/WB project for **Conservation and Sustainable Use of Medicinal Plants and preparation of a national Biodiversity Action Plan (GEF ID 95)** followed Sri Lanka's ratification of the CBD in 1994. It directly enabled meeting obligations under Article 6a of the CBD. More importantly, the ensuing consultations and other wide ranging activities conducted by the Ministry for Environment during preparation of the Biodiversity Conservation Action Plan (BCAP) catalyzed:
  - The establishment of a dedicated Biodiversity Secretariat within the Environment Ministry.
  - Addressing sustainable use of terrestrial biological resources and coastal and marine resources in the third National Environmental Action Plan (NEAP) of 1998-2001, and biodiversity conservation (as per the BCAP) in later NEAPs<sup>7</sup> (MoENR, 2003; MoENR, 2008).
  - Attention on conservation of traditional varieties of crops was introduced into the Agriculture Research Plan of the Ministry of Agriculture and Lands 2000-2008 (DoA/DEA/SLCARP, 1999),<sup>8</sup> and is now part of the National Agricultural Policy of 2007 (MoAAS, 2007).
  
- **The GEF/UNDP funded Southwest Rainforest Conservation Project (GEF ID 818) spanning 2000-2006** was instrumental in pioneering a model for participatory forest conservation in the Wet Zone. This model was also used in the Sri Lanka Australia Natural Resources Management Project (SLANRMP) and the GEF/ADB/GON funded Protected Area Management and Wildlife Conservation (PAM&WC) project (GEF ID 878). Other influences of rainforest conservation project are as follows:
  - The 2009 amendment to the Forest Ordinance to empower the Conservator General of Forests to engage with stakeholders to carry out community participatory programmes for forest development could have been influenced by this project.
  - Attitudinal change in the FD to move away from strict protection and policing to adaptive management and participatory conservation for long-term protection of the reserves they manage, and for introducing this to the DWLC.

<sup>6</sup> [http://saarc-sec.org/areaofcooperation/cat-detail.php?cat\\_id=54](http://saarc-sec.org/areaofcooperation/cat-detail.php?cat_id=54)

<sup>7</sup> By then referred to as Caring for the Environment: Path to sustainable development.

<sup>8</sup> Personal communication with chief compiler of the document, M AT Silva, Co-Team Leader for preparation of the BCAP.

- The GEF/WB funded Development of Wildlife Conservation and Protected Areas Management Project (GEF ID 352) carried out by the Department of Wildlife Conservation (DWLC) from 1992-1998 is likely to have influenced (a) the Fauna and Flora Protection (amendment) Act of 1993 which ensured better coverage of species to be protected by law, and (b) the first National Wildlife Policy of 2000
- Protected Area Management and Wildlife Conservation Project (GEF ID 878) implemented from 2001 – 2008 was directly responsible for:
  - The 2009 amendment to the Fauna and Flora Protection Ordinance (FFPO) which made it mandatory for preparation of management plans for all wildlife reserves.
  - Preparation of the 2007 Addendum to the BCAP to focus on issues that had emerged as significant national and global issues since the 1999 BCAP. These include threats from alien invasive species and biosafety with some follow up actions funded by GEF (GEF ID 2472 - Strengthening Capacity to Control the Introduction and Spread of Alien Invasive Species and GEF ID 875 - Development of National Biosafety Frameworks).
  - Institutionalising the Red Listing of nationally threatened species within the Ministry of Environment (IUCN and MoENR, 2007; MoE & DNBG,2012 b).
- It is noteworthy that one year after the commencement of the **Biosafety GEF enabling activity** (GEF ID 875), Sri Lanka became Party to the Cartagena Protocol on Biosafety. Sri Lanka also developed a biosafety policy in 2011.
- GEF enabling activities such as the **National Capacity Self Needs Assessment Project** of 2005/06 (GEF ID 2417) directly served to identify the need for a functional Access to Genetic Resources and Benefit Sharing (ABS) regime in Sri Lanka which led to it being prioritized for national GEF IV and V cycles (MoENR, 2006c; MoE, 2012).
- During the GEF funded POPs enabling activity to develop a national implementation plan 2002 – 2006 (GEF - ID 1777), Sri Lanka ratified the Stockholm Convention in 2005. This put POPs on the environmental agenda in Sri Lanka and led to formation of a POPs unit in the Ministry of Environment.
- Sri Lanka ratified the UNCCD in 1998, and this probably led to the commencement of preparation of a Land Use Policy in 2002; however it was finalized only in 2007.
- The GEF enabling activities under UNFCCC have resulted in a stock taking exercise (in 2000), and the identification of priority areas under climate change. However the climate policies and adaptation strategies were formulated much later (in 2010) – without GEF support. Climate change activities were initially handled by the global affairs/air resources management unit in the Ministry of Environment, but with increasing importance awarded to this issue, a separate Climate Change Secretariat and a Sri Lanka Carbon Fund was created in 2008 within the MoE.
- The projects addressing Renewable Energy (GEF ID 104, 425 and 1545) have assisted with increasing the use of renewables and thereby contributing to reducing emissions. In 2004, the government established a procedure for tariff setting to facilitate selling of energy to the grid (but thus far is not widely used) and a regulatory mechanism to manage off-grid renewable energy systems.



1979	1980-89	1990-91	1992-93	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011-12	
CITES	WHS	Bonn	BASEL	CBD*				CCD				Kyoto		Cartagena								CONVENTIONS
	Vienna	Ramsar	UNFCCC	UNCLOS			MARPOL								Stockholm							
	Montreal																					
	Law / sea																					
	NEA1	NEA2	FPFO/a		FO	Fish.A			PPA	NEA 3	Fish. A		Seed A								FFPO/a	ACTS
MASLA	NHWA		MASLA						WRBA	TCPA		Energy Supply Act									FO/a	
	CCA		ADA																			
	NARRDA																					
	MPPA																				MPPA/a	
	Fert A					SoilCA			AASA													
	CPA																					POLICIES
					Forest policy						Wildlife policy		NEPS	Watershed		Wetlands		Energy	biotech			
																						Biosafety
																Sand		Land use				CC
	NCS	NEAP		NEAP/r	FSMP		CZMP/r	NEAP/r	BCAP	Solid		NAP land deg	NEAP	CZMP	Bio-safety Frame		BCAP/ addend	NEAP	Haritha Lanka			PLANS
		CZMP		Strat for BAP						Waste			CE					CE/r				
														Prot. of marine resources from land based pollution		NIP						NAPCC



Note: This time line diagram features selected Act, Policies, Plans, Actions, GEF projects and other projects, based on their overall importance to conservation and links to the GEF project timelines.

## 7. Overview of legal frameworks, policies and plans

### Legal aspects<sup>9</sup>

Sri Lanka's legal framework was shaped by years of foreign rule, with use of the Roman Dutch Law influenced by elements of English Law and systems of indigenous laws (Guneratne, 2005). Overall, there are over 50 laws that facilitate management and monitoring of Sri Lanka's environment for sustainable development (EFL, 1993, 2006), that have evolved over time since the colonial era (Guneratne, 2005). The main enactments that influence environmental conservation in terms of the 5 GEF focal areas are given in Table 3.

The most important with respect to the GEF focal areas are the National Environmental Act (NEA) implemented by the Ministry dealing with environment, the Flora and Fauna Protection Ordinance (FFPO) implemented by the DWLC, the Forest Ordinance (FO) implemented by the FD, the Coast Conservation Act (CCA) implemented by the Coast Conservation Department (CCD), the Soil Conservation Act and Plant Protection Act implemented by the Department of Agriculture, and the Marine Environment Protection Act implemented by the Marine Environment Protection Agency (MEPA) (MoENR, 2007a). Sri Lanka has also enacted legislation on Intellectual Property Rights (MoE, 2010b).

The National Environmental Act (NEA) No. 47 of 1980 and its subsequent amendment in 1988 provide legal provision for EIAs. The NEA, among other things, also makes provision for the protection, management and enhancement of the environment and for the prevention, abatement and regulatory control of pollution. It also provides for declaration of environmentally sensitive areas as Environmental Protection Areas (EPAs) where only some types of development are permitted by the CEA (MoENR, 2007a,b). Eight EPAs, important either for their biodiversity or wetland value, have been declared to date (MoENR, 2009).

With regard to physical planning, the NPPP&P prepared by the National Physical Planning Department is in accordance with the provisions of Section 03 of the Town and Country Planning (Amendment) Act No.49 of 2000. The Urban Development Authority Law No. 41 of 1978 and its amendments promotes the integrated planning and implementation of social, economic and physical development of areas declared as "Urban Development Areas" and provides for the development of environmental standards and schemes for environmental improvement in UDA areas (MoENR, 2007a).

#### **Environmental Impact Assessments (EIA) in Sri Lanka**

Environmental Impact Assessments (EIAs) to all development projects were introduced in 1984 through a Cabinet decision. The NEA of 1988 empowered the CEA with legal provisions to control environmental pollution and to mitigate the adverse impacts of development activities through legally binding EIA procedures for certain prescribed projects. Hence, prescribed development activities within 100 m from the boundary of any protected area requires an EIA. Similarly, the DWLC can request an EIA for developmental activities in areas within one mile from the boundary of any National Reserve declared under section 2 of the FFPO. The CCA of 1981 enables the Director Coast Conservation to call for an EIA from both private and state agencies for any development activity that falls entirely within the Coastal Zone, but this is often limited to prescribed projects in the NEA of 1988. The CCD, UDA, FD and DWLC are among the project approving agencies (PAAs) named in the NEA.

(Source: MoENR, 2007a)

<sup>9</sup>A comprehensive review of laws that are relevant for biodiversity conservation, climate change and land degradation were made during the GEF funded National Capacity Needs Self-Assessment, and this is used in this section extensively.

**Table 3: The most important environmental laws and their relation to GEF focal areas**

Legislation	Focal area				
	BD	CC	LD	POPs	IW
National Environmental Act (NEA) No. 47 of 1980 and the amendments No. 56 of 1988 and Act No. 53 of 2000.	●	●	●	●	
Fauna and Flora Protection Ordinance (FFPO) No. 2 of 1937, and amendments incl. Act No. 49 of 1993 and Act No. 22 of 2009.	●				
Forest Ordinance (FO) No. 16 of 1907, and its amendments incl. the amendment Act No. 23 of 1995 and Act No. 65 of 2009.	●	●	●		
National Heritage Wilderness Area (NHWA) Act No. 3 of 1988.	●		●		
Fisheries and Aquatic Resources (FAR) Act No. 2 of 1996 and amendment Act No. 4 of 2001.	●				
Coast Conservation Act (CCA) No. 57 of 1981 and amendment Act No. 64 of 1988.	●	●	●		
Maritime Zone Law No.22 of 1976	●			●	●
National Aquatic Resources Research and Development Agency (NARRDP) Act No. 54 of 1981.	●				
<u>Urban Development Authority (UDA) Law No. 37 of 1978; as amended, the Urban Development Authority (Special Provisions) Act No. 44 of 1984; No. 49 of 1987 and No. 41 of 1988 Act No. 4 of 1992.</u>	●		●		
Town and Country Planning (TCP) Ordinance No 13 of 1946 as amended by Act No. 49 of 2000.	●		●		
Marine Pollution Prevention Act (MPPA) No. 59 of 1981 and its amendment Act No. 35 of 2008.	●				●
Mines and Minerals Act (MMA) No. 33 of 1992			●		
Plant Protection Act (PPA) No. 35 of 1999 (replacing Plant Protection Ordinance No. 10 of 1924).	●				
Animal Disease Act (ADA) No. 59 of 1992.	●				
The Seed Act No. 22 of 2003.	●				
Fertilizer Act No 21 of 1961 and amendment Act No. 68 of 1988.	●		●	●	
The Control of Pesticides Act (CPA) No 33 of 1980, and its Amendment Act No. 6 of 1994.	●			●	
Agrarian Services Act (AGA) No. 58 of 1979, and amendments, and the new Agriculture and Agrarian Services Act of 1999.	●		●		
State Lands Ordinance No. 8 of 1947 (chapter 454) and amendments.	●		●		
Sri Lanka Land Reclamation and Development Corporation Act No. 52 of 1982.	●		●		
Land Reform Act. No 1 of 1979 (as amended)			●		
Soil Conservation Act, No. 25 of 1951; amended by Acts No. 59 of 1953 and 24 of 1996.	●		●		
Mahaweli Authority of Sri Lanka Act (MASLA) No. 23 of 1979; and amendment 59 of 1993.	●		●		
Flood Protection Ordinance No. 04 of 1924 (chapter 449) amended by act No. 22 of 1955.	●	●	●		
Land Development Ordinance No. 19 of 1935 (chapter 464); and its	●		●		

Legislation	Focal area				
	BD	CC	LD	POPs	IW
subsequent amendments.					
Land Acquisition Act No. 9 of 1950	●		●		
Irrigation Ordinance No. 32 of 1946; Irrigation Act No.1 of 1951 and its amendments.	●		●		
National Water Resources Board Act (NWRB) No.29 of 1964 and subsequent Act No. 42 of 1999.	●	●			
Energy supply (temporary provisions) Act. No 2 of 2002.		●			
Nuisances Ordinance No 15 of 1962 (chapter 230).				●	
Motor Traffic Act No. 14 of 1951 as amended by Act No. 21 of 1981 and Act No. 8 of 2009		●		●	
Intellectual Property Act No. 36 of 2003.	●				
Customs Ordinance No. 17 of 1869 (chapter 235) as amended.	●				

\* Amendments specified here are not the only amendments to these Acts but are key to conservation

### Biodiversity conservation and sustainable use

The Fauna and Flora Protection Ordinance (FFPO) Ordinance No. 2 of 1937 and its subsequent amendments and the Forest Ordinance (FO) No. 16 of 1907 (and subsequent amendments) are the main legal instruments that govern biodiversity conservation, including genetic resources.

The FFPO protects animal and plant life within six categories of national reserves managed by the DWLC and lists “Protected Species” to be protected wherever they are found. Both the FFPO and the FO provide measures to control the export of wild biodiversity. The FFPO Amendment Act No 49 of 1993 addresses “protection against commercial exploitation” which covers commercial access to indigenous genetic resources. Several other acts enacted for fisheries management, plant protection and animal husbandry are of relevance for conservation of indigenous fish, crop and livestock diversity as well as indigenous genetic resources (MoENR, 2007a).

While there are no special laws concerning access to genetic resources, consultations during the GEF funded NCSA project identified that the existing legal framework, provided by the FFPO and the FO, had adequate flexibility for granting/denial of a legitimate application made to the Government of Sri Lanka for Transfer/Access of Genetic Resources and for benefit sharing (MoENR, 2006d, 2007a). Further, it was felt that a separate national Access Law could be interpreted in terms of obligations under the WTO and its trade related conventions<sup>10</sup> in a manner that runs counter to the objectives of Article 15 of the CBD (MoENR, 2007a). Sri Lanka has also enacted the Intellectual Property Act No. 36 of 2003 which provides the procedures of registration, control and administration of such rights. It is also relevant for granting IPR protection in the use of genetic resources and for genetic engineering techniques and their products (ibid).

The Coast Conservation Act No. 57 of 1981 and the Amended Act No. 3 of 1988 legislate for governance of the coastal zone and development in it. The CZMP also forms an important legal instrument when gazetted after receiving Cabinet approval (MoENR, 2007a). The Fisheries and Aquatic Resources Act No. 2 of 1996 deals with ownership and protection of fish and other aquatic resources in marine and inland areas (MoENR, 2007a).

<sup>10</sup>Sri Lanka is a signatory to the WTO.

## **Pollution prevention**

The control of air, land, water and noise pollution and environmental degradation connected with development is addressed by the NEA of 1988 which makes it mandatory for all industries (including service facilities such as vehicle service stations) classified as low, medium or high polluting to obtain an Environmental Protection License (EPL) from the CEA. Part of this work is devolved to the LAs. The CEA has powers conferred by the NEA to issue Environment Protection Licenses (EPLs), monitor industrial discharge of effluents and is the regulatory authority to facilitate preparation of standards for ambient water, air quality, mobile source emissions, industrial emissions, and stationary sound emission which are gazetted by the MoENR (Guneratne, 2005).

The emission of pollutants into the atmosphere is prohibited under section 23 of the NEA and the National Environmental (Protection and Quality) Regulations of 1990. Further regulations such as the Motor Traffic (Emission Control) Regulations of 1994, Ozone Depleting Substances and National Environmental (Ambient Air Quality) Regulations 1994 and the Amended Regulations (Air Emission, Fuel and Vehicle Importation standards) of 2000 also play a min role in controlling air pollution (MoE, 2010a).

## **Preventing land degradation**

The Soil Conservation Act of No. 25 of 1951 and its amendments help address land degradation.<sup>11</sup> The Director-General of Agriculture can declared Conservation Areas under this Act (known as Erodible Areas before 1996) and restrict, prevent or even order certain types of activities as needed in 'Conservation Areas' to address land degradation and to conserve water and watersheds. The Minister of Agriculture can also acquire land for conservation purposes under the Land Acquisition Act. Other important laws in this regard are the NEA (Section 22) Flood Protection Ordinance, Irrigation Ordinance, State Lands Ordinance, The Coast Conservation Act and the Mahaweli Authority of Sri Lanka Act (Guneratne, 2005). Provincial Councils too can legislate on land matters within the areas of their jurisdiction which may sometimes create confusion (ibid).

## **Main gaps and weaknesses in the legal provisions**

The most apparent gaps in the legal framework that could preclude implementation of the UNCBD, UNFCCC and the UNCCD in Sri Lanka were identified via the NCSA project (MoENR, 2007a,b,c,d). Sri Lanka has also not adequately considered the legal aspects of Property Rights covering traditional knowledge related to the commercial use of indigenous (especially endemic) genetic resources. However, a Task force has been established on "Safeguarding Indigenous Biodiversity and Indigenous knowledge" (MoENR, 2009) and action is also currently being taken to collate and preserve information on traditional knowledge while promoting its use in modern technology while taking into consideration the rights of such knowledge holders by the National Science and Technology commission and the National Science foundation.

The existing national legal framework, however, does not provide for equitable benefits to the holders of traditional knowledge when such information is used for genetic resources or other components of biodiversity for commercial use by others; there are also deficiencies in the Mines and Minerals Act No. 33 of 1992 as the offences under it are not cognizable, thus weakening enforcement; the NEA lacks provision to prevent biodiversity loss from mining through EIA

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<sup>11</sup>This act provides for necessary action to enhance the productive capacity of soil, restore degraded land for the prevention and mitigation of soil erosion, to conserve soil resources and protect land against damage by floods salinity, alkalinizing, water logging and drought (MoENR, 2007b).

procedures, and does not sufficiently empower field officers of the CEA to take action against persons contravening this law (MoENR, 2007a).

Other gaps in the legal framework are absence of laws to prevent introduction and spread of alien invasive species or to ensure biosafety, but some aspects are covered with the existing laws (e.g. The Plant Protection Act, the Water Hyacinth Ordinance and the Animals Disease Act). Biosafety is to some extent addressed through the Control of Pesticides Act, Consumer Affairs Authority Act No. 9 of 2003, and the Food Act, No 26 1980 amended by Act No 20 of 1991 (MoENR, 2007a). Likewise there is eroding of the exclusive authority to permit development exercised by the Director CCD from the provisions of the Mines and Mining Act No 33 of 1992, which can also permit mining of natural resources in coastal areas (Gunaratne, 2005).

Overall, the existing legal framework offered through periodic revision of laws are adequate for conservation of indigenous biodiversity, addressing land degradation, pollution, and for some aspects relating to adaptation and mitigation of climate change. While some laws do overlap, there are no serious contradictions. The NEA, the FFPO and FO are equal in status, and override other laws such as the CCA, the UDA Law and the Fisheries Acts (MoENR, 2007a). However, there are serious lapses in the interpretation of laws leading to considerable divergence of opinion and inconsistent interpretation (MoENR, 2007a). Further, weak law enforcement and the need for institutional and individual capacity building to meet this end was identified by the GEF funded NCSA project in 2006 (MoENR, 2007a, b, c).

## **8. Environmental policies/plans/actions**

The main environmental policy framework is given in Table 4. Among them, the National Environmental Policy of Sri Lanka of 2003 responds to the constitutional responsibility of providing sound environmental management within a framework of sustainable development (MoENR, 2003). It addresses environmental dimensions for conservation and management of four basic groupings of natural resources: land, water, atmosphere and biological diversity.

The Cleaner Production Policy supports the control of environmental pollution and mitigation of adverse impacts of development activities affected through legally binding EPL and EIA procedures<sup>12</sup> respectively (MoENR, 2007a). Further, Standards for effluent discharge into inland surface waters (Gazette Extraordinary No. 559/16 of February 2<sup>nd</sup> 1990), Standards for ambient air quality (Gazette notification No. 850/4 of December 20 of 1994) and Standards for mobile air emissions (Gazette Extraordinary No. 1137/35 of June 23 2000 (Gunaratne, 2005), and the Solid Waste Management Strategy of 2000 (MoFE, 2000) serve to enable a cleaner and healthier environment.

Sri Lanka was one of the first countries in Asia to prepare a National Conservation Strategy (NCS) in 1988, as a response to the World Conservation Strategy of 1980. The NCS identified priority areas for action to deal with environmental degradation in the country. To follow-up on the NCS, the government prepared the first National Environmental Action Plan (NEAP) of 1991 for the five-year period 1992–1996 (MoENR, 2002). Since then, there have been several revisions of the NEAP (MoFE, n.d; MoENR, 2003). The current 2008 NEAP, termed Caring for the environment Path to Sustainable Development Action Plan 2008-2012, has separate chapters on biodiversity, forests,

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<sup>12</sup>EPL= Environmental Protection License; EIA = Environmental Impact Assessment

wildlife; climate change; coastal and marine resources; land resources; waste management, and water resources with mechanisms for implementation and monitoring (MoENR, 2008).

The *Haritha Lanka* (Green Lanka) Action Plan launched in 2008 is designed to promote a holistic and an integrated approach to tackle environment related issues seriously. It focuses on addressing critical environmental issues which, if left unattended, would jeopardize the nation's economic development programme under 10 missions: Clean air – everywhere, 2. Saving the fauna, flora and ecosystems, 3. Meeting the challenges of climate change, 4. Wise use of the coastal belt and the sea around, 5. Responsible use of the land resource, 6. Doing away with dumps, 7. Water for all and always, 8. Green cities for health and prosperity, 9. Greening the industries, and 10. Knowledge for right choices (NCS&D & PS, 2009). The *Haritha Lanka* programme is expected to be implemented through the National Sustainable Council and the Coordinating Committees established for the 10 missions.

**Table 4: The most important environmental policies and plans and their relation to GEF focal areas**

Policy	Focal area				
	BD	CC	LD	POPs	IW
The National Environmental Policy and Strategies of 2003	●	●	●	●	
The National Physical Planning Policy and Plan of 2007	●	●	●		
The National Forest Policy of 1995	●	●	●		
The National Wildlife Policy of 2000	●				
The National Biosafety Policy of 2011	●				
The National Strategy for Solid Waste Management of 2000	●	●	●	●	
The National Watershed Management Policy of 2004	●	●	●		
The National Wetlands Policy and Strategy of 2006	●	●	●		
The National Fisheries and Aquaculture Policy of 2006 (which deals with environmentally friendly management of the fishery).	●				
The Ten Year Development Policy Framework of the Fisheries and Aquatic Resources Sector of 2007	●				
National Livestock Development Policy (--)	●	●			
The National Policy on Agriculture of 2007	●	●	●		
The National Land Use Policy of 2007	●		●		
National Policy on Sand for the Construction Industry of 2005	●		●		
National Climate Change Policy of 2012		●			
National Air Quality Management Policy of 2000		●		●	
The Cleaner Production Policy of 2004	●	●	●	●	
National Policy on Clean Development Mechanism (CDM)	●	●	●	●	
National Energy Policy & Strategies of Sri Lanka 2008 (Updates National Energy Policy of 1997)		●			
National Industrial Pollution Management Policy Statement of 1996	●	●	●	●	
National Transport Policy of 2008		●			
National Nutrition Policy of Sri Lanka 2010	●		●		



## Biodiversity

Upon ratification of the UN Convention on Biological Diversity in 1994, Sri Lanka prepared a strategy for preparation of a National Biodiversity Action Plan (BAP) in 1994, followed by the GEF/WB funded preparation of the National Biodiversity Conservation Action Plan (BCAP) termed “Biodiversity Conservation in Sri Lanka: a framework for action” (GEF ID 95) and for the “Conservation and Sustainable Use of Medicinal Plants”. The BCAP was accepted by the government in 1998 and published in 1999 (MoFE, 1999a). Completion of the BCAP<sup>13</sup> was reported to the CBD in 1998 via Sri Lanka’s first National Report to COP 1 (MoENR, 2009). It was said at the time that “In South Asia, the NBSAPs in Sri Lanka and...are the most advanced, and are entering the implementation phase” (IUCN, 2002).<sup>14</sup>

The BCAP was updated with the Addendum of 2007 (MoENR and BDS, 2007) under Component C of the GEF funded PAM&WC project (GEF ID 878) to cover new issues that had emerged both nationally and internationally. In addition, this project funded seven Provincial Biodiversity Conservation Profiles for implementation by Provincial Councils. The recommendations of the BCAP and Addendum are meant to guide national implementation of the CBD, but assessments have showed the need for BCAP implementation holistically (MoE, 2003; MoENR, 2007a; 2009). The BCAP is now due for revision.

Other important events were upgrading of the Biodiversity Unit in the MoFE to a Biodiversity Secretariat (BDS)<sup>15</sup> in 1999 following acceptance of the BCAP by government (IUCN, 2002) to better service the CBD and implement the BCAP; establishing a National Experts’ Committee on Biodiversity, and initiating several globally and nationally important projects to support biodiversity conservation in Sri Lanka (MoENR, 2006c; MoENR,2009). The PAM&WC project (GEF ID 878) enhanced capacity for the National Red Listing Process which led to its institutionalization within the Ministry of Environment (IUCN and MoENR, 2007; MoE, 2012). Sri Lanka enhanced capacity for biosafety through the UNDP/GEF funded Biosafety Framework Project (GEF ID 875), which led to ratifying the Cartagena Protocol on Biosafety in 2004 and participating in the UNEP/GEF regional project for Building Capacity for Effective Participation in the Biosafety Clearing House (BCH) mechanism.

The GEF funded National Capacity Needs Self-Assessment for global environmental management (GEF ID 2417) enabled a comprehensive review of the biodiversity related legal framework, plans, policies and projects. This revealed that 10 priority areas with inadequate national capacity to implement the CBD.<sup>16</sup>

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<sup>13</sup>The BCAP sets out activities to address biodiversity conservation within the forestry, wetland, coastal and marine and agricultural systems and several cross-cutting areas and issues crucial for biodiversity conservation.

<sup>14</sup> The BCAP preparatory process involved wide consultation through establishment of a network of Biodiversity Liaison Officers in all stakeholder agencies by the Ministry of Forestry and Environment (MoFE) for regular consultation, capacity building and training to maximize their participation. Awareness programmes were held at various levels ranging from Secretaries of Ministries, technical experts, private sector, NGOs and CBOs at grassroots level, later hailed as key feature that gave stakeholders ownership of the plan (IUCN, 2002).

<sup>15</sup>Later upgraded to the Biodiversity Division of the MoE.

<sup>16</sup>They are: Sectoral and cross sectoral support for biodiversity conservation and sustainable use; effective enforcement of laws and regulations; a national Access (to genetic resources) and Benefit Sharing (ABS) regime for equitable benefit sharing; biotechnology using genetic resources for sustainable use of biodiversity; effective inter institutional coordination mechanism for identification and monitoring of critical components of biodiversity and threats; a multi-institutional coordinated effort for establishing a rational network of protected areas; participatory and integrated *in-situ* conservation

## **Forestry and wildlife systems**

Policies, plans and programmes in the forestry and wildlife sub-sectors reflect concern for biodiversity conservation, and significant steps have been taken to better manage natural resources and biodiversity. Biodiversity considerations were incorporated into plans and policies prepared after ratification of the CBD in 1994: (a) the National Forest Policy of 1995 (MALF, 1995) has the specific objective of conserving forests for posterity, with particular regard to biodiversity, ... ” and (b) the Forestry Sector Master Plan of 1995 (MALF, 1995) devotes an entire chapter to forest biodiversity. They also followed a landmark moratorium on state mediated logging in all natural forests of Sri Lanka in 1990, and the Environmental Management in Forestry Development (EMFD) Project initiated in 1991 through which the Accelerated Conservation Review (ACR) of Wet Zone forests by the Forest Department (IUCN, 1994), identification of 33 Wet Zone forests for strict conservation (FD, 2012), followed by the comprehensive assessment of biodiversity in natural forests of the country through the National Conservation Review (NCR) completed in 1996 (IUCN/FAO/FD, 1997) were carried out. All these led to an amendment of the Forest Ordinance in 1995 to recognize “Conservation Forests” set aside for strict conservation. At present 65 forests (including 15 mangrove forests) are declared as Conservation Forests (FD, 2012). Recent (2009) amendments to the FO and FFPO have made preparation of management plans mandatory for all forest and wildlife reserves managed by the FD and DWLC respectively (MoENR, 2009).

Likewise, the National Wildlife Policy of 2000 addresses biodiversity conservation (DWLC, 2000), and followed the UNDP/GEF project for Development of Wildlife Conservation and Protected Area Management carried out by the DWLC (1992-1998). Both Forest and Wildlife Policies oriented the FD and DWLC to a major shift in management policy towards a participatory approach involving local communities in lieu of the former policing approach. This was promoted in management plans prepared for 9 wet zone forests (IUCN 1994), and the proposed model was pilot tested for wet zone forests via the GEF/UNDP southwest rainforest project (GEF ID 818). The same model was later applied to wildlife reserves through the ADB/GEF/GON funded PAM&WC project (GEF ID 878). The success of this model is likely to have influenced the amendment of the Forest Ordinance in 2009 to enable engaging with stakeholders to carry out community participatory programmes for the development of forests (FD, 2012).

Positive impacts of forest conservation efforts are that most of the previously logged Wet Zone forests are regenerating well (MoENR, 2009); Illegal timber felling in Wet Zone forests is minimal, particularly where a good rapport has been built by forest managers with local people. It is further assisted by the introduction of a permit system for transportation of most timber species (FD, 2012). Likewise, survey and marking of forest boundaries by the FD (via the FRMP), and promotion of the participatory conservation model by local people as pilot tested in two forests by a GEF project (GEF ID 818), has minimized encroachment into Wet Zone forest reserves (FD, 2012<sup>17</sup>). Both FD and DWLC

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and management of ecosystems; multi-stakeholder participation for species specific *in situ* and *ex situ* conservation; Negotiating at CBD COP and other global fora and communication, education and public awareness for biodiversity conservation. A key cross cutting issue was inadequate capacity to prevent entry and establishment of alien invasive species which is addressed through the GEF funded project for control of alien invasive species that threaten biodiversity (GEF ID 2472).

<sup>17</sup>And field information during preparation for the REDD+ project and the ongoing Periodic Review of International MAB reserves.

have invested heavily in institutional capacity building for better management and conservation of forests under their purview, mainly through the ADB funded Forestry Resources Management Project (FRMP) for the FD and the PAM&WC project (GEF ID 878) for the DWLC. The latter project facilitated the preparation of a Portfolio of Strategic Conservation Sites/Protected Area in the country through a Gap Analysis of the national protected area system (MoENR, 2006b).

### ***Coastal and marine systems and fisheries resources***

Coastal resource management in Sri Lanka goes back to the early 1980s with the setting up of the Coast Conservation Department (CCD) and the enactment of the Coast Conservation Act of 1981. Integrated management of coastal resources with the support of local people through Special Area Management (SAM) planning were initiated by the CCD at Rekawa and Hikkaduwa in 1991, via the USAID funded Coastal Resources Management Project (CRMP). This approach was formalized by "Coastal 2000: Recommendations for a Resource Management Strategy for Sri Lanka's Coastal Region" published in 1992 (CCD & MoFAR, 1992). The current CZMP identifies 57 SAM sites and Areas of Species Concern (APC) sites (ibid). This approach is, however, not adequately incorporated into coastal zone management despite wide stakeholder consultation for preparation of policies, plans and actions. This is attributed to problems of institutional coordination that preclude effective implementation of the CZMP (MoENR, 2007a) despite the support offered by laws, plans, programmes and projects (MoENR, 2007a; MoENR, 2009).

The Coast Conservation Act (CCA) requires the CCD to prepare Coastal Zone Management Plans (CZMPs) periodically and to request EIAs prior for development activities in the coastal zone (CCD & MoFAR, 1992). The current CZMP of 2004 (gazetted in 2006) has incorporated relevant recommendations from the BCAP, and identifies policies, strategies and actions for conserving coastal habitats, controlling coastal water pollution, promoting Special Area Management, and integrating coastal fisheries and aquaculture with coastal zone management (ibid). The UNDP/GEF project (2000-2006) for Conservation of Biodiversity through Integrated Collaborative Management in Rekawa, Ussangoda, and Kalametiya Coastal Ecosystems (GEF ID 802) carried out by IUCN sought to assist management of coastal biodiversity with the participation of local people, with emphasis on conservation of wetlands and turtles. Also post tsunami coastal rehabilitation is being targeted with the Participatory Coastal Zone Restoration and Sustainable Management in the Eastern Province of Post-Tsunami Sri Lanka (GEF ID 2753) that is ongoing.

Concerns for sustainable use of the fishery resource have been incorporated into laws, policies and plans of the fishery sector. These include provisions in the Fisheries and Aquatic Resources Act No. 2 of 1996, and its amendments, to deal comprehensively with conservation of the fishery resource (both marine and inland), declare fishery reserves where needed, and ensure sustainable development of the industry. Accordingly, the National Fisheries and Aquaculture Policy of 2006 deals with environmentally friendly management of the fishery (MoFAR, 2006). The ADB and Government of Netherlands (GON) funded Coastal Resources Management Project (CRMP) spanning 2002-2005 played a major role in institutional strengthening for managing coastal resources and for conduct of a sustainable marine and coastal fishery.

### ***Wetland biodiversity***

Conservation of wetlands commenced with the Wetland Conservation Project (WCP of 1991-1997) carried out by the CEA to prioritize wetlands for conservation and management (MoENR, 2009),

followed by the Integrated Resource Management Project (IRMP) piloted at two selected wetlands during 1998 -2002 (Ibid). Positive actions for wetland management are the National Watershed Management Policy of 2004, setting up a Special Wetland Unit in 2008 within the CEA to oversee and coordinate wetland conservation, the National Wetlands Policy and Strategy of 2006 (MoE & CEA, 2006), and preparation of the National Wetland Directory of Sri Lanka (IUCN and CEA, 2006). Development agencies responsible for land reclamation have to consult The Wetland Unit prior to filling paddy land and obtain approval for any development activity in such wetlands, and an EIA is required for clearing or filling of wetlands more than 4 ha, and for clearing any wetland that occurs in a scheduled sensitive area. Six wetlands have been declared Ramsar sites: namely, the Bundala National Park (1990), Anawilundawa Sanctuary (2001), Maduganga Sanctuary (2003), Vankalai Sanctuary (2010), Kumana Wetland Cluster (2010) and the Wilpattu Ramsar Wetland Cluster (2013). Despite these positives actions, wetland biodiversity has received less attention than other terrestrial systems identified in the BCAP of 1999.

### ***Agricultural and livestock biodiversity***

Agricultural policy has moved away from the sole aim of increasing productivity to reach self-sufficiency in essential food items, to the present 2007 National Agricultural Policy that takes into account sustainable agriculture in conformity with environmental and biodiversity considerations, by promoting integrated pest management, land management, adapting to climate change, and sustainable use of genetic resources in compliance with Article 15 of the CBD (MoAAS, 2007). This change was probably influenced by the comprehensive National Agricultural Research Plan (NARP) developed in 1999 by CARP which took into account some of the needs identified in the BCAP of 1999 for conservation of agro-biodiversity (MoENR,2007a; DoA/DEA/SLCARP, 1999). The National Livestock Development Policy Statement mentions conservation of native livestock genetic diversity (MoL&RCD, 2010).

There have been several joint projects between the Ministry of Environment (Biodiversity Division) and the Department of Agriculture, which include the '*in-situ* conservation of Crop Wild Relatives Project for information management and enhanced field application in 2004-2009 (GEF ID 1259)<sup>18</sup>(MOENR, 2009, MoE, 2010b), 'Strengthening capacity to control the introduction and spread of invasive alien species in Sri Lanka'(GEF ID 2472), and Mainstreaming Agro-biodiversity Conservation and Use in Sri Lankan Agro-ecosystems for Livelihoods and Adaptation to Climate Change(GEF ID 4150). These are relatively new projects and are yet to reveal results. The process used for development of the proposal for a Regional UNEP/GEF PDF B Full Size Project for "Development & Application of Decision-support Tools to Conserve & Sustainably Use Genetic Diversity in Indigenous Livestock & Wild Relatives" helped identify country status and needs in this sphere (GEF ID 1902).

### **Climate change**

Sri Lanka was a party to the Vienna Convention and the Montreal Amendment before ratifying the UNFCCC in 1993 (**Table 2**). Although being a developing non-Annex 1 nation with no direct

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<sup>18</sup>The objectives of this project were to identify the status of wild crop relatives conservation in Sri Lanka in respect of *in-situ* and *ex-situ* activities with the expected outputs of: Development of an information management and access system; capacity built to undertake *in-situ* conservation with local communities; to review and share current experiences on conservation of crop wild relatives at the global level; to develop a framework for an information management system with national and international features that will support improved conservation and use of wild crop relatives.

commitment for reduction of emissions, Sri Lanka acceded to the Kyoto Protocol in September 2002 in view of the potentially serious impacts of climate change on the island (MoENR, 2006c). Sri Lanka has voluntarily participated in CDM projects, so that the country can sell carbon credits to Annex 1 countries and is also researching technologies for renewable energy through wind, solar and dendro-thermal power. Sri Lanka is not obligated to reduce emissions under the UNFCCC.

A significant move to address climate change was the establishment of a Climate Change Secretariat (CCS) in 2010 within the Ministry dealing with Environment to better facilitate, formulate and implement projects and programmes at national level with regard to climate change. Ratification of the UNFCCC also led to several enabling projects that were of significant value.

GEF made available to Sri Lanka a grant of US \$110,000 through UNDP to prepare its initial National Communication on Climate Change in 1997 (GEF ID 309). This Enabling Activity Project commenced its activities in February 1998 and a national Steering Committee comprising of experts from different fields was appointed to provide the necessary guidance and direction to the project. The National Communication incorporates the updated (1994) inventory of greenhouse gases in Sri Lanka, the potential measures to abate the increase of greenhouse gases, and the national action plan to address Climate Change. As a prelude to the preparation of the National Action Plan on Climate Change (NAPCC), the necessary background information was collected on the four major sectors: Energy, Industry, Transport and Highways; Agriculture, Forestry, Land Use and Water Resources; Coastal Zone, Ports and Fisheries; and Human Health, Human Settlements and Public Utilities (MoE, 2000). Sri Lanka's second National Communication on Climate change was published in 2011, with updates of greenhouse gas emissions (MoE, 2011). In parallel, the ADB assistance was provided to prepare a National Climate Change Adaptation Strategy Sri Lanka: 2011-2016. By 2012 Sri Lanka had also developed a Climate Change Policy and a process to operationalize the Clean Development Mechanism was established in 2010.

Many other policies impinge on reducing green-house gasses and addressing climate change. Among them are the National Policy on Air Quality Management of 2000, Regulations on Mobile Emissions and Fuel Quality & Vehicle Importation Regulations which came into effect in 2003<sup>19</sup> (Guneratne, 2005), the National Transport Policy of 2008 which incorporates statements to ensure environmentally sustainable transport and the National Energy Policy and Strategies of Sri Lanka (2006). Measures such as phasing out the use of leaded Petrol in 2002 and the ban on importation of two stroke three wheelers from 1st January 2008 have helped control GHGs.

At the institutional level, A Centre for Climate Change Studies (CCCS) was established in 2000 under the Department of Meteorology to conduct research, monitor climate change, and provide the general public with current information on climate change and allied issues. Several institutions including the DoA, DEA TRI, RRI, CRI, SRI, NBRO, institutes dealing with water resources and the UDA have examined vulnerability to climate change and initiated adaptation measures through institutional programmes (MoENR, 2010 a,b,c,d); the CZMP of 2004 has taken into account sea level rise in their set back standards (CCD, 2006).

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<sup>19</sup>The National Environmental Regulations (Air, Emission, Fuel and Vehicle Importation standards) Regulation No 1 of 2000 gazetted (Gazette extraordinary No 1137/35 of June 2000)

Leadership in Energy and Environmental Design (LEED), “Greening Sri Lankans Hotels Programme”, an establishment of the Sri Lanka Sustainable Energy Authority in 2007 are some of the other initiatives and they will reduce the Carbon foot print in the service sector.

A project implemented by the Global Environment Facility/Small Grants Programme (GEF/SGP) of UNDP Sri Lanka on introducing electric vehicles to the country received global recognition recently when it was selected as a winner of the Lighthouse Projects Competition. An initiative of the United Nations Framework Convention on Climate Change (UNFCCC), the competition awards projects that addresses climate change and deliver social and environmental benefits to the urban poor in developing countries. The project was also showcased at the Climate Change Conference, COP 18, which took place in Doha, Qatar on the 4th of December 2012<sup>20</sup>.

### **International waters**

The Marine Pollution Prevention Act No. 59 of 1981 (Table 3) established the Marine Pollution Prevention Authority (MPPA) to address the problem of marine pollution in Sri Lankan territorial waters. The amended Act of 2008 (Effective from Jan 2009) changed the name of the MPPA to Marine Environment Protection Authority (MEPA)<sup>21</sup> and widened its regulation making capacity.<sup>22</sup> As the focal point for UNCLOSS (ratified in 1994), and MARPOL (ratified in 1997) (Figure 1), MEPA is working to enforce the MPPA and enhance surveillance and response activities. Work done includes preparation of a National Oil Contingency Plan (NAS COP) in 1995 for spills over 100 tonnes (MoENR, 2007a), which was revised, received Cabinet approval in 2000, and has since undergone further change. Limited resources are also available with the Colombo Port Authority<sup>23</sup> for responding to a spill within port or sheltered waters. Further, A Regional Oil and Chemical Pollution Contingency Plan for South Asia is being prepared by the South Asia Co-operative Environmental Programme (SACEP), with the assistance of the International Maritime Organization (IMO).<sup>24</sup> As a country party to the UNEP-Global Programme of Action for the Protection of the Marine Environment from Land based activities, Sri Lanka prepared a National Programme of Action in 2003. Other relevant actions are the India–Sri Lanka Joint Working Group on Fisheries which is preparing a Memorandum of Understanding on Development and Cooperation in the field of Fisheries through the Ministry of External Affairs.

Sri Lanka is not yet a signatory to the IMO Ballast Water Management Convention (which is not yet in force). However, the potential problem of alien invasive species in ballast water from ships has been recognized. MEPA is also carrying out a baseline biological study of ballast water at the Colombo port and a National Ballast Water Strategy is under preparation. There is already a draft Ballast Water Strategy for South Asia, and SACEP is engaged in organizing a regional Task Force on Ballast Water Management (interview with MEPA).

However, a National Oil Contingency Plan was prepared by the Marine Pollution Prevention Authority (MPPA) in 1995 and revised in 1998 and 1999. It received Cabinet approval in 2000 and

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<sup>20</sup><http://www.lk.undp.org/content/srilanka/en/home/presscenter/articles/2012/12/30/introducing-electric-vehicles-to-sri-lanka-receives-global-recognition/>

<sup>21</sup>The main partners of the MPPA are NARA, Sri Lanka Ports Authority, Ceylon Petroleum Corporation, Sri Lanka Navy, Air Force, Army and Police, Department of Meteorology, Coast Conservation Department, Local Authorities, experts in universities and the Dock Yard (MoENR, 2006a).

<sup>22</sup><http://www.mepa.gov.lk/web/>

<sup>23</sup> Source: <http://www.itopf.com/assets/country/srilanka.pdf>

<sup>24</sup> Source: <http://www.sacep.org/pdf/Action%20Plan%20and%20Strategies%20-%20Oil%20spill%20contingency%20plan.pdf>

has undergone subsequent amendments and limited resources, restricted to responding to a spill within port or sheltered waters, are held at Colombo by the Port Authority<sup>25</sup>.

SACEP with the assistance of the IMO has also developed a regional oil spill contingency plan for South Asia. The purpose of this Contingency Plan is to establish a mechanism for mutual assistance, under which the competent national Authorities of Bangladesh, India, Maldives, Pakistan and Sri Lanka will co-operate in order to co-ordinate and integrate their response to marine pollution incidents either affecting or likely to affect the territorial sea, coasts and related interests of one or more of these countries, or to incidents surpassing the available response capacity of each of these countries alone<sup>26</sup>.

Thus, although the relevant plans and legislation are developed and adopted, it is believed that capacity and resources may not be sufficient to successfully mitigate a major spill or serious marine pollution incident that will drastically impact the marine waters surrounding the island state

Baseline information is also lacking for protecting shared waters in the Palk Strait and the Gulf of Mannar, which are critical habitats shared by Sri Lanka and India Under the regional Bay of Bengal Large Marine Ecosystem (BOBLME) Project GEF ID 1252) bi-national stakeholder consultations are undertaken on sustaining the Gulf of Mannar Ecosystem and its Resources (BOBLME 2011).

### **Persistent Organic Pollutants (POPs)**

The Ministry dealing with Environment services the Basel Convention and the Stockholm (POPs) Convention, ratified in 1992 and 2005 by Sri Lanka respectively (Table 2). POPs pesticides have never been manufactured in Sri Lanka, and those that were imported for use have either been banned or not used for the last fifteen years (UNEP/GEF/MoE, n.d.). While there are no special laws for pollution control, the NEA amendment of 1988<sup>27</sup> (Table 3) addresses this by its provisions for EPL and EIA procedures, and some aspects are covered under the Nuisances Ordinance, Police Ordinance and laws applicable to LAs (Guneratne, 2005). The Control of Pesticides Act No 33 of 1980, and its Amendment Act No. 6 of 1994 which deals with controlling the import, use, transport, storage and disposal of pesticides in the country, has banned almost all of the POP pesticides in Sri Lanka, paving the way for implementation of the Stockholm Convention (UNEP/GEF/MoE, n.d.). There are many other laws (**Table 3**), policies (**Table 4**) plans and activities that address reduction of POPs in the country. Among these are the Solid Waste Management Strategy of 2000, and measures to manage hazardous wastes.

Key activities for control of POPs in Sri Lanka were enabled by the UNDP/GEF funded Persistent Organic Pollutants (POPs) Project spanning 2002- 2006 (GEF ID 1777), leading to the establishment of the POPs unit at the MOE in 2002 which carried out extensive awareness creation among the general public on POPs and preparation of a National Implementation Plan (NIP), a preliminary inventory of all PCB containing equipment in the country and three separate national inventories for POPs pesticides, polychlorinated biphenyls (PCBs) and unintentionally produced Dioxins and Furans. The POPs project prepared the groundwork required to implement the Stockholm Convention in Sri

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<sup>25</sup><http://www.itopf.com/assets/country/srilanka.pdf>

<sup>26</sup><http://www.sacep.org/pdf/Action%20Plan%20and%20Strategies%20-%20Oil%20spill%20contingency%20plan.pdf>

<sup>27</sup>Under the NEA amendment Act No.53 of 2000, the total prohibition of discharging waste has been changed to prescribed activities, and the earlier license awarded for 1 year is extended to 3 years. However, this has also brought in a criminal liability for those who violate the license, and is the pollution is continued the penalty can be closing down of operations.

Lanka. Due to institutional reorganizing POPs activities are now carried out by the Air Resources Management & International Relations Division.

### **Land degradation**

Land degradation has been a major environmental problem in Sri Lanka since colonial times, and more than 39 laws address various aspects of land degradation (MoENR, 2006c). Of these several play a major role (Table 3). Recognizing the seriousness of this problem and the threat of salinization in the Dry Zone, Sri Lanka signed and ratified the UNCCD in 1995 and 1998 respectively. Since then, the Natural Resources Division of the MoE&RE is responsible for supervising obligations under UNCCD. As a Party to the UNCCD, Sri Lanka prepared the National Action Programme (NAP) of 2002 (GEF ID 4829) to address land degradation in Sri Lanka. This Plan identified the development programmes, activities and projects required to meet the commitments under the UNCCD. This could not be implemented holistically due to funding constraints - as experienced by several other countries of South Asia. This is now being addressed by aligning it with the 10 year strategy for the UNCCP to combat land degradation in the country. A further impediment was that while a Land Use Policy was initiated in parallel in 2002, this was in draft form until it received cabinet approval in 2007. This delay affected efficient use of the land resource in the country during this time (MoENR, 2007c).

Many other policies also impact on use of the land resource (Table 4), chiefly, the National Agricultural Policy of 2007 and the National Policy on Sand for the Construction Industry of 2005. Several cross-sectoral plans and strategies such as the NEAP (Caring for the Environment 2003-2008), the Biodiversity Action Plan of 1999 and the *Haritha* Lanka Action Plan also address various aspects of land degradation.

Some key projects for land degradation commenced in the 1990s, such as the Upper Watershed Management Project<sup>28</sup> effective from 1998 for 7 years and the Landslide Hazard Mapping Project which commenced in 1994 to promote Optimal Land Use in Sri Lanka with particular Application to Land Degradation & Plantation Industries. More recently, there have been several soil rehabilitation and crop diversification programmes in plantations to control and arrest soil erosion and improve soil water storage and water resources, and land titling projects to meet the long-term objective of increasing economic productivity of the island's land resource (MoENR, 2006c).

Stemming from the NAP, the Ministry of Environment has prioritized several actions to combat land degradation in the country with GEF/UNEP funds in 2012. One was "The rehabilitation of degraded agricultural lands in the Kandy, Badulla and Nuwara Eliya districts of the Central Highlands of Sri Lanka. The MOE was also actively involved in the preparation of the South Asia Sub-Region Action Programme (SA-SRAP) 2004<sup>29</sup> for the south Asian region with participation of international and national experts. But implementation of this is also on hold for lack of financing.

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<sup>28</sup>Mainly funded by the Asian Development Bank (ADB)

<sup>29</sup>The five programmes proposed under the SA-SRAP programme were: Early warning system, integrated ecosystem management, Information network, Capacity building and resource mobilization and partnership building for the south Asia Sub- Region to achieve the requirement of UNCCD. However, this programme was not implemented due to funding constraints.



The Land Use Policy Planning Department and the Land Commissioner General's Department play a key role in land management planning. Many other agencies such as the Natural Resources Management Centre of the Department of Agriculture (DOA), the Department of Export Agriculture (DEA), The Ministry of Plantation Industries, the Mahaweli Authority of Sri Lanka (MASL) the Hadabima Authority and the Provincial Departments of Agriculture are actively engaged in various soil and water conservation measures (MoENR, 2007c). The Department of Forests contributes to the control of soil erosion and water conservation by implementing the Forestry Master Plan of 1995 (MALF, 1995).

The thematic assessment on land degradation of the NCSA Project (GEF ID 2417) found that main capacity constraints underlying land degradation in Sri Lanka were weak coordination and communication among institutions/agencies, the lack of a proper coordination mechanism/body and poor private sector involvement. The lack of awareness about the NAP on the part of senior officers in different government agencies and private institutions was found to impede implementing the activities of NAP in Sri Lanka (MoENR, 2007c).

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**TECHNICAL DOCUMENT B:**  
**Global Environmental Benefits Assessment**

## 1. Country Context

Democratic Socialist Republic of Sri Lanka, a small island state in the Indian Ocean, by virtue of its geo-positioning was a port of call on the ancient trade routes between China and the Middle East. The existence of natural commodities such as spices and gems resulted in Sri Lanka too becoming a valuable trade hub. These trade links coupled with its close proximity to the Indian subcontinent has shaped its people, culture and relationships. Sri Lanka is a multi-religious, multi ethnic country and this diversity is emulated in the ecological features and natural resources that can be found on the island.

**Table 1: Sri Lanka - Vital Statistics**

Indian ocean (latitude/longitude)	5°55' - 9°50' N /79°42' - 81°53'E
Size	65,610 Sq.km
Maximum Length and width	435km / 240km
Elevation Zones (coast, lowlands, highlands)	3
Main Climatic Zones (wet, dry, intermediate)	3
Agro-Climatic Zones	46
Average Annual mean surface Temperature	28 – 32 <sup>0</sup> C
Annual Rainfall (range dry – wet)	1750- 5000mm
Provinces	9
Population	20 Million
Races (Sinhalese, Tamil, Muslims, Burghers, Veddhas, other)	5+
Religions (Buddhism, Hinduism, Islam, Christianity, other)	4+

Source: MOE 2011

A 30 year armed conflict that divided the country geographically, ethnically and politically, was brought to an end in May 2009. The end of war saw a new revival and vitality of the Sri Lankan economy with greater opportunities for businesses such as tourism that remained constrained and stunted over 3.5 decades. Even throughout the time of war, terrorist attacks, and unrest, the consistent policy of an open economy, with the private sector at helm resulted in an average 5% growth rate per annum. The ambition is now is to move up to 8.5% per year (CB 2011). In order to achieve this, the Government envisions a strategy of infrastructure development especially to combat the regional disparities of growth and development and attracting investment in business ventures. In “Sri Lanka, the Emerging Wonder of Asia” the government spells out the development policy framework<sup>30</sup>, of the Government up to 2016 and it highlights the Presidents mission of transforming the island state into a strategically important economic centre of the world (DoNP and MoFP, 2010).

Sri Lanka has now also moved up in its economic ranks to become a low middle income country with a per capita income of USD 2836 in 2011(CB 2011). The expansion of the economy has enabled the progressive reduction of unemployment as well as the poverty. However the economic wealth has not spread equitably – spatially or among its citizens. Much of the growth and wealth is accumulated in the western province that generate 45% of the Gross Domestic Product (GDP).The Northern Province due to the armed conflict and restricted access in the area, has the lowest percentage (3.4%) of GDP while the Uva Province where poverty has persisted and economic opportunities are restricted very much to primary agriculture products also has a low contribution to GDP (4.5%) (Ibid). Sri Lanka’s main economic drivers for 2011 have been the Service and industrial sectors, while highest foreign exchange earners are tourism, remittances and tea. This shows a gradual change over time from an agriculture and plantation industry based economy to a more diversified economy.

<sup>30</sup>The present government’s framework for development is popularly known as the *Mahinda Chinthana* and is mentioned as such in this report in several instances.

In terms of people, the poverty head count index has reduced from 15.2% in 2006/7 to 8.9% in 2009/10 but the income inequality measured by the Gini Coefficient is 0.49 indicating a very high income inequality between the poor and the rich (DCS 2011). In fact in the period of 2002 – 2009 the lowest and highest income deciles have shown negative growth rate that underscores the income inequality issue. The poor tend to rely on agriculture and fisheries related income that is not a growing sector in terms of its contribution to the GDP.

Sri Lanka is used as a beacon of how social and welfare policies, used consecutively over a long period of time can bring about remarkable achievements in health and education, despite being a low income country. The high levels of social development are reflected in the millennium development goal targets that the country is on track to achieving. This is largely a result of past investments, particularly the free education and health provision, which, despite its cost to the state provided equitable access and opportunities for social mobility and moving out of poverty. Sri Lanka has achieved high levels of reducing infant and maternal mortality and combating communicable diseases. However, these national level indicators mask regional disparities and challenges in the delivery of services and quality of services. At present the state investments into these sectors are well below the globally accepted levels (1.4% as opposed to the global standard of 4.5% of GDP on education and 1.9% as opposed to 5% of GDP on health) (CB 2011 and WB data online). This raises issues of the ability to provide and maintain quality health and education services across the country.

As a result of the better social conditions, Sri Lanka's population is living longer. At the same time Sri Lanka also has a low population growth rate. This is resulting in a population comprising of more people over 60 years of age and less children under 15. The number of people over 60 is predicted to double by 2031 and to become 1/4<sup>th</sup> of the population by 2041. This demographic is on par with developed countries, but has not followed up with stable economic growth and support structures to care for the elderly. From an economic perspective, it will lead to greater dependency, with the current child dependency being overtaken by old age dependency reaching over 50% by 2051 (De Silva, 2007). It can also mean a labour shortage that can impact the economic growth potential. From a social perspective, it puts pressure on the ability to care for the elderly – both in the homes and through the health services. The health care system has to adjust to cater to the elderly while also having to deal with changing disease profile, with Non Communicable Diseases (NCDs) emerging as the biggest health care challenge.

The reconstruction and resettlement in the North and the East is one of the central focuses of the government in the next few years. Revitalizing of Sri Lanka's economy to attract investments increasing businesses (such as tourism) in Sri Lanka is another. Both will be mobilized by large scale infrastructure development and upgrading. The similarities they share are that both will result in land use changes and resettlement of affected people. These are taking place in different ways across the country causing disputes over resources and what they should be used for and disparities in how different affected people's entitlements are provided for.

Sri Lanka is a democratic, socialist, republic. It has an elected President with executive powers and a parliament. The number of Ministries and Portfolios are re-shuffled quite frequently and the most recent change was in January 2013. The cabinet now has 10 senior ministers, 54 cabinet ministers and 29 deputy ministers and two project ministers. There is a central government with an administrative structure that reaches all the way to village level (District to Divisional secretariats to *Grama Niladhari* at village level). Parallel to this there are 9 Provincial Councils (PC), and a range Local Authorities (LAs) (Municipal and Urban councils and Pradeshiya Sabha) that have elected bodies and some devolved powers and responsibilities – such as health and education, social



infrastructure for the PCs, maintenance of public utilities for Las etc. The central government retains control of major portfolios such as defence, finance, economic development, and security. In the last couple of years two powerful ministries the Ministry of Economic Development and the Ministry of Defence and Urban Development have been created to spear head development activities. In addition a new Act “Divi Neguma” was passed in January 2013, amalgamating national and regional poverty alleviation programmes and centralizing the administration of these development activities. The bill raised concern among legal professionals on its constitutionality, governance and transparency.

Capital expenditure of the government largely comes from loans and grants from donors. There has been a shift in the funding partners to the government projects and programmes in the recent past. Traditionally Japan, Asian Development Bank and the World Bank provided the largest share of loans and grants to Sri Lanka. Since 2009, China and India have started providing increasing amounts of loans and grants to the government (Table 4). These new donors are supporting infrastructure projects and their commitment to community and environmental safeguards are not clear.

While development speeds ahead in Sri Lanka, there is concern that this will come at the cost to its environment. Currently Sri Lanka does have a depleting and degraded resource base and it cannot keep pace with the demands of increasing populations and consumerists lifestyles. Table 2 summarises the significant environmental issues for Sri Lanka. Climate change is an emerging threat with ecological, economic and social consequences.

**Table 2: Sri Lanka’s significant environmental issues**

Land Resources	Water Resources	Air
<ul style="list-style-type: none"> <li>• Soil erosion</li> <li>• Biodiversity loss</li> <li>• Pollution from agrochemicals and solid waste</li> <li>• Degradation and fragmentation of forests</li> <li>• Urbanization coupled with unplanned development</li> <li>• Sand mining</li> <li>• Coastal erosion</li> </ul>	<ul style="list-style-type: none"> <li>• Depletion and pollution of fresh water sources</li> <li>• Depletion and degradation of coastal and marine resources</li> <li>• Pollution of coastal areas</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution due to industrialization</li> <li>• Emissions from transport and power generation</li> <li>• Indoor air pollution – due to open hearth cooking</li> </ul>

Source: MoENR/UNEP 2009; NCSD and PS, 2009.

In the next 5 sections of this chapter, overviews of the current status in the 5 GEF focal areas – biodiversity, climate change, international waters, Persistent organic pollutants and land degradation - are presented. These overviews provide relevant information of how Sri Lanka is contributing to the GEF global environmental benefits.

## 2. Biodiversity

### The Biodiversity GEBs considered for Sri Lanka:

- **Conservation of globally significant biodiversity**  
Endemism, endangered/relict species/taxonomically unique species  
Globally threatened species (IUCN Red list)  
Important ecosystems (TNC – hotspots, WWF – threatened regions), unique/rare ecosystems, important life support systems, boosting global biodiversity, global climate and water balance, areas supporting threatened/significant migrant species.
- **Sustainable use of the components of globally significant biodiversity**  
Medicinal herbs, NTFP (from significant species)  
Wild relatives of food crops and yams that are important to food security especially due to climate change
- **Fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources.**  
(currently not very applicable to Sri Lanka, but with future potential)

Source: GEF

Sri Lanka's rich and unique biodiversity forms the basis for the country's natural heritage that is linked to its cultural legacy and economic advancement. Despite its relatively small size the island exhibits an exceptional array of terrestrial, freshwater and marine ecosystems, with high diversity and endemism, which can be attributed to the presence of wide range of topographic and climatic variations. Another contributing factor is the country's isolation from the neighbouring Indian subcontinent since the late Pleistocene, leading to a reduced influence of the subcontinent on the evolutionary history of Sri Lanka's biodiversity after that geological period (MTE &WA, 1995).

Sri Lanka, together with the Western Ghats of India is recognized as one of the 34 biodiversity hotspot, recognized for high endemism and 70% loss of its original habitat (Conservation International, 2012). This indicates the globally significant nature of the biodiversity as well as the urgency to protect it. With respect to comprehensive global analyses of specific taxonomic groups, Sri Lanka is recognized as one of 234 centres of plant diversity in the world (Davis, Heywood and Hamilton, 1995) and as one of the 218 endemic bird areas, defined by BirdLife International (Stattersfield *et al.*, 1998). Further various documents indicate that the marine waters around Sri Lanka contain high species richness and thus priority should be given in conserving the marine biodiversity (Ausubel, 2010; Cheung *et al.*, 2005; Robert *et al.*, 2002).

Sri Lanka also has globally recognized biologically rich areas such as UNESCO World heritage sites (2: Sinharaja and Central Highlands), UNESCO Man and biosphere reserves (4: Hurulu, Sinharaja, KDN Forest Complex and Bundala), and Ramsar sites (6: Bundala, Madu Ganga, Anawilundawa, Vankalei, Kumana wetland cluster, and Wilpattu wetland cluster).

The rich biological wealth of the country is a result of a combination of factors such as distinct climatic zones and different soil conditions. Topographically, the island consists of a south-central mountainous region which rises to an elevation of 2500m, surrounded by broad lowland plains at an elevation of 0 - 75m above sea level. The climate is tropical overall, but it shows variations across the island mainly due to differences in rainfall and elevation. Generally three broad climatic regions are recognized: the wet zone, dry zone and intermediate zone. Whereas the dry zone is all lowland, the other two zones are further subdivided on the basis of altitude. Sri Lanka, despite its small size, has a

rich diversity of soils. Fourteen of the Great Soil Groups are recognized within the country. These variations have resulted in several forest categories with their own characteristics (Table 3.1).

**Table 3: Forest Cover of Sri Lanka**

Type of forests	2010 (Ha)
Montane Forest	44,758
Sub-Montane Forest	28,513
Lowland Rain Forest	123,302
Moist Monsoon Forest	117,885
Dry Monsoon Forests	1,121,392
Riverine Dry Forests	2,425
Mangroves	15,669
<b>Total "closed canopy" forest<sup>‡</sup></b>	<b>1,453,944</b>
Open Canopy Sparse Forest <sup>†</sup>	445,485
Total natural forest cover in the country	1,899,429
Forest Plantations	79,941

Source: Edirisinghe & Chandani (2011)

Over 28% of the total land area is under forest cover and administered by either the Forest Department or the Department of Wildlife Conservation (Biodiversity Secretariat/MoE 2011). Deforestation has been the most serious threat to terrestrial biodiversity in Sri Lanka. In the period of 1884 and 1992 the rate of deforestation was estimated at 37,000ha per year. This rate has slowed down in the most recent past to 7,000ha per year (SD, 2007;FD, 2012).

As seen in Table 3, much of the closed canopy forest cover is in the dry zone (dry monsoon and riverine forests). Dry zone forests are an important habitat for threatened and charismatic species such as the elephant and leopard, however greater species diversity is found in the wet zone (low land rainforests, moist monsoon forests). The wet zone is heavily populated and forest land here has been converted for agriculture, homesteads, infrastructure etc. This has resulted in fragmented forest areas that put pressure on the integrity of these ecosystems (FD, 2012). The national budget and plans for 2013 had stated that forest cover will be increased to 35% with an allocation of Rs 500 million in 2013 and 1,500 million over a 3 year period (MFP, 2012).

Sri Lanka's wetlands are diverse, comprising 103 major rivers and associated marshes and about 12,000 man-made irrigation tanks that harbour a multitude of wetland species. Being an island, the country has a rich marine and coastal biodiversity along its 1620 km coastline and the Exclusive Economic Zone with a sea bed and water column spanning over an area of 517,000 km (CCD, 2006).

High ecosystem diversity in the island has given rise to a large number of indigenous species, including a remarkably high percentage of endemics among both fauna and flora. Among the inland indigenous vertebrate species (excluding marine forms and migratory birds) described currently, 43% are endemic to Sri Lanka. A higher percentage of endemism is evident among the freshwater crabs (almost 100 %), amphibians (86%), and land snails (81%) (See table 4). Much of these endemic species are concentrated in the rainforests and are heavily dependent on rainfall and humidity to maintain their structure and function. Many endemic rainforest species are 'point endemics' that are restricted to extremely small areas within a single forest (MOE 2012, MOE 2010b).

Presently only a small fraction of the island state's biodiversity is known to science. Invertebrates and lower plants are largely neglected except for few selected groups such as butterflies, dragonflies, land snails, pteridophytes and algae. Even the vertebrates and higher plants may not be completely listed as during the last two decade alone large number of new species has been discovered. The need for trained taxonomists and more initiative to explore the biodiversity of the country is needed.

MoE, 2012.

**Table 4: Species diversity among selected groups of Sri Lanka's fauna and flora in terrestrial and freshwater wetlands**

Taxonomic group	Number of species	Number of species	of endemic	% endemism
Land snails	253	205		81%
Dragonflies	118	47		40%
Bees	130	NA		
Butterflies	245	26		17%
Spiders	501	257		51%
Freshwater crabs	51	50		98%
Freshwater fish	91	50		55%
Amphibians	111	95		86%
Reptiles	209	125		60%
Birds (Resident)	237	27 definitive and proposed	6	
Mammals	124	21		17%
Angiosperms	3,154	894		28%
Pteridophytes	336	48		14%
Mosses	566	63 +		

NA= data not available

Source: IUCN Red List version 2013.1: Last Updated: 02 July 2013)

The various geo-evolutionary and geological processes in Sri Lanka, coupled with spatial variations in climate and topography, have also promoted isolation of species resulting in a large number of 'geographically relict species'. Several endemic relict genera are recorded among the land snails and herpetofauna. The high elevation cloud forests contain a significant complement of geographically relict endemic species. The high elevation features coupled with anthropogenic pressures has led to a higher portion of endemic species becoming globally and nationally threatened (Bambaradeniya 2006).

As per the IUCN Red list (table 5) out of the 571 globally threatened species recorded from Sri Lanka 286 are plants 286. Out of the 285 threatened fauna there are 130 invertebrates, 56 amphibians and 43 fishes, 30 mammals, 15 birds, and 11 reptiles (IUCN 2013).

**Table 5: Red list Categories – Sri Lanka summary**

	E	EW	Sub total	CR	EN	VU	Sub total	NT	LR/cd	DD	LC	Total
Fauna	20	0	<b>20</b>	61	96	128	<b>285</b>	169	129	10	1,146	<b>1,759</b>
Flora	1	0	<b>1</b>	79	74	133	<b>286</b>	3	4	5	382	<b>681</b>
<b>Total</b>			<b>21</b>				<b>571</b>					<b>2,220</b>

E- Extinct; EW-Extinct in Wild; CR= Critically Endangered; EN- Endangered; VU – Vulnerable; NT – Near Threatened; LR/cd - LR/cd - Lower Risk/conservation dependent; DD – Data Deficient; LC – Least Concern

Source: IUCN Red List version 2013.1: Table 5 Last Updated: 08 July 2013

With forty six agro-climatic regions in Sri Lanka based on soil variation, annual rainfall and altitude, the country supports a wide range of traditional crop varieties. With a long history of agriculture and a unique hydraulic civilization, agro-biodiversity (crops and livestock) in the country has been enhanced. Sri Lanka's traditional farming systems developed over hundreds of years, have resulted in crops that are resistant to diseases and insect pests, and are suited for varied soil conditions and climates in the island. Despite a process of selection through the ages, introduction

to new areas and climatic conditions, some varieties still show close genetic links to their wild relatives (i.e. rice varieties) (MOE 2011).

Sri Lanka is also a valuable repository of crop germplasm, especially of rice. There are varieties of rice which are resistant to pests and adverse climatic and soil conditions, exhibit variations in grain size and quality, and show differences in rate of maturing (MoENR2009). With the threats of climate change looming more effort has been put into identifying drought and flood resistant rice varieties. The uptake remains limited due to preference given to conventional high yielding varieties and methods, as well as the lack of knowledge, financial resources and external support (CEPA 2011). There is also significant crop genetic diversity among spices of commercial importance. Among these are 500 selections of pepper and about seven wild species, 10 wild races of cardamom, and several indigenous varieties of betel and chilli. Grain legumes and root and tuber crops also show a rich genetic variability, as do fruit crops such as banana, mango and citrus. Among domesticated animals of economic value are wild species of buffalo, cattle and fowl. The local cattle show high resistance to disease and tolerance of internal parasites. Likewise, the local breeds of poultry are resistant to tropical diseases (MOE 1999).

The most common use of forest products is for fuelwood that remains the most widely used cooking fuel. Various projects have tried to control forms of destructive extraction of firewood from protected areas through allocation of woodlots, community forests programmes, creating awareness, and provision of alternative livelihoods. Another common use is of herbs for ritualistic and medicinal purposes. At least 189 species of the 1414 medicinal plants used in Sri Lanka are endemic to the island or geographically restricted to the Indian sub-continent. This number includes 79 species that are threatened (from GEF project document – ID no 95). Conservation of these plants will secure the continued existence of these rare and endemic plants as well as the preservation of traditional knowledge on medicinal plants. However with a greater reliance on western medicine, the use of traditional healing methods has reduced (MoENR 2009).

Sri Lanka ratified the Convention on Biological Diversity (CBD) in 1994 and the Cartagena Protocol on Biosafety in 2004. The country is yet to become a party to the Nagoya Protocol on Access and Benefit Sharing and the Nagoya- Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol. Ratification of the CBD led to the publication of a comprehensive Biodiversity Conservation Action Plan (BCAP) in 1999 through a widely participatory process, thus fulfilling the country's obligations under Article 6a. This was updated with the publication of an Addendum to the BCAP in 2007 (GEF Project – 878) to reflect several issues that had a bearing on biodiversity conservation in the country since publication of the BCAP. During 2005 and 2006, Sri Lanka also carried out extensive stakeholder consultations through the National Capacity Needs Self-Assessment (NCSA) Project (GEF ID 2417) to identify national capacity needs to implement the Conventions on Biological Diversity (CBD), Climate Change (UNFCCC) and Land Degradation (UNCCD). Among the main capacity building requirements identified were for cross-sectoral integration of biodiversity considerations, the application of the "ecosystem approach" for establishing new protected areas (including forests, inland wetlands, coastal and marine systems and agricultural systems), and establishing an Access and Benefit Sharing regime (MoENR 2009).

**Table 6: GEF Projects and alignment to GEBs**

GEF Project	Biodiversity GEBs			and Other GEBs
	Conservation of globally significant Biodiversity	Sustainable use	Benefits Sharing genetic resources	
95 – Sustainable use of medicinal herbs	✓✓	✓✓		
352 – Development of conservation areas	✓✓			Forests/REDD Climate change/LD/MF
802 – coastal conservation RUK area	✓✓	✓		
818 – Conservation of Globally Threatened Species in Rainforests	✓✓	✓✓		Climate change Forests /REDD/MF
878 - Protected Areas and Wildlife Conservation Project	✓✓	✓		Climate change Forests /REDD/LD/MF
2472 - Strengthening Capacity to Control the Alien Invasive Species	✓✓			LD/IW
4150 – Agro biodiversity Conservation and Use Agro-ecosystems	✓✓	✓✓		CC/POPs/LD
4997 - Biodiversity Planning for the Implementation of the CBD 2011-2020	✓✓	✓✓	✓✓	CC/IW
2753 - Participatory Coastal Zone Restoration and Sustainable Management in the Eastern Province of Post-Tsunami Sri Lanka	✓✓			CC/CCA/LD

✓✓ - indicates main objectives covers this GEB and was/will be primary focus

✓ - indicates main objectives covers this GEB but with less focus

### 3. Climate Change

#### The Climate change GEBs considered for Sri Lanka:

- Mitigated GHG emissions in metric tons of CO2 equivalent;
- Increased use of renewable energy and decreased use of fossil energy resources;
- Improved efficiency in primary energy production, energy process and transmission, and final energy consumption at end-use;
- Increased adoption of a low-carbon development path through technology transfer, market transformation, and enabling activities;
- Reduced GHG emissions and enhanced carbon stocks under sustainable management of land use (including peatlands), land use change, and forestry.

Source: GEF

Sri Lanka is a negligible contributor to global warming. However, the island is highly vulnerable to the impacts of climate change, which include: increases in the frequency and intensity of disasters such as droughts, floods and landslides; variability and unpredictability of rainfall patterns; increase in temperature; and inundation due to sea level rise (MOE, 2010e)

The degree of severity and actual impacts are being debated but there is overall agreement that climate change – if not acted upon, can undermine the economic and social development potential. It is likely to affect livelihoods such as tourism, agriculture and fisheries, and especially those in the informal sector, small scale businesses/farmers/fishermen, labourers, and wagers who are less able to cope with external shocks. It will also affect communities living in close proximity to the ocean, putting the biggest risk on families in makeshift houses and in environmentally sensitive areas (e.g. buffer zones, flood plains). Climate change also affects health, especially the health of young children and older people who are less able to adapt or respond quickly to change (MOE, 2012 and 2010e).

Recognising the importance of Climate change and its impacts on Sri Lanka, International conventions (UNFCCC and Kyoto Protocol) have been ratified and measured have been taking place to fulfil the requirements. Sri Lanka has developed a Climate change policy (in 2013), a CDM policy Adaptation strategy (in 2012). A separate unit- a climate change Secretariat - within the Ministry of Environment was set up in 2010 to handle climate change issues. This unit deals with both mitigation and adaptation. In addition Sri Lanka has also

The rains at the latter part of 2012 caused major flooding affecting 17 districts in the country. The consequent loss of paddy production was 290,000 Mt in 2012/2013 Maha season. The damage caused to the livestock sector was estimated at Rs 160 million. This also led to 10 elephants deaths. Consequent damages required the Government to spend additional funds to rehabilitate 4,686 km of roads including national, provincial and rural roads and 188 structures such as bridges, culverts, drains and retaining walls. The Government allocated Rs 8,856 million for the implementation of a flood recovery programme.

May and September 2012, recorded a significant increases in temperature. This caused a severe droughts coinciding with the 2012 Yala season in the Dry and Intermediate zones. Further, many areas in the Dry zone were affected in the 2011/12 Maha season as well disrupting livelihood of more than 1.3 million people

Source: MFP (2013)

set up a sustainable energy authority (in 2007), that was under the Ministry of Power and Energy and in the most recent portfolio reshuffle in January 2013, it has been placed under Ministry of Environment and Renewable Energy to promote the use of renewable energy in the country.

Sri Lanka's Green House Gas (GHG) emissions are low, with the per capita GHG emissions being 0.6tonnes/y while the global standard is 4.29tonnes/y. It is also the lowest for South Asia (WB data online). This is mainly due to the lower levels of industrialization (table 6). Highest source of GHG comes from Carbon Dioxide (CO<sub>2</sub>) as a result of the use of biomass mainly as the source of household cooking fuel as well as for industrial thermal energy. Fossil fuel combustion for energy mainly from transport (49%) and power generation (29%) are the other large contributors to CO<sub>2</sub> emissions. The largest methane (CH<sub>4</sub>) emissions are from agriculture (mainly rice cultivation) and waste (agriculture and municipal). Largest source of Nitrous Oxide (N<sub>2</sub>O) is also from Agriculture.

**Table 7: Sources of GHG Emissions and Removals**

Sector	CO <sub>2</sub> (Gg)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)
<b>Fuel Combustion (FF)<sup>1</sup></b>	<b>10430.01</b>	<b>41.87</b>	<b>0.81</b>
Energy Industry	3065.84	0.12	0.02
Industry	842.03	2.29	0.21
Transport	5059.19	0.48	0.05
Household and Commercial	1195.70	38.97	0.53
Refinery	268.25	0.01	0.00
<b>Biomass<sup>2</sup></b>	<b>19720.30</b>		
<b>Industrial Processes<sup>3</sup></b>	<b>492.4</b>		
Cement	347.95		
<b>Agriculture<sup>4</sup></b>		<b>185.14</b>	<b>2.65</b>
Enteric Fermentation		59.68	
Rice Cultivation		117.43	
<b>LUCF</b>	<b>10.3</b>	<b>1.67</b>	
<b>Waste</b>		<b>96.82</b>	

Source: Derived from MOE 2011. 2nd National Communication to UNFCCC. Values generated in 2000.

<sup>1</sup> Refers to emissions due to the use of fossil fuels for producing energy (electrical and thermal).

<sup>2</sup> Biomass has been listed separately and combines emissions from industrial and household use

<sup>3</sup> Industrial processes include cement, mineral, chemical, metal, other. The figures here represent emissions due to industrial/manufacturing processes and do not include electricity that is covered under fuel combustion. Only cement is highlighted separately as the main source of emissions in this category.

<sup>4</sup> Agriculture includes livestock, and processes such as burning residues. Only main sources of GHG emissions are mentioned in this category

Table 7 presents the aggregate emissions, calculated using global warming potential values applicable in a 100 year time horizon as used in the IPCC calculations. In this format all emission values are converted to CO<sub>2</sub> equivalents. This shows that the inclusion of land use change and forestry (LUCF) has contributed to the removal of around 30% of the total emissions (MOE 2011). Biomass has not been included into this calculation.



**Table 8: Sources of GHG Emissions and Removals**

Sector	CO <sub>2</sub> Gg	CO <sub>2</sub> Removals (Gg)	CH <sub>4</sub> GgCO <sub>2eq</sub>	N <sub>2</sub> O GgCO <sub>2eq</sub>	Total (net) GgCO <sub>2eq</sub>
Energy	10,430.0		881.4	251.1	11,562.5
Ind. Processes	492.4				
Agriculture			3,887.9	821.5	4,709.4
LUCF - emissions	10.3		35.1		45.4
Waste			2,033.2		2,033.2
Total - Emissions	10,932.8		6,837.6	1,072.6	18,849.9
Total - Removals		-6,254.0			-6,254.0
Total - Net	10,932.8	-6,254.0	6,837.6	1,072.6	12,588.9

Source: MOE 2011. 2nd National Communication to UNFCCC. Values generated in 2000.

In the post conflict era in Sri Lanka with increased economic growth, greater mobility, greater reliance on coal and thermal energy, it can be assumed that the emissions have increased, however a more recent emission's inventory has not been carried out. The electricity demand in Sri Lanka is growing at a rate of about 7-8% per annum and number of new vehicles added is 300,000 per annum. Industries and the commercial sectors are also expanding and this indicates a greater level of emissions can be expected (MOE 2011).

**Table 9: Sri Lanka's Energy Mix**

Primary Energy Sources	2011
Biomass	43.7%
Petroleum	43.4%
Coal	2.9%
Hydro	8.5%
Renewables	1.6%
<b>Electricity Sources (2011)</b>	
Thermal (oil and coal)	59.1%
Hydro (Large scale)	34.5%
Renewables (grid and off-grid)	6.2%

Source: SLSEA, 2011. Sri Lanka Energy Balance

Sri Lanka's energy mix shows the dependency on thermal – biomass and fossil fuel, while hydro power makes up the next largest power source (table 8). Biomass remains the most widely used cooking fuel, while thermal power generated through oil and coal is the largest source of electricity. This is a change from the 1990s when large hydro, that is considered a conventional renewable energy, made up over 90% of the electricity supply. The large hydro potential has been fully tapped, and the future plan is to increase coal fired power plants to 1000MWs. In 2011, Sri Lanka commissioned its first coal power plant (300MW).

Non-conventional renewable energy (such as mini hydro, solar, wind) use is increasing, but at present levels it makes up a very small portion of the energy balance. Sri Lanka has also put in place tariff structures and power purchasing policies that allow private households and businesses to sell renewable energy to the grid. GEF funding has directly contributed to increasing the use of non conventional renewables and to reduce the market barriers for the greater uptake of renewable energy (GEF IDs 104, 1545). Private mini hydro schemes are well established with over 180Mw of installed capacity connected to the grid (DFCC online). Some of the mini hydro projects are also registered for carbon credits under the CDM mechanism. Since 2010, private sector has been involved in wind power generation and more recently with biomass (dendro) power projects. As per the SLSEA website there are 11 private wind generation units listed with 111.5 MW of power and 6 biomass projects are listed with 23.5MW. Wind and Biomass are identified as two main sources that can increase the non-conventional power supply. In 2011 the first grid connected commercial solar plant (1.2MW) was also commissioned.

Overall Sri Lanka has provided 100% fuel accessibility to all communities and will shortly reach 100% electrification, thereby fulfilling the goal of providing access to modern energy services to all the citizens. Interestingly the largest users of energy are households with transport and industries following behind with a wide gap (table 9). This indicates that a bulk of the energy generated is not being used for productivity and growth.

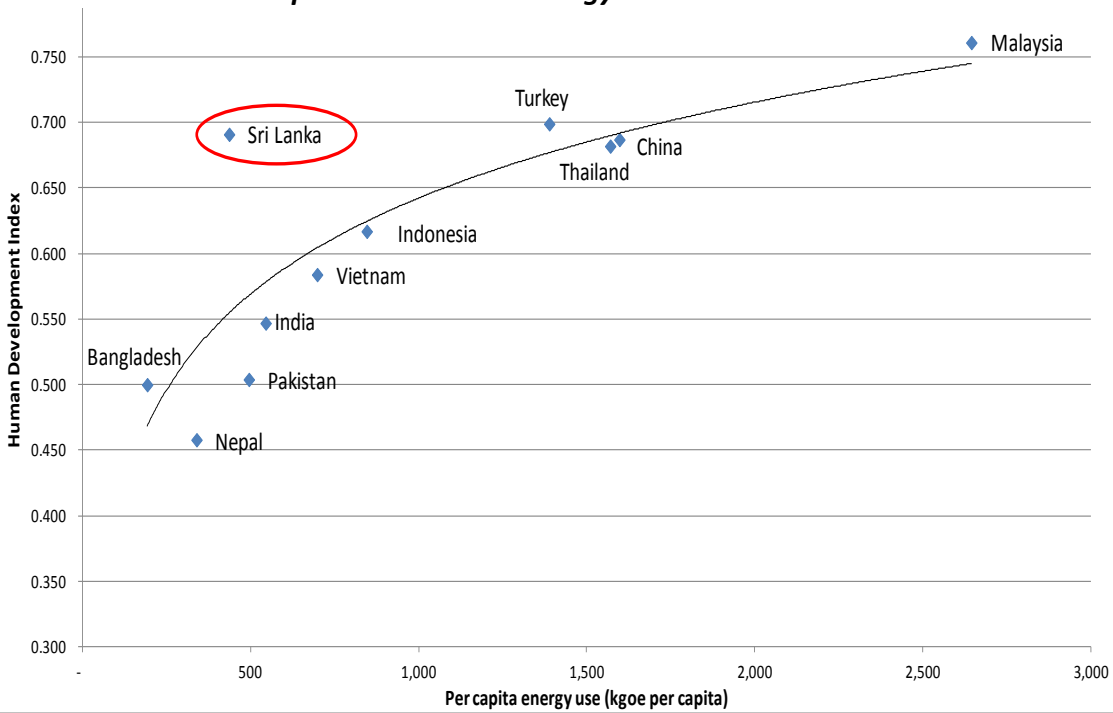
**Table 10: Sri Lanka Energy Use in 2010 (thousand toe)**

Sector		Fuel/Wood Baggase	Diesel	Gasoline	Oil fired power	LPG	Kerosene	F.Oil	Avtur	Coal	Hydro power	Total
Household, and Other	Commercial	3,435	12	-	243	169	152	23	-	-	278	<b>4,313</b>
Transport		-	1,518	672	-	-	-	-	117	-	-	<b>2,336</b>
Industrial		1,619	62	-	126	26	21	134	-	67	144	<b>2,200</b>
Agricultural		-	3	-	-	-	-	7	-	-	-	<b>10</b>
<b>Total Energy Use</b>		<b>5.054</b>	<b>1,596</b>	<b>672</b>	<b>370</b>	<b>196</b>	<b>173</b>	<b>164</b>	<b>117</b>	<b>67</b>	<b>422</b>	<b>8,860</b>

Source: Derived using SLSEA web portal data

As a low middle income country, with high social development indicators, Sri Lanka has a per capita energy consumption (0.4 toe) that is far below the lower middle income country average of 1.02 toe. This indicates a more positive picture in terms of low carbon development while also having the space to increase its energy consumption levels (Chart 1).

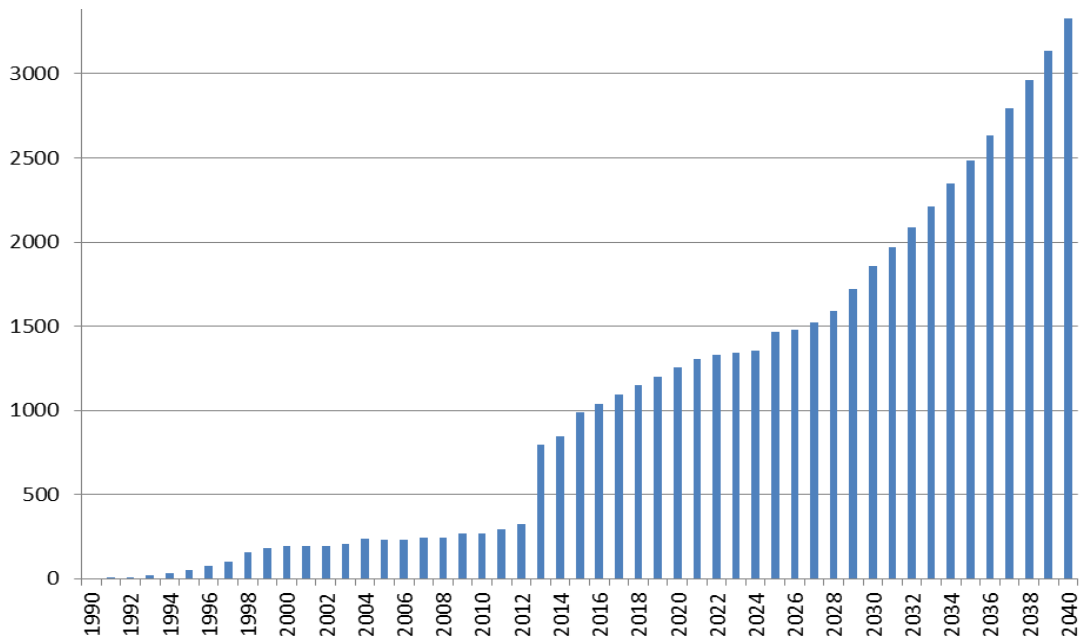
**Chart 1: Human development Index and energy use in relation to other countries**



Source: WB data (online)

Chart 2 shows the possible increase in energy consumption if a business as usual development trajectory is followed.

**Chart 2: Projected energy Consumption pattern under a business as usual scenario**



Source: WB data (online)

While recognising the need to increase the use of energy, there are policy targets include generating 10% of the power from non-conventional renewable energy by 2015, while also looking to reduce the business as-usual-energy demand by 2020 by 20%.

Much of the progress in terms of climate change has been in energy sector through the promotion of renewables. The GEF supported projects –national, regional and global have tended to focus on this aspect as well.

GEF Project	Climate change and the GEBs					Other GEBs
	GHG Mitigation	Increase in REs and reduction in FFs	Improved efficiency, transmission, and end use	Low carbon development	Carbon stocks	
104 – Energy Service delivery	✓✓	✓✓	✓			BD/LD
425 – RE and Capacity Building		✓				
1545 – RE and Rural Economic Development	✓✓	✓✓		✓		
2996 – Portfolio Approach to Distributed Generation Opportunity			✓✓			
4096 - Sustainable Biomass Energy Production and Bio-Energy Technologies	✓✓	✓✓		✓	✓	
4114 – bamboo processing	✓✓	✓✓			✓✓	LD
4609 – Resilience to climate change – post conflict recovery						LD/BD/CCA
2753 - Participatory Coastal Zone Restoration and Sustainable Management in the Eastern Province of Post-Tsunami Sri Lanka					✓✓	LD/BD/CCA

✓✓ - indicates main objectives covers this GEB and was/will be primary focus

✓ - indicates main objectives covers this GEB but with less focus

## 4. International waters

### The International waters GEBs considered for Sri Lanka:

- Multi-state cooperation to reduce threats to international waters;
- Reduced pollution load in international waters from nutrient enrichment and other land based stresses;
- Restored and sustained coastal and marine ecosystems goods and services, including globally relevant biodiversity and ecosystems

Source: GEF

As an island state situated in the Northern Indian Ocean, Sri Lanka's marine environment comes under the International Waters Category as it lays in the Bay of Bengal Large Marine Ecosystem (BOBLME). Other than Sri Lanka, BOBLME is bordered by Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, and Thailand. The LME covers an area of about 3,660,130 km<sup>2</sup> and contains 3.63% and 0.12% of the world's coral reefs and sea mounts, respectively. It is influenced by the second largest hydrologic region in the world, the Ganges-Brahmaputra-Meghna Basin, which spread over five countries. The BOBLME and its natural resources are of considerable social and economic importance to the bordering countries. Activities such as fishing, marine farming, tourism and shipping contribute to foodsecurity, employment and national economies. Marine living resources are extremely important to the coastal poor, particularly as a source of food (BOBLME Project, 2012).

The maritime boundaries of Sri Lanka are established under the Maritime Zones Law, No. 22 of 1976 (MZL) that follows the framework provided by the United Nation Convention on the Law of the Sea (UNCLOS), to which Sri Lanka became signatory in December 1982 and ratified in 1994. Under the MZL, different maritime zones have been declared by a Presidential Proclamation gazetted in January 1977. The Sovereignty of the Republic extends to the territorial sea and to the airspace over the territorial sea. The Exclusive Economic Zone (EEZ) of the country extends to a distance of 200 nautical miles from the baseline. The area enclosed by the EEZ is reported as 517,000 sq. km, which is 7.8 times the total land area of the country. Within this zone the country has sovereign rights to explore, exploit, conserve and manage natural resources, both living and non-living and exclusive rights to authorize regulate and control scientific research. (UN, 1993, Joseph, 2003). Sri Lanka and India agreed on June 1974 to the delimitation of a boundary through the "historic waters" of Palk Bay. This agreement came into force in July 1974. Another agreement between the two countries in 1976 determines the maritime boundary in the areas of Gulf of Mannar, Palk Straight and Bay of Bengal (DoD/USA, 2005).

Under the provisions of UNCLOS, Sri Lanka is entitled to lodge a claim for an extended area of seabed where the thickness of the sediment layer is over 1km and once this claim is accepted, the country could gain an additional seabed area which would be 23 times the island's land area. In addition to the living resources, the EEZ and the extended area, which will come under Sri Lanka's jurisdiction, also contain valuable non-living resources such as hydrocarbon sources and a variety of economically important minerals including manganese nodules (MF&AR, 2007).

Sri Lanka has a coastline of approximately 1,620 km, which includes the shoreline of bays and inlets, but excludes the lagoons (CCD, 2006). The main economic activities associated with marine waters are fishery, maritime transport and tourism. Sri Lanka is exploiting the coastal fisheries resources close to its Maximum Sustainable Yield (MSY), while the deep sea resources which were largely untapped or

being exploited by foreign vessels illegally, which is now become a huge political issue (CB, 2008). More recently there have been several incidences of illegal fishing of foreign boats in Sri Lankan waters that have been reported in the media. In the post war era the Ministry of Fisheries aims to expand and promote off-shore fishing. While dolphin and whale watching has become new attractions for the tourism sector.

Strategic location of Sri Lanka in the Indian Ocean close to east west shipping route and the increased shipping activity projected within next decade has given vision to enhance capacity in Sri Lankan commercial ports at Colombo, Hambantota, Trincomalee. According to the “Mahinda Chinthana” development policy framework, rapid development in tourism and marine related industries is expected. In the light of these developments Sri Lanka face a greater risk of marine pollution due to oil/chemical spill or due to dumping of ship generated waste and need to enhance and strengthen awareness, preparedness and capacity to counter possible threat caused to marine environment. Marine Pollution Prevention Authority was established under the Marine Pollution Prevention Act No. 59 of 1981. With a view to strengthen the legal authority vested with this authority to deal with marine pollution incidents and to implement international conventions relating to marine pollution prevention as applicable to GOSL, the existing act was repealed and Marine Pollution Prevention act No. 35 of 2008 was enacted and was operationised in January 2009. In line with the Act this authority was re-named as Marine Environment Protection Authority (MOE, 2012).

Presently a GEF funded regional International Waters project entitled Bay of Bengal Large Marine Ecosystem Project (BOBLME) is being executed by FAO to improve the lives of coastal populations through improved regional management of the Bay of Bengal environment and its fisheries. Key issues to be addressed by this project include: (i) overexploitation of living resources, (ii) critical habitat degradation, (iii) land-based sources of pollution, and (iv) the status of these critical habitats, post-tsunami, and their ability to support livelihoods in the future. The project will address one of the key barriers to resolving these issues; the lack of regional institutional arrangements to facilitate a coordinated approach among the BOBLME countries. Additionally illegal fishing and poaching; sustainable utilization of migratory species; protection of shared non-targeted species such as turtles, dugongs and sea birds; and safety at sea issues are also priority issues with in the BOBLME (BOBLME Project, 2012).

Sri Lanka is presently party to several bi-lateral and multi-lateral agreements developed with the objective of collaborative management of marine resources with neighboring countries. Few examples are:

- South Asian Seas Action Plan Developed in 1995 under the umbrella of UNEP Regional Seas Programme. The objective is to protect and manage the marine environment and related coastal ecosystems of the region through the promotion of sustainable development of the resources (SACEP/UNEP, 1995)
- The Bay of Bengal Programme (BOBP-IGO) is an Inter-Governmental Organization mandated to enhance cooperation among member countries, other countries and organizations in the region and to provide technical and management advisory services for sustainable coastal fisheries development and management in the Bay of Bengal region. The BOBP-IGO presently covers four countries: Bangladesh, India, Maldives, Sri Lanka (Anonymous, 2011).

## 5. POPs

### The POPs GEBs considered for Sri Lanka

- Reduced POP risks on human health and the environment through reducing and eliminating production, use and releases of POPs; and
- Protected ecosystems and their goods and services, including biodiversity, from POP impacts.

Source: GEF

Persistent Organic Pollutants (POPs) can be categorized into three groups: pesticides, industrial chemicals and unintentional by-products. The Pesticides are Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene (HCB), Mirex and Toxaphene that are no longer used in Sri Lanka. The industrial chemical Polychlorinated Biphenyls (PCBs) is widely used in Sri Lanka. The two unintentional by products are Dioxins (Polychlorinated Dibenzo Dioxin - PCDD) and Furans (Polychlorinated Dibenzo Furan (PCDF) that are also present due to incomplete combustion in various anthropogenic activities (MOE 2005). As a country where agriculture is a main livelihood, the major use of POPs in Sri Lanka is as agricultural pesticides. However POPs pesticides are not manufactured in Sri Lanka but imported as ready-to-use products or technical materials for local formulation.

Sri Lanka has been fortunate that the detrimental effects of POPs have been noted and substantial measures have taken place even decades before the Stockholm Convention came into force. With the implementation of the Control of Pesticides Act No 33 of 1980, all POPs pesticides were banned. The prohibition of use of POPs pesticides was initiated in the early 1970s and was completed in 1996 with the ban of chlordane, which was the last POPs pesticide used in Sri Lanka (Table 10). Prior to completing the ban, the last remaining use of chlordane was termite control in a building construction sites (CEJ, 2006; MOE 2005).

The problems related to POPs pesticides are due to the possibility of illegal imports through false declarations, lack of resources for systematic screening of imports as well as for identification and analysis, and inadequate data on environmental impact baselines and health issues. One of the main concerns associated presently with POPs pesticides is the possibility of exposure through contaminated sites/environmental compartment resulted from historical uses. However, there is very little information available on safe environmental levels, which seriously incapacitates arriving at reasonable predictions on potential human and environmental adverse effects arising from POPs pesticide use in Sri Lanka. Some data is available concerning the concentration of limited number of pesticides in surface waters, river waters, while isolated incidences of pesticide related deaths of fish populations, snakes, etc. have been reported in surface waters following heavy application of mostly organophosphate and carbamate type of pesticides in agricultural fields without possible long-term environmental damages (CEJ, 2006; MoE, 2005).

The first synthetic pesticide to be used in the country on a large scale was DDT in the late 1940s and it was followed by benzene-hexa-chloride (BHC or Lindane) to control the malaria vector. Subsequently these pesticides were used in agriculture for control of pests to meet the increasing demand for food after the 2nd World War. By the next decade more toxic chemicals such as aldrin, dieldrin, endrin and others were introduced and used indiscriminately for control of pests in the fields of agriculture, veterinary, public health, and the industry

(CEJ, 2006)

**Table 11: Historical Use of POPs as Pesticides in Sri Lanka**

Name of the Chemical	Year of administrative declaration of prohibition /restriction of imports	Last Imports	
		Amount (kg/yr)	Year
Toxaphene	1970+	NA	
Endrin	1970	NA	-
DDT	1976	316,522	1976
Aldrin	1986	7,040	1986
Heptachlor	1986*	NA	-
Dieldrin	1992	1,100	1991
Chlordane	1996	4,600	1994
Hexachlorobenzene	Never been used	None	
Mirex	Never been used	None	

NA- Not Available \* Year of restriction for termite control + Year maximum expected in use

Source: Jayakody. S. 2005, Office of the Pesticide Registrar: as used in CEJ 2006.

As reported in the National Implementation Plan: *“PCB was used extensively as a dielectric in transformers until international production ceased in 1986. Of the estimated 18,500 transformers in the electricity and industrial sector, a very few pure PCB transformers have been identified. Initially it was assumed that only transformers manufactured before 1986 had high probability of containing PCB. However, sampling across different era of manufacture using field test kits and laboratory analysis indicates that there is a very high degree of cross contamination of even non-PCB transformers during routine maintenance even among relatively new transformers.*

The danger with PCBs is that PCB oils can cause contamination of ground and surface waters, soil and air. Contamination can take place during maintenance and through recyclers, scrapping yards or repair yards. The recyclers use a considerable quantity of used transformer oil in their daily operations. They use sawdust to absorb the oil during draining of transformers. The sawdust soaked with transformer oil is then handed over to the local authorities for disposal. Therefore, there is a possibility of dumping and burning of sawdust used for cleaning spilled oil, which might contain PCBs. Three experiments of burning PCB oil have been tried in a cement kiln and could be an alternative to manage PCBs (MOE 2005, CEJ 2006).

Some of the issues related to the control and elimination of PCBs as identified in the NIP:

- Long life span of PCBs containing equipment – 30 – 35 years
- High cost of replacement of PCBs containing equipment
- Lack of legislation to prevent import of PCB containing equipment – no legislation dedicated to prevent imports and use
- Lack of facilities in testing for PCBs;
- Recycling of transformers without testing for presence of PCBs that can lead to more contamination;
- Closed systems using dielectric oils can be a future source of PCB contamination;

In terms of unintended POPs produced in Sri Lanka, estimations were made using a toolkit developed by UNEP. The main sources of releases of PCDD and PCDF (Dioxins and Furans) were identified as:

- The uncontrolled combustion of wastes, primarily in dumps and in the open;
- The processing of metals, in particular scrap copper where a significant amount of PCDD/F is likely to be associated with the residues from gas cleaning systems;
- The incineration of medical wastes carried out under very poorly controlled conditions;
- Burning of biomass in homes for cooking, industry and for disposal of agricultural residues.

(MOE 2005)



There are implications for health from short term issues like irritation to more long term effects such as cancer, immunological and neurological issues. There are also effects on the health of ecosystems and wildlife.

Sri Lanka became a signatory to the Stockholm Convention on POPs on 5<sup>th</sup> September 2001 and ratified the Convention in December 2005. To meet the obligations towards the convention, a National Implementation Plan was prepared in 2006 with GEF support (GEF ID 1777 - Enabling activities for the Stockholm Convention on Persistent Organic Pollutants (POPs): National Implementation Plan for Sri Lanka).

A national coordinating committee has been formed under the Ministry of Environment and Harmonized System (HS) codes for prioritised POPs chemicals has been established in collaboration with Department of Customs. Further National Inventories for PCBs, Dioxins and Furans and Pesticides have been undertaken (MoE, 2008). Additionally there are several NGOs actively participating in events organized by the International POPs Elimination Network (IPEN).

## 6. Land degradation

### Land Degradation GEBs considered for Sri Lanka

- Improved provision of agro-ecosystem and forest ecosystem goods and services;
- Reduced vulnerability of agro-ecosystems and forest ecosystems to climate change and other human-induced impacts;
- Conservation and sustainable use of biodiversity in productive landscapes;

Source: GEF

Sri Lanka consists of 6.5 million ha of land, where only about 50% is arable due to unsuitable terrain, inland water bodies and forest reservations. At present with an estimated population of about 20.2 million, the per capita arable land area is less than 1.5ha indicating heavy pressure on land resources. The present land use pattern of the country stems from the legacy of a land policy from the colonial times where export based commercial agriculture was superimposed on a traditional farming systems (DLUPP, 2011). As table 10 indicates agricultural activities – including the plantation crops and land set aside for conservation are the highest percentages.

**Table 12: Land Use categories in Sri Lanka**

Land Use Category	Extent (ha)	%
Agriculture (Tea, Rubber, Coconut, Paddy, & other crops)	2,605,647	40
Urban Areas	29,353	>1
Forests, Wildlife, Reserves & Catchments areas	2,000,000	31
Underutilized Lands	728,800	11
Reservations (Reservoirs, Streams & Irrigation Channels)	585,300	9
Steeply sloping lands, unsuitable for Agriculture	380,000	6
Barren Lands	77,000	1
Highlands over 5000 feet (1600m) above mean sea level	76,400	1
Mangroves & Marsh Lands	70,000	1
Total	6,552,500	

Source: DLUPP, 2011.

Land is considered as the most important and heavily threatened natural resource in the country. Sri Lanka is a predominantly agricultural nation, while land ownership is considered as a social and economic status. The agriculture sector is important in the local economy of the country, and is directly linked to the systematic management of the land under cultivation. At present about 37 percent of the people in the country are dependent on land centred activities, for their sustenance (MoE, 2002). New trends to develop infrastructure, urban centres coupled migration into city areas will impact this land use pattern.

The island is not a desertification prone country, yet falls within the context of land degradation and drought mitigation aspects of the UN Convention to Combat Desertification, (UNCCD). It is widely accepted that land degradation is one of the most critical problems affecting the future economic development in Sri Lanka. According to the Global Assessment of Soil Degradation (GLASOD), about 50% of land in Sri Lanka is degraded. The area affected by soil fertility decline is 61% of the total agricultural land. The major contributors to land degradation are soil erosion and soil fertility degradation. This in turn affects productivity. Over exploitation of ground water, salinization, water logging and water pollution are also becoming important contributors to land degradation. The demands of a rapidly expanding population has set up pressures on the island's natural resources and these in turn have resulted in a high level of environmental degradation. The more important manifestations are heavy soil losses; high sediment yields; soil fertility decline and reduction in crop yields; marginalization of agricultural land; salinization; landslides and deforestation and forest degradation (MoE, 2000; MoE, 2003; MoE, 2006 and 2007).

Soil erosion is a common problem in the entire country and it has been estimated that nearly one third of the land in Sri Lanka is subjected to soil erosion, the erodible proportion ranging from less than 10.0% in some districts to over 50.0% in others. Severe erosion takes place in the hill country on sloping lands under market gardens (vegetables and potatoes) tobacco, poorly managed seedling tea and chena cultivation. Soil erosion is also considered a threat to agricultural production in the rainfed farming areas in the Dry Zone (MOE, 2000; 2006).

According to the National Building Research Organization (NBRO), about 125,000 ha of land in the hill country are vulnerable to landslides. Although landslides occur due to various reasons, soil erosion is one of the main reasons for the occurrence of landslides in the hill country. Landslides frequently occur during the rainy season in areas with steep slopes and high rainfall. Human activities such as deforestation and poor land uses have contributed to the increased incidence of landslides (MoE, 2002).

There are a few important ground water sources in Sri Lanka. The Karstic ground water resource found in the lime stone belt in the Jaffna Peninsula has been exploited for agriculture for over 100 years. In this aquifer, a shallow lens of fresh water is found to float over the saline water. Over exploitation has led to increased salinity. Further in the North western Province the intensive agriculture developed in the area over the last few decades has caused several problems due to over-exploitation of ground water and over use of agro chemicals (MoE, 2003; MoE, 2006).

Existence of large number of decision making institutions with complicated legal systems and overlapping policies had lead limited government interventions to conserve and improve the productivity of land. Insecure tenure systems, extreme weather conditions including droughts and floods and haphazard development initiatives are further contributing to land degradation. Implementation of land conservation activities is generally confined to a few small donor funded

projects. Often, the process initiated by the projects could not be extended to other areas after the project period due to the non-availability of funds and the discontinuation of incentives offered to the extension staff and the farmers (MoE, 2000; MoE, 2006)

Sri Lanka signed and ratified the UN Convention to combat desertification and land degradation (UNCCD) in 1995 and 1998 respectively. The Ministry of Environment is the focal point for the implementation of activities of UNCCD in Sri Lanka. A National Action Programme (NAP) was prepared in 2002 to identify the factors contributing to land degradation and practical measures necessary to combat land degradation. A National Expert Committee in Land Degradation was formed in 2004. In 2010 the Land use Policy Planning Division was upgraded into a Department under the Ministry of Lands (Gazette Extraordinary No. 1654/21).

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**TECHNICAL DOCUMENT C:**  
**Review of Outcomes to Impact:**  
**Conservation of the Biodiversity in the Rain Forests Project**  
**(GEF ID 818)**

## Acronyms

A	Assumptions
BCAP	Biodiversity Conservation Action Plan
CBD	Convention on Biological Diversity
CBO	Community Based Organization
FGD	Focus Group Discussion
GEB	Global Environmental Benefit
GEG	Global Environmental Facility
ID	Impact Drivers
IS	Intermediate States
KDN	Kanneliya-Dediyagala-Nakiyadeniya
KPI	Key Person Interview
MSP	Medium Sized Project
NCR	National Conservation Review
NTFP	Non-timberForest Product
ROtI	Review of Outcomes to Impact
TOC	Theory of Change
UNDP	United Nations Development Programme



## 1. Introduction

As a part of the GEF Sri Lanka Country Portfolio Evaluation (CPE), a review of the project entitled “Contributing to the Conservation of the Unique Biodiversity in the Threatened Rain Forests of Southwest Sri Lanka” (GEF ID 818) was carried out using the Review of Outcomes to Impact (ROtI) methodology, which was developed by the GEF Evaluation Office.

This Medium Sized Project (MSP) was implemented between July 2000 and December 2005. The total budget for the project was US\$ 975,713 including GEF financing of US\$ 749,713 and US\$ 226,000 in co-financing from the Sri Lankan government. It was implemented by the United Nations Development Programme (UNDP) and executed by the Forest Department, of the Ministry of Forestry and Environment of the Government of Sri Lanka.

The project expected to pilot a forest management model to improve the protection of floral and faunal species and to promote conservation of endemic species in the area with community participation. The project aimed to create a positive change in forest management that would improve forest protection from encroachment, illicit logging and unsustainable resource extraction while also enhancing the socio-economic status of buffer zone communities that were engaged in adverse forest use activities.

The following were the expected outcomes of the project;

- Buffer zone community (and society at large) cooperating in the conservation of the selected rainforest ecosystems harbouring globally threatened species
- A suitable model developed for securing collaboration between the local community, state agencies and other stakeholders in managing the rainforest ecosystems
- Sustainable use of non-timber forest products (NTFP) secured
- Forests adequately protected against encroachment and illicit logging

The relevance and effectiveness of the project outcomes have been rated as satisfactory in the Terminal Evaluation Report. This current review expects to assess whether the successful outcomes have actually **contributed** to achieving a long-lasting and favourable environmental impact.

This ROtI assessment followed the following steps. First, the project documents were reviewed and a TOC was developed with the project stakeholders. In order to validate it and discover the sustainability of the project benefits, key informant interviews (KIIs) were carried out with Forest Department officials, ex-officials and consultants and focus group discussions (FGDs) were held with the buffer zone communities of the Kanneliya Forest area and in the southern side of the Sinharaja World Heritage Site. Information and data was also drawn from the Periodic Review of Man and Biosphere (MAB) Reserves in Sri Lanka for the Sinharaja World Heritage Site. Comparative data were also drawn from the Periodic Review of Man and Biosphere (MAB) Reserves in Sri Lanka, which replicated the ROtI data collection

format for focus group discussions with the Sinharaja Forest buffer communities and also gathered information from interviews with the Forest Reserve Officials.

The report is structured according to the ROTI methodology, starting with the characterisation of the intended project environmental impacts, or Global Environmental Benefits (GEB) (section 2). The logical sequence of conditions (i.e. the project theory of change - TOC) deemed necessary to convert outcomes to impacts was then modelled (sections 3), and was followed by an assessment of the extent to which the outcomes-impacts pathways have been realised, which in turn provides an indirect measure of impact that is likely to be achieved over time (section 4). Section 5 provides a summary of the overall conclusions of the ROTI assessment.

## **2. The project's global environmental benefits**

Sri Lanka ratified the Convention on Biological Diversity (CBD) in 1994. This ratification of the CBD was followed by the preparation of the national Biodiversity Conservation Action Plan (BCAP) in 1999, which has given high priority to the conservation of forest biodiversity. The Forestry Master Plan of 1995, the Forest Policy of 1995 and the Five-year implementation programme of the Forest Department have also given high priority to the conservation management of the biodiversity-rich forests in the wet zone with the participation of local people. The Forest Ordinance has been amended to include a new category of forests – Conservation Forests.

The aim of the project was to protect the ecosystems in the rainforests of Sinharaja and Kanneliya, which are exceptionally rich value in biodiversity, through community involved participatory forest management. The Sinharaja forest is a World Heritage Site, an International Biosphere Reserve and a National Heritage Wilderness Area. According to the National Conservation Review (NCR) carried out from 1991 to 1996, the inventoried sample plots contained 337 species of woody plants in the Sinharaja forest. 57% of these species were endemic and 34% were globally threatened. Kanneliya forest is a biodiversity-rich lowland rainforest, which is a part of the Kanneliya-Dediyagala-Nakiyadeniya (KDN) complex. According to the NCR, there were 234 woody species, of which 66% were endemic and 45% were globally threatened. Both forests are also high in endemic fauna.

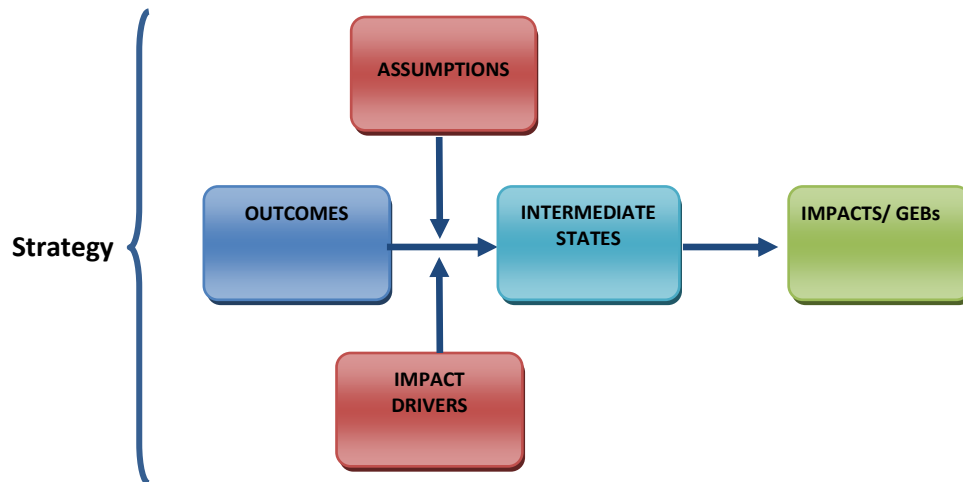
Since the economy of the buffer zone communities of these two forests was based on tea cultivation, encroachment to expand tea lands was the main threat to these two forests. Illicit felling of timber by timber dealers was also a threat to these two forests, but it was not prevalent. There was threat from buffer zone villagers through the removal of poles and felling of small timber for household and community requirements. The collection of non-timber forest products (NTFPs) was also considered a threat to biodiversity in these two forests. Buffer zone villagers were also prone to collect several types of products for their household or community use.

It was expected that through the successful implementation of the project, protection and conservation of endemic and globally threatened species in the two forests would have been ensured with community participation.

### 3. Conservation of the Biodiversity in the Rain Forests Outcome to Impact Theory of Change

The theory of change of a project is the logical sequence of conditions and factors that are necessary to deliver the ultimate project impact. The basic project theory of change starts with activities and develops through delivery of outputs and achievement of expected outcomes at the end of implementation, i.e. through a means-ends hierarchy that ultimately puts in place the conditions to reach impact sometime after project completion. The GEF project terminal evaluations assess the basic theory of change as far as outcomes, but do not usually go far in assessing the crucial last step to impact. The ROTI assessment focuses on this last step and develops and assesses a detailed theory of change between outcomes and impacts, referred to as **outcomes-impacts pathways**, measured at least two years after project completion. Each outcomes-impacts pathway represents a specific strategy. Figure 1 below illustrates the key elements and relationships of the detailed theory of change between outcomes and impacts.

**Figure 1: Generic theory of change for outcomes-impacts pathways**



The key ingredients in the outcomes-impacts pathways (or strategies) that are examined according to the ROTI methodology are intermediate states, impact drivers and assumptions, which are defined in Table 1 below. Impact in terms of global environmental benefits can be achieved either through environmental threat/stress reduction or improvement in the environmental conservation status of the resource. If the project outcomes are assessed to be successfully delivered and the key ingredients of the theory of change between outcomes and impacts are in place, then it is reasonable to conclude that that the barriers and threats to impact have been overcome, the environmental status has improved,


and that consequently impact has or will be achieved, with time. In the evaluation the focus is on performance beyond the life of the project – therefore beyond outcomes to assess the progress made towards achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

**Table 1: Definitions of theory of change elements in the outcomes-impacts pathways**

TOC terms	Definition
Intermediate States (IS)	These are the transitional conditions between the project’s outcomes and impacts that must be achieved in order to deliver the intended impacts
Impact Drivers (ID)	These are the significant factors that, if present, are expected to contribute to the ultimate realisation of project impacts and that are within the ability of the project to influence
Assumptions (A)	These are the significant factors that, if present, are expected to contribute to the ultimate realisation of project impacts, but that are largely beyond the power of the project to influence or address

The development of the Conservation of Biodiversity in the Rainforests outcomes-impacts theory of change was based on document review followed by validation by key informants and the buffer zone communities of the Kanneliya and South of Sinharaja forests.

**Table 2: The Conservation of Biodiversity in the Rain Forests outcomes-impacts theory of change**

Project Strategies	Outcomes	Impact Drivers & Assumptions	Intermediate States	Impact
<b>STRATEGY #1</b> Model Development	Outcome 1: Functioning model for forest conservation with cooperation between local community, FD and other stakeholders	ID1: The ownership of the project by the Forest Department  A1: FD adopts community based forest management	IS1: Strengthening of institutional mechanisms for community participation in forest conservation  IS2: Attitudinal change in Forest Department officials for improved community collaboration.  IS3: Improvement in livelihood benefits to local people	<p style="text-align: center;"><b>PROTECTED ECOSYSTEMS IN THE RAINFORESTS OF SINHARAJA AND KANNELIYA</b></p>  <p style="text-align: center;"><b>CONSERVED GLOBALLY THREATENED SPECIES</b></p>
<b>STRATEGY #2</b> Conservation Action	Outcome 2: Buffer zone community cooperate in conservation	ID2: Effective training programmes - For communities - For FD officers/ mobilisers	IS4: Better community awareness and active involvement in forest conservation  IS5: Reduction in forest offences by local people  IS6: Reduced dependency on over extracted NTFPs	
	Outcome 3: Improved forest protection from encroachment and illicit logging	ID3: Effective livelihood development activities leading to community participation		
	Outcome 4: Sustainable use of non-timber forest products secured.	ID4: Effective awareness programmes delivered via mobilisers		

## 4. Assessment of achievement of the outcomes-impacts pathways

The assessment of achievement of the outcomes-impacts pathways was carried out through a review of documents, interviews with key persons and focus group discussions with the buffer zone communities of the Kanneliya and South of Sinharaja forests. The rating system used for the assessment is given in Table 4 below as per the ROTI Handbook, and is applied at the different levels of the Theory of Change; i.e. at the individual TOC element level (outcomes, impact drivers, assumptions and intermediate states) and at the overall project level.

**Table 3: Field ROTI Rating System**

Rating	Description
0	Not achieved
1	Poorly achieved
2	Partially achieved
3	Well achieved

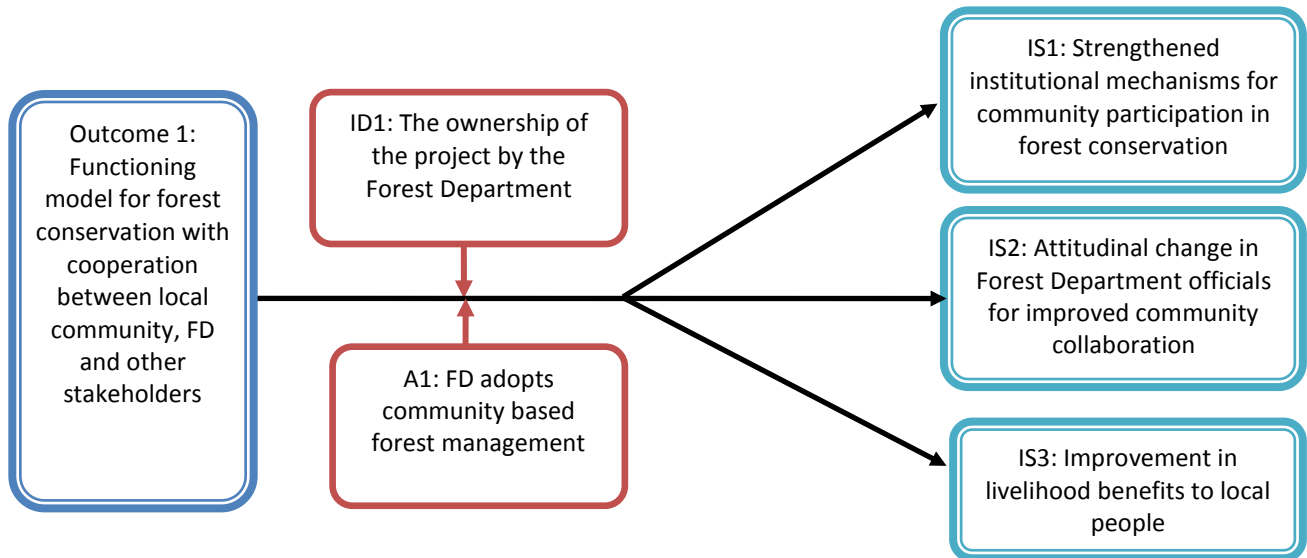
The reporting starts off by providing justification for why the identified intermediate state for the strategy is considered important in delivering the ultimate impact. The theory of change for the strategy is then examined through its logical steps, firstly validating the extent to which the outcomes were achieved at project closure, secondly by an assessment of the extent to which the impact drivers and assumptions were realized. The section concludes with an assessment of achievement of the intermediate state itself.

### 4.1 Strategy 1: Model Development

#### 4.1.1 Theory of Change Overview

The model development strategy focuses on delivering three intermediate states. The first intermediate state *“Strengthening of institutional mechanisms to involve the community in conservation”* was a necessary change to improve the protection of the forest. The second intermediate state: *“Attitudinal change in Forest Department officials and improved community collaboration”* was used to build the relationship between the two parties and the third intermediate state *“Improvement in livelihood benefits”* was a specific feature of the model that has contributed to ensuring community participation in conservation.

**Figure 2: Theory of Change for Strategy #1**



The project outcome that was identified as important for delivering these three intermediate states is shown in Figure 1 above.

**Outcome 1: functioning model for forest conservation with cooperation between local community, FD and other stakeholders**

**Intermediate States**

***IS1: Strengthened institutional mechanisms for community participation in forest conservation***

There was realisation at the time of the project design that that the policing approach for forest management was not effective for conservation of Sri Lanka’s valuable wet zone forests. It could not stop surreptitious forest clearing for tea cultivation and other unsustainable forest practices by local people. This project pilot tested a participatory model to see its effectiveness for adoption by the Forest Department. The project expected to improve the dialogue between the forest managerscommunities and other stakeholders for forest conservation. To achieve this purpose it was intended to set up CBOs, and include forest conservation in their mandate without creating conflicts with their own objectives. Loan schemes and training for livelihoods and community activities was a part of the model, to provide benefits for the community.

As this was a new concept for the FD, strengthening the department’s capacity for engaging with communities and implementing the model was a strong requirement. To ensure that adequate staffs with the required skills were deployed in the project without compromising the department’s other functions, special staffs were recruited to the project.

Twenty seven community based organizations (CBOs) had been established in peripheral villages around the Kanneliya forest and south of Sinharaja forest with the aim of developing a viable system for

community involvement for conservation of the rich biodiversity in the two forests. Some of these CBOs had been newly established and the others, which were already there, have been strengthened through the project through the social mobilisers who provided training and guidance. The established or strengthened CBOs were provided with sufficient financial capital to initiate community development activities and environment-friendly enterprises in the buffer zone. Substantial time and effort had been spent to develop the capacity of communities to carry out above tasks so that the groups can function independently and beyond the life of the project. With the establishment of this mechanism, communities have actively participated in forest conservation.

The groups were functioning quite well during and immediately after the project. However, at present, due to non-payment of loans borrowed from the CBOs by some members and a lack of active involvement on the part of members, around one third of the CBOs are not functioning at Kanneliya. In these, active involvement in the CBO by members has diminished due to the lack of new opportunities offered to the CBOs by the FD, lack of time due to tea cultivation work, non-payment of loans, perceived low benefit of attending meetings to receive small loans of Rs. 5,000/= to Rs. 10,000/=, and in a few cases tensions among members and administrative issues involved with maintaining the revolving fund. The remaining CBOs are performing well with strong leadership from the community and active involvement of their members. The focus of their activities is mainly on livelihood and community based activities, but members (and former members) continue to collaborate in supporting law enforcement activities of the FD. The extension officers and other officials of the Forest Department are now working to revive the non-active CBO members and mobilize these CBOs back to a functioning level.

*“Some CBOs have become inactive due to the non-payment of the loans. We are currently trying re-establishing the CBOs. We re-started two CBOs which were inactive for some time.”*

- Forest Officers

The replication of CBO activities in other adjoining villages and other forest areas (i.e. Ikkumbura – in the Knuckles range) is taking place gradually either through funded projects (i.e. AusAid ) or through regular work (i.e. in selected forests in Hambantota). The scale of activities to replicate the whole model is at times constrained due to lack of regular funds especially to establish new CBO and credit lines. However, overall there is acceptance that community-level activities should be part of forest management and these types of activities should continue and efforts are taking place in selected areas.

### ***IS2: Attitudinal change in Forest Department officials for improved community collaboration***

Forest management was considered the domain of the Forest Department, which enforced the laws and rules of forest use within the forest boundaries. Their relationship with the community was more one of policing, with interaction occurring only when illegal activities such as encroachment and logging took place and hence, was a hostile one. As part of the institutional changes piloted in this project, the officials were provided training in community mobilization and participatory forest management. The aim of this process was to change their attitudes towards collaboration with communities, which was deficient in the pre-project period.



Through this project, in addition to providing skills in terms of biodiversity and biodiversity conservation, all levels of staff - field level staff to high ranking district officials of the FD- were trained in participatory forest management and working with communities. The training as well as the hands-on application of the concepts, the various collaborative activities carried out, helped to change their mind set and they interacted and worked collaboratively with buffer zone communities for forest conservation as well as community development.

*“Previously, even the forest officers used to work for their personal gains, but now it is difficult for them, since the village is connected with the forest. In the past, they only came to the village if there was a need to arrest somebody. There was no such a relationship with us like now. We go in to the forest with forest officers and we meet them in the program. That’s how the relationship was built up.”*

- Community FGD

*“Without the participation of the people, a large area like the Sinharaja forest cannot be managed and conserved by a handful of forest officers”*

Field Officer

A large number of mobilizers were necessary at the start of the project, and it was a staff intensive process with one mobiliser for every GramaNiladhari division. This was necessary to overcome suspicion of the FD, and gain acceptance from the community to start CBOs. The logic of the model is that once the CBOs are established they should be able to function independently. However communities express a need to maintain the interaction as an incentive to continue to stay active. This is taking place but less frequently resulting in less dynamism of some groups. From the perspective of the Forest Department, the mobilisers recruited for the project and specially trained were absorbed into the Forest Department as Forest Extension officers (EO). They are now spread more widely to cover a larger area, hence their ability to maintain the same level of interaction is no longer feasible. This can be seen as an acceptable change.

The attitudinal change of Forest Department officials and their collaboration with communities for forest conservation, during as well as after the project, is a highly satisfactory achievement of the project. The need to maintain relationships and involve the communities in the conservation effort has been absorbed into the operational style of the Forest Department. An EO is assigned to every Range office to continue with extension and education, which highlights their acceptance of the need for community development and interaction as a part of their regular activities.

### ***IS3: Improvement in livelihood benefits to local people***

The villagers who were cultivating tea on the boundaries of the forest were given training to improve their productivity within the available land without expanding their cultivation extent. In addition, they were given advice on use of fertilizers and newly improved tea varieties to improve productivity.

Financial support was given through the revolving funds offered to CBOs as credits to enhance their tea cultivations or establish tea nurseries.

*“If I got 5kg of tea leaves in those days, now I take 10 kg of tea leaves. Now I know how to get the maximum productivity out of the limited land I have. When I get a support, when I get new cloned tea, also supplying proper guidance to increase productivity leads to increase of my income.”*

- Community FGD

Many livelihood activities were also supported by this project – through training and loans given to the CBO membership. This activity was considerably successful and is a strong driver for community participation in conservation activities.

*“Training was provided to get driving licenses. Many of those who took their drivers licenses received jobs at the Ceylon Transport Board and Ceylon Electricity Board as drivers. There were other trainings such as in bee keeping, beauty culture, bridal dressing, etc. Those who received sewing training now do sewing as self-employment.”*

- Community FGD

With improvements in facilities such as tourist centres and the creation of walking trails, etc. for nature-based tourism, the arrival of foreign and local tourists as well as school children has increased. Some CBO members were trained as Forest Tourist Guides to guide these tourists on such forest walks. In addition, a few people from communities adjacent to the tourist centres where the entrances to the forest are located, could earn an additional income through the provision of food and accommodation and by selling their local products to tourists.

*“Tourist guides were trained through the project. Many people in Koralegama requested tourist guide training. After this project only tourists started coming to Kanneliya. No one knew this place earlier. Some villagers started places to supply food and accommodation such as small hotels.”*

- Community FGD

The tourist-related facilities (i.e. visitor centres, guides, accommodation) have improved in both the project locations and are continuing to operate. In terms of the livelihood benefits of such activities, it is benefitting only a few members living closest to the entrances, due to access. The most widely spread benefits of the programmes relate to enhanced incomes from tea cultivation, the main economic activity in the buffer zone, with an acknowledged impact on preventing encroachment. The community members also state that similar training on livelihoods should continue periodically so that the next generation will also benefit and help to attract new members to the CBOs. With the limited funds available some activities such as English classes, linking to the tea extension services, assistance for home gardening is carried out.

## **Impact Drivers**

### ***ID1: The ownership of the project by the Forest Department***

The project objectives were very much in line with the objectives of the Forest Department, their work plans and policies. They were also very much at the forefront in developing this project. The process of development also included feedback from the regional staff. Hence although there was a project office and an project manager (an ex-forester) the project was absorbed into the regular work at the project sites. Additional support for the community mobilisation was also provided and the staff has been retained as extension officers.

It was administered and managed closely by the Forest Department staff and this helped to create ownership of the project. This also helped to bring about a change in their attitudes and collaboration with local communities for participatory forest management. In addition, the Forest Department has taken measures to integrate the project experience back into the Forest Department that takes place gradually overtime.

This experience has also been replicated in a few other projects in Sri Lanka, for instance through the AUSAID project and at Hambantota. The same model, more or less, has been used for the Protected Area Community Partnership Building component of the Protected Area Management and Wildlife Conservation project implemented by the Department of Wildlife Conservation, Sri Lanka.

## **Assumptions**

### ***A1: FD adopts community based forest management***

The period during which the project was designed and implemented was when community based management was considered as extremely important for sustainable use of environmental resources in developing countries. These were concepts being promoted internationally in the forestry sector. The Forest Department had been experimenting with this concept in other community forestry projects to manage woodlots, set up home gardens or for sustainable use of medicinal herbs (GED ID 95). Hence they did have previous experience in social forestry, but in this case the model was developed for conservation of protected forest areas. The model had been proposed in several management plans as a response to the 1995 forest policy and FSMP. Hence the FD was interested in piloting the proposed model. The drive for this project thus came from within the Forest Department there was good support and buy-in. It must be noted that some aspects of a co-management model where communities directly manage forest plots, or have legal rights to it (as is done in Nepal) was not envisioned in this project. Hence as stated in the terminal evaluation, the objectives of the project was thus reformulated mid-way, to forest management with community participation rather than co-management, on the basis that dependence on forests by Sri Lankan communities is different from countries likes Nepal and that previous efforts by the FD to give direct management to the communities did not generate community buy in.

**Table 4: Outcomes-impacts assessment findings for Strategy #1: Model Development**

Theory of Change Component	Qualitative Assessment	Rating
<p><b>Outcome 1:</b> Functioning model for forest conservation with cooperation between local community, FD and other stakeholders</p>	<ul style="list-style-type: none"> <li>▶ Identification of a functional participatory forest management model which has resulted in obtaining the collaboration for conservation by the community and has increased protection of the Forest, its resources and ecosystem services.</li> <li>▶ The Forest Department has accepted the model as a viable forest management approach. However, replication of the entire model in all wet zone conservation forests has been constrained due to lack of funds to establish micro-credit facilities and intense skills development training for livelihood benefits.</li> <li>▶ In some locations and projects (Ausaid) the entire model is being applied.</li> <li>▶ Regular interaction with communities is continuing</li> </ul>	<p><b>3</b></p>
<p><b>Assumption 1:</b>FD adopts community based forest management</p>	<ul style="list-style-type: none"> <li>▶ A lasting change in the attitudes of the FD from one of policing and applying the law to one where community participation in forest conservation is respected and valued.</li> <li>▶ Trained Extension officers to maintain relationships, carry out education and community based activities is mainstreamed into the structure.</li> <li>▶ A model that is seen more aligned to Sri Lanka, especially for management of protected areas, and in this case the management of wet zone forests with high biodiversity, has been accepted. (this is different from the definition of co-management and hence the wording was changed)</li> </ul>	<p><b>3</b></p>
<p><b>Impact Driver 1:</b>The ownership of the project by the Forest Department</p>	<ul style="list-style-type: none"> <li>▶ Full engagement of the Forest Department within the design, administration and management of the project has led to the integration of the project experience back into the Forest Department and hence into its future work.</li> </ul>	<p><b>3</b></p>
<p><b>Intermediate State 1:</b> Strengthening of institutional mechanisms for community participation in forest</p>	<ul style="list-style-type: none"> <li>▶ Though currently the impact of strengthening CBOs for forest conservation has deteriorated in a few places, its sustainability is satisfactory in most places. Forest Department officials have taken some steps to revive those non-active CBOs back to functioning level.</li> </ul>	<p><b>2</b></p>

conservation		
<b>Intermediate State 2:</b> Attitudinal change in Forest Department officials for improved community collaboration.	<ul style="list-style-type: none"> <li>▶ The project community mobilizers were absorbed into the Forest Department as Forest Extension officers and this has helped to continue their collaboration with the communities and to take forward the community involved participatory forest management concept.</li> <li>▶ Since the project ended the number of extension officers per area has decreased and they have expanded their activities to other areas. However communities feel that for greater dynamism the interaction must continue as before. This was not intended and some level of interaction does continue.</li> <li>▶ The concept of a more participatory management style has been internalised in the department.</li> </ul>	<b>3</b>
<b>Intermediate State 3:</b> Improvement in livelihood benefits to local people	<ul style="list-style-type: none"> <li>▶ Improved household income through enhancement of existing livelihoods and training/loans for alternate livelihoods.</li> <li>▶ The programmes for tea cultivation brought the widest benefits with regard to preventing encroachment. Some of the alternative income avenues such as driving, sewing have reduced the pressure to encroach. These training and livelihoods options were given based on the community request.</li> <li>▶ Additionally limited employment opportunities have been generated through the improvement of tourism through employment of guides from the community, sale of treacle and jaggery and accommodation.</li> <li>▶ The continuation and extension of these activities is seen as need by the community in order for the next generation to benefit and attract more members to the CBOs. Although the same intensity is not possible, funds are allocated for some training such as English classes and activities such as home gardening.</li> </ul>	<b>3</b>

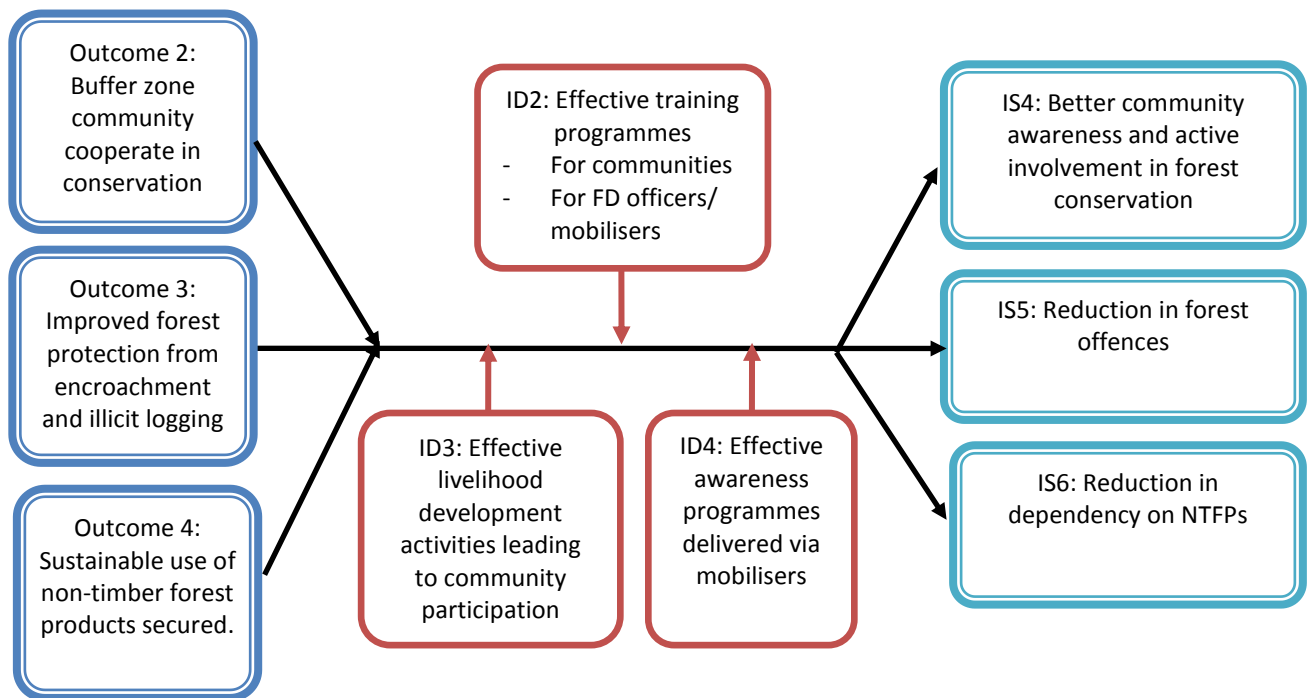
NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

#### 4.1.2 Strategy#2: Conservation Action

#### 4.1.3 Theory of Change Overview

The conservation action strategy focuses on delivering three intermediate states. These three intermediate states “Better community awareness and active involvement in forest conservation”, “Reduction in forest offences” and “Reduction in dependency on NTFPs” were important in achieving the conservation objectives of the project.

**Figure 3: Theory of Change for Strategy #2**



Project outcomes #2, #3 and #4 that were identified as important for delivering these three intermediate states are shown in Figure 2 above.

## **Outcome 2: Buffer zone community cooperated in conservation and Outcome 3: Improved forest protection from encroachment and illicit logging**

*Since these two outcomes are linked to each other and most of the activities are common, they have been discussed together.*

### **IS4: Better community awareness and active involvement in forest conservation**

The importance of promoting the buffer zone communities' awareness and understanding of biodiversity and other associated values and ecosystem functions of the wet zone forests was identified during the project designing stage. Therefore, it was necessary to create awareness and educate and sensitize these communities on the value of forests and the need for their conservation. As the next step, it was expected to ensure the active participation of the communities in forest conservation.

Through the community mobilization process, awareness of the importance of forest conservation and participatory forest management were created among buffer zone communities in the Kanneliya and South of Sinharaja forest reserves through awareness programmes such as awareness of forest values including environmental benefits and threats to forestry. Before the implementation of the project, increasing the understanding of the value of conservation and ecosystem functions was not carried out. In the community focus groups carried out as part of this review, the awareness programmes were ranked as the most important activity that helped to conserve the forest. The CBO members believe that this awareness still exists amongst them, even seven years after project completion. However, they are concerned that since this awareness creation is not continuing with the same level of intensity, the new generation is not made aware of the importance and value of forest conservation and this will impact the conservation effort. The elders in CBOs want activities that can interest and inform the younger generation whose expectations and willingness to participate require different types of activities which is the next challenge that the Forest department has to address.

*“Awareness creation is the most important aspect that helped conservation, since without this other things would not have been achieved. Earlier, people did not think about the damage to the environment. We became aware that this forest is one of the most important resources in the world.”*

- Community FGD

Because of improved community awareness of forest conservation as well as the relationship built between the communities and the Forest Department officials, together with the livelihood and community development activities, the Forest Department could obtain the active involvement of the communities for conservation activities such as boundary marking, live fence establishment, enrichment planting, weeding, etc. In addition, communities continue to actively provide information regarding illegal activities and forest offences to the Forest Department officials.

Although, during the post-project period their involvement in forest management activities is less, they do extend their support to Forest Department officials, when requested, even where the CBOs are not active.

*“Even though our CBO is not active now, we still extend our support and call forest officers when something happens inside the forest. Then they come to have a look.”*

- Community FGD

The improved relationship between the forest officers and the community as well as the presence of the CBOs in the villages are acting as a deterrent for illegal activities. This has allowed for a larger area of forest to be under vigilance which was not possible before, with only the forest officers responsible for monitoring illegal activities. This has been the major impact lasting beyond the life of the project.

### **ISS: Reduction in forest offences by local people**

The project expected to reduce threats such as encroachment, forest clearance, tree felling, etc. made by the surrounding villagers. It was planned to re-demarcate the boundaries and establish land markers in Kanneliya and the southern part of Sinharaja forest to avoid encroachments. With the aim of stopping these kinds of forest offences, it was expected to provide assistance for existing and alternative livelihoods and to make provision for greater mobility for the field staff to visit the forests and the buffer zone areas. The nature-based tourism projects were also intended to open up opportunities for local people and reduce forest offences or extractive practices.

During the pre-project period, encroachment of forest lands, mainly for expanding tea cultivation, was very common in the Kanneliya and southern part of the Sinharaja forests. Through this project, amicable re-demarcation of boundaries was carried out and land markers were established. In addition, the surrounding communities were educated on the importance of protecting the forest.

The decision to improve tea cultivation and assist communities in this area has had a positive effect on conservation through communities benefiting and in return being willing to take on a watch guard role. The demarcation of boundaries was another activity that helped to clearly mark the boundary, allowing better management of the forest. The process used, involving discussions with the villagers on what tea land they could keep and what would be absorbed into the forest, has also helped to improve relationships and reduce encroachment.

*“The villagers have a keen interest in conservation. If they heard at least the sound of cutting a tree, they make phone calls to us. There are almost no encroachments in Kanneliya. It is not possible to encroach the forest, after demarcation was completed. If somebody did, people inform us. Last month we sued a person in Koralegama who removed a border post and tried to encroach the forest for tea plantation. It was easier to catch the person, since we got the information from the people.”*

- Divisional Forest Officer



## Outcome 4: Sustainable use of non-timber forest products secured.

### **IS6: Reduced dependency on over extracted NTFPs**

During the design stage of the project, it was identified that many NTFPs are harvested in excess of sustainable levels in Kanneliya and South of Sinharaja forests. Therefore the project expected to create awareness, identify the types of NTFPs which can be harvested sustainably, to determine the level of harvesting that could be done and to issue permits for this purpose. Therefore the project expected to encourage the enhancement of NTFPs in the buffer zone and locate demonstration plots in state forestland and outside the buffer zone in order to reduce the dependency.

Although it was identified, during the project design stage, that the harvesting of many NTFPs is in excess of sustainable levels in Kanneliya and South of Sinharaja forests, this threat has already reduced to some extent since tea cultivation had become the main income source of the buffer zone communities, by the time the project was implemented. At the same time, the younger generation was not keen to engage in harvesting activities. Some practices, such as *kithul* tapping<sup>31</sup>, harvesting for medicinal herbs for non-commercial use, and gathering some seasonal food items still continues, but at a lesser scale and mainly by the older generation or the very poor. None the less, the destructive nature of the collection of NTFPs was reinforced through the awareness programmes and training was provided on sustainable extraction measures (especially for resin extraction), while also encouraging buffer zone communities to grow these products on their own lands (e.g.: *Kitul* palm trees –*Caryotaurens*).

*“After the project there was a huge change. In most cases, damage to the forest stopped because of the awareness. Also raids were conducted. Collecting resin does not happen now. Dorana oil is now not extracted. Now people do not know how to use them. Only 1 or 2 persons in the village knew how to extract dorana oil. Now they have become old.”*

- Community FGD

Interestingly, as described earlier, the livelihood options that were in demand by the community also tended to disconnect the link to the forest products. For example, loans and training were given in driving, dress making, beauty culture, computer training, English language, etc., hence, the need for sustainable use of forest products did not materialize as expected. The traditional links with the forest are changing and are no longer popular with the young and the types of training selected by the communities themselves show that their interest lie in livelihoods that wean them away from forest products. Hence, the disconnect has afforded a chance for conservation.

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<sup>31</sup> Extraction of inflorescence from the fishtail palm (*Caryotaurens*) for producing toddy, treacle, and jiggery

## **Impact Drivers**

### ***ID2: Effective training programmes for communities and FD officers/mobilisers***

Forest Department officials who were engaged with the project were given training in conservation and community involved participatory forest management that involved external experts brought in by the project as well as through the training programmes carried out by the Forest Department. Due to these training programmes, the Forest Department staff has become knowledgeable about the forests and are comfortable with working with communities. A training module on community mobilization and participatory management was developed and included in the curriculum for training of forest officers of the Sri Lanka Forestry Institute.

Communities were mobilized and they were also given trainings in forest conservation to encourage their participation in conservation. Apart from this, they were provided training on NTPF sustainable extraction, alternative income generation and improved income generation.

### ***ID3: Effective livelihood development activities leading to community participation***

The success of the livelihoods programme, especially the decision to assist the community to improve tea cultivation, went a long way in winning over the community. The training and the revolving funds were key reasons the community members stayed in the groups and continue to keep the groups active.

**Table 5: Outcomes-impacts assessment findings for Strategy #2: Conservation Actions**

Theory of Change Component	Qualitative Assessment	Rating
<p><b>Outcome 2:</b> Buffer zone community cooperate in the conservation</p> <p><b>Outcome 3:</b> Improved forest protection from encroachment and illicit logging</p> <p><b>Outcome 4:</b> Sustainable use of non-timber forest products secured.</p>	<ul style="list-style-type: none"> <li>▶ A reduction of threats (lasting beyond the life of the project) to the two forests resulting in better conservation status of ecosystems, habitats, species and other ecosystem services, resulting in increased Global environmental benefits.</li> <li>▶ Awareness creation, building relationships with forest officials and providing livelihood support have led to community cooperation in conservation activities. Even at present they have more or less the same collaboration with forest officials in conserving the forests.</li> <li>▶ Forest protection has improved and is continuing because of the project interventions for tea cultivation, the collaborative demarcating of boundaries and establishing more visible markers (concrete posts, live fences) as well as the active involvement of the community for vigilance.</li> <li>▶ The use of forest products is declining due to social changes in the communities and therefore extraction has reduced.</li> </ul>	<p><b>3</b></p>
<p><b>Impact Driver 2:</b> Effective training programmes</p> <ul style="list-style-type: none"> <li>- For communities</li> <li>- For officers</li> </ul>	<ul style="list-style-type: none"> <li>▶ Trainings in forest conservation, sustainable extraction of NTFPs and improving livelihoods were given to the communities. Some of the beneficiaries are still experiencing the benefits and they acknowledge that the training given for tea cultivation has improved their management of the cultivation and this has improved their yields.</li> <li>▶ A training module on community mobilization and participatory management was developed and included in the curriculum for training of forest officers of the Sri Lanka Forestry Institute. The Extensions officers trained in these methods use the experience in their work.</li> </ul>	<p><b>3</b></p>
<p><b>Impact Driver 3:</b> Effective livelihood development activities leading to community participation</p>	<ul style="list-style-type: none"> <li>▶ The success of the livelihoods programme, the revolving fund, the training, the support to start businesses and support for tea cultivation were the reasons the community members stayed in the groups and continue to extend their support. Communities are requesting further support – another project - for the new generation, in order to keep the momentum.</li> </ul>	<p><b>2</b></p>

<p><b>Intermediate State 4:</b> Better community awareness and active involvement in forest conservation</p>	<p>▶ community awareness and their involvement in forest conservation are being maintained at a satisfactory level, even seven years after the completion of the project with communities actively involved in the vigilance and also assisting the FD when requested. The communities state that similar programmes are needed for the next generation to keep up the same level of conservation. Some programmes are being done but understandably not with the same level of intensity as the project period.</p>	<p>Better <b>3</b></p>
<p><b>Intermediate State 5:</b>Reduction in forest offences by local people</p>	<p>▶ Incidents of forest offences have reduced through project interventions. Training to enhance income from tea and re-demarcation of boundaries and establishing land markers has helped to stop encroachments; people’s participation has also helped deter encroachment and logging; and alternate income generation and moving away of the younger generation from extracting NTFPs.</p>	<p><b>3</b></p>
<p>IS6: Reduction in dependency on over extracted NTFPs</p>	<p>▶ The use of NTFPs was over-estimated at the design stages and was later changed and given less emphasis. Activities such collection fuel-wood, <i>dorana</i> oil, <i>weniwal</i> (a medicinal vine), poaching are less frequent and the communities showed that their traditional links with the forest are changing as few use NTFPs in the same way. Hence most of the livelihoods requested were those that did not involve forest products. For some uses such as Kithul tapping that continue awareness was provided on non-destructive methods as well as planting the tree in their home gardens.</p>	<p><b>2</b></p>

NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

## 5. Overall Conclusions

Overall, the project has succeeded in contributing to conserve endemic and globally threatened species in the South of Sinharaja and Kanneliya forests with community participation. This ROTI assessment is based purely on the validation and assessment of the delivery of the theory of change modelled above, which has been developed through consultation with the project stakeholders, including communities.

A final consolidated rating of the project's progress towards impact is given in Table 6 below (using the scoring system given in Table 4 and 5 above). It provides an assessment of the extent to which the project's theoretical design is in line with the validated theory of change deemed necessary for delivering impact and the progress towards delivering the outcomes-impacts pathways.

**Table 6: Overall rating of project impact**

<b>Outcomes – Impact Assessment</b>	
<b>Strategy 1: Model Development</b>	<b>3</b>
<b>Strategy 2: Conservation Action</b>	<b>3</b>
<b>Overall project</b>	<b>3</b>

Improved awareness, better relationships and livelihood assistance have led to active involvement of the communities in management activities such as boundary marking, live fence establishment, enrichment planting, weeding, etc. The model has been accepted and practiced in Protected Areas Management and Wildlife Conservation project and Sri Lanka Australia Natural Resources Management Project (SLANRMP) with modifications to suit the ground situation. It has also led to the continued support for protection and law enforcement which is directly related to conservation of the forest and its resources. The support for tea cultivation along with the demarcation of boundaries has had the greatest impact on reducing encroachment. The improved relationship between forest officers and the community and the benefits from livelihood activities have resulted in greater vigilance that is a deterrent for illegal activities. This has allowed for a larger area of forest to be monitored and the vigilance has continued to this day. Hence, it can be stated that the project played an important role in complementing Sri Lankan efforts to conserve globally threatened species in the rainforests of the country.

## Annex 1: References

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4. Jayasuriya, A.H.M. & Abayawardana, S.D., 2008. Integrated Development Association, *A Study to Determine The Changes in The Biodiversity Values of Southern Sinharaja and Kanneliya Forests after The Implementation of GEF Medium Sized Project*. Integrated Development Association.
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8. Ministry of Agriculture, Lands and Forestry (MALF), 1995. Sri Lanka Forestry Sector Master Plan. Ministry of Agriculture, Lands and Forestry, Sri Lanka.

## Annex 2: Sites Visited

**March 13, 2013**

Kanneliya-Dediyagala-Nakiyadeniya Forest Complex area

Thawalama (Range Office, Forest Department), Galle District

- FGD with non-active CBO members

Name	Gender	Age	CBO
G.G. AjithPriyanka	Male		Panangala North
W.K. Prasanna	Male	35	Panangala North
W.K. Kanthi	Female	40	Panangala North
SomalathaHewawitharana	Female	49	Malhathaawa, Hiniduma
BanduSenanayake	Male	78	Malhathaawa, Hiniduma
K.A. Danawathi	Female	73	Hinduma North
U.G. Renuka	Female	44	Malhathawa, Hiniduma

- FGD with active CBO members

Name	Gender	Age	CBO
J.A. MangalikaAmaratunga	Female	47	Malgalla Forest Conservation Society
KanthiKarunarathna	Female	38	Kanneliya Protection Leaders, Thawalama
H. T. RenukaMalkanthi	Female	34	Malgalla Forest Conservation Society
L.L. Malani	Female	43	Malgalla Forest Conservation Society
G.H.D. Piyarathna	Male	52	Kanneliya Protection Leaders, Hingalgoda, Hiniduma
Neel Kaluarachchi	Male	31	Kanneliya Protection Leaders, Hingalgoda, Hiniduma
Keerthisenalhalawithana	Male	50	Kanneliya Protection Leaders, Hingalgoda, Hiniduma
N.W. Karunarathan	Male	65	Kanneliya Protection Leaders, Thawalama
P.P. Chandrika	Female	48	Kanneliya Protection Leaders, Thawalama

**March 14, 2013**

Sinharaja World Heritage Site

Neluwa (Madugata Temple), Galle District

- FGD with CBO members

Name	Gender	Age	CBO
GnanaKariyakarawana	Female	42	Society of Sinharaja Friends, Madugeta
M.G. Premadasa	Male	50	Society of Sinharaja Friends, Kosmulla
M.G. Premathilaka	Male	34	Society of Sinharaja Friends, Kosmulla
SamanPriyankaPathirana	Male	36	Society of Sinharaja Friends, Madugeta
N. Chandrani	Female	42	Society of Sinharaja Friends, Thambalagama
E.B.G. Sugathapala	Male	39	Society of Sinharaja Friends, Waarukandeniya
G.G. Chandradasa	Male	48	Society of Sinharaja Friends, Waarukandeniya

Deniyaya (Kiriwalegama Temple), Matara District

- FGD with CBO members

Name	Gender	Age	CBO
W. Nimalawathi	Female	52	Society of Sinharaja Friends, Dehigampala
K.G. NadeekaSandamali	Female	28	Society of Sinharaja Friends, Kiriwalagama
N. Thalapalage	Female	47	Society of Sinharaja Friends, Kiriwaldola
Y.G. Pathmananda	Male	42	Society of Sinharaja Friends, Dehigampola
W.SusilSanjeewa	Male	31	Society of Sinharaja Friends, Dehigampola
W. Priyanganie Silva	Female	32	Society of Sinharaja Friends, Dehigampola
W.M. Indrani	Female	42	Society of Sinharaja Friends, Dehigampola
W. Ramani	Female	43	Society of Sinharaja Friends, Dehigampola
SiriyaPanagoda	Female	41	Society of Sinharaja Friends, Dehigampola
R.L. SriyaniRathnayaka	Female	38	Society of Sinharaja Friends, Dehigampola
T.G. Wimalasena	Male	42	Society of Sinharaja Friends, Kiriwalagama
W.G. DilanChathuranga	Male	19	Society of Sinharaja Friends, Kiriwaldola
SarukkaliThakshilaDilrukshi	Female	23	Society of Sinharaja Friends, Kiriwaldola



**22 – 24 July and 11 – 13 August 2013**

Information was also collected and through the Man and Biosphere (MAB) Reserve Periodic Review in the Sinharaja World Heritage Site area

**March 15, 2013**

Divisional Forest Office – Matara District (Forest Department)

- KPI with Divisional Forest Officer - Matara

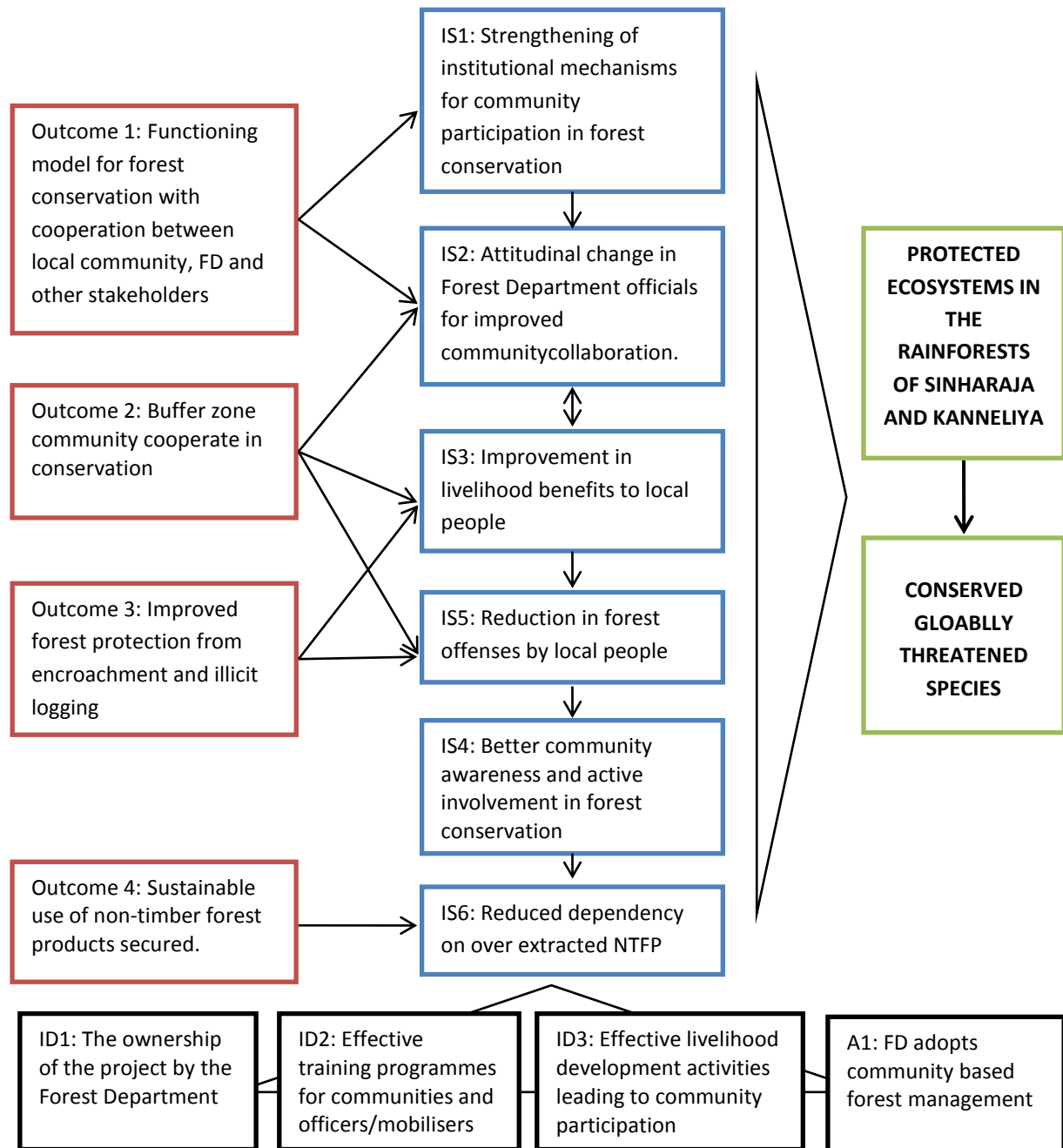
Divisional Forest Office – Galle District (Forest Department)

- KPI with Divisional Forest Officer – Galle
- KPI with Range Forest Officer - Galle

### Annex 3: People met

<b>Date</b>	<b>Name</b>	<b>Position</b>	<b>Organization</b>
2013/02/07	H.G. Gunawardena	Project Manager - Conservation of the Biodiversity in the Rain Forests	Forest Department
2013/02/07	Mohan Heenatigala	Assistant Conservator of Forests	Forest Department
2013/02/20	Padma Abeykoon	Director – Biodiversity Secretariat	Ministry of Environment
2013/03/13	M.H. Asitha De Silva	Additional Range officer - Kanneliya Range	Forest Department
2013/03/13	R.A. Dissanayake	Beat Forest officer - Kanneliya Range	Forest Department
2013/03/14	RasikaSasanka	Forest Extension Officer – Neluwa Range	Forest Department
2013/03/14	Sarath Chandra Ranaweera	Range Forest Officer – Deniyaya	Forest Department
2013/03/15	H.G. Wasantha	Divisional Forest Officer – Galle	Forest Department
2013/03/15	K.G. Sepala	Divisional Forest Officer – Matara	Forest Department
2013/03/15	UthsukaPrasanga	Range Forest Officer – Galle	Forest Department

## Annex 4: Schematic of Conservation of Biodiversity in the Rain Forests outcomes-impacts theory of change



**TECHNICAL DOCUMENT D:**  
**Review of Outcomes to Impact**  
**Protected Areas Management and Wildlife Conservation Project**  
**(GEF ID 878)**

## Acronyms

A	Assumptions
ADB	Asian Development Bank
ADF	Asian Development Fund
BCAP	Biodiversity Conservation Action Plan
BCS	Biodiversity Conservation Secretariat
CBD	Convention of Biological Diversity
CBO	Community Based Organization
DWLC	Department of Wildlife Conservation
FGD	Focus Group Discussion
FSP	Full Sized Project
GEF	Global Environmental Facility
ID	Impact Drivers
IS	Intermediate States
IUCN	International Union for Conservation of Nature
KPI	Key Person Interview
NWTC	National Wildlife Training Centre
PA	Protected Areas
PACF	Protected Area Conservation Fund
PACT	Protected Area Conservation Trust
PAM&WC	Protected Areas Management and Wildlife Conservation
PPA	Pilot Protected Areas
ROtI	Review of Outcome to Impact
TOC	Theory of Change

## 1. Introduction

As a part of the Joint GEF/Sri Lanka country portfolio evaluation, the review of “Protected Areas Management and Wildlife Conservation Project” (GEF ID 878) was carried out using Review of Outcome to Impact (ROtI) methodology, which was developed by the GEF Evaluation Office.

This Full Sized Project (FSP) was implemented between September 2001 and December 2008. The total budget of the project was \$ 34.7 million including \$12 million loan from Asian Development Bank’s (ADB) Asian Development Fund (ADF), \$10.1 million grant from the GEF, \$4.0 million grant from the Government of the Netherlands, \$7.7 million from the Government of Sri Lanka, and \$0.9 million from beneficiaries. It was implemented by the World Bank together with Asian Development Bank (ADB) and executed by the Department of Wildlife Conservation (DWLC) and the Ministry of Forestry and Environment of the government of Sri Lanka.

The Protected Areas Management and Wildlife Conservation Project (PAM&WCP) intended to assist the Government of Sri Lanka with conserving the country’s natural resources and preserving its wildlife. More specifically, the project expected to contribute to the protection of the country’s fauna and flora, stimulate nature based tourism and promote the development of a sustainable protected area management and wildlife conservation system for Sri Lanka. It also aimed at assisting in the establishment of a sustainable financing mechanism for wildlife conservation.

Following were the expected outcomes of the project;

- Enhanced institutional capacity of the Department of Wildlife Conservation (DWLC)
- Improved Management of Protected areas through Participatory Adaptive Management systems
- Community partnership for livelihoods and conservation established
- Improved collaborative conservation planning

The project was implemented in seven selected protected areas (PAs). They were Bundala, Udawalawe, Horton Plains, Peak Wilderness, Ritigala, Minneriya<sup>32</sup>, and Wasgomuwa.

At the end of the project the completion report rates the performance of the project as satisfactory (ADB, 2010). This current review expects to assess whether in time the successfully achieved outputs have actually contributed in achieving long-lasting and favourable environmental impact.

This ROtI assessment followed several steps. First the project documents were reviewed and a TOC was developed with the project stakeholders. To validate it and to discover the sustainability of the project benefits, key person interviews (KPIs) were done with the Department of Wildlife Conservation (DWLC) officials, consultants/ex-project officials and implementing agencies, and focus group discussions (FGDs) with buffer zone communities in Minneriya, and Wasgamuwa pilot protected areas (PPAs). Comparative data were also drawn from the Periodic Review of Man and Biosphere (MAB) Reserves in Sri Lanka, which replicated the ROtI data collection format for focus

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<sup>32</sup> Some implementation was also done in Kaudulla National Park that adjoins Minneriya.

group discussions at the Bundala Biosphere Reserve (BBR), Ritigala Strict Reserve and Kaudulla National Park and also gathered information from interviews with the Park Officials.

The report is structured according to the ROtI methodology, starting with the characterization of the intended project environmental impacts, or GEBs (section 2). The logical sequence of conditions (i.e. theory of change) deemed necessary to convert outcomes to impacts was then modelled (sections 3), followed by an assessment of the extent to which the outcomes-impacts pathways have been realized, which in turn provides an indirect measure of impact that is likely to be achieved over time (section 4). Section 5 provides a summary of the overall conclusions of the ROtI assessment.

## 2. The project's global environmental benefits

In Sri Lanka, protected areas (PAs) account for 9,700 square kilometres and it is 15 percent of the total land area. A separate Protected Area (PA) network was set up under the 1937 Fauna and Flora Protection Ordinance (FFPO), in order to conserve areas with significant wildlife biodiversity. Some of these PAs contain high endemism, including relict species, and some of the highest species richness per unit area in Asia. Hence they provide global benefits by maintaining endemic lineages, species, and higher taxa that would otherwise go extinct.

Out of the seven pilot protected areas (PPAs) selected for the project, Peak Wilderness PPA is cited as one of the most valuable conservation areas in Sri Lanka and is a part of the central highlands world heritage. Due to its geo-evolutionary history and topographic variation it has a large number of endemic fauna, with highest endemism among freshwater fish, amphibians and reptiles, while more than 50% of its woody plant species are endemic. Ritigala Strict Nature Reserve is an isolated mountain where a large number of plant species that are generally scattered in different climates and growing conditions can be found in a small area. It supports over 400 of plant species, 20% of them endemic, and three tree and shrub species known only from this site (*Coleus elongates*, *Dendrocalumus cinctus* and *Madhuca clavata*), more than 100 plant species are used in *ayurvedic* medicine. Although located in the Dry Zone, this forest has a unique vegetation type in the summits and upper slopes, including montane and sub-montane species of the wet zone. In Horton Plains PPA, over 50% woody plants are endemic and the vegetation includes wild relatives of cultivated pepper, guava, tobacco, and cardamom that offer vital germ plasm reserves. Horton Plains and Peak Wilderness PPAs are also part of the Central Highlands World Heritage site. The Bundala PPA is one of the six wetlands of international importance in Sri Lanka designated under the Ramsar Convention. This Park provides shelter for wide range of species including two endemic species, a toad (*Bufo atukoralei*) and a snake (*Xenochrophis asperrimus*) and nesting sites for all five of the threatened marine turtles found in Sri Lankan waters. Bundala is among the best sites to watch birds in Sri Lanka, with over 200 species recorded in the Park; its wetlands are famous for migratory birds. Wasgomuwa PPA lies in the central lowland and covers both dry and intermediate zones. The known fauna comprises 23 species of mammals, 163 species of birds (8 endemic), 35 reptiles (7 endemic), 15 amphibians, 17 freshwater fishes, and 52 butterflies (9 endemic). Minneriya contains a unique concentration of intact ecosystem types that support populations of most dry-zone mammals, including elephants, bear and leopards, while the lakes support a wide variety of waterfowl and at least 31 species of native fish. Udawalawe in the southern lowlands is located in the catchment area of the walawe reservoir. Much of the semi deciduous monsoon forest was

cleared for shifting cultivation while the northern areas some old growth vegetation can be found. The riverine stands in this area contain an endangered endemic tree *Hopea cordifolia*. The endemic gold civet is found here along with herds of migratory and resident elephants<sup>33</sup>.

DWLC was established in 1949 to take over responsibility (from the Forest Department) of the PA network. Long term park management planning commenced in the early 90s with the "Development of Wildlife Conservation and Protected Area Management" (GEF ID 352). The project under review was a follow on project to this one. At the time, the PAs and the services provided by them were not effectively protected due to weak institutional set up, lack of resources, inadequate managerial skills and technical capacity throughout the institution, and lack of cooperation between conservation agencies in order to provide more integrated coverage and protection. The project aimed to address these issues by providing support for human resource development, improving managerial systems and technical skills, and provision of infrastructure and equipment.

A considerable pressure on Sri Lanka's PAs has been generated by the high population density, levels of poverty and unemployment in the surrounding communities, and their dependence on subsistence agriculture. The project identified that effective PA management cannot take place in the long term without the involvement and support of the local communities. Therefore the community participation for conservation was promoted under the sustainable financing mechanism of the Protected Area Conservation Fund (PACF) that looked to support community livelihoods including nature based activities to serve a dual purpose of reducing the pressure on the forest through improved economic conditions for the surrounding communities.

### **3. PAM&WC Outcome to Impact Theory of Change**

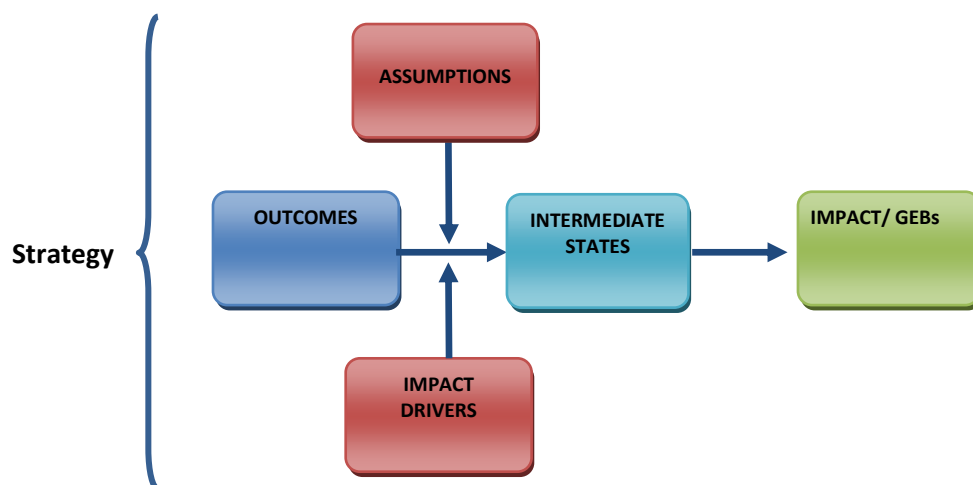
The theory of change of a project is the logical sequence of conditions and factors that are necessary to deliver the ultimate project impact. The basic project theory of change starts with activities and develops through delivery of outputs and achievement of expected outcomes at the end of implementation, i.e. through a means-ends hierarchy that ultimately puts in place the conditions to reach impact sometime after project completion. The GEF project terminal evaluations assess the basic theory of change as far as outcomes, but do not usually go far in assessing the crucial last step to impact. The ROTI assessment focuses on this last step and develops and assesses a detailed theory of change between outcomes and impacts, referred to as **outcomes-impacts pathways**, measured at least two years after project completion. Each outcomes-impacts pathway represents a specific strategy. Figure 1 below illustrates the key elements and relationships of the detailed theory of change between outcomes and impacts.

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<sup>33</sup> All data unless otherwise specified within the text is taken from the project document.



**Figure1: Generic theory of change for outcomes-impacts pathways**



The key ingredients in the outcomes-impacts pathways (or strategies) that are examined according to the ROTI methodology are intermediate states, impact drivers and assumptions, which are defined in table 1 below. Impact in terms of global environmental benefits can be achieved either through environmental threat/stress reduction or improvement in the environmental conservation status of the resource. If the project outcomes are assessed to be successfully delivered and the key ingredients of the theory of change between outcomes and impacts are in place, then it is reasonable to conclude that the barriers and threats to impact have been overcome, the environmental status has improved, and that consequently impact has or will be achieved, with time. In the evaluation the focus is on performance beyond the life of the project – therefore beyond outcomes to assess the progress made towards achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

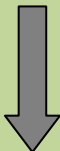
**Table 1: Definitions of theory of change elements in the outcomes-impacts pathways**

TOC terms	Definition
Intermediate States (IS)	These are the transitional conditions between the project’s outcomes and impacts that must be achieved in order to deliver the intended impacts
Impact Drivers (ID)	These are the significant factors that, if present, are expected to contribute to the ultimate realisation of project impacts and that are within the ability of the project to influence
Assumptions (A)	These are the significant factors that, if present, are expected to contribute to the ultimate realisation of project impacts, but that are largely beyond the power of the project to influence or address

The development of the PAM&WC outcomes-impacts theory of change was based on document review followed by validating it with the key informants and the buffer zone communities of the selected pilot protected areas. Due to disagreements on the objectives, modes and structures to be used in the project, the designs stage went through several revolutions. The TOC presented below was constructed based on the final logical framework, activities carried out based on the information

available, the impacts described in the project completion report and with the participation of stakeholders.

**Table 2: The PAM&WC outcomes-impact theory of change**

Project Strategies	Outcomes	Impact Drivers & Assumptions	Intermediate States	Impact
<b>STRATEGY #1</b> Capacity Development	<b>Outcome 1:</b> DWLC Institutional capacity enhanced	<b>A1:</b> Willingness of DWLC to accept the proposed structural changes  <b>A2:</b> Structural changes proposed for DWLC supported by the State administrative system	<b>IS1:</b> DWLC restructured with decentralized power and better legal coverage for management	<b>ENHANCED PROTECTED AREA MANAGEMENT AND BIODIVERSITY CONSERVATION IN SRI LANKA</b>   <b>PROTECTED ECOSYSTEMS WITH HIGH LEVELS OF SPECIES RICHNESS AND ENDEMICITY</b>
			<b>IS2:</b> Enhanced technical capacity of DWLC staff	
			<b>IS3:</b> Enhanced ecotourism capacity for DWLC staff	
			<b>IS4:</b> Strengthened wildlife biodiversity monitoring and evaluation of DWLC	
<b>STRATEGY #2</b> Protected Area Management	<b>Outcome 2:</b> Improved Management of Protected areas through Participatory Adaptive Management systems	<b>ID1:</b> Effective training and capacity building  <b>ID2:</b> Livelihood benefits incentivises participation in conservation  <b>ID3:</b> Facilities and infrastructure assists adaptive management  <b>A3:</b> Financial and technical support for DWLC available continuously	<b>IS5:</b> Area management plans prepared and mandated by law	
			<b>IS6:</b> Implemented adaptive management systems	
			<b>IS7:</b> Developed ecotourism products and services	
			<b>IS8:</b> Sustainable financing available for participatory community mobilization	
<b>STRATEGY #3</b> Community Partnership	<b>Outcome 3:</b> Building of community partnership for livelihoods and conservation	<b>ID4:</b> Better relationships between DWLC and communities  <b>A4:</b> DWLC's willingness, technical and financial support to continue community activities	<b>IS9:</b> Improved livelihoods of buffer zone communities	
			<b>IS10:</b> Addendum prepared for the National Biodiversity Conservation Action Plan	
<b>STRATEGY #4</b> Collaborative Conservation Planning	<b>Outcome 4:</b> Improved collaborative conservation planning	<b>A5:</b> Relevant Ministries and Departments will cooperate to put in place joint actions	<b>IS11:</b> Reviewed and enhanced protected area system	
			<b>IS12:</b> Prepared endangered species recovery plans	

#### 4. Assessment of achievement of the outcomes-impacts pathways

The assessment of achievement of the outcomes-impact pathways was done through review of documents, interviews with key persons and focus group discussions with the buffer zone communities of the selected pilot protected areas. The rating system used for the assessment is given in Table 4 below as per the ROTI Handbook, and is applied at the different levels of the Theory of Change; i.e. at the individual TOC element level (outcomes, impact drivers, assumptions and intermediate states) and at the overall project level.

**Table 3: Field ROTI Rating System**

Rating	Description
0	Not achieved
1	Poorly achieved
2	Partially achieved
3	Well achieved

The reporting starts off by providing a justification for why the identified intermediate state for the strategy is considered important in delivering ultimate impact. The theory of change for the strategy is then examined through its logical steps, firstly validating the extent to which the outcomes were achieved at project closure, followed by an assessment of the extent to which the impact drivers and assumptions were realized. The section concludes with an assessment of achievement of the intermediate state itself.

#### 4.1 Strategy 1: Capacity Development

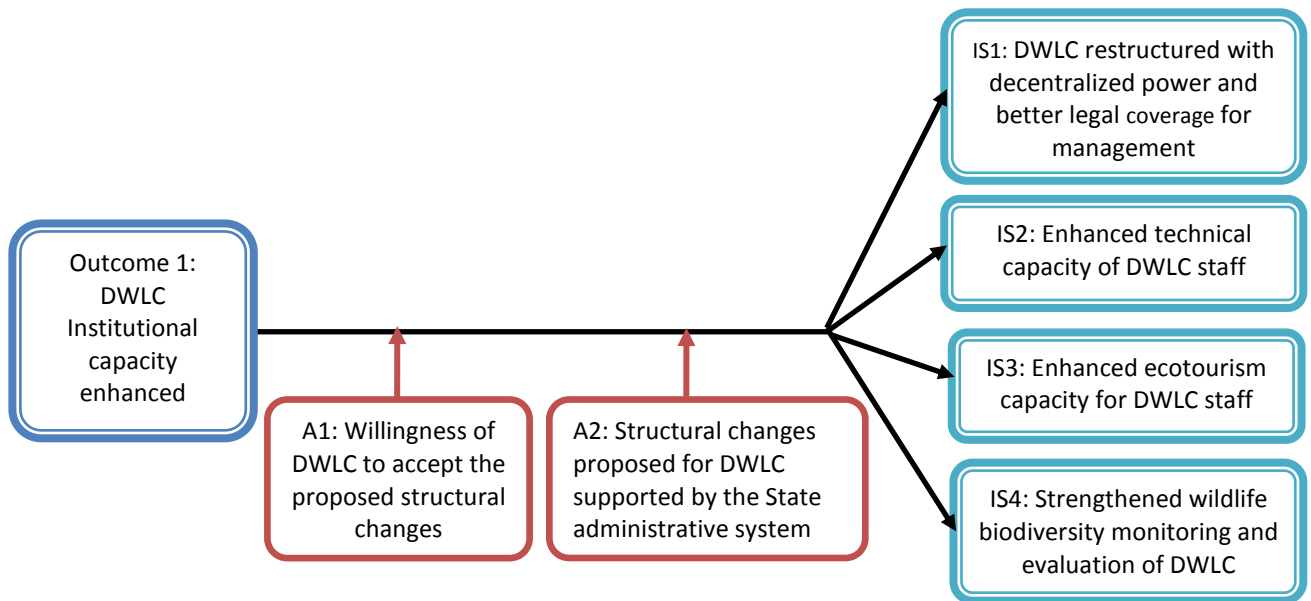
##### 4.1.1 Theory of Change Overview

The capacity development strategy focuses on delivering four intermediate states.

- i) DWLC restructured with decentralized powers better legal coverage for management
- ii) Enhanced technical capacity of DWLC staff
- iii) Enhanced ecotourism capacity of DWLC staff
- iv) Strengthened wildlife biodiversity monitoring and evaluation of DWLC

Altogether, it was aimed to upgrade institutional capacity of the DWLC – both in terms of operational systems and human capacity to improve the management of the PAs.

**Figure 2: Theory of Change for Strategy #1**



The project theory identified for delivering these four intermediate states is shown in Figure 2 above.

### **Outcome 1: DWLC Institutional capacity enhanced**

#### **Intermediate States**

##### ***IS1: DWLC restructured with decentralized power and better legal coverage for management***

The project expected to strengthen human resources, financial and administrative capacity (including infrastructure such as a building, communication equipment and a MIS), and transparent management system of DWLC in order to improve its credibility and effectiveness in managing wildlife. One of the key components was to include a decentralized system with regional offices that could make decisions about work objectives, resource needs, and work programmes with decentralized budgets to increase the efficiency of PA operations. The project also looked to improve the Fauna and Flora protection ordinance to enhance PA management. The ultimate aim of this was to improve the management structure and style to increase efficiency in a relatively new institution.

The new organizational structure was introduced, but the restructuring was delayed due to procedural and other institutional problems. Restructuring delays meant that interactions between DWLC counterpart staff with the consultants and experts which was expected to enhance the technical capacity of the Department took place in a much shorter space of time. These delays were partly due to internal resistance of some aspects of restructuring/cadre positions and the State Administrative Procedures for restructuring of Government Department, which needed approvals from Public Service Commission (PSC) and Scientific Service Commission (SSC). If there is staff

resistance and the proposals need some amendment, the procedure is such that the approval process has to restart all over again.

The restructuring created a range of new units and Deputy Directors at the head office. However as there was internal resistance to new recruits, the new positions were filled by internal staff on acting basis as a temporary measure. However, some of these positions are still vacant (i.e. Director of Protected Area Management) and some are still at acting basis (i.e. Deputy Director of Outreach). While the appointment of Regional Deputy Directors (RDD) was a main feature of the restructuring effort, and took place at the latter stages of the project, this too was carried out without adequate funds from the project to set-up staff in these offices. At the time of writing this report, the DWLC stated that the RDDs appointed have been promoted and moved to head office and the positions are now vacant. Hence there are only Assistant Directors at regional level, so that approvals have to revert back to the head office, which reduces the impact of the expected decentralization where decisions can be taken at the regional level. No indication was given on whether or not new RDDs will be appointed. Some stakeholders feel that there is no real commitment to the expected decentralization and that the RDDs have only added an extra layer of bureaucracy to field level financial management. In addition during the time of the project as well as after the DWLC has changed Ministries several times and this too was stated as a reason for the disruption in the smooth flow of operations.

It was also intended to upgrade the head office under this project. However the funding for it was suspended due to a court case filed on the land and so these renovations did not take place. After the completion of this project, government funds were used to set up a new office and the DWLC relocated to a new premises in 2010 as agreed at the time of project closure.

With a delayed start, annual work plans were formulated and accounting procedures were established. The borrowers' project completion report states that the accounting has been very good. A communication network was established to increase the efficiency of management, but field work indicated that some are not functioning in some parks and the equipment is not maintained. Some activities such as budgets and tourism figures are computerized and have helped to improve efficiency and these activities have continued. However, it is not a system where the head office and PPAs are connected but one where the information is manually given to the head office and entered into a computerized system.

A new DWLC website was developed which is currently functioning and a facebook page has also been developed and updated with recent activities. Other informational magazines and leaflets are printed. When the project was being implemented 25 research projects were undertaken and some findings have been used for PA management. According to the DWLC annual performance reports, the 2011 and 2012 research projects by the staff, sometimes in collaboration with others, does take place still but at a smaller scale than at project closure. In 2011, 12 individual projects and 4 joint projects are reported and in 2012, nine projects are mentioned.

### ***IS2: Enhanced technical capacity of DWLC staff***

To provide technical capacity for the DWLC staff, the project expected to provide technical trainings in areas such as ecology and habitat management, communications, enforcement, conflict resolution, GIS, remote sensing, etc. in order to improve the technical knowledge and put in place a professional/qualified staff that was identified as lacking.

The completion report states that 543 oversees trainings including 2 post graduate degrees, 5 diplomas, short term trainings for 46 officers and study tours for 490 officers. Regarding the local trainings, 7 DWLC and Biodiversity Secretariat staff received post graduate degrees and large number of DWLC officers, other government officers, school children and community members around buffer zone parks received training in terms of short term trainings, workshops and awareness programmes.

Some of the external trainers, consultants used in this project have been acknowledged to have enhanced capacity and is seen as a positive contributor to building this capacity.

The National Wildlife Training Centre (NWTC) was renovated and its curricula were revised including new concepts introduced through the project (including ecotourism). Regular programmes are held and training is still carried out with budget allocations.

The training programmes that have integrated components developed in this project are a regular feature in the department activities. In 2012 DWLC annual report to the parliament states that training of 250 new recruits, 2 wildlife certification courses at junior and senior levels, Tamil language skills course for 25 officers, and 2 post graduate opportunities. Similar efforts are reported in 2011 with budget allocations. Hence continuity of the programmes and the focus on staff development can be seen.

There is acknowledgement that the staff's technical capacity and understanding of wildlife management on an individual level was collectively increased at project closure, with enhanced professional skill levels of the institution. Stakeholders, however, state that use of skills so provided (and hence impact) tends to vary with individual attitudes, leadership position and location (i.e. whether based at head office or at the park level). Also some trained personal are not in positions that can use the training. For example, some PPAs with visitor services and outreach activities no longer have the trained offices. Hence it can be stated that the training has improved capacity but may not be adequate for desired impact over time.

### ***IS3: Enhanced ecotourism capacity for DWLC staff***

The project will support capacity building in DWLC to assist in the future development of ecotourism in Sri Lanka. At the time this was seen as a new feature that could enhance the management of the park through visitor awareness. Additional capacity will be achieved through establishing incremental staff positions, training, inter-sectoral workshops, and technical assistance.

Visitor Services and Ecotourism (VSE) officers were trained and assigned to the newly created Park visitor centres where visitor information and exhibits were displayed. With the aim of building DWLC staff capacity on ecotourism, study visits were conducted to Nepal, Philippines and Malaysia.

Visitor surveys were conducted and findings were used for the VSE plans. The VSE instructions have been incorporated into the National Wildlife Training Centre curriculum. Park entry fees have been revised after reviewing pricing structure. VSE still continues to be a feature in the institutional working structure and training programme. However, it is not clear whether VSE in these parks is getting the same attention at project closure, as some PPAs no longer have a trained VSE officers. Although the visitor centres provided are attractive, some have imposed a heavy burden of upkeep on the DWLC due to problems of building design. The value of this training in terms of the ability of the VSE officers to improve the visitor awareness may not be as expected as at project closure.

***IS4: Strengthened wildlife biodiversity monitoring and evaluation of DWLC***

Under this, it was expected to strengthen DWLC's capacity to systematically monitor biodiversity in the protected areas under its mandate as an important step towards managing the wildlife.

A biodiversity baseline survey was undertaken in seven pilot protected areas to assess the status of biodiversity by assigned Technical Assistance (TA) consultants. Together with DWLC officials, Ministry of Environment officials, academics and International Union for Conservation of Nature (IUCN) members, an advisory committee was established.

For all the pilot protected areas, the biodiversity survey and habitat maps were completed by early 2008. However due to delays in commencing the survey (due to public concern and need to change the procedures), the initial plan to repeat biodiversity surveys every 3 years did not take place during the project time frame. These initial Biodiversity Baseline Surveys are available on the department website. The use of the documents for monitoring progress and planning is not clear. The 2011 DWLC Annual report to the parliament mentions that the surveys are being continued but this was not confirmed in the interviews carried out and that further work has not been possible due to lack of funds.

**Assumptions**

***A1: Willingness of DWLC to accept the proposed structural changes***

Resistance to this project by staff due to lack of buy-in to the project was a major constraint at the initial stages - but this appears to be partly due to design errors in the project and lack of consultation with staff during project design. The delay in commencing most of the training programmes may also have affected staff buy-in but this was addressed later during the project.

The project sought to create structural changes in the department by changing the cadre positions. While some of the changes were accepted, others met with several problems. Firstly, there was resistance to external recruitment of qualified staff for the new posts, by some categories of internal staff who saw this as impeding their promotional prospects. Secondly, even several years after project closure, some positions of Deputy Directors (DD) continue to be on an acting basis, while some DD positions remain vacant (i.e. Protected Areas Management). Further project staff trained as community mobilisers and expected to be absorbed into the Department to strengthen capacity in this sphere did not materialize despite strong efforts to absorb trained personnel. Similarly the transfer of trained VSE and community outreach officers as per departmental procedures from the PPAs where their presence seems vital to continue the outcomes of the projects has also reduced

long term impact. The establishment of RDDs which was an important aim of the re-structuring process is not in place at present. While this precluded the expected decentralization, there has been notable delegation of financial and management authority to the Deputy Directors in the Head Office who are now responsible to ensure effective use of the allocated funds. The DWLC has also adopted a new improved accounting system that is of vital importance for effective management and can be viewed as change in the right direction.

***A2: Structural changes proposed for DWLC supported by the State administrative system***

Agreement on institutional reforms and recruitment were also protracted because the restructuring agreed upon through a consultative process via the project, was changed by other institutions (Public Service Commission (PSC), Scientific Services Board (SSB) that had to approve the reforms. This led to requests for redress by affected staff members. Changes made in this regard had to be re-submitted for approval by the PSC and the SSB which further delayed submission of the proposed institutional reform structure to the Cabinet. The complex procedure involved in filling key posts externally had not been factored into the project's design, although it was known at the project appraisal stage that DWLC had insufficient staff with the relevant experience and qualifications.<sup>34</sup> Additionally the changing of the law, which was expected in the first year of the project took 3 years due to procedural issues. Hence this assumption implies that the issues of state process and procedures were not given due consideration in the project design.

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<sup>34</sup> A DD post requires ten years of experience in an AD post plus a post graduate qualification



**Table 4: Outcomes-impacts assessment findings for Strategy #1: Capacity Development**

Theory of Change Component	Qualitative Assessment	Rating
<p><b>Outcome 1:</b> DWLC Institutional capacity enhanced</p>	<ul style="list-style-type: none"> <li>▶ Institutional strengthening of the DWLC has provided a more conducive base for future activities pertaining to national wildlife conservation. The project has helped to bring a degree of professionalism to the cadre, with delegation and management of duties at the top to qualified staff and upgrading of physical infrastructure and accounting processes.</li> <li>▶ However in some areas structural changes such as decentralisation and assigning Regional Directors (RDs) have not been used as well to reduce the administrative process of needing approvals from head office. At the time of writing this report the RDs positions were vacant</li> <li>▶ While the trained staff has increased there is also a stakeholders, state that use of skills vary with individual attitudes, leadership position and location, hence reducing overall impact.</li> <li>▶ Overall long term impacts fall somewhat short of project expectations.</li> </ul>	<p><b>2</b></p>
<p><b>A1:</b>Willingness of DWLC to accept the proposed changes</p>	<ul style="list-style-type: none"> <li>▶ The initial lack of participation and buy-in by the staff seems to have carried over, resulting in some activities remaining incomplete (i.e. filling key positions).</li> <li>▶ The DWLC has also moved Ministries several times and therefore changes in leadership is also disrupting the process</li> </ul>	<p><b>1</b></p>
<p><b>A2:</b> Structural changes supported by the State administrative system</p>	<ul style="list-style-type: none"> <li>▶ The time needed and complex nature of the state protocol and procedures to put in place legal or structural changes was not fully appreciated into the project design that has carried through the project.</li> </ul>	<p><b>1</b></p>
<p><b>IS1:</b>DWLC restructured with decentralized power and better legal coverage for management</p>	<ul style="list-style-type: none"> <li>▶ Restructuring delays meant that interactions between DWLC counterparts staff with the consultants and experts took place in a short space of time reducing the final impact.</li> <li>▶ Some of the positions created still remain vacant while others still have staff on acting basis indicating that permanent change has not happened.</li> <li>▶ Established decentralization process did not achieve the levels expected.</li> <li>▶ More powers through the legal process for protected area management has been established as expected.</li> </ul>	<p><b>1</b></p>
<p><b>IS2:</b> Enhanced technical capacity of DWLC staff</p>	<ul style="list-style-type: none"> <li>▶ Wide range of trainings was provided for all levels of DWLC staff. The National Wildlife Training Centre (NWTTC) was renovated and its curricula were revised including new concepts</li> </ul>	<p><b>2</b></p>

	<p>introduced through the project and trainees are continuously benefiting from it.</p> <ul style="list-style-type: none"> <li>▶ Increasing staff technical capacity is effective, since most of them are retained within the institution. However this is mostly effective at an individual level, with some officers using this knowledge to improve management of the parks.</li> </ul>	
<b>IS3:</b> Enhanced ecotourism capacity for DWLC staff	<ul style="list-style-type: none"> <li>▶ This was a new area for the DWLC and the Project has supported to build capacity for the future development of ecotourism in Sri Lanka. The visitor services and ecotourism (VSE) instructions have been incorporated in to the National Wildlife Training Centre (NWTC) curriculum and it will improve the ecotourism capacity of future DWLC staff.</li> <li>▶ The use of trained VSE officers to carry out the tasks is not found in all the parks.</li> </ul>	<b>1</b>
<b>IS4:</b> Strengthened wildlife biodiversity monitoring and evaluation of DWLC	<ul style="list-style-type: none"> <li>▶ The biodiversity survey and habitat maps were completed by early 2008. However due to project delays, the initial plan to repeat biodiversity surveys in every 3 years was dropped.</li> <li>▶ And now there is no initiative to continue BBS as envisaged by the project to monitor the management of the PPAs. So while it is valuable to have a baseline there is danger that this may become a one -off activity.</li> </ul>	<b>0</b>

NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

## 4.2 Strategy 2: Protected Area Management

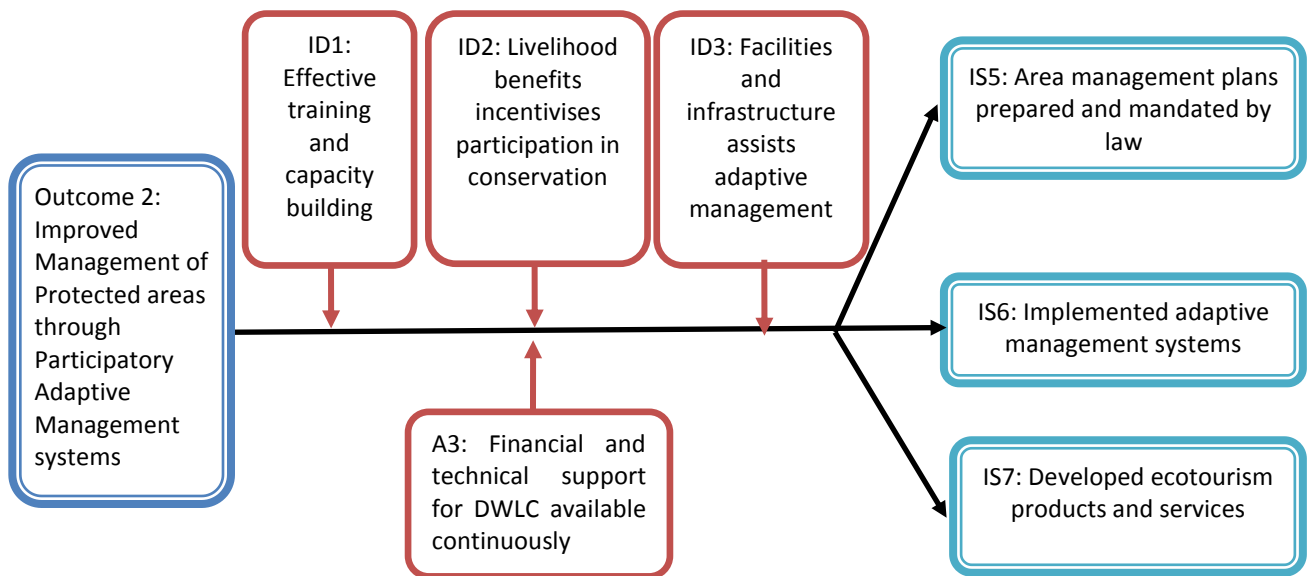
### 4.2.1 Theory of Change Overview

The protected area management strategy focuses on delivering four intermediate states.

- i) Area management plans prepared and mandated by law
- ii) Implemented adaptive management systems
- iii) Developed ecotourism products and services

These three intermediate states were important to achieve the protected area management strategy of the project.

**Figure 3: Theory of Change for Strategy #2**



The project outcome that was identified as important for delivering these four intermediate states is shown in Figure 2 above.

## **Outcome 2: Improved Management of Protected areas through Participatory Adaptive Management systems**

### **Intermediate States**

#### ***IS5: Area management plans prepared and mandated by law***

It was expected to continue to base protected area management through the application of management plans and that it will be done through a multi-stakeholder process for reviewing the existing protected area management plans to establish priorities and work programmes.

During the project some existing management plans were revised and others that did not have management plans prepared management plans to establish priorities and work programmes. In the project this was done by the existing staff with assistance from the consultants with the view to build up a core group of staff who will be able to revise the management plans periodically (earlier these plans were made by external staff). This has been done with stakeholder consultation. The plans are being used to create a rolling three year work plan with follow up for necessary updates. Guidelines have been prepared to extend planning to other protected areas as well. The World Bank also reported that when parks were asked to submit proposals for proposed project the Parks responded using the structure of the management plans. While after the project there has not been a complete revision of the management plans. Very recently (September 2013) some parks reported that an initiative to revise the management plans has been started by the Head-office.

In general, the updating and use of management plans is not optimal, even though preparing a management plan for each protected area under the DWLC is a gazetted activity as per the 2009 amendment to the Fauna and Flora Ordinance prepared under this project. The budgetary allocations happen annually and even though each park may prioritize based on their plans and needs, these are then amalgamated into regional plans. The eventually budget allocations are made not based on each park but the units set up at the head office such as natural resource management, protection and law enforcement, wildlife health, elephant conservation etc. As such, the requirements for each park may not match the funds it receives, making it difficult to implement the management plan holistically.

#### ***IS6: Implemented adaptive management systems***

After revising the protected area management plans, the proposal of the project was to design the activities to institutionalize the implementation of adaptive management approaches to strategic threats at each of the pilot site.

Adaptive management experiments have been devised for key issues which were specific to each pilot protected area. The activities carried out under this were electric fencing, habitat enrichment, water source development, maintenance of grasslands, live fencing, etc. By the time of project closure, invasive species were removed from over 7,841 hectares of pilot protected areas by contracting CBOs. Removal of invasive species has continued even after the project period in several pilot protected areas

with CBOs, private contractors as well as with sponsorship from private sector. However habitat enrichment does take place but varied within parks. In terms electric fences erected with the support of the CBOs show varied maintenance levels. 315 km of electric fences were constructed to reduce human elephant conflict. 195 km of this was done by the contractors and 120 km was done by the CBOs under protected area conservation trust. Some are extremely well maintained and others have fallen into disrepair giving rise to the human elephant conflict. The DWLC also continues to have some allocations to maintain these fences. One of the other benefits of the well-functioning electric fences is that it has separated villages and protected areas and has decreased the encroachment into protected areas.

In addition to the electric fences, live fences have been established along the electric fence using plants such as bougainvillea, lime, *hana* to control elephants entering in to the villages. This has been done with community participation. Earlier villagers who involved in establishing live fences were paid for their labour and they were established inner boundaries of the protected areas. However currently in some protected areas, they are given lime plants free by the DWLC and they have to establish them as live fence outer boundaries of the protected areas. They are responsible for maintenance of it and they are benefiting by harvesting the yield.

*“It was expected to make a live fence, using lime, orange and hana plants. Because of the thorns, the elephants do not come closer to those trees. It was also simultaneously expected that the income receiving from lime cultivation could be earned by the villagers.”*

- Community FGD

Under adaptive management 347 km of fire lines were cleared to reduce fire hazards and in some parks indications of continuing this activity was mentioned. In addition boundary surveys and demarcation was done following a participatory process with local people in all pilot protected areas covering 627km this has helped to reduce encroachment and conflicts in many areas.

#### **IS7: Developed ecotourism products and services**

Raising the capabilities of DWLC staff, enhancing the quality of the visitor experience, increasing the involvement and capabilities of other stakeholders in the provision of ecotourism opportunities and increasing local opportunities for benefit sharing without consumption of park resources were the designed activities under this component to develop ecotourism products and services. Also it was expected to develop a visitor services and ecotourism plan for each pilot protected area in a participatory manner.

The visitor services and ecotourism plans for each pilot protected area have been formed and implemented within the project period. Under those plans, visitor centres have been established in each pilot protected area with information displays. To raise the capabilities of DWLC staff in ecotourism and visitor serves, several overseas training opportunities have been provided to them through the project. A dedicated officer for VSE also has been appointed for each visitor centre. These resources are being used to inform visitors about the protected area as well as to conduct awareness programmes for school children, but the use of visitor centre depends on visitors’ (local and foreign tourist) keenness. After

project closure most of the trained as officers dedicated to VSE have been transferred to other protected areas. Also in terms of maintaining these facilities, while in some parks they are well maintained, with functioning displays, toilets and other in some parks design faults have led to less than optimal use of these centres. Maintenance is found to be difficult.

However benefits of improvements in ecotourism products and services haven't transferred much to the bordering communities of the pilot protected areas. Only a few opportunities for volunteer trackers and jeep drivers have been created for communities adjacent to the park. Communities say that it is outsiders who own many of the hotels and jeep/safari owners who benefit the most while only a few local people from the buffer zone areas are involved. Hence a key component of ecotourism where communities also benefit from the tourism activities seems to be lacking. The ecotourism related activities were much more focused on staff capacity and infrastructure improvements for the park.

*“When it comes to tourism, the people in the village get almost nothing. We can't have a safari vehicle as we have to pay Rs.50,000 to the company in charge. The majority of the safari jeep owners are from Matale, Hiriwadunna etc. They are the people who benefit. We have participated to conserve the forest, we have stopped cutting trees, killing animals, reduced income sources that harm the forest, but we don't get a benefit [from tourism activities].*

- Community FGD

## **Impact Drivers**

### ***ID1: Effective training and capacity building***

NOTE: This impact driver is relevant to both outcome 2 and 3 but is reported here.

Valuable training and capacity building opportunities were provided for the DWLC staff through training, exposure visits, working with consultants and experts both foreign and local, degrees, with the aim of enhancing DWLC's institutional capacity for protected area management through skills enhancement based on an identified need. Different training opportunities were provided for officers in different levels while also allowing for new trained positions such as Visitor Services and Ecotourism (VSE) Officers. The development of management plans was done by the officers in the respective parks and hence the capacity to develop the plan was created and can be seen in their ability to prepare similar plans for other projects – as reported by the World Bank. While the capacity developed in terms of community mobilization and group dynamics were used to set up the livelihoods component but as this cadre was not hired the training benefits have been lost to the department. Although there were initial delays for the training programmes to commence it is seen a motivation that provided personal growth opportunities. Some individuals continuing to use to the training to improve the Parks at both at the headquarters and local level is acknowledged by stakeholders. This can be deemed overall as one of the most positive driver of the project. The transferring of technical ability and knowledge of some of the external consultants was acknowledged as a contributing factor for the improvement in skills among DWLC staff. Training is still a feature in the regular activities of the department.

### **ID2: Livelihood benefits incentivizes participation in conservation**

Many of the adaptive management activities (i.e. erecting and maintaining electric fences, removal of alien invasive species) required community participation. Support for these activities were possible due to the livelihood benefits offered to the project reviewed under outcome 3. Community participation was promoted under the sustainable financing mechanism of the Protected Area Conservation Fund (PACF) and the activities, as well as commitment of both the project and DWLC outreach staff, played a vital role during to enlist the support of the communities during project duration. The livelihood component that had direct benefits to individuals and to the community at large in terms of income and wellbeing were incentives used to solicit community participation in conservation. Due to these benefits and in some cases with the continuation of the CBOs and revolving fund, the willingness to support the DWLC still remains – albeit with less active involvement and reduced membership. Due to greatly reduced interactions with the DWLC resulting from the transfer of the 15 trained outreach officers in the DWLC to other areas as per regular institutional practice, in addition to the lack of social mobilisers employed during the project, the community outreach activities have greatly lost momentum and its effectiveness as a driver has reduced. This is perceived by the community as the cause of the restart of illegal activities such as hunting. Commitment to this type of community based activities is also not a priority for the DWLC at present and the model is not replicated in other parks by the DWLC.

### **ID3: Facilities and infrastructure assists adaptive management**

Improvements of management of pilot protected areas were facilitated by providing infrastructure facilities such as office amenities, vehicles, communication systems, improved roads and water supplies.

The facilities provided through the project for the pilot protected areas were useful for better management of the parks. However during the post-project period, some of them have become unusable due to lack of funding for operation and maintenance. Some of the structures which had been built by the project in the pilot protected areas are not suitable for the location and some are difficult to maintain and some are not necessary for management of the pilot protected areas. Some of the staff quarters are also difficult to maintain and are not in use.

*“Road network inside the park, buildings, and electric fences have been constructed by the project. Also office equipment, furniture etc. have been received through the project. However some buildings have been constructed unnecessarily. We don’t use some of the buildings for any purpose. Vehicles and machines to maintain the park have been given by the project. But we cannot use them since we don’t get fuel to operate them.”*

- Park warden of a Pilot Protected Area

*“The visitor centre has been built in 2005. After that it has not been maintained properly. It is difficult to maintain even this office. Due to the design of the buildings, it is hard to protect these. In the visitor centre the rain beats in from one side to another and the pillars and railings are rotting.”*

- Park warden of a Pilot Protected Area

*“Some aspects of the design structures are not suitable for national parks. There are bungalows which are wide open and the animals can go inside. Some bungalows are too big and it is really difficult to maintain them.”*

- Former official of the PAM & WC project

## **Assumptions**

### ***A3: Financial and technical support for DWLC available continuously***

Although Parks are managing with less financial resources than during the project, budgetary allocations are provided for the continuation of the adaptive management activities and for some of the most pressing maintenance of equipment and infrastructure. However allocations are not sufficient to meet all the needs identified by the parks. Though external technical support is not available in the same manner as during the project, they are managing with technical resources within the Department and other externals resource people via various wildlife experts and groups with whom the Department has built relationships.



**Table 5: Outcomes-impacts assessment findings for Strategy #2: Protected Area Management**

Theory of Change Component	Qualitative Assessment	Rating
<p><b>Outcome 2:</b> Improved Management of Protected areas through Participatory Adaptive Management systems</p>	<ul style="list-style-type: none"> <li>▶ The project supported adaptive management programmes that addressed strategic threats and opportunities at each PPA. The Park Wardens are using the management plans and have capacity to revise them. However due to budgetary restrictions and how the budgetary allocations are made for various activities it cannot be holistically implemented. Hence it is not at the expected optimal implementation level.</li> <li>▶ Continuation of adaptive management also takes place at various levels in the Parks (i.e. electric fences, invasive species removal, habitat enrichment, etc.).</li> <li>▶ Encroachment and illegal activities by the buffer zone have reduced considerably</li> </ul>	<p style="text-align: center;"><b>2</b></p>
<p><b>ID1:</b> Effective training and capacity building</p>	<ul style="list-style-type: none"> <li>▶ The training have to some extent improved skills and motivation to carry out duties to some extent.</li> </ul>	<p style="text-align: center;"><b>2</b></p>
<p><b>ID2:</b> Livelihood benefits incentivises participation in conservation</p>	<ul style="list-style-type: none"> <li>▶ Community participation was a driver that contributed to the success of some of the conservation and management activities. Livelihood development was promoted under the sustainable financing mechanism of the Protected Area Conservation Fund (PACF). Even now communities continue to participate in the CBOs, though diminished compared to the project period. The alternative livelihoods and training has helped to improve relationships with the park officials and also to provide alternatives to using forest products.</li> </ul>	<p style="text-align: center;"><b>2</b></p>
<p><b>ID3:</b> Facilities and infrastructure assists adaptive management</p>	<ul style="list-style-type: none"> <li>▶ The facilities provided through the project for the PPAs were useful for better management of the parks (i.e. vehicles).</li> <li>▶ However design of some structures is not appropriate and has created a burden on the DWLC for maintenance. Some buildings are not under- used. Some machinery and equipment are unusable due to lack of funds for maintenance during the post-project period.</li> </ul>	<p style="text-align: center;"><b>2</b></p>
<p><b>A3:</b> Financial and technical support for DWLC available</p>	<ul style="list-style-type: none"> <li>▶ Although parks are managing with less financial resources than during the project, budgetary allocations are provided for the continuation of the adaptive management activities and for some of the most pressing maintenance of equipment and infrastructure.</li> <li>▶ Though external technical support is not available in the same manner as during the project, DWLC has technical</li> </ul>	<p style="text-align: center;"><b>2</b></p>

continuously	resources within the Department and other external resource people via various wildlife experts and groups with whom the Department has built relationships.	
<b>IS5:</b> Area management plans prepared and mandated by law	<ul style="list-style-type: none"> <li>▶ Management plans have been done for all the pilot parks with internal staff assisted by consultants. The capacity to prepare management plans now exists to meet the legal requirement of management plans for all protected areas managed by the DWLC. The plans have not been revised up to now but there is a recent move to start the revision of these plans.</li> <li>▶ The manner in which budget decisions are made centrally through the different units of the DWLC restricts the holistic implementation of these plans, and only some activities get priority and institutional funding.</li> </ul>	<b>2</b>
<b>IS6:</b> Implemented adaptive management systems	<ul style="list-style-type: none"> <li>▶ Establishment of electric fences, removal of invasive species, and clearing of fire lines were done successfully with some participation of communities. These activities are a part of the regular management of the park however activities continue at a lower scale compared to the project period.</li> </ul>	<b>2</b>
<b>IS7:</b> Developed ecotourism products and services	<ul style="list-style-type: none"> <li>▶ The visitor services and ecotourism plans were formulated and structures put in place.</li> <li>▶ Issues with maintenance and suitability of the structures in some of the sites have been raised.</li> <li>▶ During the post-project period, most of the officers dedicated to ecotourism have been transferred and not replaced hence discontinuing some of the focus on the issue.</li> <li>▶ Use of visitor centres, and value of awareness raising to change behaviour is not clear</li> <li>▶ Benefits of ecotourism through tourism initiatives have not transferred adequately to the bordering communities of the PPAs.</li> </ul>	<b>1</b>

NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

### 4.3 Strategy 3: Community Participation

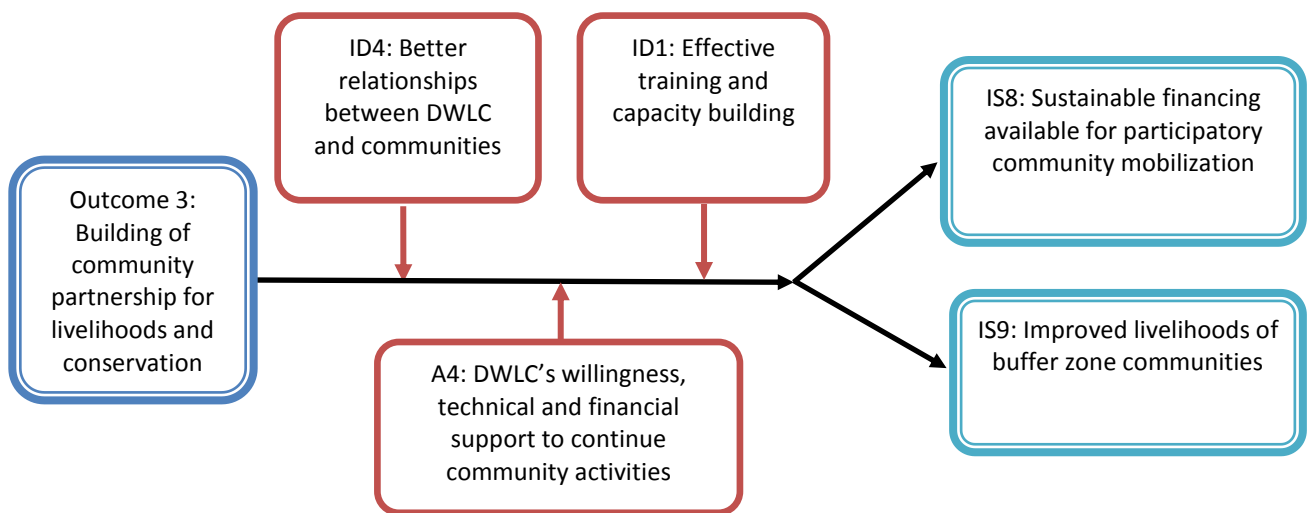
#### 4.3.1 Theory of Change Overview

The protected community partnership strategy focuses on delivering two intermediate states.

- i) Sustainable financing available for participatory community mobilization
- ii) Improved livelihoods of buffer zone communities

These three intermediate states were important to achieve the protected area management strategy of the project.

**Figure 4: Theory of Change for Strategy #3**



The project outcome that was identified as important for delivering these three intermediate states is shown in Figure 4 above.

#### Outcome 3: Building of community partnership for livelihoods and conservation

##### Intermediate States

##### **IS8: Sustainable financing available for participatory community mobilization**

The project plan for this was to establish a Protected Area Conservation Trust (PACT) with the aim of financing activities which enhance the wellbeing of the communities in the buffer zone while respecting the conservation function of the protected areas. The implementation modality of the Trust was changed into the Protected Area Conservation Fund (PACF).

Protected Area Conservation Fund (PACF) had been established through the project with the aim of supporting the empowerment process in bordering communities of the pilot protected areas. This component was delayed due to issues raised by various parties on the modality of the original component D and later due to the inability to find suitable local NGO to conduct community outreach

programmes. Local consultancy firms that were eventually engaged could not perform and the tasks were taken over by the DWLC following the model piloted by the Forest Department under Conservation of Globally Threatened Species in the Rainforests of Southwest Sri Lanka (GEF ID 818). The DWLC recruited and trained social mobilisers for this purpose and while this too took some time, the approach was successful and feedback verifies that through their efforts a better relationship was established between communities and DWLC.

The borrowers completion report states that by 2007, the project had mobilized 167 CBOs in 198 *Grama Niladhari* divisions around the border of the pilot protected areas. CBOs had prepared micro-projects based on their priority needs. A part of the PACF was allocated for infrastructure development projects in the villages. This was used by some CBOs to build community centres that have helped to facilitate community meetings, conduct medical clinics, classes for children, etc. Irrigation projects were also done and have helped farmers to cultivate during both *yala* and *maha* seasons and to expand the cultivation extent. Main grid electricity for the villages have improved beneficiaries' quality of life, and establishment of electric fences have helped to reduce human elephant conflicts.

*"In the past, we were not able to cultivate anything because of the elephants. All our cultivation was destroyed by the elephants. After the electric fence was built, the elephants entering to the village have reduced a lot. People are able to engage in their agricultural works with more security. As a result our economy has improved."*

- Community FGD

Some of the CBOs established through the project are still functioning, while some are not functioning well. Even so, communities and PA staff report that these communities remain committed to conservation of the PPAs to varying degrees, and most have not reverted to adverse practices. Thus the CBOs can still be resurrected if funds and staff dedicated to outreach are available. The main reason for collapsing of the CBOs is lack of loan repayment due to the lack of monitoring by the DWLC after the project period. This occurred as all field mobilisers and Project officers recruited under this project were discontinued. The regular departmental transfer system also means that trained staff taking on the role of outreach officers during the project to interact with these communities have also been transferred to other parks where similar activities do not take place. The lack of dedicated Outreach Officers places a heavy burden on the regular DWLC staff members who have other protection related activities and are expected to carry out community mobilization. However in some locations, the DWLC regular field staff have taken over the task to monitor CBO activities and mobilization. CBOs that are functioning well do so due to self-motivation of members and good CBO leadership, external support and in a few cases commitment of the Park Wardens.

*"People were repaying their loans without any problem. When involvement of the wildlife officials was reduced, they stopped to repayment. Though we asked them to repay their loans, they don't care about that. If a wildlife officer tells them, they may accept that. We have to keep the relationship with all the villagers. If we go for legal activities, they will be annoyed with us."*

- Community FGD

*“Commitment of every CBO member and CBO official helped for its success. Rev. Thero’s leadership is also a contributor for that. It is a strength for our CBO.”*

- Community FGD

Currently some voluntary community work on *shramadhana* basis (donating labour) to clean the temples, constructions in temples, New Year festivals, meditation programmes and preschool festivals are also carried out by the active CBOs. In some occasions, these things are done with the support of wildlife officials.

#### ***IS9: Improved livelihood of buffer zone communities***

The PACF was used for individual loans through CBOs. Microfinance loans were given through the established CBOs to improve livelihoods in the area. Some of them are retail shops, dairy production, animal husbandry, cultivation, and self-employment. The loan scheme had become a revolving fund for the CBOs. Apart from the financial support, the project had given training especially for those who were involving in self-employment. Training and micro-finance to start new livelihoods included activities like rush and read cultivation, banana cultivation, and production of soap, incense stick etc. In addition, the project officials had helped them to find raw materials and market for their products. This support had created a positive impact on the beneficiaries’ household economy. However after completion of the project, some of the newly started livelihoods have collapsed due to failure to find market for their products as well as inability to find raw materials. Much of the livelihood development projects promoted under this initiative was with the aim of reducing the dependence and illegal activities within the parks and illegal activities have reduced.

### **Impact Drivers**

#### ***ID1: Effective training and capacity building***

Trained staff and expert support was central to the implementation of the livelihoods component and gaining support for conservation. However trained project staff were not absorbed into the Department and trained staff in the pilot parks have been transferred leading to less focus on community outreach activities in most of the pilot parks. Some Park Officials have however made efforts to continue these activities with their other duties and find it a burden.

#### ***ID4: Better relationships between DWLC and communities***

During the pre-project period, illegal activities such as poaching, tree felling and sand mining were very common in the pilot protected areas and boundary communities frequently have entered in to the protected areas to collect materials to fulfill their needs. Some of them have collected firewood from the park as an income generating activity. Sending animals into the protected areas for grazing also took place in some of the pilot protected areas.

Through the community outreach programmes, a good relationship was built between the communities and the DWLC staff through the joint activities undertaken and the livelihoods component. It has reduced the frequent conflicts between two parties. The awareness programmes on wildlife

conservation and the efforts to uplift their socio-economic situation are seen to be main reason for the improved relationship and support for conservation.

*“Earlier we didn’t have any kind of relationship with the wildlife officers. The wildlife officers implement their law strictly before starting the project. Even when we collect firewood from the park, they tried to catch us by law. Now it is not so. They are very much friendly with us. When they are friendly, we cannot do wrong things. Also when the villagers received benefits from the project, a good relationship was established with the wildlife officers.”*

- Community FGD

Post project, illegal activities such as poaching, tree felling, collection of fuel-wood, bees honey medicinal plants, and sand mining have been minimized through livelihood development, awareness, improvement of mobility of the staff with the vehicles, improved communications, and improvement of their relationship with DWLC staff. In addition some of the adaptive management activities such as establishing electric fences, boundary demarcation have also helped reduce encroachment into the park.

*“Earlier villagers cut a lot of trees. Some of them did this as a business. They went into the park at night and cut trees. It was difficult to stop this by law. After the project, this has reduced very much. Villagers were informed. Also with the establishment of the electric fence, the park and villages got divided. Beyond the electric fence, villagers didn’t come in to the park. The number of wildlife officers in the park increased and also villagers’ awareness on importance of environmental protection contributed to this.”*

- Community FGD

However community focus groups indicate that poaching incidents have increased in some parks as compared to the project completion period. Cattle grazing is also seen to have reduced due to better awareness and training on cattle rearing as well as a decrease in the number of people rearing cattle. However in some of the parks cattle grazing has increased since project completion. Communities believe that not having awareness programmes, lack of new livelihoods programmes and lack of interaction between the community and park officers after completion of the project have created this situation. The community feel that it is important to continue educating the new generation about the importance of wildlife conservation and continuing these links if conservation benefits are to continue into the future.

## **Assumptions**

### ***A4: DWLC’s willingness, technical and financial support to continue community activities***

Outreach activities and some training does continue in terms of general awareness programmes and joint activities such as live fences and clean ups in pilot areas and in other parks. In the pilot areas efforts are made to maintain links with the communities. However the model used in this project with group formation, loan schemes, targeted livelihoods and community engagement in conservation has

not been replicated elsewhere and not a part of the management models used. Technical expertise was also not retained.

**Table 6: Outcomes-impacts assessment findings for Strategy #3: Community Partnership**

Theory of Change Component	Qualitative Assessment	Rating
<p><b>Outcome 3:</b> Building of community partnership for livelihoods and conservation</p>	<ul style="list-style-type: none"> <li>▶ The community outreach programme successfully developed rapport and mutual respect between the DWLC staff (including project staff assisting the DWLC) and communities. The links are reducing due to lack of dedicated staff to outreach activities but other officials try to continue this work along with their other activities</li> <li>▶ The PACF provided financial support for village infrastructure development and livelihood development has benefited communities and enlisted their support for conservation. These benefits continue with some CBOs still active.</li> <li>▶ Illegal activities by the community have reduced due to the activities and awareness</li> <li>▶ The community collaboration established through this component existed even after completion of the project, but now it has weakened in some PPAs but not overall and depends on the project staff in place.</li> </ul>	<p><b>2</b></p>
<p><b>ID1:</b> Effective training and capacity building</p>	<ul style="list-style-type: none"> <li>▶ Trained staff and expert support was central to the implementation of the livelihoods component and gaining support for conservation. However trained project staff were not absorbed into the department and trained staff in the pilot parks have been transferred leading to less focus on community outreach activities in most of the pilot parks. However Park Officials in some pilot parks are making efforts to continue these activities with their other duties.</li> </ul>	<p><b>1</b></p>
<p><b>ID4:</b> Better relationships between DWLC and communities</p>	<ul style="list-style-type: none"> <li>▶ Through the community outreach programme, relationships were built with the community and community awareness on conservation still exists.</li> <li>▶ Illegal activities have reduced in general, but in parks some activities such as cattle grazing, poaching continues. The reduction in the interactions with the park officials and lack of livelihoods activities is seen for the reason some activities are increasing again</li> </ul>	<p><b>1</b></p>
<p><b>A4:</b> DWLC's willingness, technical and financial support to continue community activities</p>	<ul style="list-style-type: none"> <li>▶ Outreach activities and some training does continue in terms of general awareness programmes and joint activities such as live fences and clean ups in pilot areas and in other parks. In the pilot areas efforts are made to maintain links with the communities. However the model used in this project with group formation, loan schemes, targeted livelihoods and community engagement in conservation has not been replicated elsewhere.</li> </ul>	<p><b>1</b></p>
<p><b>IS8:</b> Sustainable financing available for participatory community mobilization</p>	<ul style="list-style-type: none"> <li>▶ PACF established for financing of community mobilization, planning and support, operated well through established CBOs during the project period.</li> <li>▶ Some CBOs have continued to revolve the fund and operate successfully and still remain active. Some CBOs have collapsed due to lack of repayment of loans.</li> </ul>	<p><b>2</b></p>



**IS9:** Improved livelihoods of buffer zone communities

- ▶ Financial and capacity building support were provided to improve existing livelihoods or start new livelihoods and buffer zone communities have benefited a lot through these and acknowledge this contribution.
- ▶ The alternative livelihoods, training have helped to improve relationships with the park officials and also to provide alternatives to using forest products.

**2**

NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

## 4.4 Strategy 4: Collaborative Conservation Planning

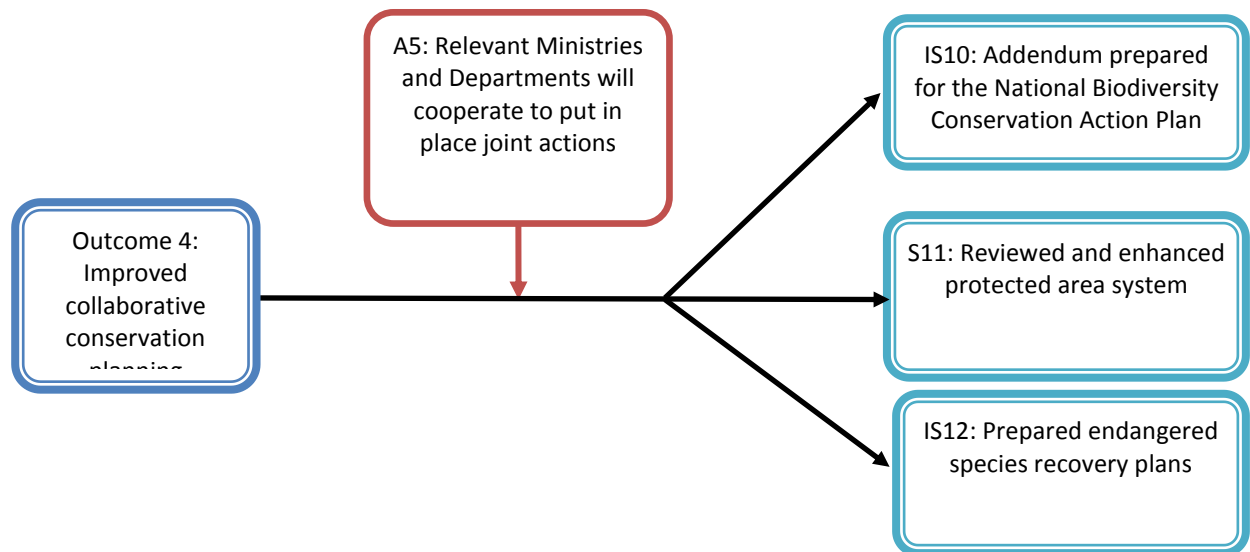
### 4.4.1 Theory of Change Overview

The collaborative conservation planning strategy focuses on delivering three intermediate states.

- i) Addendum prepared for the National Biodiversity Conservation Action Plan
- ii) Reviewed and enhanced protected area system
- iii) Prepared endangered species recovery plans

These three intermediate states were important to achieve the protected area management strategy of the project.

**Figure 5: Theory of Change for Strategy #4**



The project outcome that was identified as important for delivering these three intermediate states is shown in Figure 5 above.

### Outcome 4: Improved collaborative conservation planning

Within the project, this is the component which was funded by GEF. This component expected to establish a platform on which to develop increased collaborative conservation planning among the involved institutions and other stakeholders. Also it has planned to strengthen the Biodiversity Conservation Secretariat (BCS) to prepare Biodiversity Conservation Action Plan (BCAP). In addition to that, this project component has proposed to review and enhance protected area system and prepare endangered species recovery plan.

## **Intermediate States**

### ***IS10: Addendum prepared for the National Biodiversity Conservation Action Plan***

This project chose to develop a biodiversity action plan in its design when the Biodiversity Conservation Action Plan (BCAP) had been published in 1999 and was at its early stages of implementation. Hence the need for a new one was questioned and the eventual outcome was that the existing document – entitled the Biodiversity Conservation in Sri Lanka: A Framework for Action (1999) was reviewed and issues that threatened biodiversity which had emerged as important since the BCAP were addressed through an addendum titled Biodiversity Conservation in Sri Lanka: A Framework for Action; Addendum (1997). The addendum was prepared based on recommendations made by Task forces on In-situ Conservation, Ex-situ Conservation, Agricultural Biodiversity, institutional Capacity building Impacts on Biodiversity, Monitoring and coordination, Biodiversity Information Management Education, Awareness and Training, Biodiversity valuation and & Mainstreaming Economics of Conservation, and emerging areas such as Bio-safety, Biodiversity Dimensions in Traditional Knowledge and life styles, Access to Genetic Resources, Sustainable Use and Benefit Sharing, Bio-safety, and some process issues such as Policies, Strategies and Action Planning, Monitoring and coordination. The Biodiversity Action Plan (BCAP) of 1999 is thus updated by the Addendum prepared under the PAM&WC project.

The preparation was done through 16 Task Forces formed by the Biodiversity Secretariat. To assist this activity, the project facilitated physical and human development in the Biodiversity Secretariat. Preparation of BCAP improved the Ministry of Environment's know-how on issues of biodiversity and also fulfills one of the requirements under the Convention of Biological Diversity (CBD) while also being a base document for other conventions and strategy formulations processes. However stakeholders state that implementation of the stated recommendations, actions, research areas etc. are not taking place as expected.

### ***IS11: Reviewed and enhanced protected area system***

The Project carried out to review of the adequacy of the PA system to assemble a portfolio of strategic conservation sites for Sri Lanka that would adequately represent biological diversity and ecological systems. All PAs managed by the FD and DWLC were included in the analysis as well as other sites considered important to provide landscape functional integrity to connect existing PAs or to provide buffer zones. The process utilized existing information, although some information that was not commonly available was generated anew. The process actively involved a wide range of stakeholders and expert review teams.

The PA gap analysis served to: (a) to identify and describe a portfolio of strategic conservation sites for Sri Lanka, and (b) to compare the existing PA system with this portfolio and to identify areas of conservation importance that were not among the existing PAs (gaps). This resulted in mapping a network of PAs and linkages. It is not clear whether this analysis is consulted when DWLC identifies new PAs - as expected.

***IS12: Prepared endangered species recovery plans***

With the aim of monitoring the endangered species, the species conservation advisory group was established by the Biodiversity Secretariat. Also the national red list was updated in 2012 and a national data base was prepared for threatened species while preparing profiles for 122 faunal and 270 floral species. Recovery plans had been prepared for two red list species (*Puntius bandula* and *Ravana politissima*). The Biodiversity Secretariat has trained 3 officials to conduct that task of updating the red list with time. These activities have helped to form a base for future national biodiversity conservation. The national red list activity is one of the activities under this component that is continuing.

***A5: Relevant Ministries and Departments will cooperate to put in place joint actions***

The DWLC, the Forest Department, and the Biodiversity Secretariat were the key biodiversity related institutes. Having a greater collaboration among them has provided direct benefits for sharing experiences and joint actions. However this did not take place as intended, even though the planning was done in a collaborative manner, there are still clear boundaries as to whose document/efforts it is. Each department also relies on their own systems rather than the joint action plans such as the BCAP. However use of activities such as the gap analysis and red listing is acknowledged. In practice however the departments are still compartmentalized and do not collaborate easily. The fact that the two main departments the Forest and wildlife are in two separate ministries is also not conducive to joint efforts. However there was no impact of this lack of collaboration on the protected area management efforts under the project.

**Table 7: Outcomes-impacts assessment findings for Strategy #4: Collaborative Conservation Planning**

Theory of Change Component	Qualitative Assessment	Rating
<b>Outcome 4:</b> Improved collaborative conservation planning	<ul style="list-style-type: none"> <li>▶ This component produced outputs that helped to improve the scientific database for national biodiversity conservation planning and contributed to meeting Sri Lanka's obligations to Convention of Biological Diversity (CBD).</li> <li>▶ Developing capacity within the BDS helped for the continuation of these activities.</li> <li>▶ However the collaborative planning and management is not taking place.</li> <li>▶ The fit of this component to the rest of the project logic of this component was that it would improve conservation as a whole and the intended joint activities; planning, etc. did not take place as intended</li> </ul>	<b>1</b>
<b>A5:</b> Relevant Ministries and Departments will cooperate to put in place joint actions	<ul style="list-style-type: none"> <li>▶ Though it was expected to have a greater collaboration among them has provided direct benefits for sharing experiences and joint actions, this did not take place as intended.</li> </ul>	<b>1</b>
<b>IS10:</b> Addendum prepared for the National Biodiversity Conservation Action Plan	<ul style="list-style-type: none"> <li>▶ BCAP was done only a few years back the need for a new one was questioned, and eventually only an addendum was done. The action plan is also not being implemented as intended and was also not directly used in the project. Both BCAP and Addendum are still not implemented holistically.</li> </ul>	<b>1</b>
<b>IS11:</b> Reviewed and enhanced protected area system	<ul style="list-style-type: none"> <li>▶ Though this valuable review was done through the project use of the gap analysis for enhancing the PA system is not apparent.</li> </ul>	<b>1</b>
<b>IS12:</b> Prepared endangered species recovery plans	<ul style="list-style-type: none"> <li>▶ Updating national red list, preparing data base for threatened species and preparation of recovery plans for 2 red list species were done through the project. Updating national red list is still continuing, and some recovery plans are being done.</li> </ul>	<b>3</b>

NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

## 5. Overall conclusions

Overall, the project has partially succeeded in moving towards the desired impact of assisting the Government of Sri Lanka to conserve the country's wildlife. This ROTI assessment is based purely on the validation and assessment of the delivery of the theory of change modeled above, which has been developed through consultation with the project stakeholders including communities.

A final consolidated rating of the project's progress towards impact is given in Table 8 below (using the scoring system given in Table 4, 5, 6 and 7 above). It provides an assessment of the extent to which the project's theoretical design is in line with the validated theory of change deemed necessary for delivering impact and the progress towards delivering the outcomes-impacts pathways.

**Table 8: Overall rating of project impact**

Outcomes – Impact assessment	
Strategy 1: Capacity Development	1
Strategy 2: Protected Area Management	2
Strategy 3: Community Partnership	2
Strategy 4: Collaborative Conservation Planning	1
<b>Overall project</b>	<b>2</b>

Given the status before the project, the project has contributed to improve the institutional processes and technical capacity of the staff to manage wildlife and protected areas. However impacts are reduced due to some institutional restructuring processes not achieving its full potential with some key positions remaining vacant, the decentralization process not implemented in the way it was envisioned. In terms of technical capacity of staff this is acknowledged to have built a more professional cadre in the DWLC. The use of the knowledge is seen to be dependent on the individuals and some trained staff have been transferred as per the regular transfer system that has reduced some activities continuing effectively (outreach). The infrastructure too has enhanced the facilities that help manage the park and the visitor experience and funds continue to be allocated for their maintenance. However funds don't cover all maintenance costs and in some parks design faults have led to some buildings being unusable. The adaptive management activities continue through removal of invasive species, maintaining electric and live fences continue with some variations on the pilot protected areas. In terms of community based activities some of the CBOs set up continue to function due to strong leadership from the community as well as interactions with the Park officials. This is not the same for all parks. The cadre trained to work on community issues were not retained these types of activities are not continued despite the some of the positive outcomes in terms of less encroachment and illegal activities in the park by the communities. Some parks have made attempts to maintain relationships and manage these activities with other park staff. Overall a contribution has been made to put in place better structures and processes to protect important habitats and species in Sri Lanka but it has been sub optimal.

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## Annex 2: Sites Visited

**April 08, 2013**

Minneriya National Park, Polonnaruwa District

Eerige Oya village (temple) (Polonnaruwa District)

- FGD with CBO members

Name	Gender	Age	CBO
Rev. Thero	Male		Society for protecting the electric fence - Eerige oya
Hapuarachchige Gunadasa	Male	60	Society for protecting the electric fence - Eerige oya
T. Gamini Vimal Gunarathne	Male	42	Society for protecting the electric fence - Eerige oya
G.R.Dissanayake	Male	31	Society for protecting the electric fence - Eerige oya
K.P.P. Wilbert	Male	45	Society for protecting the electric fence - Eerige oya
A. Ananda Bandara	Male	50	Wanasarana Community Based Organization, Moragaswewa, Habarana

**April 09, 2013**

Katukeliyawa village (community hall) (Polonnaruwa District)

- FGD with communities

Name	Gender	Age	CBO
Ven. Katukaliyawe Gunadassi Thero	Male	46	Katukeliyawa Pubudu wildlife CBO
D.M. Lokubanda	Male	58	Katukeliyawa Pubudu wildlife CBO
W. M. Madduma Bandara	Male	57	Katukeliyawa Pubudu wildlife CBO
P. G. Yasomenike	Female	58	Katukeliyawa Pubudu wildlife CBO
T. G. Abeyrathne Banda	Male	50	Katukeliyawa Pubudu wildlife CBO
M. A. K. Nuradhani Senarathne	Female	34	Katukeliyawa Pubudu wildlife CBO
P. G. Indrani Chandralekha	Female	39	Katukeliyawa Pubudu wildlife CBO
H. M. Senanayake	Male	53	Katukeliyawa Pubudu wildlife CBO
H. M. P. G. Jayabandara Gunassekera	Male	34	Community Participatory Wildlife Development Society – Nawa Katukeliyawa
R. Sunil Bandara	Male	37	Community Participatory Wildlife Development Society – Nawa Katukeliyawa



***April 10, 2013***

Wasgamuwa National Park (Matale District)

Pallegama village (Park office building), Matale District

- FGD with communities
- 6 members participated from 2 societies

Dehiattakandiya village (at a community leaders' house), Ampara District

- FGD with communities
- 25 members participated from 3 societies

***16 – 19 May, and 29 – 31 July 2013***

Consultations held during the Man and Biosphere (MAB) Reserve Periodic Review of the Bundala National Park (International Biosphere Reserve)

***21 July 2013***

Observations at Udawalawe National Park

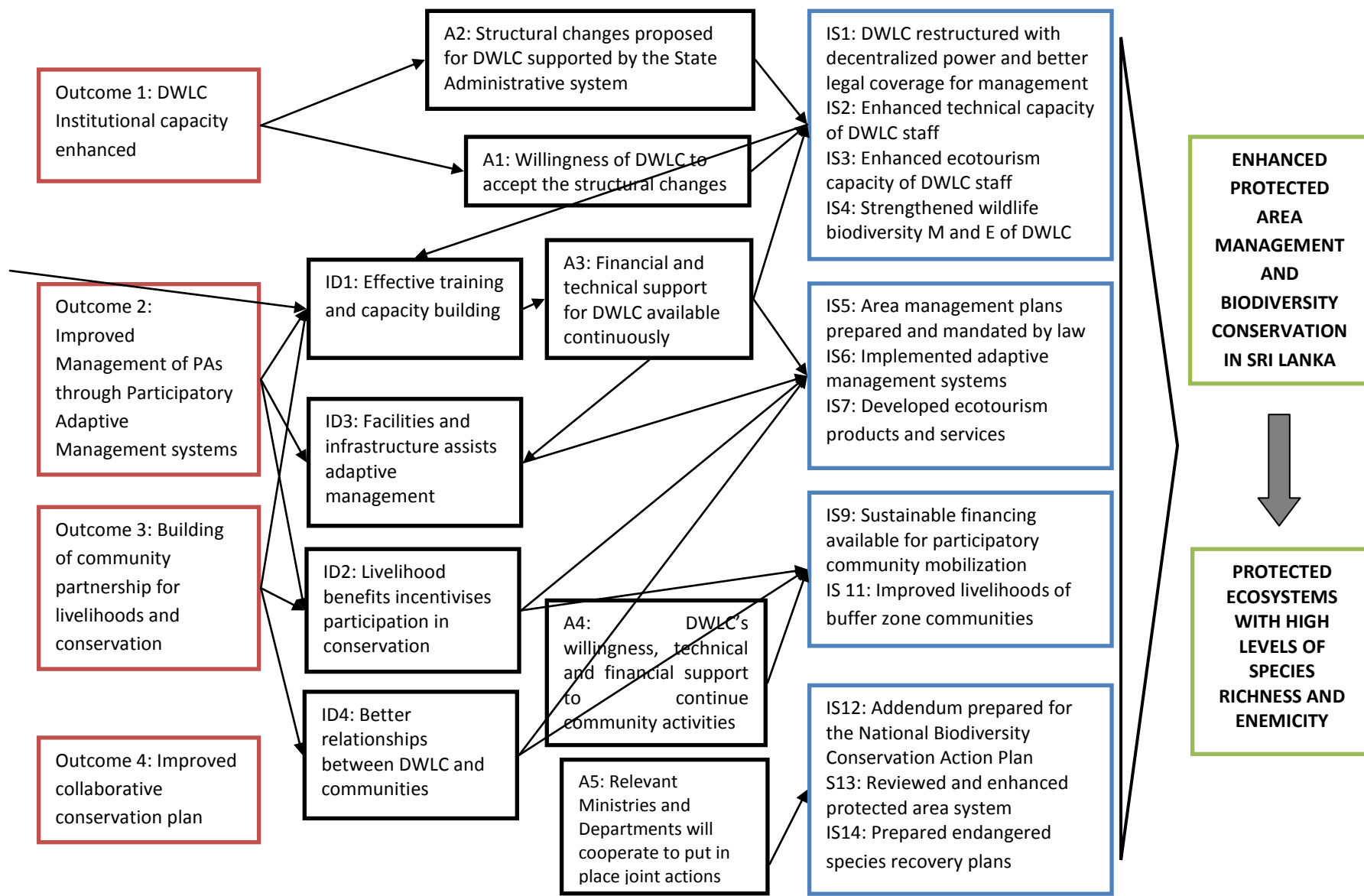
***29 September 2013***

Observations and conversations at Kaudulla National Park

### Annex 3: People met

<b>Date</b>	<b>Name</b>	<b>Position</b>	<b>Organization</b>
2013/02/07	Easha Nanayakkara,	Head – Community Outreach	Department of Wildlife Conservation
2013/02/07	Lakshman Peiris	Assistant Director	Department of Wildlife Conservation
2013/02/20	Gamini Gamage	Additional Secretary - Environment Policy	Ministry of Environment
2013/04/09	Buddhika Vithana	Park Warden	Minneriya National Park
2013/04/10	R.A.D.D.D. Samaranyake	Park Warden	Wasgamuwa National Park
2013/05/03	H.G. Gunawardena	Former Additional Project Manager - PAM&WC Project	Department of Wildlife Conservation
2013/05/03	K.W.P. Thilakeratne	Former Manager - Community Outreach, PAM&WC Project	Department of Wildlife Conservation
2013/07/10	Dr. Sumith Pilapitiya	Lead Environmental Specialist	World Bank
2013/08/08	W.S.K. Pathiratne (Telephone Interview)	Director - Operations	Department of Wildlife Conservation

## Annex 4: Schematic of PAM&WCP theory of change



**TECHNICAL DOCUMENT E:**  
**Review of Outcomes to Impact**  
**Energy Services Delivery Project**  
**(GEF ID 104)**

**and**

**Renewable Energy for Rural Economic Development Project**  
**(GEF ID 1545)**

## Acronyms

A	Assumptions
AU	Administration Unit
CEB	Ceylon Electricity Board
DSM	Demand Side Management
ECS	Electricity Consumer Societies
ESCO	Energy Service Company
ESD	Energy Services Delivery
FECS	Federation of Electricity Consumers' Societies
FSP	Full Sized Projects
GEB	Global Environmental Benefit
GEF	Global Environmental Facility
ID	Impact Drivers
IS	Intermediate States
MFI	Micro Finance Institutions
MOE	Ministry of Environment
NGO	Non-government Organization
PCI	Participatory Credit Institution
PEU	Pre-Electrification Unit
RERED	Renewable Energy for Rural Economic Development
ROtI	Review of Outcome to Impact
SEEDS	Sarvodaya Economic and Enterprise Development Services
SHSs	Solar Home Systems
SLBDC	Sri Lanka Business Development Center
SPPA	Small Power Purchase Agreement
SME	Small and Medium Enterprise
UNFCCC	United Nations Framework Convention on Climate Change

## 1. Introduction

As a part of the GEF Sri Lanka country portfolio evaluation (CPE), reviews of the “Energy Services Delivery” (ESD) Project (GEF ID 104) and the “Renewable Energy for Rural Economic Development” (RERED) Project (GEF ID 1545) were carried out using the Review of Outcome to Impact (ROtI) methodology, which was developed by the GEF Evaluation Office. Since the RERED project was an extension of the ESD project, these two projects were reviewed together. This was accommodated as it was requested by the stakeholders who see these two projects as one project.

Both the ESD project and RERED project were Full Sized Projects (FSP) implemented under the Climate Change GEF Focal Area. The ESD project was implemented between July 1997 and December 2002 and the total budget of the project was \$55.3 million including \$5.9 million of GEF grant and \$49.4 of co-financing. The project expected to overcome barriers to renewable energy uptake and energy efficiency market development while promoting and improving the provision of grid connected and off-grid renewable energy technologies/services by the private sector, non-government organizations (NGOs) and cooperatives. It also aimed at strengthening the environment for Demand Side Management (DSM) implementation. The project was implemented by the World Bank and executed by the Ministry of Finance and Ceylon Electricity Board (CEB) of the government of Sri Lanka.

The RERED project was implemented between July 2002 and December 2011, that included a further extension from 2008 – 2011. The total budget included \$8 million of GEF grant and \$115.8 million of co-financing from the World Bank (\$75 million for the main project component and \$40 million for the extension). RERED concentrated on extending the ESD objectives of increasing off-grid and on-grid renewable energy uptake. The additional objective included was to improve the quality of life of the remote communities by providing electricity. The implementing mechanism remained the same as for the ESD project.

Ultimately both projects expected to reduce the impact of greenhouse gases by reducing carbon emission. Following were the general expected outcomes of the two projects.

- Promoted adoption of renewable energy by removing market barriers and reducing implementation costs.
- Provided training and technical support in the area of renewable energy and energy efficiency for the different stakeholders and implementing entities in the public and private sector.
- Piloted the feasibility of small-scale (3 MW) wind power generation project in Sri Lanka from a technical and commercial standpoint.

## 2. The project’s global environmental benefits

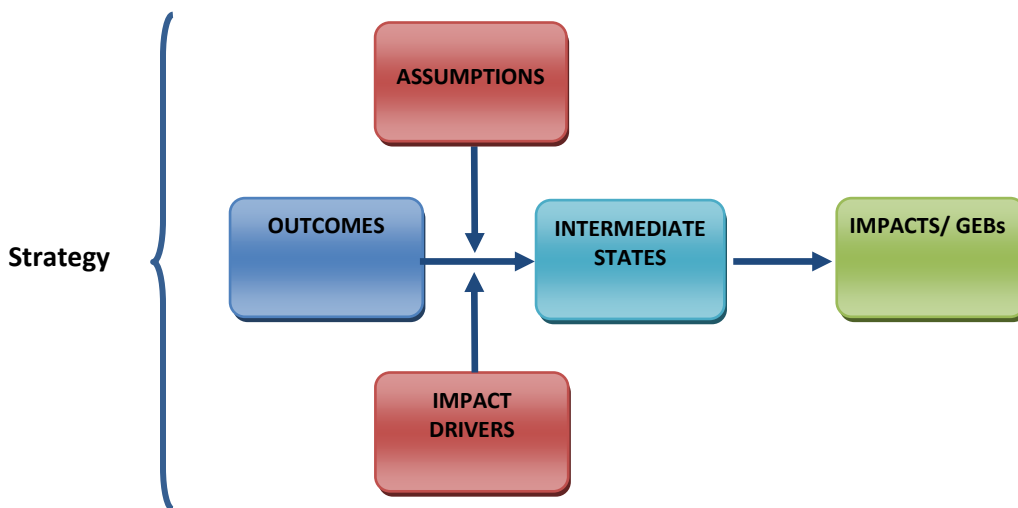
As a part of its environmental strategy, Sri Lanka has ratified the United Nations Framework Convention on Climate Change (UNFCCC). Sri Lanka recognizes the global significance of greenhouse gas emissions due to fossil fuel based electricity generation. Electricity generation is the second highest source of carbon dioxide gas emission (27% of total emissions) in Sri Lanka (MOE, 2011). Increasing renewable energy and energy efficiency are identified as mitigation strategies for greenhouse gas emissions. While recognizing the need to increase the use of energy, there are also policy targets that include reducing business-as-usual energy demand by 2020 by 20%, having a 40% share of renewables which include 20% from non-conventional renewable energy sources by 2020. Hence, this project contributed directly to

addressing the global benefits of increasing the use of renewable energy and reducing greenhouse gas emissions.

### 3. ESD & RERED Outcome to Impact Theory of Change

The theory of change of a project is the logical sequence of conditions and factors that are necessary to deliver the ultimate project impact. The basic project theory of change starts with activities and develops through delivery of outputs and achievement of expected outcomes at the end of implementation, i.e. through a means-ends hierarchy that ultimately puts in place the conditions to reach impact sometime after project completion. The GEF project terminal evaluations assess the basic theory of change as far as outcomes, but do not usually go far in assessing the crucial last step to impact. The ROTI assessment focuses on this last step and develops and assesses a detailed theory of change between outcomes and impacts, referred to as **outcomes-impacts pathways**, measured at least two years after project completion. Each outcomes-impacts pathway represents a specific strategy. 0 below illustrates the key elements and relationships of the detailed theory of change between outcomes and impacts.

**Figure1: Generic theory of change for outcomes-impacts pathways**



The key ingredients in the outcomes-impacts pathways (or strategies) that are examined according to the ROTI methodology are intermediate states, impact drivers and assumptions, which are defined in 0 below. Impact in terms of global environmental benefits can be achieved either through environmental threat/stress reduction or improvement in the environmental conservation status of the resource. If the project outcomes are assessed to be successfully delivered and the key ingredients of the theory of change between outcomes and impacts are in place, then it is reasonable to conclude that that the barriers and threats to impact have been overcome, the environmental status has improved, and that consequently impact has or will be achieved, with time. In the evaluation the focus is on performance beyond the life of the project – therefore beyond outcomes to assess the progress made towards achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

**Table 1: Definitions of theory of change elements in the outcomes-impacts pathways**

TOC terms	Definition
Intermediate States (IS)	These are the transitional conditions between the project's outcomes and impacts that must be achieved in order to deliver the intended impacts
Impact Drivers (ID)	These are the significant factors that, if present, are expected to contribute to the ultimate realization of project impacts and that are within the ability of the project to influence
Assumptions (A)	These are the significant factors that, if present, are expected to contribute to the ultimate realization of project impacts, but that are largely beyond the power of the project to influence or address

The development of the ESD and RERED outcomes-impacts theory of change was based on document review followed by validating it with the key informants and the beneficiaries of the solar home systems and village micro-hydro systems.



**Table 2: The ESD & RERED outcomes-impacts theory of change**

Project Strategies	Outcomes	Impact Drivers & Assumptions	Intermediate States	Impact
<b>STRATEGY #1:</b> Adoption and Promotion of Renewable Energy	<b>Outcome 1:</b> Adoption of renewable energy promoted, by removing market barriers and reducing implementation costs.	<b>ID1:</b> Allow for flexibility in project design  <b>ID2:</b> Private sector leadership  <b>ID3:</b> Multi stakeholder implementation arrangement  <b>A1:</b> Enabling macro-economic environment	<b>IS1:</b> Electricity access provided to households, rural SMEs and public institutions through off-grid systems  <b>IS2:</b> Expanded renewable electricity generating capacity and production in Sri Lanka	<b>MITIGATION OF GREENHOUSE GAS EMISSIONS IN SRI LANKA THROUGH DISPLACEMENT OF FOSSIL FUEL USE</b>
	<b>Outcome 2:</b> Technical support for promoting renewable energy and energy efficiency in public and private sector established.			
<b>STRATEGY #2:</b> Piloting Wind Farm	<b>Outcome 3:</b> Small-scale wind power generation projects piloted to establish feasibility in Sri Lanka, from both technical and commercial standpoints.	<b>A2:</b> Private sector initiatives and other projects support and take up wind energy projects	<b>IS3:</b> Significant interest in developing private wind power projects generated among private developers.	

#### 4. Assessment of achievement of the outcomes-impacts pathways

The assessment of achievement of the outcomes-impact pathways was done through review of documents, interviews with key persons, interviews with beneficiaries of solar home systems and focus group discussions with village micro-hydro beneficiary communities. The rating system used for the assessment is given in Table 3 below as per the ROTI Handbook, and is applied at the different levels of the Theory of Change; i.e. at the individual TOC element level (outcomes, impact drivers, assumptions and intermediate states) and at the overall project level.

**Table 3: Field ROTI Rating System**

Rating	Description
0	Not achieved
1	Poorly achieved
2	Partially achieved
3	Well achieved

The reporting starts off by providing a justification for why the identified intermediate state for the strategy is considered important in delivering the ultimate impact. The theory of change for the strategy is then examined through its logical steps, firstly validating the extent to which the outcomes were achieved at project closure, followed by an assessment of the extent to which the impact drivers and assumptions were realized. The section concludes with an assessment of achievement of the intermediate state itself.

#### 4.1 Strategy #1: Adoption and Promotion of Renewable Energy

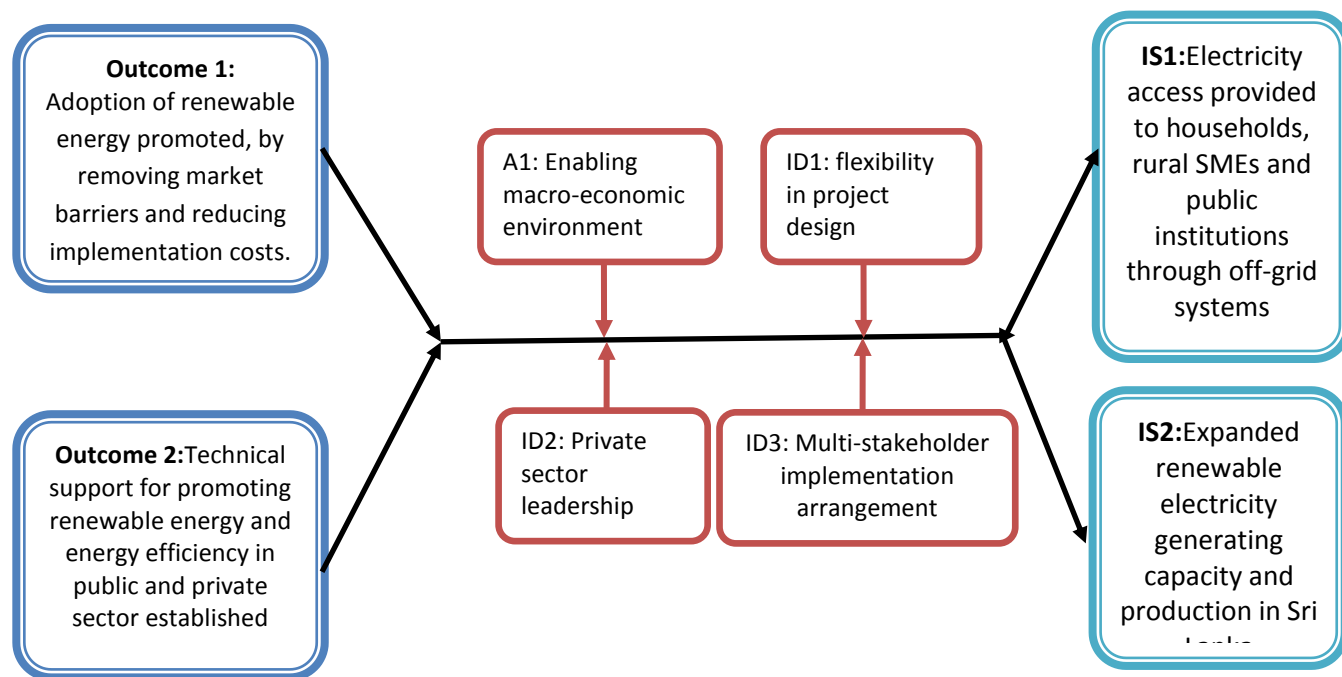
##### 4.1.1 Theory of Change Overview

The adoption and promotion of renewable energy strategy focuses on delivering two intermediate states, *“Electricity access provided to households, rural SMEs and public institutions through off-grid systems”* and *“Expanded renewable electricity generating capacity and production in Sri Lanka”*. The first one was important to provide off-grid electricity for rural households and the second for grid connected renewable energy expansion.

At the onset it is important to provide some clarity on the types of renewable energy that will be mentioned in this report. This project addressed several types of renewable energy sources: Mini-hydro, Micro-hydro, and solar. The mini-hydro is small scale hydro projects of a few 100KWs to a maximum of 10MW. These systems were intended to be connected to the grid through the establishment of power purchase agreements. The developers of these systems were private sector companies. The micro-hydro schemes are systems generate less than 100 KWs of power and were aimed at connecting villages with no access to electricity. These units were developed and managed by electricity consumer societies set up amongst the member of the participating households. These were not intended as off-grid systems. The solar systems were Solar Home systems (SHS) which were individual home units generally around 30-50W that supplied the needs for lighting and other uses such as black and white TVs for households. The schemes were set up and maintained by private companies registered with the project. These were

also intended as off-grid projects and were specifically targeted to areas where the grid was not going to be available for up to 10 years.

**Figure 2: Theory of Change for Strategy #1**



The project outcomes that were identified as important for delivering these two intermediate states are shown in Figure 2 above.

## Outcomes

### **Outcome 1: Adoption of renewable energy promoted, by removing market barriers and reducing implementation costs.**

The ESD and RERED projects were intended to remove the following market barriers. (a) the reluctance of commercial banks to lend for grid-connected renewable energy projects; (b) the ability to obtain lending (or lending with longer tenures) for these projects; (c) the lack of opportunities for un-electrified households to access clean and affordable electricity services; (d) the investment risk of supporting a new/untested scheme; and (e) the reluctance of the CEB to purchase electricity from grid-connected renewable energy plants.

Lack of access to long-term financing was the key barrier for the private sector investors/commercial banks to invest in the renewable energy sector. According to the implementation completion reports of the two projects, as well as interviews with the project stakeholders, the projects brought in long term

financing through commercial banks that entailed a credit line for renewable energy along with a output oriented co-financing grant by the projects that covered some of the incremental costs (technical support, information) that helped to encourage investment in renewable energy development. These grants were disbursed once the pre-defined results were achieved. With this set up the project demonstrated that the risks are manageable and that lending would be profitable for the private sector. The private sector took the lead as renewable energy developers and built up all the projects using the lending provided by commercial banks as Participating Credit Institutions (PCIs), with some risk absorption by the ESD and RERED. Discussions with the DFCC stakeholders revealed that at the level of commercial banks long term financing for renewable energies has not continued. Such a long term mechanism for grid connected renewable energies was not planned for by the project. In terms of off-grid energy by 2011 the reach of the grid has expanded to cover more than 90% of the households leaving some isolated pockets amounting to 1072 villages (approximately 40,0000 households) identified by the CEB (as per Energy Forum, 2013), and also need some lending and possibly a grant mechanism as per the ESD/RERED model.

The project also addressed other gaps such as technical competencies of developers and manufacturers that helped to improve the development of renewable energy service suppliers within the country that can cater to the various needs. In terms of off-grid facilities solar energy, the credit facilities were made available mainly through Micro Finance Institutions (MFIs) who were more suited to access the rural households. The implementation completion reports of the two projects show that targets were exceeded in terms of SHSs. The ESD project provided 20,953 SHSs against the target of 15,000, and the RERED project provided 110,575 SHSs against the target of 85,000.

As stated in the ESD Project Completion Report, the assigned primary role for the Ceylon Electricity Board (CEB) was to create the enabling environment for facilitating private implementation of grid connected sub project through standard Small Power Purchase Agreement (SPPA), agreed tariffs, and CEB grid-interconnection standards and certification procedures. The government through the CEB, has established cost reflective feed-in-tariffs for selling renewable electricity to the national grid. This can be evidenced by the SPPA terms and conditions that are available with the CEB as well as Sri Lanka sustainable energy authority. This SPPA is being used by the by mini hydro developers, while a similar scheme was set up for wind and biomass post project.

**Snap shot of projects supported by ESD and RERED (as of June 2012)**

**On-grid**

- 77 mini-hydro projects (total of 181.6 MW) have been commissioned and 6 mini-hydro projects (total 13.9 MW) were under construction
- 1 private sector wind farm (10 MW) was commissioned and another 10 MW wind farm is under construction
- 1 bio-mass project of 1 MW commissioned

**Off-grid**

- Solar Home Systems installed in 131,528 households
- Village Hydro projects have supplied electricity to 7,913 households
- Biomass based projects have provided electricity to 39 households

*Source: DFCC, 2012 (online)*

## **Outcome 2: Technical support for promoting renewable energy and energy efficiency in public and private sector established.**

One of the main components of the ESD project was the Capacity Building Component, which expected to support commercial building sector energy efficiency initiatives, strengthen the capacity of the CEB to refine and implement a Demand Side Management (DSM) action plan, facilitate small private power investment and pre-electrification, and provide institutional support and training, as well as equipment and materials, to the ESD Credit Line and participating banks. Also, the RERED project expected to strengthen energy service companies (ESCOs) and support to the electricity consumer societies.

Provision of training and technical support under the capacity building component of the ESD project was carried out by consultants hired by the ESD project and delivered through the Demand Side Management (DSM) branch and the Pre-Electrification Unit (PEU) which were within the CEB institutional structure. Increasing awareness and building renewable energy project implementation capacity of CEB area offices, private sector and NGOs was done by the pre-electrification unit. The trainings provided through the ESD project were different for each stakeholder: For the project developers, it was on the knowledge of a technology and preparation of bankable project proposals; for financial institutions, it was on analysis of risk; and for the electricity consumers, it was on the quality of the products offered. Twenty six training programmes have been conducted for 748 officers from the CEB, provincial governments, the private sector and NGOs (Energy Sector Unit, 2003).

The capacity building component covered two aspects:

(i) Implementation of load research programme and a DSM strategy

Under this, completion of first National load research programme and enhancing the quality of CEB DSM were done. At the same time, development of energy audit skills and enhancement of DSM programme monitoring and evaluation skills were carried out with respect to CEB DSM energy efficient programme. By the time of project completion, 2-3 new companies were also providing energy efficiency services. As the DSM was discontinued within the CEB due to establishment of Sri Lanka Sustainable Energy Authority (in 2007) the built capacities are not utilized within the CEB as expected.

(ii) Design and implementation of Code of Practice for Energy Efficient Commercial Building

With a consultation of stakeholders, development and implementation of energy efficient building codes were carried out by the CEB.

The RERED project has supported the development of ESCOs through awareness creation and training, where the support was provided for development of business plan and development of legal agreements. The pilot grid-connected wind farm intervention also built expertise within the CEB to implement wind power projects. Apart from that, the ESD project has provided technical assistance to Sarvodaya Economic and Enterprise Development Services (SEEDS), to increase the quality of their operations through better business planning and the implementation of a portfolio management system.

## Intermediate States

### ***IS1: Electricity access provided to households, rural SMEs and public institutions through off-grid systems***

At the time of the ESD project preparation (1996), about 48% of the population in Sri Lanka did not have access to the grid. Lighting needs were met largely by kerosene lamps. Through the ESD and RERED projects, it was expected to provide access to electricity for households, rural small/medium enterprises and public institutions like schools, hospitals through solar home systems, micro hydro schemes, mini-hydro schemes and biomass. The main renewable sources utilized were solar and micro hydro. According to the Implementation Completion Reports of ESD and RERED projects, the ESD project served, 22,685 off-grid customers (20,953 solar and 1,732 hydro) while RERED provided 116,795 households (110,575 solar and 6,220 hydro) with electricity.

However, although the RERED programme envisioned that local level enterprises would also benefit from these schemes, provision of electricity for small and medium enterprises was very limited, hence it did not meet the livelihoods objectives as expected. The benefits have been well received in terms of education, conveniences in households, and have improved the quality of life.

*“Available information indicates that only 736 enterprises [1000 planned] benefited from receiving electricity from off-grid sources but as nearly all of them employed only family labor who worked longer hours after receiving electricity, they did not generate opportunities for paid employment. Some enterprises reported higher profits due to improved productivity and longer working hours.”*

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*Monitoring & Evaluation Report of the RERED project*

Access to affordable financing was required for the individual households for SHS and village based Electricity Consumer Societies (ECS) to get access to off-grid electricity. The two projects addressed this through a credit programme. The process also established the fact that larger commercial banks will not be able to service the rural households and hence brought in micro finance institutions such as SEEDS to link up with rural communities. They worked to strengthen the capacity and provided technical training for both the micro-hydro and solar developers. Technical expertise for manufacturing some of the hydro components, installing the systems and maintaining the systems were covered in the training programme.

Towards the end of the project, with the expansion of grid (that now covers over 90% of households) there was a drop in the use of solar and micro hydro systems. In the case of micro hydro, the cost of labour and of maintaining the systems (e.g. machinery breakdowns) and the limited power capacity per household were some deterring facts that have reduced usage following the grid becoming available.

*“Now no one needs to dedicate their time to look after a powerhouse. If we face any problem with the grid connection it is solved by the electricity board. Earlier we had to clean the powerhouse twice a month.”*

Problems with the solar systems were mentioned, such as maintaining batteries and the lack of technical support available, which are preventing their use – even as a way to reduce energy consumption from the grid. Before getting the grid connection, it was seen as a valuable resource. Some households are selling the units second hand to households that are still not connected to the main grid. (Source: FGD, Household interviews; energy forum, 2013).

There was no mechanism in place in the project to address the issue of these systems once the grid is extended. However, post-project, a procedure has been put in place to allow power to be sold from the micro hydro schemes to the grid through an interconnection<sup>35</sup>. This is being spearheaded by the Federation of Electricity Consumers' Societies (FECS)<sup>36</sup>; a community umbrella organization set up and strengthened under the RERED project. At the time of the review two of the micro hydro sites at Athuraliya and Owala in Ratnapura District had been connected with the use of the SPPA (Energy Forum (Guarantee) Limited, 2013). This process is continuing after project completion due to the interest and efforts of some of the stakeholders:

*“At present, as a pilot we have already connected 2 plants and one another one is getting ready to connect. At the moment it is successful. CEB will pay for the electricity provided by our plants. We expect to connect other plants also.”*

- Federation of Electricity Consumers' Societies (FECS)

### **IS2: Expanded renewable electricity generating capacity and production in Sri Lanka**

Through the ESD and RERED project activities, 10 NGOs were trained in areas of social mobilization and village hydro development by the Intermediate Technology Development Group (currently named as Practical Action) and Sri Lanka Business Development Center (SLBDC). Also, the projects have helped to improve the capacity of renewable energy and energy efficiency consultants. The project looked to generate grassroots feedback and under the guidance of the Energy Forum, the Federation of Electricity Consumers' Societies (FECS) was formed as an umbrella organization with the representation of all the village-based electricity consumer societies. The FECS is considered a strong lobby group by the energy stakeholders and they continue to work and lobby for renewable energy as a part of the energy mix. This group is currently active in connecting the off-grid micro-hydro systems to the grid (explained above in IS1).

As per the Implementation Completion Report of the ESD project, during the ESD project appraisal period, there was only 1 mini-hydro developer, 1-2 village hydro developers and 2-3 fledgling solar dealers in the country. At the completion of the project, there were 11 mini-hydro developers, 12-15 village hydro developers and 4 major solar companies showing a significant expansion of private renewable energy developers and the RERED Project Implementation Completion Report says that this has further expanded

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<sup>35</sup>The Power purchase agreements were being used by the commercial mini hydro plants but this was not being used by the smaller community operated micro hydro units.

<sup>36</sup>The Federation of Electricity Consumers' Societies (FECS) is the umbrella organisation for the electricity consumer societies set up to manage the micro hydro systems at village level. The federation brings together 200 of these societies.

throughout the RERED project period. Beyond the life of the two projects, mini hydrodevelopers have continued to invest in renewable energy in Sri Lanka as well as in other countries in Asia and Africa.

The capacity building component carried out by the CEB DSM branch has helped to enhance the institutional capacity of CEB to implement energy efficiency renewable projects but this capacity may not be fully utilized due to the changes in place with the establishment of the Sri Lanka energy authority that has now taken over these activities. The ESD project has generated private sector interest in the delivery of energy efficiency services and established energy service companies- 14 for Audit & Efficiency services; 6 for Audits; and 4 for Efficiency (ESCOs). These companies are registered and listed under the SLSEA as service providers (SLSEA website).

## **Impact Drivers**

### ***ID1: Allow for flexibility in project design***

The ESD project design was flexible and has allowed different approaches and changes whenever required. This flexibility has had an effect on project success. For example, to address the slower development of the village hydro market, an open solicitation process was initiated where consultants were used to address issues on policy, technology and sustainability. The flexibility of the implementing organizations to handle and address issues as they arose is seen as a lesson learnt in the RERED project completion report.

### ***ID2: Private sector leadership promoted***

Early ownership of the two projects was taken by the private sector from the project preparation time and they performed as key stakeholders in the project implementation. The ESD and RERED projects created an enabling environment for private sector participation with the specific view of getting their support for creating a market for renewable energy services. They provided 42% of the project funding for ESD and 37% for RERED as PCIs and entrepreneurs of the funds. Hence their contribution was expected through investment as well as through the development of renewable energy services. Both of which took place with some additional risks of investment also being borne by the renewable energy developers (RERED PCR, 2012). Interviews with the stakeholders say that having a private sector banking institution (the DFCC Bank) as the Project Administration Unit (AU) brought in banking expertise and the ability to get support of other private sector companies, especially financial institutions.

The AU is also seen to have played a proactive role in facilitating and mediating amongst various stakeholders such as beneficiary households, renewable energy developers, various government entities including CEB, as well as the World Bank, etc. and maintaining a good consultation process with all of them throughout the project period. The same unit also continued throughout ESD and RERED projects allowing it to build on its experience and improve the efficiency of the project. This was an arrangement with which other stakeholders were also comfortable with and is rated highly satisfactory and has contributed to the success of these two projects, with the caveat being that sustainability of long term funding was not properly addressed as an exit strategy (RERED PCR 2012; discussions with stakeholders).

### ***ID3: Multi stakeholder implementation arrangement***

The public-private-civil society partnership and the collaborative approach used throughout the project was a key factor behind the project success. There were specific roles that were carried out based on the stakeholder expertise. Financial issues were handled by the Participatory Credit Institutions (PCIs) and the



Micro Finance Institutions (MFIs). While the MFIs were also central in reaching the communities, Government agencies such as the CEB were involved as executing agencies with a key responsibility for implementing components of the project, while the Ministry of Planning and Provincial Councils provided backing for smooth implementation for approvals and necessary government support. The energy developers provided the technical support to develop the products and also manage the maintenance. The village consumer societies were also part of this collaboration, where they were involved in the project planning and monitoring and could provide direct feedback, while civil society organizations were involved for capacity building and mobilization purposes. The ability to gain the collaboration of a range of stakeholders was a noteworthy driver of this project.

## **Assumptions**

### ***A1: Enabling macro-economic environment***

A favorable macro-economic environment is crucial factor for the smooth functioning of re-financing of loans for renewable energy projects. The government supported the creation of a market enabling environment which was required for achieving private sector engagement in developing the renewable energy sector. That was very important for the success of both ESD and RERED projects. As stated in the Implementation Completion Report of the RERED Project, at the time RERED was implemented, interest rates were reasonable; the exchange rate has fluctuated somewhat modestly while the absence of restrictions on lending for renewable energy investments was supportive. Developers were willing to develop and implement renewable energy projects, through the tariffs and SPPA offered by the CEB. Additionally the promotion of the renewables was timely due to the need to reduce the cost of exporting fossil fuels and the objectives of the government to increase electricity coverage. Through the later part of the project the energy policy included non-conventional renewables into the energy mix and showed the government's commitment to renewables. Consequently, the Sri Lanka Sustainable Energy Authority was also set up to further build attention to renewables, which includes assisting and liaising with private sector renewable energy development.

**Table 4: Outcomes-impacts assessment findings for Strategy #1: Adoption and Promotion of Renewable Energy**

Theory of Change Component	Qualitative Assessment	Rating
<p><b>Outcome 1:</b> Adoption of renewable energy promoted, by removing market barriers and reducing implementation costs.</p>	<ul style="list-style-type: none"> <li>▶ Almost all the market barriers which were targeted by this project were removed and the targets set were achieved in terms of coverage (as of June 2012):               <ul style="list-style-type: none"> <li>○ 77 Grid connected mini hydro systems connected with 13.9 MW capacity</li> <li>○ Off-grid community based micro hydro systems connecting 7,913 non electrified households.</li> <li>○ 131,528households with solar home systems</li> </ul> </li> <li>▶ Once the households are connected to the main grid, there is a noticeable reduction in the use of solar and off-grid micro hydro systems. This was envisioned by the project as the home systems were expected to be a pre-grid-electrification solution. However it was also felt that the exit strategy could have planned for the continued use of these systems. Post project stakeholders have managed to get agreement to connect the micro hydro systems (less than 100kw) to the grid, so that the energy can be sold to the CEB using the same process that was put in place by this project for the mini hydro (&gt;100KW and&lt; 10MW). Already two micro hydro schemes are selling to the grid.</li> <li>▶ Post project, there is no continuation of the long term financing scheme for renewable, especially for off- grid projects.</li> </ul>	<b>2</b>
<p><b>Outcome 2:</b> Technical support for promoting renewable energy and energy efficiency in public and private sector established.</p>	<ul style="list-style-type: none"> <li>▶ 26 training programmes have been conducted for 748 officers from CEB, provincial government, private sector and NGOs under the ESD project and this expertise is available inside the country renewable energy promotion.</li> <li>▶ Training and networking for leaders of the electricity consumer societies (beneficiaries) for sustainability of off-grid schemes was carried out. These groups are still active and lobby for changes (i.e mini hydro connections to the grid)</li> <li>▶ Number of ESCOs has increased and continued to engage in renewable energy service provision even after completion of the projects and are registered as service suppliers with the Sri Lanka Sustainable Energy Authority – there are 14 for Audit &amp; Efficiency services; 6 for Audits; and 4 for Efficiency.</li> <li>▶ Some of the trained personnel have worked in Africa and other countries of Asia.</li> <li>▶ Many of the components of the hydro plants are produced in country by trained persons</li> </ul>	<b>3</b>
<p><b>A1:</b> Enabling macro-economic environment</p>	<ul style="list-style-type: none"> <li>▶ The government support to create a market enabling environment through the Feed-in-tariff and establishing the Sri Lanka Sustainable Energy Authority to facilitate the process for getting private sector engagement.</li> <li>▶ Reasonable interest rates, modestly fluctuating exchange rates and absence of restrictions on lending for renewable energy investments were beneficial to the project implementation.</li> <li>▶ Further government support to promote renewables as a part of the energy mix, as a way of reducing expenses on oil gave priority to this project.</li> </ul>	<b>3</b>
<p><b>ID1:</b> Allow for flexibility in project design</p>	<ul style="list-style-type: none"> <li>▶ The ESD project design was flexible and has allowed different approaches and changes whenever required.</li> </ul>	<b>3</b>
<p><b>ID2:</b> Private sector leadership</p>	<ul style="list-style-type: none"> <li>▶ Early ownership of the two projects was taken by the private sector from the project preparation time and they performed as key stakeholders in the project implementation also.</li> <li>▶ Administrative unit was recognized for its financial expertise and was able to bring in private sector especially for financing</li> <li>▶ Private sector provided investment and implementation of renewable energy projects</li> </ul>	<b>3</b>

<p><b>ID3:</b>Multi stakeholder implementation arrangement</p>	<ul style="list-style-type: none"> <li>▶ There was an effective public-private-civil society partnership during the project implementation.</li> <li>▶ Many of the professionals who were in the ESD AU were involved in the RERED AU also. This helped to transfer the experiences gained from the ESD project to the RERED project implementation.</li> <li>▶ The AU has facilitated different stakeholders such as beneficiary households, renewable energy developers, various government entities including CEB, and the World Bank, etc. They maintained a good consultation process with all of them throughout the project period that enabled cooperation and delivery of outputs.</li> </ul>	<p><b>3</b></p>
<p><b>IS1:</b>Electricity access provided to households, rural SMEs and public institutions through off-grid systems</p>	<ul style="list-style-type: none"> <li>▶ Both projects were able to exceed the number of rural households targeted (ESD targeted 17,000 and reached 22,685 hhs while RERED targeted 113,500 and covered 116,795) with off-grid electricity.</li> <li>▶ However use of these systems once grid connection was received was not clearly envisioned in the project and is seen as weakness in the exit strategy. However as stated in the qualitative assessment of the achievements under outcome 1 above post project measures are being taken to address this at least in terms of micro hydro through the group (FECS) set up under this project. Solar systems are not being used (once the grid is available) due to problems with maintaining batteries and lack of after sales technical support from the solar companies. There are 1,072 households identified by the CEB as still needing off grid energy (most likely solar energy) in the future but at present no long term financing is available for them.</li> <li>▶ While providing electricity for improved living conditions was the primary objective the RERED project also tried to stimulate economic opportunities by providing electricity for SMEs as a secondary objective. This target was not achieved. Some increased work hours was possible to already-established SMEs but it did not create new jobs and benefits as expected. The electricity was used mainly for improved wellbeing, education purposes.</li> </ul>	<p><b>2</b></p>
<p><b>IS2:</b>Expanded renewable electricity generating capacity and production in Sri Lanka</p>	<ul style="list-style-type: none"> <li>▶ Renewable energy developers and financial institutions were strengthened and expanded the number of developers through the two projects and this capacity has been used in Sri Lanka as well as other countries. Trained staffs on energy efficiency/energy audits are still available (ESCOs) and continue to provide these services.</li> </ul>	<p><b>3</b></p>

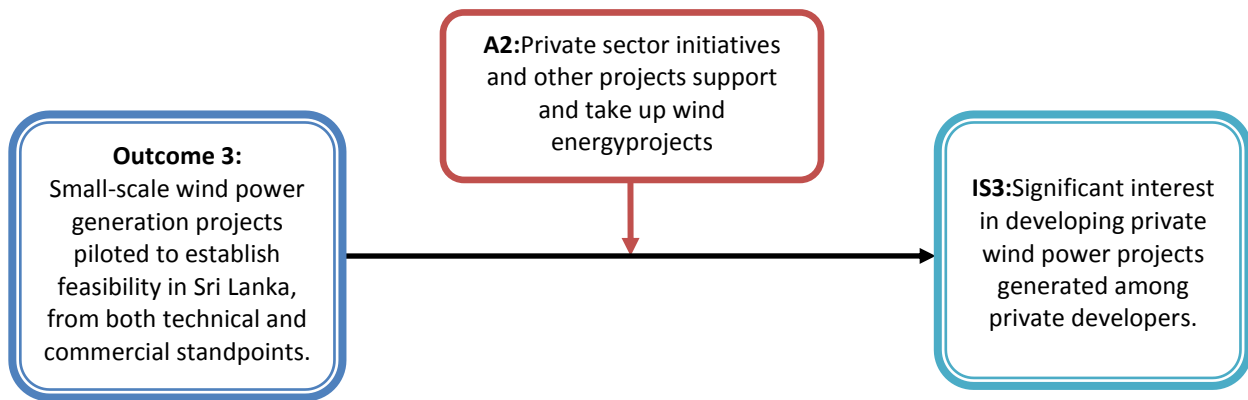
NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

## 4.2 Strategy: Piloting Wind Farm

### 4.2.1 Theory of Change Overview

The piloting wind farm strategy focuses on delivering the third intermediate state “Significant interest in developing private wind power projects generated among private developers.”. In this strategy, it was intended to pilot the technical and commercial feasibility of small-scale wind power generation projects in Sri Lanka.

**Figure 3: Theory of Change for Strategy #2**



#### Outcome

#### **Outcome 3: Small-scale wind power generation projects piloted to establish feasibility in Sri Lanka, from both technical and commercial standpoints.**

One of the objectives of the project was to pilot a grid-connected wind farm project to demonstrate the technical potential and the long-run economic potential for wind power in Sri Lanka.

Initially there was resistance to wind energy from within the CEB but a 3MW grid connected pilot wind farm project was implemented and operated by the CEB. The sighting of the wind farm is seen as the negative factor in terms of the amount of wind power it can generate. However the project is operational and has created awareness on the potential for wind power. Some stakeholders do not consider this pilot as a driver for demonstrating the commercial viability of the wind as based on its performance the viability could not be established and funding could not be sourced on this case alone. The benchmark for a suitable pricing was not possible through this project. However the CEB developed experience with wind power through this project.

*“Sri Lanka’s only utility-scale wind power project, a 3-MW pilot project, is located near Hambantota although several kilometers inland from the southeast coast. The site chosen is different from the sites analyzed in CEB feasibility study in order to distance the project from national park and reserve land. The current site has a lower wind resource than the sites recommended in CEB study and lower than coastal sites. In 2000, the capacity factor for the pilot wind project was 12.8%, which reflects the relatively low wind resource at the project site”.*

## Intermediate State

### ***IS3: Significant interest in developing private wind power projects generated among private developers.***

The ESD project completion report states that as it was the first one to be installed in Sri Lanka, the pilot wind farm did create private sector interest to develop private wind power projects. The CEB also invited expressions of interest for wind power development in 2002 and some projects were submitted but a final selection was not done at the time. However there was interest amongst private developers and 7-8 private companies had presented unsolicited proposals to the CEB. However it was not until 2010 that the first private wind power plants were commissioned with RERED support. This took place after the Energy Policy in 2006 mandated that 10% of energy must be from non-conventional renewable sources and due to the technology based tariff that was established for wind in 2008. Earlier it was the same tariff and conditions given for mini hydro that were available. These changes have enabled better conditions for private sector wind projects. Since this project several privately owned and operated wind farms are now in operation and the Sri Lanka Sustainable Energy Authority website lists 11 licenses issued to private sector.

## Assumption

### ***A2: Private sector initiatives and other projects support and take up wind energy projects***

The ESD and RERED projects largely concentrated on solar and hydro projects and the attention to wind power was mainly through the pilot wind farm and the credit line for wind. However alongside this other projects and support was available to promote wind power in Sri Lanka. The GEF supported project (GEF ID 425 – Renewable Energy and Capacity Building) and USAID's South Asia Regional Initiative for Energy (SARI/Energy) provided training and exposure visits for private and state sector professionals. One of the key inputs seen to be the wind resources and assessment maps and technical support provided by the National Renewable Energy Laboratory (NREL) through a USAID grant. There were also private sector groups who through their own efforts were interested in installing wind power and did their own assessments and studies. The tariff structure for wind also contributed to encouraging private sector involvement.

**Table 5: Outcomes-impacts assessment findings for Strategy #2: Piloting Wind Farm**

Theory of Change Component	Qualitative Assessment	Rating
<b>Outcome 3:</b> Small-scale wind power generation projects piloted to establish feasibility in Sri Lanka, from both technical and commercial standpoints.	<ul style="list-style-type: none"> <li>▶ A 3 MW wind farm was established and is functioning but due to being placed in an area with low wind it was not able to promote the viability of investing in wind power.</li> <li>▶ However some awareness for wind power was raised amongst the CEB and private developers on wind power</li> <li>▶ The experience has helped CEB to build in-house capacity to implement wind farm projects.</li> </ul>	<b>2</b>
<b>IS3:</b> Significant interest in developing private wind power projects generated among private developers.	<ul style="list-style-type: none"> <li>▶ While the CEB did call for expression of interest for private wind power in 2002, and subsequently also received 7 – 8 unsolicited wind power proposals from the private sector these did not result in any projects. It was not until 2010 that a private sector company put forth a project after a positive tariff structure was put in place in 2008 (unrelated to this project).</li> <li>▶ Now Sri Lanka Sustainable Energy Authority website lists 11 licenses issued to the private sector. The CEB extends the support to connect and buy the electricity. These were achieved beyond the project.</li> </ul>	<b>3</b>
<b>A2:</b> Private sector initiatives and other projects support and take up wind energy projects	<ul style="list-style-type: none"> <li>▶ The promotion of wind power was due to support and further work done by other projects that addressed capacity building, exposure visits, wind assessment maps and development of technical aspects of wind generation.</li> </ul>	<b>2</b>

NOTE: The ratings are given on the basis of achieving the intermediate states and the contribution towards achieving final or lasting impact at the time of the evaluation.

## 5. Overall Conclusions

Overall, the project has succeeded in moving towards the desired impact of increasing the use of renewable energy that has contributed to reduction in CO<sub>2</sub> emissions in the electricity sector. This ROI assessment is based purely on the validation and assessment of the delivery of the theory of change modeled above, which has been developed through consultation with the project stakeholders including communities.

A final consolidated rating of the project's progress towards impact is given in Table 6 below (using the scoring system given in Table 4 and 5 above). It provides an assessment of the extent to which the project's theoretical design is in line with the validated theory of change deemed necessary for delivering impact and the progress towards delivering the outcomes-impacts pathways.

**Table 6: Overall rating of project impact**

Outcomes – Impact Assessment	
<b>Strategy 1:</b> Adoption and Promotion of Renewable Energy	<b>3</b>
<b>Strategy 2:</b> Piloting Wind Farm	<b>2</b>
<b>Overall project</b>	<b>3</b>

The ESD and RERED projects were able to address financial and technical barriers and tariff structures that were preventing involvement of the private sector as renewable energy developers. The projects have succeeded in putting in place both on grid and off renewable systems using mainly hydro and solar power through a long term lending mechanism, from commercial banks. However post project a similar long term lending mechanism has not continued. However the renewable energy sector has benefitted from the capacity building of developers, manufacturers and financiers, the cost reflective tariff structures and small scale power purchasing agreements put in place by the project. The commercial use of mini-hydro had also had a positive impact on Green House Gas Emission reductions in Sri Lanka. While on a time bound scale the off grid Solar and Micro hydro projects have also contributed to the reduction in use of kerosene (a fossil fuel) for lighting. There is a tendency to stop using these units once the grid is available. The fact that the ESD and RERED projects did not have an exit strategy for these off grid systems is seen as a weakness. However post project interested parties are working to connect micro hydro to the grid. The capacity built for energy service companies (ESCOs) also continues to be used showing long term use of these built capacities. The private sector also continues to invest in mini hydro and wind power, driven by the Tariff structures and Power Purchasing Agreement. Further barriers to sell the grid, for biomass etc., have emerged and there are new GEF projects coming on board, albeit with a delayed start. Strong lobby groups continue to work with the authorities to improve the uptake of renewables in the country.

## Annex 1: References

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## Annex 2: Sites Visited

### **March 21, 2013**

Hapugasthanna village (Weligepola Divisional Secretariat, Ratnapura District)

- FGD with village hydro society

Name	Gender	Position in the CBO
Malani L. Jinasena	Female	Secretary
G. M. EmalinLatha	Female	Member
W.A. Dayarathna	Male	Committee Member

### **March 22, 2013**

Maduwanwela village (KolonnaDivisionalSecretariat, Ratnapura District)

- FGD with village hydro society

Name	Gender	Position in the CBO
K.M. Munipema	Male	President
P. Sarath	Male	Secretary
K.D. Karunawathi	Female	Treasurer
A.K. Jinadasa	Male	Advisor
A. Somawathi	Female	Member
ChandrikaUdayakumari	Female	Member
G. Jayawardana	Male	Member
A. Dayananda	Male	Member

### **March 23, 2013**

Welewatta village (Kolonna Divisional Secretariat, Ratnapura District)

- FGD with village hydro society

Name	Gender	Position in the CBO
Y. K. Mudiyanse	Male	Secretary
Y. NilanthaSanjeewa	Male	Member
Samantha Rathnayaka	Male	Vice President
K. K. Wijesundara	Male	Member
R. ShyamaleeWijithalatha	Male	Member
Y. SumithManjula	Male	Vice Secretary
W. L. MenakaSajith	Male	Son of a member

### Interviewed solar home system beneficiaries

Respondent's Name	Gender	Village	2.5_GN_Div
D.K. Sumanawathi	Female	Ranwala Kanda	Madaganoya
KanchanaLakmali	Female	Kalotuwawa	Welewaththa
N.M. Anulawathi	Female	Dikwelagoda	Maduwanwela
ThamaraKumari	Female	Matihakkagama	Maduwanwela
K. Mala Malkanthi	Female	Matihakkagama	Maduwanwela
G. Babynona	Female	Kalotuwawa	Welewathugoda
W. Sumanawathi	Female	Kella	Hakbeliara
W. Yasawathi	Female	Hakbeliara	Kella
DinushaPriyangani	Female	Kolanna	kolanna
Kusumalatha	Female	Habbeliyara	Jadura
Mrs.G.Somawathie	Female	Hambiliara	Hambiliara
Mrs. M.A.Malkanthi	Female	Hambiliara	Hambiliara
Mrs. RohiniPushpalatha	Female	Dikwelagoda	Maduwanwela
Mrs. DeepaNilanthi	Female	Elukurayaya	Maduwanwela
Mrs. Ramyakumari	Female	Kalawatuwawa	Welewathugoda

### Annex 3: People Met

Date	Name	Position	Organization
2013/02/07	Noel Priyantha	Chief Engineer – Renewable Energy Projects	Ceylon Electricity Board
2013/02/07	P.L.G. Kariyawasam	Deputy General Manager – Energy Marketing	Ceylon Electricity Board
2013/02/07	KapilaSubasisnghe	Vice President – Corporate Banking	DFCC Bank
2013/02/07	NalinKarunatilake	Assistant Vice President – Project Management	DFCC Bank
2013/02/22	Y.P. Dassanayake	Coordinating Officer	Federation of Electricity Consumer Societies
2013/07/10	SumithPilapitiya	Lead Environmental Specialist	World Bank, Sri Lanka
2013/10/04	Sunith Fernando (phone interview)	Director	Resource Management Associates ( Pvt) Ltd

## Annex 4: Schematic of ESD&RERED Theory of Change

