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SRI LANKA TROPICAL FOREST AND BIODIVERSITY ANALYSIS (FAA 118 &119)

REPORT FOR ABBREVIATED CDCS







March 2016

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Front Cover: The Department of Post issued a set of seven commemorative stamps on 26 January 2016 as first-day covers, a souvenir sheet, and presentation pack in a series titled "National Parks of Sri Lanka." [Stamp Bulletin No 879: 3rd Stamp Issue for 2016: 26/01/2016]. The animals shown are the Big Seven of Sri Lanka depicted on those stamps.

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middle row: SriLankaSafaris.co [leatherback turtle (*Dermochelys coriacea*)]; SriLankaSafaris.co [blue whale (*Balaenoptera musculus*)]

bottom row: SriLankaSafaris.co [estuarine / saltwater crocodile (*Crocodylus porosus*)]; animalport.com [Sri Lankan sloth bear (*Melursus ursinus inornatus*)]

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Sri Lanka Tropical Forest and Biodiversity Analysis (FAA 118 & 119)

Report for Abbreviated Country Development Cooperation Strategy (CDCS): 2017-2019

March 2016

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Acronyms

ADS	Automated Directive System
BDS	Biodiversity Secretariat (MoMDE)
CBD	Convention on Biological Diversity
CDCS	Country Development Cooperation Strategy
CEA	Central Environmental Authority
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
DWC	Department of Wildlife Conservation
FAA	Foreign Assistance Act, as amended
FAO	Food and Agriculture Organization of the United Nations
FD	Forest Department (MoMDE)
FRA	Forest Resources Assessment [periodic global review of the state of the world's forests and their attributes]
GVP	Office of Governance and Vulnerable Populations (USAID/Sri Lanka)
GSL	Government of the Democratic Socialist Republic of Sri Lanka
ha	hectare [10,000 square meters or 2.47 acres]
IUCN	International Union for the Conservation of Nature
km^2	square kilometers [1 km^2 = 100 hectares or 247 acres]
MEA(s)	Multilateral Environmental Agreement(s)
MEPA	Marine Environmental Protection Authority
MoE	Ministry of Environment
MoENR	Ministry of Environment and Natural Resources
MoE&RE	Ministry of Environment and Renewable Energy
MoMDE	Ministry of Mahaweli Development and Environment
MSDW	Ministry of Sustainable Development and Wildlife
NGO(s)	nongovernmental organization(s)
NRMD	Natural Resources Management Division (MoE&RE)
PA(s)	protected area(s)
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFCCC	United National Framework Convention on Climate Change
USG	Government of the United States of America
USAID	United States Agency for International Development
WCMC	World Conservation and Monitoring Centre

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Preface

This analysis of tropical forests and biological diversity in Sri Lanka comes at a time of transition for Sri Lanka, for USAID/Sri Lanka, and for USAID's Agency-wide processes and products for implementing Section 118(e) and Section 119(d) of the Foreign Assistance Act of 1961 (FAA) as amended.

Sri Lanka underwent a political transition in 2015 that saw the long-ruling party voted out of power. As this report is being written in January 2016, the effects of a new party leading the government are still rippling through the various ministries, departments, and agencies of the Government of Sri Lanka (GSL). Institutional arrangements across the government are undergoing reorganization. Some ministries are being elevated in status, departments are being rearranged, and new agency leaders are setting priorities that in some cases differ from those of their predecessors.

USAID/Sri Lanka was in the process of reducing its portfolio of programs, recognizing both the success of Sri Lanka in achieving positive macro-level results on economic, health, and education indicators, and the reality that the former government was often an unwilling partner for USAID in Sri Lanka. With the new party assuming power, the U.S. reassessed that decision, and reversed course. USAID/Sri Lanka is now expanding rather than contracting, guided by the CDCS for which this analysis was conducted.

As an agency, USAID is implementing the Biodiversity Policy approved in March 2014. One of the actions taken was to form a working group of pillar and regional bureau staff to update processes and products used for meeting the requirements of FAA 118 and 119. The most recent guidance for conducting these analyses was produced in February 2006, and in the intervening decade, many of the lessons and best practices became outdated. The reports vary in quality across USAID operating units, and in some cases are bulky compilations of information available elsewhere, often 150-200 pages long. Reports of this type serve a useful purpose by providing a single reference document for those interested in developing biodiversity programs in a country, yet the excessive length also makes them inaccessible to more general audiences among USAID staff and implementing partners. This is especially true in cases such as Sri Lanka where environment programs are not among Agency priorities in the country. The result has often been that actions recommended in 118/119 reports were unrelated to a Mission's portfolio and did not support the primary purpose of the FAA sections and Biodiversity Policy: to integrate conservation and sustainable development into all USAID programming.

This report, therefore, is an initial attempt at testing new ways of conducting the analysis and reporting on the required elements of FAA 118 and 119, and the ADS 201 guidance for CDCSs. Because USAID/Sri Lanka does not receive and is not anticipating biodiversity program funds, we make recommendations that we hope align more closely with the programmatic priorities and directions of the Mission, and identify opportunities for integrating actions to conserve tropical forests and biodiversity in Sri Lanka into economic growth and governance programs that are the Mission's priorities. We also make liberal use of hot links to external websites and other online resources, recognizing that shorter reports are more likely to be read more widely, while also providing access to more detailed information for the smaller set of readers who are interested in a list of protected areas, scientific descriptions of endangered species, or similar information commonly found in most reports of this type.

Executive Summary

The USAID/Sri Lanka mission is developing an abbreviated CDCS for the period 2017-2019. Under sections 118 and 119 of the FAA, each country strategy produced by USAID must include an analysis of tropical forests and biodiversity, respectively. In January 2016, this analysis was conducted in Sri Lanka, focusing on the two key questions under FAA 118 and 119:

(1) What actions are necessary in the country to conserve tropical forests and biodiversity?
(2) To what extent do planned USAID programs in the country consider these actions?

Because the CDCS is still being formulated, the second question cannot be fully answered at this time. The results of the analysis presented in this document, therefore, instead provide ideas for consideration by USAID/Sri Lanka on actions that they could take that would contribute toward both the intent of the legislated mandate and the overall development objectives in Sri Lanka during the three-year period covered by the CDCS.

Positive Building Blocks for Reinvestment in Natural Capital Assets

Based on a review of several dozen documents, and interviews with key stakeholders in government, civil society, and academia in Sri Lanka, the overall state of tropical forests and biodiversity is quite positive. The country is endowed with an abundance of natural capital assets that place it in the top tier globally in terms of ecosystem diversity. Sri Lanka has perhaps the world's highest proportion of unique species – those found nowhere else – on a per-hectare basis. The geology and natural history of the island nation, coupled with relatively good soils and generally favorable climate, provide ecological niches occupied by specialist species and unique subspecies of animals and plants whose nearest relatives may be on the Indian subcontinent. These conditions also provide the foundation for a diverse agricultural economy and growing tourism industry.

Unlike many of her neighbors, Sri Lanka is not facing a crisis in terms of deterioration of these natural capital assets; such a deterioration would portend an inability to continue providing the ecosystem goods and services that underpin a strong economy and society. The extent of area under protected status is growing for forests, wetlands, and coastal and marine ecosystems, although management quality is uneven across the network of protected areas. A well-crafted body of environmental laws and policies is in place and widely seen to provide a sound framework for sustainable development if the laws and policies could be implemented more fully. In short, Sri Lanka has many of the building blocks in place to become a model for other countries in the region and beyond who are looking for examples of green growth in the 21st century. Taking advantage of these positive aspects is an opportunity for the country.

Challenges to Achieving Sustainable Development in Sri Lanka

There are, of course, a number of challenges facing Sri Lanka and its tropical forests, biodiversity, and other natural capital assets. The political transition that began in 2015 remains a work in progress; an absence of meaningful redress for long-simmering grievances could divert leadership attention from its stated goals of strengthening the economy and society in ways that are more sustainable. This may reopen old scars or stoke new tensions, undermining rule of law and potentially resulting in renewed efforts to liquidate natural capital assets for short-term gain. The rampant deforestation and ecosystem degradation of past decades may return, fundamentally altering the current positive trajectory.

Although Sri Lanka ranks in the middle on Transparency International's Corruption Perceptions Index at 83rd of 168 countries in 2015, systemic rent seeking and the use of political connections to circumvent environmental laws are another challenge. When the value of natural capital assets is captured by private interests, and costs (pollution abatement, habitat loss, declining productivity and health) are shifted to society, the overall economy – and public sector revenues – is prevented from reaching its potential. The Biodiversity Secretariat, a unit of the Ministry of Mahaweli Development and Environment, identified in its Biodiversity Conservation in Sri Lanka: A Framework for Action (1999) the valuation of biodiversity among a set of priority actions for achieving conservation and sustainable development of natural capital. Among the under-valued services provided by forests, for example, to GDP are those beyond the value of marketed timber, including: hydrological regulatory functions that benefit irrigation and hydropower schemes; non-timber forest products such as medicinal plants, food, cane and rattan; genetic diversity in wild relatives of domesticated plants such as disease- or pest-resistant rice; and aesthetic or social values.

Opportunities for USAID/Sri Lanka Programming

During this analysis, several stakeholders highlighted a recent renewal of interest in "carrying out studies to make realistic valuations of Sri Lanka's biodiversity, and apply the results in national planning, national accounting, and decision making at different levels."[1] **Supporting this action could be the most impactful activity that USAID/Sri Lanka undertakes in the period covered by the CDCS.** By taking advantage of rapid progress over the past 15 years in developing methodologies for valuation of natural capital, USAID has the opportunity to support Sri Lanka's new government as it alters the trajectory of development toward a sustainability model for other middle-income nations to emulate. Combined with efforts to support continued strengthening of the political reform process now underway, the relatively short period of this CDCS could have long-term and far-reaching impacts in the region. Increasing both the public perception of more responsive governance and the reality of a growing economy providing inclusive access to opportunity could generate a positive feedback loop further reinforcing improvement on both economic and governance measures, and solidifying genuine reconciliation across society.

A more targeted set of recommendations for possible interventions is in Section VI of this report, including specific ideas for areas within the economic growth and governance parts of the planned portfolio where co-benefits to tropical forests and biodiversity in Sri Lanka may be encouraged. These range from proactively seeking investors in clean energy to promoting climate-smart agricultural practices as part of achieving economic growth objectives, or including environmental justice and transparent data on water quality among the topics raised during efforts to strengthen civil society participation in national governance. As a legally-required minimum, USAID/Sri Lanka has a responsibility to closely monitor all resettlement programs or agribusiness developments to ensure that no negative impacts on Sri Lanka's tropical forests and biodiversity are inadvertently resulting from sponsored interventions.

Bottom Line: The Time is NOW

The United Nations General Assembly adopted Sustainable Development Goals in September 2015 and the UN Framework Convention on Climate Change adopted a new agreement in Paris, while Sri Lankans voted twice for fundamental change in national leadership, and USAID reengaged. With the momentum of these historic events providing "wind in the sails", the next three-to-five years in Sri Lanka may be a once-in-a-generation opportunity for development professionals to make lasting impact. Just Do It!

[1] Ministry of Forestry and Environment. 1999. Biodiversity Conservation in Sri Lanka: A Framework for Action. Approved by the Cabinet of Ministers on 27 August, 1998.

Figure 1: Physiographic map of Sri Lanka

[*From* Perry-Castañeda Library Map Collection, University of Texas at Austin]

I. Introduction

This document is the report of an analysis conducted by USAID/Sri Lanka to assess the actions needed in Sri Lanka to conserve tropical forests and biological diversity, and the extent to which the current and proposed actions of USAID/Sri Lanka meet or could meet the needs identified by the analyses.

A. Purpose of the analysis

The results reported in this document are intended to guide USAID/Sri Lanka in taking tropical forestry and biodiversity concerns into consideration for its programs under an Abbreviated Country Development Cooperation Strategy (CDCS) (2017-2019[2]). The strategy is being formulated as a result of U.S. policy decisions to support the new government elected in Sri Lanka in 2015. Sections 118 (Tropical Forests) and 119 (Endangered Species) of the Foreign Assistance Act (FAA) of 1961, as amended, require USAID to complete a country analysis as part of formulating country strategies, in recognition of the critical roles that tropical forest ecosystems, and biological diversity in all ecosystems, play in facilitating sustainable development. This analysis also is necessary to comply with country strategy guidelines under ADS 201.3.5.2(1)(a).

B. Methodology for the analyses

The most recent Sri Lanka FAA 118/119 Tropical Forests & Biodiversity Analysis was completed in July 2011. The report from that analysis[3], conducted by a team from USAID and the Sri Lanka country office of the International Union for the Conservation of Nature (IUCN), compiled a comprehensive base of information on tropical forests and other ecosystems, threats to those ecosystems, and recommendations for reducing those threats. Much of the 2011 analysis was informed by official Government of Sri Lanka (GSL) documents and other sources, including *inter alia* national and international research institutions, donors, nongovernmental organizations (NGOs).

Rather than repeat that information, the analysis reported here focused on updating the previous report[4] with changes in the status of tropical forests and biodiversity of Sri Lanka, new institutional arrangements for management of natural resources, emerging threats to forests and other ecosystems, and other updates from the past four-to-five years, particularly dynamics in the past year under the new government. More emphasis was placed on analyzing available information in the context of USAID/Sri Lanka strategic directions, with recommendations on ways to integrate the conservation and sustainable management of forests and biodiversity into planned program designs.

Methods for the analysis included review of recent documents and interviews with key officials of the various GSL agencies with responsibility for Sri Lanka's terrestrial and marine natural resources. The team also met with senior members of the IUCN country office, and University of Peradeniya. A list of those with whom we met in attached as Annex1. The team was composed of the Forestry and Climate Change Advisor from the USAID Bureau for Asia's Office of Technical Services and the USAID/Sri Lanka Deputy Mission Environmental Officer. We were assisted by, and gratefully acknowledge the invaluable contributions of Bandula Nissanka in setting up meetings with GSL officials, and Solita Muthukrishna for administrative support.

[2] USAID/Sri Lanka is preparing an Abbreviated CDCS per Automated Directive System (ADS) chapter 201.3.3.3.
[3] Volk, R; Bandaratillake, HM; and Vidanage, S. 2012. *Sri Lanka FAA 118/119 Tropical Forest & Biodiversity Analysis*. USAID and IUCN. January 2012.
[4] Hereinafter referred to as "the 2011 analysis" or "Volk et al. 2012"

II. Overview of Sri Lanka's Tropical Forests and Biodiversity

Sri Lanka is an island nation of approximately 65,610 square kilometers (km^2), of which 6.27 million hectares (ha) are land surface and 290,000 ha are inland water surface.[5] Despite this relatively small area, the GSL Biodiversity Secretariat[6] (BDS) and Biodiversity International both recognize Sri Lanka as a mega-diverse country. This is due to topographic and climatic variation creating ecological niches that result in one of the highest rates of endemism[7] in the world.

An estimated 90% of Sri Lanka is made up of crystalline rocks, some dating back nearly two billion years to Precambrian times. This explains the importance of Sri Lanka within the gem mining industry.[8] The land existed since before Gondwanaland broke apart in the Cretaceous period, followed by 30 million years of evolutionary isolation.[9] Nine peaks rise more than 2,000 meters above sea level, topped by Mount Pidurutalagala at 2,524 m (8,281 ft) south-southeast of Kandy. Sri Lanka's location between 6° and10° North latitude, and lying southeast of the Indian landmass, also places it on the annual path of the northeastern and southwestern monsoons (December to March and June to October, respectively), interspersed with relatively drier inter-monsoonal periods. The wet zone (central and south-western parts) receives an average of 2500 mm of rain per year, while the dry zone (northern, eastern, and southeastern parts) rainfall averages 1500 mm. Northwest and southeast coasts are drier (<1000 mm).

A. Tropical forests of Sri Lanka

A direct result of its topographic and climatic variation is the diversity of vegetation types found in Sri Lanka; 15 floristic zones are recognized by ecologists.[10] The total national forest cover is approximately 29%[11], and several of the officials interviewed for this analysis mentioned a new national target of 32% forest cover. The most recent national forest assessment was conducted in 2010, providing the data cited in Volk et al. (2012). Here, we will use more recent figures from the Global Forest Resource Assessment 2015 (FRA 2015) conducted by the Food and Agriculture Organization of the United Nations (FAO) using estimates based on satellite imagery. Table 1 shows updated estimates of changes in land cover during the past 25 years. Sri Lanka instituted a commercial logging ban in 1990.

Table 1: Land cover type changes in Sri Lanka: 1990-2015

Land Cover Category	Area (000 hectares) [%]				
	1990	2000	2005	2010	2015
Forest land (including rubber and forest plantations)	2,284 [34.8]	2,192 [33.4]	2,118 [32.3]	2,103 [32.1]	2,070 [31.6]
Other wooded land	0	0	0	52	52
Other land	3,987	4,079	4,153	4,116	4,149
Inland water areas	290	290	290	290	290
TOTAL	**6,561**	**6,561**	**6,561**	**6,561**	**6,561**

Source: FAO Global Forest Resources Assessment 2015

[5] FAO. 2014. Global Forest Resources Assessment 2015; Country Report Sri Lanka.
[6] BDS. 2014. Sri Lanka's Fifth National Report to the Convention on Biological Diversity. Ministry of Environment and Renewable Energy.
[7] Endemism is the degree of uniqueness of species, measuring the proportion not found anywhere else in the wild.
[8] For example, Zwaan, P. 1982. *Sri Lanka: The Gem Island*. Gems and Geology, September 1982.
[9] Although the slender coralline link between Sri Lanka and southern India, known as Adam's Bridge, only broke apart in the 15th century CE.
[10] Gunatilleke, IAUN and Gunatilleke, CVS. 1990. Distribution of Floristic Richness and Its Conservation in Sri Lanka. *Conservation Biology* Vol. 4, No. 1: pp. 21-31.
[11] FAO. 2015. *FAO Statistical Pocketbook 2015: World Food and Agriculture*. [*n.b.* rounded from 28.68%; excludes forest plantations & rubber]

1. Major forest types

The Forest Department, housed in the Ministry of Mahaweli Development & Environment, recognizes eight forest types. The most extensive by far is the dry monsoon forest concentrated especially in a half-dozen districts in North Eastern, North Central, and Uva Provinces, where elevation and rainfall are less varied compared to the highlands of Central Province and areas further west. The dry monsoon forests comprise almost half of total forested area

Data vary across sources on the actual extent of each forest type, with those of the Forest Department, FAO, Biodiversity Secretariat (also in the Ministry of Mahaweli Development & Environment), and the 2011 analysis differing even for the 2010 National Forest Assessment. These data inconsistencies are not uncommon, with different analysts often using slightly different criteria for classification of land cover as well as differences in interpretation of remote sensing data. Nevertheless, Table 2 provides an updated but unofficial estimate of approximate proportions of forest in each of the eight recognized forest types. This table should be used to understand relative extent rather than actual number of hectares in each category.

Table 2: Approximate extent of forest cover by forest type (unofficial estimates)

Forest Type	Approx. Extent (000 ha)	Approx. Extent (% of total forest area)	Primary Districts (having >10% of total estimated national hectarage)
Dry monsoon forest	1,121.4	59.6%	Anuradhapura, Millaittivu, Trincomalee, Mannar, Moneragala, Vavuniya
Sparse & open forest	426.7	22.7%	Anuradhapura, Hambantota, Moneragala, Ampara
Lowland rainforest	124.0	6.6%	Ratnapura, Galle, Matara, Kalutara, Kandy
Moist monsoon forest	117.7	6.3%	Moneragala, Ampara, Polonnaruwa, Matale
Montane forest	44.8	2.4%	Kandy, Nuwara Eliya
Sub-montane forest	29.0	1.5%	Nuwara Eliya, Ratnapura, Kandy
Mangrove	16.0	0.9%	Puttalam, Batticaloa, Trincomalee, Mannar
Riverine dry forest	2.4	0.1%	Ampara, Hambantota
TOTAL	**1,882.0**	**100%**	

Sources: extrapolated by author from FAO Forest Resources Assessment 2015; Forest Department – Sri Lanka; Volk et al. 2012; BSP 2014

Technical descriptions of each forest type are provided on the FAO Forestry website, and in the Forest Department's 2009 publication Sri Lanka Forestry Sector Outlook Study.

With the diversity of forest types described above comes high levels of biodiversity within the forest ecosystems. According to the Biodiversity Secretariat, of Sri Lanka's 3,154 species of native flowering plants (angiosperms), "28% are endemic to the country, including 14 endemic genera. For example, all 58 species of dipterocarps[12]found in Sri Lanka are endemic. Similarly, the genus *Syzygium*[13] … has 30 indigenous species, of which 25 are endemic, while 26 of the 33 species of *Memecylon*[14] are endemic."[15] Orchids, pitcher plants, ferns, and other plants found in the forests of Sri Lanka also have high rates of endemism, especially the wet zone forests in the central highlands and southwestern parts of the country.

[12] The dipterocarp family of high-value timber species extends across South and Southeast Asia and is traded as Lauan
[13] A member of the myrtle family of woody species that includes clove, allspice, eucalyptus, bay rum trees, and others.
[14] A genus in the Melastomataceae family of small trees or woody shrubs, most with showy flowers
[15] BDS 2014. *Op cit.*

According to the Forest Department, they now manage approximately 60% of the total forest area of the country, categorized under the Forest Ordinance (1907, last amended in 2009) and the National Heritage and Wilderness Areas Act (1988) into one of five categories. The categories are[16]:

- *National Heritage Wilderness Areas* – unique ecosystems provided maximum legal protection; Sinharaja forest is the only area declared as a national heritage wilderness area at present.
- *Conservation Forests* – important ecosystems declared for maximum legal protection; no activity other than research and visitations is allowed within these forests.
- *Reserved Forests* – important forest areas for conservation of soil, water and biodiversity; non-extractive uses are allowed within these forests.
- *Village Forests* – areas declared to provide forest products and services for local communities.
- *Other State Forests* – do not fall under the previous categories; after demarcation of boundaries these forests will eventually be declared into one of the above categories.

During interviews conducted for this analysis, the Conservator General of Forests said that several new areas had been added to the Conservation Forest and Reserved Forest category in the past year as work was completed on boundary demarcation and gazettement of the legal description. Table 5 in Section III.C provides summary data on all protected areas in Sri Lanka.

The Department of Wildlife Conservation manages the other 40% of forested ecosystems under protected status. These are categorized as National Parks, Nature Reserves, Strict Nature Reserves, Sanctuaries, and Ramsar Wetlands of International Importance. The protected areas are detailed in Section III.C. The two largest of these are Wilpattu National Park and Yala National Park at 131,000 and 98,000 ha respectively.

2. Current status and trends

From interviews with officials of the Forest Department, Biodiversity Secretariat, and the Ministry of Sustainable Development & Wildlife, as well as IUCN and University of Peradeniya, all indications are that Sri Lanka's tropical forests are generally healthy and under reasonably good management. This is also seen in the documents reviewed for this analysis. Unlike tropical forests elsewhere in Asia, the overall extent of natural forest cover remained fairly steady over the past 25 years at about 2 million hectares, or almost one-third of national land surface. Sri Lanka's Fifth National Report to the Convention on Biological Diversity in 2014 stated that "[t]his is a positive feature when compared with the annual deforestation rate of around 40,000 ha during the period 1956 and 1992."[17] That is, Sri Lanka is no longer facing a critical or crisis situation. For this, the Government of Sri Lanka should be commended. The logging ban in 1990 is credited for halting large-scale deforestation.

We also heard very positive views on the prospects for Sri Lanka's forests and their biodiversity in the near future, aided by strong leadership. The Minister of Mahaweli Development & Environment – where both the Forest Department and Biodiversity Secretariat are housed – is also the president of Sri Lanka. Both President Maithripala Sirisena and Prime Minister Ranil Wickremesinghe have made public pronouncements of their strong support for conservation of forests and other natural capital.

Despite this positive situation and trend, Sri Lanka's forests are facing threats. The following section describes these, based on interviews. For most of the threats listed, data are not yet available documenting

[16] Descriptions for each category are edited extractions from the Forest Department website at the link provided.
[17] BDS 2014. *Op cit.*

the extent of forest area affected by each of the threats. The Forest Department will conduct an updated national forest inventory this year to validate the estimates in the FAO Forest Resource Assessment 2015 that were derived from remote sensing data.

3. Drivers of change in forest quality

Even with the overall positive situation regarding sustainable management and conservation of forests in Sri Lanka, there are areas of concern. The 2011 analysis listed 14 direct threats and 17 indirect threats to forests and biodiversity.[18] Comprehensive iterations of these are useful for Missions that need to delve deeply into threats and their inter-linkages in order to develop programmatic theories of change for designing biodiversity activities. Because USAID/Sri Lanka is not in that situation, we focus here on the top, high-priority drivers of change in forest quality so that Mission program designers are aware of and may incorporate reduction of these drivers into their designs. At a minimum, **Mission programming cannot – by law – contribute to accelerating negative drivers**; i.e., those that reduce forest quality. Specific opportunities and actions for positive effects on forests are presented later.

In order to concisely encapsulate the drivers of declining forest quality, Table 3 lists those cited most often in documents reviewed and by those interviewed for this analysis. Some of the ways that the GSL is addressing these drivers of change in forest quality are described in Section IV, along with thoughts from those interviewed and the analysts who conducted this assessment on other actions that could be taken for sustainable management and conservation of forests in Sri Lanka. Specific ideas for consideration in USAID/Sri Lanka programming are in Section V.

Table 3: High-priority drivers of declines in forest quality

Drivers of decline (ranked)	Description / discussion
Forest conversion to commercial agriculture	Commercial logging was halted in the 1990s as a logging ban was implemented. The most serious concern now is expansion of commercial agriculture, especially in wet zone areas. Those interviewed were unable, however, to provide reliable estimates of the extent of conversion since it is an emerging challenge only seen in the past year or two.
Resettlement programs and other development projects	Many internally-displaced populations are now being resettled as part of national efforts to achieve reconciliation. Some are returning to original home areas, reclaiming lands overgrown as forests during the conflict years; those generally are not considered deforestation. Rather, the concern is the opening of natural forest land for resettlement or accompanying development projects such as irrigation schemes. This dynamic primarily affects the dry zone.
Conversion of mangroves	Mangroves are among the most productive ecosystems on a per-hectare basis, given their deep and fertile soils, and the high number and impact of ecosystem services for fisheries, coastal protection, carbon sequestration, and others. The relatively small extent of mangroves in Sri Lanka places them at higher risk. One expert cited mangroves as the most threatened ecosystem in the country.
Degradation and fragmentation	Small-scale "nibbling" at forest edges and opening of patches within forests is reported to be a relatively minor issue in single locations, but in the aggregate is leading to habitat loss, more widespread fragmentation of forests, and increased occurrence of human-wildlife conflict. Much of this dynamic was attributed to clearing forest for grazing by cattle (see also Biodiversity section).
Invasive species	Several of those interviewed mentioned this as a challenge, primarily in terms of displacing local endemics in specialized niches of the various forest ecosystems (see also Biodiversity section).

Sources: Team interviews with senior officials of GSL and other stakeholder; Volk et al. 2012; BDS 2014; other documents listed in References

[18] Volk et al. 2012. *Op cit*.

B. Biodiversity of Sri Lanka

As highlighted above, the diversity of forest ecosystems in Sri Lanka provides numerous ecological niches that result in high rates of endemism. Sri Lanka has among the highest rates of endemism in the world on a per-hectare basis.[19] This section focuses on ecosystems other than forests, as well as the animal diversity found in forest and non-forest habitats throughout the country. In addition to freshwater and marine habitats, these include grasslands and other systems composed of non-woody plants as well as the notable levels of agro-biodiversity found in Sri Lanka.

1. Major ecosystem types and their biodiversity

The Biodiversity Secretariat reported to the Convention on Biological Diversity that Sri Lanka has higher species richness per 10,000 km^2 for mammals, reptiles, amphibians, fishes, and flowering plants than any other country in the Asian region, "and is second only to Malaysia [for] density of bird species."[20] Along with the high levels of endemism noted earlier, this species richness is a due to the range of ecological niches present in the country, in turn a function of topographic and climatic variation. In this section, we will provide snapshots of the natural capital assets Sri Lanka has within the major ecosystem types, while those interested in more detailed descriptions can refer to the links and cited documents.

a) Grasslands

The total extent of grasslands is thought to be 300,000-400,000 ha,[21] making them the most common non-agricultural land cover type after forests. Grasslands are categorized into three types,[22] although data on the extent of each type are not available. The types are:

- Montane grasslands (*patana*) at elevations from 500 m to >2,000 m and rainfall between 1,750-4,000 mm per year; result from abandonment of forest lands converted to shifting cultivation;[23] Horton Plains National Park is an archetype of this ecosystem;
- Savanna grasslands at moderate elevations (250-500 m), and rainfall (1,450-2,000 mm/year); these tall-grass systems are found on lands subject to frequent fire;
- Lowland grasslands below 200 m elevation; subdivided depending on levels of rainfall; dry zone areas (*damana*) provide fodder for elephants and buffalo, *villu* marshes along rivers in the dry zone are important habitat for birds, and wet zone *talawa* grasses occupy heavily eroded sites.

Photo Credit: Sambur deer (*Cervus unicolor*) from Yala Sanctuary blogspot

Damana grasslands and nearby dry zone forests are important as habitat for elephants, bears, leopards, Sambur deer, and other large mammals,[24] providing a unique eco-regional opportunity for conservation.

[19] BDS 2014. *Op cit.*
[20] Ibid.
[21] Author extrapolation from BDS 2014 and Punyawardena, BVR. 2004. Technical report on the characterization of the agro-ecological context in which farm animal genetic resources are found: Sri Lanka. Farm Animal Genetic Resources Asia Project.
[22] Premaratne, S. and Premalal, GGC. 2006. Country Pasture/Forage Resource Profiles: Sri Lanka. FAO
[23] Volk et al. 2012. *Op cit.*
[24] BDS 2014 *Op cit*. Also Sri Lanka dry-zone evergreen forests.

b) Wetlands

The FAO estimates that there are almost 300,000 ha of inland wetlands in Sri Lanka,[25] which is not consistent with GSL estimates for inland water bodies;[26] the latter estimate is twice that of the FAO's. The reasons for this discrepancy could not be ascertained within the time available for this analysis. Regardless of their extent, wetlands play a critical role in biodiversity by providing habitat for aquatic and terrestrial species. For example, *villu* marshes are important grasslands not only for migratory and resident birds, but also habitats where amphibians, damselflies, dragonflies, and other species thrive in ecological transition zones. Animal groups occupying this ecological niche, and with high endemism in Sri Lanka, include land snails (81% of 253 species are endemic), amphibians (86% of 111 species), and several orders of insects adapted to marsh ecosystems. Even though they are seasonally wet or dry, these marshes along the estimated 103 rivers flowing out of the central highlands have "a dominant role in shaping the wetland landscape."[27] Within rivers and reservoirs ("tanks") themselves, Sri Lanka has a 98% endemism rate for its 51 species of freshwater crabs, and 55% of the 91 species of freshwater fish are endemic.

Six wetland ecosystems covering 198,172 ha have been afforded international protection under the Ramsar Convention. These are: Bundala (Hambantota; 6,210 ha), Annaiwilundawa Tanks Sanctuary (Puttalam; 1,397 ha), Maduganga (Galle; 915 ha), Vankalai Sanctuary (Mannar; 4,839 ha), Kumana Wetland Cluster (Ampara; 19,011 ha), and Wilpattu Ramsar Wetland Cluster (Anuradhapura and Mannar; 165,800 ha). The last and largest of these covers the entirety of Wilpattu National Park, and consists of more than 200 lakes and *villu* marshes. The global biodiversity importance of Maduganga and Madampe wetlands has earned them recognition by Living Lakes program of the Global Nature Fund, alongside iconic wetlands as Russia's Lake Baikal and Cambodia's Tonlé Sap.

c) Coastal and marine systems

Sri Lanka's coastline of about 1,585 km includes 300 km of beaches and sand dunes.[28] The maritime area of responsibility, at more than 230,000 km^2, is approximately three times larger than the land area, and includes 31,000 km^2 of continental shelf.[29] The southern and western coasts have fringing coral reefs with high biodiversity, much of which has only recently been studied.[30] Between the 4th (2009) and 5th (2014) national reports to the Secretariat for the Convention on Biological Diversity, more species of hard and soft coral, echinoderms (starfish, sea urchins, etc.), crustaceans, shellfish, and brackish water fishes were reported. Coral mining for lime production is the most severe cause of degradation.[31]

Estuaries and lagoons are by far the most extensive coastal zone ecosystem, with an estimated 127,000-158,000 ha.[32] The ecosystem boundaries (or "ecotones") between terrestrial and marine environments make coastal lagoons and estuaries some of the most productive and diverse systems on Earth.[33] In Sri Lanka, this value has been recognized through the 14 protected areas that have some or all of their expanse at the land-sea interface.

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[25] FAO 2014. *Op cit.*
[26] BDS 2014 *Op cit.*
[27] Volk et al. 2012. *Op cit.*
[28] Rajasuriya, A. n.d. Coral Reefs of Sri Lanka: Current Status and Resource Management. http://www.fao.org/docrep/x5627e/x5627e09.htm
[29] Ibid
[30] BDS 2014. *Op cit.*
[31] Volk et al. 2012. *Op cit.*
[32] Ibid. The 2012 report gives two figures for the extent of these ecosystems in Sri Lanka, both with the same citation. This team was unable to verify which is the correct figure, so it is presented here as a range between the two. BDS 2014 puts the figure at 129,100 ha.
[33] Miththapala, S. 2013. *Lagoons and Estuaries*. Coastal Ecosystems Series (Vol 4). vi + 73 pp. IUCN Sri Lanka Country Office, Colombo.

Many of the large lagoons – such as Puttalam, Jaffna, and Batticaloa – have extensive seagrass beds that provide habitat for endangered dugong and sea turtles.[34] The nation's most recent upgrade of a sanctuary to a national park (Chundikkulam)[35] contains seagrass beds and mangrove forest as it connects the Jaffna Peninsula to the mainland in Kilinochchi District.

Birdlife International recognizes 56 Important Bird Areas in Sri Lanka, with the majority of these found among the 89 lagoons (total area of more than 36,000 ha) and nearly 89,000 ha of estuaries that ring the island.

2. Drivers of change in biological diversity

The remarkably high density of endemic species per unit land area makes Sri Lanka a truly special place. Geology, geography, climate, and culture have combined to bestow a richness of ecosystems and species that is among the most notable on Earth. Two millennia or more of Sri Lankans' conservation ethos have also led to one of the world's highest proportions of territory under some form of protected status.

Sri Lanka has not been immune, however, to some of the same forces that have decimated the natural capital heritage of so many of her neighbors. As noted earlier, rampant deforestation in the 1970s and 80s led to a complete ban on logging in natural forest in 1990. Mining of coral reefs for lime has effectively killed the reefs near Colombo, and the variety of marine life they support. Aquaculture expansion along the coast competes with seagrasses and mangroves, with short-term economic gain often winning the day over long-term stability and sustainability of the coastal zone.[36] The tsunami that tragically struck eastern Sri Lanka in 2004 underscored the value of intact natural buffers, as the areas with a "green belt" suffered less loss of life and property compared to areas where mangroves, reefs, seagrass beds, and sand dunes had been disturbed or removed.[37]

During interviews conducted for this analysis, habitat encroachment in grasslands was cited as one of the most pressing issues driving degradation of Sri Lanka's biodiversity asset base. Most commonly, this was reported to be for cattle grazing. As herd sizes increase, pressures also increase to use biodiverse *patana* and *damana* grasslands as pasture, leading to competition for resources with elephants, buffalo, Sambur and other deer species, as well as smaller mammals that need the grass cover to evade predators.

Photo Credit: Giant Squirrel (*Ratufa macroura*) by Steve Garvie

A pair of issues was cited as being related to the competition for grasslands. One was reduced predator populations (leopard, foxes, etc.) because they are less able to track and capture prey in shorter grass cover. This has led to an over-population of wild boar, giant squirrels, porcupines, peacocks, and Toque macaque. The second issue was increased incidence of human-wildlife conflict as cattle, buffalo, and elephants all inhabit the same locations. Some of the respondents stated that poaching of "problem" wildlife is among the leading causes of declining populations among large mammals such as elephants.[38]

[34] Volk et al. 2012. *Op cit*.
[35] Declared a national park on 22 June 2015; it remains listed in the World Database of Protected Areas as a Sanctuary.
[36] Senaratna Sellamuttu, S; Finlayson, CM; Nagabhatla, N; Diphoorn, L 2011. Linkages between changes in land cover (use) patterns, local perceptions and livelihoods in a coastal wetland system in Sri Lanka. Journal of the National Science Foundation of Sri Lanka, 39(4):391-402.
[37] Appanah, S. 2005. Assessment of Forestry-Related Requirements for Rehabilitation and Reconstruction of Tsunami-Affected Areas of Sri Lanka. Bangkok: FAO. Also: Liyanaarachchi, A. n.d. Coastal forest rehabilitation and management in Sri Lanka. Forest Department, MENR.
[38] See also: Sooriyabandara MGC. 2014. A game theoretic scrutiny to human elephant conflict. *WILDLANKA J. Department Wildlife Conservation* Vol. 2:29-39.

The other major issue raised by those interviewed was aquatic pollution due to excess agrichemical runoff into rivers. This was reported to consist of excess fertilizers (subsidized) and improper or excessive pesticide application.

Finally, some of those interviewed expressed the view that invasive species are a locally-important driver of decline in some areas. Invasive alien species of particular concern include insects, snails, and weeds in agricultural landscapes;[39] aquatic weeds in rivers and streams;[40] tilapia fish;[41] and Caribbean pine.[42]

III. Overview of Sri Lankan Context for Conservation

Sri Lanka arguably has one of the world's oldest and most enduring traditions of conservation, beginning with the arrival of Buddhism. King Devanampiya Tissa is said to have established Mihintale as the first-ever wildlife sanctuary in Anuradhapura during his reign from 247-207 BC.[43] The country also has a long and widely-lauded tradition of sophisticated management of water resources, again dating to ancient times. Here we focus on the modern era, with some legislation from the British colonial period remaining in force, and a number of post-independence elements of the current legal and regulatory framework.

A. Legal framework for conservation

This section describes international and national laws that are most relevant to this analysis. Volk et al. 2012 contains a more comprehensive discussion of the legal framework for conservation.

1. International agreements

One of the priorities for Sri Lankan conservation is the implementation of the multilateral environmental agreements (MEAs) to which it is a party. According to the International Environmental Agreements Database, Sri Lanka has taken action on 233 Agreements including: 28 signatures; 58 ratification, accession, succession, or similars; 215 entry into forces; and 3 withdrawal or similars. Table 4 lists those most relevant to this analysis.

Table 4: Major Multilateral Environmental Agreements with Sri Lanka participation

MEA Name	MEA description	Sri Lanka participation	Most recent report or other official submission
Convention On Wetlands Of International Importance Especially As Waterfowl Habitat (1971)	The Ramsar Convention provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.	Ratified 15 Jun 1990	National Report on the Implementation of the Ramsar Convention on Wetlands, submitted Sep 2014
Convention On International Trade In Endangered Species Of Wild Fauna And Flora (1973)	CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival	Ratified 4 May 1979	Annual report for 2014, submitted Oct 2015 Document itself not available

[39] Wijesekara, A. 2010. Invasive alien species of agricultural importance in Sri Lanka: Have we managed them properly? In: *Invasive Alien Species – Strengthening Capacity to Control Introduction and Spread in Sri Lanka* (Eds: Marambe, B; Silva, P; Wijesundara, S; and Atapattu, N.)
[40] Bandara, PT. 2010. Management of Salvinia molesta in Sri Lanka. In: Marambe, et al. *Op cit*.
[41] Athauda, S. 2010. Is tilapia becoming an invasive fish in Sri Lanka? In: Marambe, et al. *Op cit*.
[42] Medawatte, WWMAB; Tennakoon, KU; Hulme, PE; Gunatilleke, CVS; and Gunatilleke, IAUN. 2010. Is Caribbean pine invading grasslands in the Knuckles Range. In: Marambe, et al. *Op cit*.
[43] See also Riley, L and Riley W. 2005. *Nature's Strongholds: The World's Great Wildlife Reserves*. Princeton University Press.

MEA Name	MEA description	Sri Lanka participation	Most recent report or other official submission
Convention On The Conservation Of Migratory Species Of Wild Animals (1979)	Also known as the Bonn Convention, CMS aims to conserve terrestrial, aquatic and avian migratory species throughout their range.	Signed 23 Jun 1979 Ratified 10 Jun 1980	National Report on the Implementation of the Convention on the Conservation of Migratory Species of Wild Animals, submitted 2011
United Nations Framework Convention On Climate Change (1992)	UNFCCC aims to cooperatively consider [how] to limit average global temperature increases and the resulting climate change, and to cope with whatever impacts were, by then, inevitable.	Signed 10 Jun 1992 Ratified 23 Nov 1993	Second National Communication, submitted Mar 2012 Sri Lanka Intended Nationally Determined Contributions, submitted Oct 2015
Convention On Biological Diversity (1992)	CBD has three objectives: conservation of biological diversity; sustainable use of the components of biological diversity; and fair and equitable sharing of the benefits arising out of the utilization of genetic resources.	Signed 10 Jun 1992 Ratified 23 Mar 1994	National Biodiversity Strategy and Action Plan, submitted Jan 2000[44] Fifth National Report, submitted Aug 2014
United Nations Convention To Combat Desertification (1994)	UNCCD seeks to reverse and prevent desertification / land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability.	Ratified 9 Dec 1998	National Action Program for Combating Land Degradation in Sri Lanka 2015-2024, submitted Nov 2014

The CITES roster of national legislation by each of its 181 member states shows Sri Lanka in Category 3 – meaning that national legislation does not meet the requirements for CITES implementation. The roster notes that "Draft and comprehensive revised draft legislation prepared and provided to legal drafters; text reviewed by LK [Sri Lankan government] and Secretariat and points for clarification identified; no recent information on status."[45] Next steps identified are "Finalization and submission of draft legislation."

Sri Lanka's six Ramsar-designated sites are listed in Table 5. There are 72 CMS-covered species listed for Sri Lanka, consisting of 51 birds, 10 marine mammals (whales and dolphins), six reptiles (turtles and crocodiles), and five species of cartilaginous fishes (sharks and rays).

2. National laws, policies, and strategies

This section is excerpted from the official website for the Forest Department. The Forest Department and the Department of Wildlife Conservation are the two agencies responsible for managing state-owned forests. Each agency is described more fully in the next section. As noted above, laws relating to forestry are found in several ordinances and acts. The Forest Ordinance, National Heritage and Wilderness Areas Act, and Fauna and Flora Protection Ordinance are the most important legislation providing the legal basis for managing state forests.

a) Forest Ordinance

The first Forest Ordinance, issued in 1885, provided for the declaration of reserved forests, to control the felling and transport of timber. The Forest Ordinance of 1907 is the cornerstone of present law relating to forests and plant protection, with the latest amendment in 2009. The Forest Ordinance consolidates laws

[44] An Addendum to the NBSAP was submitted to CBD Secretariat in 2007
[45] https://cites.org/sites/default/files/eng/prog/Legislation/CITES-NLP+Table2-20years.pdf

relating to conservation, protection, and sustainable management of forest resources including provisions for community involvement in forest management and benefit sharing through forest agreements.

b) Fauna and Flora Protection Ordinance

The Fauna and Flora Protection Ordinance of 1937, most recently amended in 2009, makes provisions for the protection of fauna and flora in national reserves and sanctuaries, in certain cases including private lands. In addition, this Ordinance provides for protection of certain species of fauna outside reserves and for the prohibition and control of export of some wild animals.

c) National Heritage and Wilderness Areas Act

The National Heritage and Wilderness Areas Act was passed in 1988 to provide special protection to the forest areas that harbor unique ecosystems, genetic resources, or outstanding natural features. Sinharaja forest, a World Heritage Site, was the first – and so far only – forest area declared under this act.

B. Government agencies and their responsibilities

The internal structure of the GSL is undergoing some transition as part of operationalizing the new government elected in 2015. This section describes the most recent information available at the time of drafting the report in January, 2016.

1. Ministry of Mahaweli Development and Environment

The Ministry of Mahaweli Development and Environment is the major policy making body in respect to environment management and natural resource conservation. The roles and responsibilities of the Ministry are assigned to twelve functional divisions. The biodiversity division; forest department; central environmental authority; and marine environment protection authority are the divisions that most directly impact tropical forests and biodiversity in Sri Lanka.

The Secretary of the Ministry serves as the National Focal Point for the United Nations Convention to Combat Desertification, while the Director of the Climate Change Secretariat is the National Focal Point for the UNFCCC (cf. Table 4) and Designated National Authority for the Kyoto Protocol.

a) Biodiversity Secretariat

The Biodiversity Secretariat division has a Mission "to provide leadership for the nation in conservation of [the] country's biodiversity without depleting natural stock and the environment while ensuring the national commitment to sustainable development."[46] The Secretariat provides policy direction towards conservation and biodiversity through 11 units covering: in-situ conservation; design and modeling; traditional knowledge; data processing; biodiversity assessment and monitoring; biodiversity awareness, education, publication and training; policy, planning and sustainable use; treaty coordination; biosafety; bio-prospecting; and legal and regulatory.

The Director of the Biodiversity Secretariat serves as the Operational Focal Point for implementing the Convention on Biological Diversity (cf. Table 4).

b) Forest Department

The Mission of Forest Department – Sri Lanka (FD) is to "[c]onserve and develop the Forest Resources in Sri Lanka to ensure the prosperity of the nation."[47] When the department was established in 1887 as the

[46] http://www.environmentmin.gov.lk/web/index.php?option=com_content&view=article&id=70&Itemid=36&lang=en
[47] http://www.forestdept.gov.lk/web/index.php?option=com_content&view=frontpage&Itemid=1&lang=en

Office of the Conservator of Forests, forest cover was 84 % of the country's land area. Forest and wildlife management was the responsibility of the forest department until 1949, when the department of wildlife conservation was established (now under Ministry of Sustainable Development and Wildlife; see below).

Today about 58% of the forest lands of the country falls under the purview of FD while the balance of forest area is primarily managed by the Department of Wildlife Conservation with an exception of very small extents of isolated forest patches under the purview of other state agencies and private ownership. The forest department also manages 90,000 ha of forest plantations. The FD consists of six technical divisions: forestry inventory and management, environment management, social forestry and extension, research and education, forest protection and law enforcement, and planning and monitoring. The field level administration is carried out through four Regional Forest Offices headed by Regional Deputy Conservators of Forests operate under the supervision of the headquarters. There are 20 forest divisions under these four regions, each sub-divided into forest ranges, forest beats, and forest field assistant units.

c) Central Environmental Authority

The Central Environmental Authority (CEA) was established in August 1981 under the National Environmental Act of 1980 and its amendments (most recently in 2000). Its objectives are to: protect, manage and enhance the environment; regulate, maintain and control the quality of the environment; and prevent, abate and control pollution. The CEA has overall responsibility to integrate environmental considerations into the development process of the country.[48] Services provided include review and approval of environmental impact assessments, licensing, environmental information, laboratory services, remote sensing and geospatial services, and resolving public complaints related to the environment.

d) Marine Environment Protection Authority

The Marine Environment Protection Authority (MEPA) was first established as the Marine Pollution Protection Authority by the Marine Pollution Prevention Act (1981), with "the sole responsibility to prevent, control, and manage the pollution of Sri Lanka's Marine Environment." [49] MEPA's primary duties involve maritime oil spills, chemical spills, and boating accidents. It also has responsibility for implementing Sri Lanka's duties under four international conventions related to maritime pollution and bunker fuels.

2. Ministry of Sustainable Development and Wildlife

The Ministry of Sustainable Development and Wildlife was established during 2015 to provide coordination, leadership, guidance and financial assistance to the stakeholders from national to regional levels to ensure the sustainable environment in the cities and villages. Three units within this new ministry are relevant for our purposes. Leadership of the Ministry also informed the team that a new **Secretariat for Sustainable Development** will be established in 2016, to monitor and report on progress toward the Sustainable Development Goals adopted at the United Nations in September, 2015.

a) Department of Wildlife Conservation

The Department of Wildlife Conservation (DWC) "is the principle government institution responsible for the protection of wildlife resources of the country. Protection of wildlife resources also encompasses protection of the majority of the large-scale reservoirs, which provide water for agriculture and generation of hydropower. The DWC has the legal authority under the Fauna and Flora Protection Ordinance to

[48] http://www.cea.lk/web/index.php/en
[49] http://www.mepa.gov.lk/web/index.php?lang=en

establish and manage the network of wildlife protected areas of the country, which at present exceeds a total area of 8500 km^2; 13% of Sri Lanka's land surface."[50] The components of the protected area (PA) network managed by DWC are described in Section III.C below.

The functions of DWC, *inter alia*, are developing national strategies to conserve wildlife, protecting representative samples of all ecosystems, monitoring each protected area, implementing recovery plans for endangered species, and minimizing illegal exploitation of wildlife resources.[51] The DWC website lists all of the department's functions and specific duties for each of the 10 Divisions.

The Director General of DWC serves as Management Authority and Scientific Authority for CITES, and National Focal Point for the Convention on Migratory Species. The Deputy Director, Natural Resources Management is National Focal Point for the Ramsar Convention.

b) Department of National Botanical Gardens

The Department of National Botanical Gardens was established in the early nineteenth century by British botanists. Today, the Department aims to become "the pivotal institution for ex-situ conservation of Sri Lankan plants" [52] as part of its Mission to "provide opportunities for the public to study, sustainably conserve, and admire plant resources in natural and man-made environments."[53] The department manages the National Herbarium and seven botanical gardens: the Royal Botanic Gardens, Peradeniya; Hakgala Botanic Gardens; Henarathgoda Botanic Gardens, Gampaha; Sevana Garden Center, Suwahas Mal; Seethawaka Wet Zone Botanical Gardens, Awissawella; Dry Zone Botanical Gardens, Marijjawila; and the Medicinal Plant Gardens, Ganewatte.

c) Department of National Zoological Gardens

The Department of National Zoological Gardens, started in the late 1920s, is the pioneer institute to possess, manage and conserve wild animals and display the animal collection to the public throughout the year in the country. Initially, a zoological garden company functioned as a collecting depot for captured wild animals destined for the zoos of Europe. In 1936, the Zoological Garden Company was liquidated and the government acquired most of the collection. When Major Aubrey Weinman became the first Superintendent in 1939, he transitioned the zoo from an entertainment focus to a center for conservation, research and education. At present, the Department of National Zoological Gardens network includes the Dehiwala zoo in Colombo, Pinnawala elephant orphanage, Pinnawala zoo, Ridiyagama safari park, Gonapola farm, and a new underwater aquarium in Gampaha district.[54] The Department of National Zoological Gardens has established its functions based on five major objectives: conservation, breeding and research, animal welfare, public education, and entertainment.

C. Protected areas system

The United Nations Environment Programme - World Conservation Monitoring Centre (UNEP-WCMC)[55] dashboard for Sri Lanka shows 659 designated or proposed protected areas in the country as of January 13, 2016, covering 2.2 million hectares or about 1/3rd of the country's total area. Table 5 shows the number and extent of those according to the World Database of Protected Areas. During interviews by

[50] http://www.dwc.gov.lk/index.php/en/aboutdwc/overview
[51] ibid
[52] http://www.botanicgardens.gov.lk/
[53] ibid
[54] http://www.parliament.lk/uploads/documents/paperspresented/performance_report_department_of_national_zoological_gardens_2010.pdf
[55] The global specialist biodiversity assessment arm organization of UNEP that tracks protected areas, species extinctions, and other key indicators of biodiversity

the team with officials from the Biodiversity Secretariat, Forest Department, Ministry of Sustainable Development and Wildlife, and IUCN Sri Lanka Country Office, all confirmed that the number of areas under protection is increasing. Another 47 PAs have been added to the national system since the 2011 analysis, which is consistent with Forest Department practice of reclassifying lands from Other State Forest to either Reserved Forest or Conservation Forest once boundary demarcation is complete and the legal boundaries have been published in the official gazette.

Table 5: Protected Areas of Sri Lanka by designated legal status and management authority

Protected Area Designation	Number of PAs	Extent (ha)	Management authority
Reserved Forest	397	914,817	Forest Department
Conservation Forest	62	121,421	Forest Department
Sanctuary	56	273,005	Dept. Wildlife Conservation
National Park	17	280,563	Dept. Wildlife Conservation
Nature Reserve	7	43,694	Dept. Wildlife Conservation
Ramsar Wetland of International Importance	6	198,172	Dept. Wildlife Conservation
UNESCO Man & Biosphere Reserve	4	60,719	Forest Department
Strict Natural Reserve	3	5,559	Dept. Wildlife Conservation
National Heritage Wilderness Area	1	11,428	Forest Department
Jungle Corridor	1	10,360	Not applicable (mixed)
Total PAs with formal designation	**554**	**1,919,738**	
World Heritage Site (proposed)	2	63,876	Forest Department
Other State Forest (includes proposed PAs)	103	234,564	Forest Department
TOTAL including proposed/under demarcation	**659**	**2,218,178**	

Source: World Database of Protected Areas

1. Protected areas managed by Forest Department

The FD manages 464 of the PAs listed in Table 5, or 84% of the total number (excluding 105 proposed areas). These include 1.1 million hectares of different forest types, representing 58% of total area under protected status, with an average of 2,389 ha (5,903 ac) for each PA. The single largest of these is the Nuwaragala Reserved Forest (55,800 ha) in Polonnoruwa District. One interviewee thought that wet zone forests needed greater representation, while another suggested the same for the dry zone.

2. Protected areas managed by Department of Wildlife Conservation

The DWC manages 89 of the PAs listed in Table 5, or 16% of the total number of officially designated areas. These cover 800,994 ha (42% of total area under protected status) and include 33,352 ha of marine PAs. The average DWC-managed PA is 9,000 ha, with the largest being Wilpattu National Park at more than 131,000 ha. The map in Figure 2 highlights that most major ecosystems in Sri Lanka are represented.

3. Mangroves

Under a new initiative announced by President Maithreepala Sirisena in May of 2015, Sri Lanka has now declared 100% of its mangrove forests to be under protected status. It is the first nation to protect all of its mangroves. Officials interviewed for this analysis stated that several management authorities need to be

involved in this effort, given the range of public and private ownerships. These may include: DWC, FD, Department of Fisheries and Aquatic Resources, Coast Conservation and Coastal Resource Management Department, National Aquaculture Development Authority, local governments where mangroves are prevalent (the most extensive are in Puttalam Lagoon, Kala Oya basin, and Trincomalee),[56] and NGOs such as Sudeesa, Seacology, Mangroves for the Future, Nagenahiru Foundation, and others.

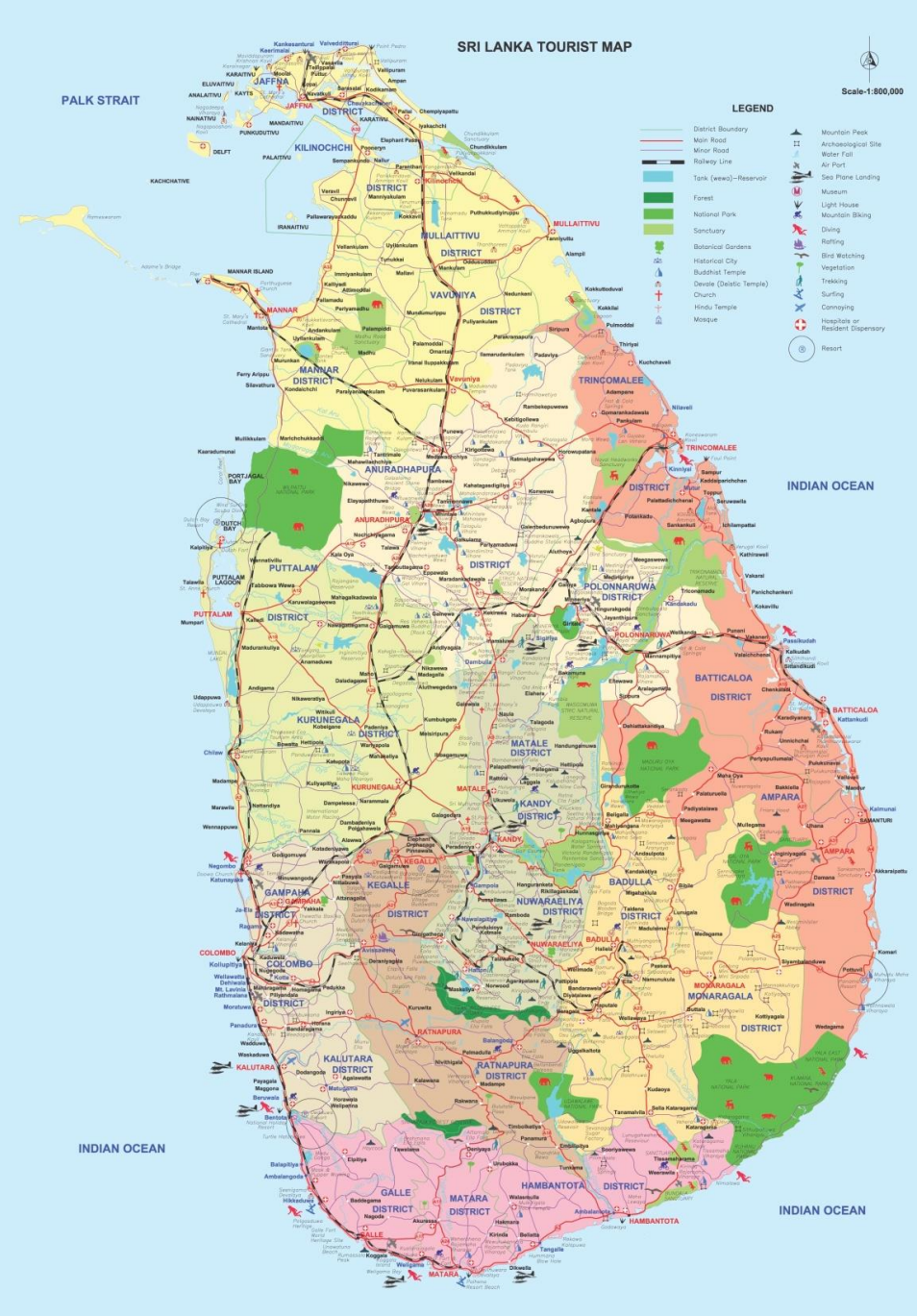

Figure 2: Tourism map of Sri Lanka showing major protected areas
Source: Sri Lanka Tourism Promotion Bureau

[56] Weerasinghe, AMCP and Wijesinghe, WPSL. 2015. Mangroves in Sri Lanka.

IV. Actions Necessary in Sri Lanka to Achieve Conservation

As noted earlier, the FAA sections 118 and 119 have two legally-binding requirements for all USAID strategy documents. The first of these is a description of actions necessary to achieve conservation and sustainable management of tropical forests (118) and to achieve conservation of biodiversity (119). These are each outlined separately, based on GSL strategy documents and reports to multilateral environmental agreements, as well as interviews with government officials, researchers, and conservation practitioners.

A. Actions necessary to achieve conservation and sustainable management of forests

The good news is that Sri Lanka enjoys almost 30% forest cover (see Figure 3); the bad news is that this figure is declining, albeit only slightly compared both to Sri Lanka's past and to other countries in the region. Five priority threats to Sri Lanka's forests emerged during the conduct of this analysis. By far the one that is most widely affecting overall efforts to conserve and sustainably manage forests is also one for which recent data are not available due to the emerging nature of the threat. That threat is the conversion of forests to commercial agriculture, especially in wet zone areas of the highlands and southwestern parts of the country. One stakeholder interviewed for this analysis proffered that there are local officials taking advantage of political uncertainties to quickly capitalize by issuing land clearance permits. This could not be verified independently.

An action that the FD is undertaking in order to counteract this forest conversion is to accelerate demarcation of protected forests so that they may be gazetted with legal definitions of boundaries. One hundred eleven reserved forest areas were added to the system in the past five years, with a total area of more than 388,000 hectares. This action could be combined with ongoing reforms of GSL to more transparently make decisions about land allocation as part of overall improvements to land and resource governance – including water allocation for irrigation.

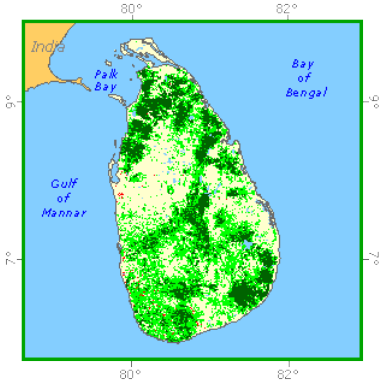

Figure 3: Forest cover map of Sri Lanka

Land assignment for irrigation schemes and other resettlement projects is another of the high-priority threats that were cited during this analysis. One action necessary to improve regulation of those is to ensure that at much as possible, land used for resettlement is not natural forest, *damana* grasslands, or other habitats used by Sri Lanka's wildlife. USAID and other sponsors of resettlement need to remain vigilant and verify that their funding is not being used to facilitate loss of forest or other habitats. This is especially the case in dry zone areas where competition for resources between cattle and wild herbivores (elephants, Sambur deer, etc.) is leading to increased human-wildlife conflict. This issue is discussed more fully in the next section on Biodiversity. The dry forests are particularly susceptible to degradation when disturbed, due to their lower productivity.

The GSL declared all mangrove areas to be protected, partly in response to the overwhelming evidence that mangrove forests along the eastern coast provided much higher levels of protection during the 2004 tsunami. The action needed to implement the mangrove declaration is coordination of multiple layers of stakeholders at local, provincial, and national levels to increase effectiveness of implementation.

The other two threats: fragmentation and degradation of non-forested habitats, and alien invasive species, are discussed more fully in the next section in terms of actions needed to reduce the threats.

B. Actions necessary to achieve conservation of biodiversity

In Sri Lanka's Fifth National Report to the Convention on Biological Diversity, the Biodiversity Secretariat reaffirmed the GSL's commitment to implementing the CBD, although the country has not yet identified specific and measurable national targets "in line with the Aichi Biodiversity Targets[57] of the Strategic Plan for Biodiversity 2011-2020."[58] Because GSL has not yet met CBD requirements in this or other areas, its actions rely on the Biodiversity Conservation Action Plan of 1999 (and 2003 Addendum) in forests, wetlands, coastal and marine systems, and agricultural systems. In that Plan and its Addendum, 74 actions were recommended to achieve 18 specific objectives in the four ecosystem types, and another 73 actions recommended to achieve 22 specific objectives under seven cross-cutting areas. This large number of objectives and recommendations could hinder progress toward actual achievement.

Based on the priority threats and drivers of degradation identified through this analysis, the most urgent action required is to slow or halt the loss of grasslands and wetlands. This would align with Aichi target #5, calling for halving the rate of loss of all natural habitats by 2020. The GSL first must determine an updated and accurate rate of loss, so that priority areas for action can be determined systematically. But the encouragement by national or local officials – sometimes aided by project sponsors or facilitators – of converting *damana* grassland to cattle pasture could be halted even as data are still being compiled to determine an accurate rate of loss and to identify hot spots. Ampara district is known to be an area where grassland conversion for human settlements is an issue, and the GSL is mapping wetlands there.[59]

Regarding agricultural systems and their relationship to biodiversity conservation, several studies have shown mature plantations of estate crops to provide suitable habitat for birds[60] and other vertebrates.[61] The runoff from agricultural lands, however, was reported to consist of excess fertilizers (subsidized) and improper or excessive pesticide application. This threat to aquatic biodiversity was among the reasons for banning Carbaril, Chlorophyriphos, Carbofuran, Propanil, and Glyphosate pesticides in 2012.[62] Efforts to reduce toxicity of runoff into rivers and other aquatic environments include removing fertilizer subsidies, promoting organic farming, and encouraging greater use of traditional varieties for home gardens. Many of these are now underway, and should become institutionalized within GSL budget allocations. These measures also correspond to Aichi targets related to removal of incentives that are harmful to biodiversity (target #3), more sustainable agriculture (#7), and reducing pollution from excess nutrients (#8).

The other important driver of decline identified in this analysis was invasive alien species, which BDS highlighted in their Fifth National Report as becoming "more pronounced" compared to the 2010 report.[63] Addressing this challenge has been taken seriously, with an Invasive Species Specialist Group established by the Ministry of Environment, a database set up to track the most pernicious invasive species, and a

[57] Aichi targets for biodiversity were agreed by the 10th Conference of Parties to the CBD in 2010 as part of the Strategic Plan for Biodiversity, 2011-2020. "This plan provides an overarching framework on biodiversity, not only for the biodiversity-related conventions, but for the entire United Nations system and all other partners engaged in biodiversity management and policy development." [https://www.cbd.int/sp/]
[58] BDS 2014. *Op cit.*
[59] *Ibid*. See also Natural Resources Management Division (NRMD). 2014. *National Action Programme for Combating Land Degradation in Sri Lanka 2015-2024*. Ministry of Environment and Renewable Energy.
[60] For example: Kottawa-Arachchi, JD and Gamage, RM. 2015. Avifaunal diversity and bird community responses to man-made habitats in St. Coombs tea estate, Sri Lanka. *J. Threatened Taxa* 7(2):6878-6890; Kottawa-Arachchi, JD; Gamage, RM; Ariyarathne, HACK; and Jayathilake, GG. 2010. Avifaunal diversity in a tea plantation ecosystem in the up-country of Sri Lanka. *Proceedings International Forestry and Environment Symposium 2010*. Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka.
[61] Kottawa-Arachchi, JD; Gamage, RM; and Jayathilake, GG. 2015. Vertebrate diversity and conservation aspects in man-made habitats in Mattakelle tea estate, Sri Lanka. *WILDLANKA* 3(3):148-162. Also: Kottawa-Arachchi, JD and Gamage, RM. 2015. Herpetofaunal richness in Lippakelle tea estate, Sri Lanka. *TAPROBANICA* 7(4):268-271.
[62] BDS 2014. *Op cit.*
[63] *Ibid*.

project funded by the Global Environment Facility resulting in publication of the current state of knowledge on controlling invasive species.[64] Progress also has been made toward establishing common data protocols in order to prioritize risks from invasive species across taxa.[65] These actions have helped Sri Lanka contribute toward attaining Aichi target #9 on prevention and control of invasive species.

An action necessary to conserve biodiversity in Sri Lanka that does not directly address any one particular threat was highlighted by the Ministry of Sustainable Development and Wildlife, IUCN, and faculty members from Peradeniya University. That action was to conduct studies on, and assess the feasibility of applying, valuation of biodiversity. This was recommended in the Biodiversity Conservation in Sri Lanka Framework for Action, published in 1999. The Biodiversity Secretariat states that "one of the main problems is that there is no proper understanding of long-term ecosystem services of biodiversity outside the conservation agencies, so that only short and medium term financial benefits from bio-resources are considered."[66] BDS notes that such a valuation should consider "the important ecosystem services of forests, wetlands, coastal and marine systems and agricultural systems in a holistic manner" and further recommends that Cabinet appoint a "National Biodiversity Valuation Committee to formulate policies and procedures for the purpose of assessing economic benefits from biodiversity (giving consideration to ethical and cultural values), proposing also a framework of tariffs and incentives designed to strengthen biodiversity conservation and assure the equitable sharing of benefits [from] aquatic resources, genetic resources [such as agro-biodiversity from indigenous plant species], carbon and emissions trading, and atmospheric emission."[67]

The Ministry of Environment sees this valuation to be necessary for full-value accounting of ecosystem services in national accounts and in evaluating development options in keeping with the overall strategy of green growth advocated by the new administration. The team sees this as perhaps the single most impactful action that could be undertaken by GSL, in that natural capital accounting removes incentives that lead to resource degradation while providing incentives for reinvestment into natural capital that provides the underpinnings of a sustainable economy. Aichi target #2 also encourages the integration of biodiversity valuation into national accounts and planning processes.

V. Extent to Which USAID/Sri Lanka Meets the Identified Needs

The second requirement under FAA sections 118 and 119 is for all country strategy documents to include analysis of "the extent to which the actions proposed for support by the Agency meet the needs thus identified." In practice, this has evolved into a gradation-based approach to how a particular operating unit is contributing toward Congressional intent of fostering sustainable management and conservation of tropical forests and biodiversity.

[64] Marambe B, Silva P, Wijesundara S, and Atapattu N (eds). 2010. *Invasive Alien Species – Strengthening Capacity to Control Introduction and Spread in Sri Lanka*. Ministry of Environment, Biodiversity Secretariat; supported by United Nations Development Programme, Sri Lanka.
[65] Ranwala S, Marambe B, Wijesundara S, Silva P, Weerakoon D, Atapattu N, Gunawardena J, Manawadu L, and Gamage G. 2011. Post-Entry Risk Assessment of Invasive Alien Flora in Sri Lanka: Present status, gap analysis, and the most troublesome alien invaders. 23rd Asian-Pacific Weed Science Society Conference, The Sebel Cairns, 26-29 September 2011.
[66] BDS 2014. *Op cit.*
[67] *Ibid*. See also *Intended Nationally Determined Contributions* submitted to the UNFCCC Secretariat in October 2015 by Ministry of Mahaweli Development and Environment

Figure 4: Programmatic gradations toward integrating conservation into development programs

- **Do no harm**: Programs do not contribute to exacerbating threats [legally required minimum]
- **Opportunistic co-benefits**: Programs take advantage of indirect ways to reduce threats that were unintended yet emerged during implementation
- **Proactive co-benefits**: Programs seek out indirect ways to contribute toward reduction of threats as part of implementation, yet without conservation being an explicit, measurable objective
- **Direct threat reduction**: Programs are designed with an explicit objective of reducing threats or otherwise contributing to biodiversity conservation; usually accomplished with earmarks funds

USAID programs by law cannot contribute toward or exacerbate direct threats to conservation identified in the analysis, whether intentionally or not. Preventing unintended exacerbation of threats is one of the primary reasons for requiring the FAA 118/119 analysis as part of each CDCS. It is often possible, and encouraged, for program designs to either take advantage of opportunities that emerge or to actively look for ways to integrate conservation into health, education, economic growth, governance or other sector programming. Examples include adding environmental education into curriculum development, selecting sub-sectors that reduce land conversion, encouraging investments in zero-deforestation enterprises, or mobilizing youth to advocate for more transparent governance of a country's natural capital assets.

A. Overview of planned USAID programming in Sri Lanka

It is considered a "new day" for Sri Lanka, with 2015 Presidential and Parliamentary election results fundamentally changing the USG – GSL relationship. The new government has begun an ambitious reform process and has shown commitment to reconciliation and accountability measures. Diplomatic and development dialogues have expanded, including coordination on key national issues of human rights, reconciliation, and anti-corruption. USAID, which previously was on a glide path to significant Mission down-sizing, is well placed to provide assistance in these areas and is now intensifying its efforts in line with the increasing awareness and interest displayed by Congress and the White House. Preparations have begun for a three-year abbreviated CDCS (2016 – 2019).

USAID/Sri Lanka currently has three different types of programming. Legacy programs focus on core strengths: civil society development, supporting vulnerable populations, small and medium sized business development, rule of law, and resettlement support. Bridge Programs are providing just-in-time support to national policy reform. Programs include support to public financial management, the elections commission, and Parliament and oversight institutions. New Generation Programs are being designed based on the Mission's ongoing conversations with all levels of the government, donors, civil society, the USG interagency, and the private sector. New Generation Program opportunities include programming in the following areas: anti-corruption, public procurement, legislative strengthening, assistance to vulnerable communities, foreign investment, business enabling environment, support for civil society, civic education, economic growth, governance initiatives, and youth programming. These new programs will build on the important achievements from the legacy programs and be informed by the bridging programs.

As this report was being drafted in January 2016, the three-year strategic planning for USAID programs focused on the following project goal and its three project objectives:

PROJECT GOAL: Strengthened inclusive democratic governance and foster board-based economic growth for a cohesive and prosperous Sri Lanka

- *Project Objective #1*: Sustained and inclusive economic growth
- *Project Objective #2*: Strengthened democratic governance and social cohesion

1. Economic Growth Office

USAID/Sri Lanka's economic growth portfolio promotes employment, private sector investments, increased productivity, the development of local community business relationships, social integration of multi-ethnic communities and improvements in the business enabling environment. With new resources secured for Sri Lanka, USAID has focused programming on national policy reform, including public financial management, public procurement reform, and improved auditing functions. In the most vulnerable areas of Sri Lanka, USAID is also ensuring food security and bolstering household income by restoring lives and livelihoods of war widows, the disabled, and newly resettled communities.

To achieve the project goal, the Economic Growth Office will focus on the following during the CDCS period:

- Public Financial Management: Providing immediate, quick impact support, with a particular emphasis on procurement
- Business Enabling Environment: Focus on foreign direct investment
- Youth empowerment project

2. Governance & Vulnerable Populations Office

USAID/Sri Lanka's governance and humanitarian assistance programming promotes a stable and equitable society, where all citizens enjoy the benefits of post-conflict economic and social progress. With new resources, the Mission supports the development of the core Sri Lankan systems of democratic governance and accountability, including elections, Parliament and the independent oversight commissions. USAID is helping to strengthen the rule of law, build a robust civil society that can advocate for citizen rights, and develop core systems of democratic governance and accountability. USAID is also supporting communities recovering from the effects of conflict and disaster by providing transitional shelter, water and sanitation facilities, and livelihoods assistance as well as counselling, rehabilitation, legal and victims' assistance services.

During the CDCS period, the GVP Office will focus on the following ways to contribute toward achieving the Project Goal:

- Strengthening Democratic Governance: transparency and oversight functions and systems of public accountability
- Support to Civil Society and Media: demand-side of democratic governance
- Improve Rule of Law and Human Rights: legal sector institutions and systems, protection of rights, accountability
- Address Social Cohesion and Reconciliation: needs of vulnerable communities and youth, island-wide reconciliation

- Further Disaster Risk Reduction: public private partnerships, government-community engagement
- Support Human Rights in the Maldives: closing space

B. Extent to which the planned programs support conservation of tropical forests and biodiversity

None of the programs described above will directly support the conservation of forests and biodiversity in Sri Lanka, nor are they intended to do so. Having an explicit objective to support conservation typically is based on having funding dedicated for that purpose.[68] USAID/Sri Lanka does not receive an allocation of these earmarked funds, nor is expected to receive these funds in the future.

The team's review of existing and planned programs against the "Do No Harm" criterion raised one area where caution needs to be exercised. Resettlement programs that convert forest to either agricultural lands or irrigation reservoirs ranked as the second-most serious driver of negative change in Sri Lanka's forest ecosystems. Therefore, the Mission is **advised to monitor carefully any resettlement programs** that receive USAID support, to ensure that the Agency is not contributing directly or indirectly to this loss of forests. It merits repeating here that this does not refer to resettlement programs that support internally displaced communities returning to lands previously cultivated and that became over-grown during the years of the conflict; rather, this advisory applies to conversion of natural forests that have been in a particular location for 50 years or longer.[69]

Another, relatively minor area where USAID/Sri Lanka may need to monitor implementing partners is in support for dairy farmers. Mission staff should verify that dairy producers receiving Agency support do not clear forest to be used as grazing land for their herds. Likewise, if future programs engage in support for agribusiness, nature tourism, estate crops, gems, or other land-based sectors, then caution may be needed to ensure that Agency resources are not directly or indirectly contributing to loss of mangroves, forests, or other natural capital assets. Those assessments are typically covered under standard USAID environmental procedures to implement 22 CFR 216 and Agency policies.

In discussions with USAID/Sri Lanka technical and program office staff, several ideas emerged for either "Opportunistic Co-Benefits" or "Proactive Co-Benefits" to be realized in Mission programming. These ideas are presented by program objectives as listed above rather than by priority, and with the caveat that most will require more detailed and specific analyses of feasibility, applicability, and contribution to overall programmatic goals in Sri Lanka.

1. Economic Growth Office programs

Within the Economic Growth Office's planned programs, each provides opportunities to achieve co-benefits that support conservation and sustainable management of forests in Sri Lanka. Under the objective Public Financial Management, perhaps the most impactful would be to support the GSL in its reported desire to incorporate the valuation of ecosystem services into National Accounts.[70] Although this

[68] Generally, these are funds allocated to Program Area 4.8 Environment in the Foreign Assistance Framework, specifically those allocated to Program Element 4.8.1 Natural Resources and Biodiversity, or to the Sustainable Landscapes pillar of Program Element 4.8.2 Clean Productive Environment

[69] The time scale of 50 years is consistent with the Clean Development Mechanism definition for allowable carbon credits from afforestation (planting forest on lands that have not been forested for 50 years), applied in reverse.

[70] The field of environmental economics produces a large quantity of literature on this topic. One of the best introductory sources is the World Bank-led Wealth Accounting and the Valuation of Ecosystem Services (WAVES) Partnership.

would require an in-depth analysis of feasibility, perhaps no other single action would demonstrate the seriousness of the GSL in its stated desire to be a country known as a model of sustainable development. Essentially, this involves making ledger entries for ecosystem services lost – from water regulation and soil conservation to plant pollination and carbon sequestration – whenever forestland is "developed" into another use such as irrigation or commercial agriculture. This often alters the cost-benefit analysis results when more balanced assessments are made in deciding whether or not to proceed with a given project.

Should the Economic Growth team decide to maintain a more narrow focus on reforms in the public procurement processes used by the Commission on Audit, then an opportunity could arise to include transparent and consistent application of environmental laws and regulations among the reform topics. That is, focusing not only on the financial integrity and transparency of bidding, but including other areas that strengthen procurement legitimacy and accountability on environmental laws as well – which could also include reducing cronyism, nepotism, and other maladies reported to be common at present.

Under its objective Business Enabling Environment, focusing specifically on encouraging foreign direct investment, there again emerge some ideas for either opportunistic or proactive co-benefits to be realized. Perhaps the most far-reaching of these would be to have an explicit effort to include green investments among those being encouraged. This would fit with the Sri Lanka NEXT program launched by the GSL on January 4, 2016, where environmental sustainability is on par with economic growth and social inclusivity in the Government's long-range vision. There is burgeoning interest in green investment across many Asian economies wary of the costs imposed by high levels of pollution and other impacts of disregard for environmental quality while seeking robust economic growth. Several middle-income countries in the region – including the Philippines, Vietnam, and Thailand – view with disfavor the air and water quality challenges and other detrimental effects of the Chinese or Indian growth models where the costs of reducing or removing health hazards are becoming more readily apparent.

Specific sectors where economic growth activities of the Mission could lead to conservation co-benefits are tourism and estate crops. The lead author of this report is very well aware of the difficulty inherent to work in the tourism sector, and recommends that a clear-eyed analysis of the sector precedes any decision to engage in it. If such a decision is made, however, a few ideas for co-benefits opportunities include:

- Working with hoteliers on green standards that include optional reuse of towels and sheets, not only saving costs but also lowering the amount of phosphate-based detergents that enter water courses and contribute to reduced aquatic biodiversity;
- Training members of communities around popular parks and reserves to become better tour guides, for example not allowing vehicles to drive off established trails, providing conservation-related messages to visitors, or identifying migratory and endemic species;
- Working with local and national authorities, as well as facility operators to improve management of visitors to marine protected areas, e.g., keeping boats a safe distance from dolphins and dugongs, not disturbing mangroves or seagrass beds, or sanctioning those who break off coral for souvenirs;
- Establishing a competitive rating or awards system for destinations based on criteria such as those of The International Ecotourism Society.

During interviews with the Ministry of Plantation Industries, the Director and Chief Executive Officer of the Tea Research Institute of Sri Lanka noted that an emerging trend in the tea sector is that most of the

larger producers are obtaining certification by Rainforest Alliance or similar programs. Nine of 22 tea processors are reported to have become certified, primarily in order to maintain access to markets in the European Union and other markets where consumer concerns about sustainability are driving change. Most of the smallholders, however, are reported to be unable to obtain certification because of the costs involved. The Additional Director of the Rubber Research Institute of Sri Lanka also reported that Forest Stewardship Council certification in the industry is not providing cost recovery for smallholders, who are now converting to oil palm due to low market prices for rubber. The potential opportunity for the Mission is in supporting smallholders to organize so that costs of certification can be shared through clustered applications. This could be across sub-sectors and certification systems.[71]

Under the Youth Empowerment objective, the Economic Growth team may have opportunities to generate either opportunistic or proactive co-benefits for conservation as the program designs are more fully developed. The range currently is quite wide, with possible opportunities in almost any sector that the Mission selects for investment promotion. Given the relatively large number of entry-level positions usually presented by expansions in the tourism industry, this sector may be worth exploring for both the investment promotion and youth empowerment objectives of USAID/Sri Lanka. Another possibility could be to support the development and deployment of viable business models for producing fuelwood in short-rotation woodlots to supply the tea estates (biomass fuel is used to cure tea). Technical expertise from USAID/Asia Bureau and the U.S. Forest Service could be deployed to support the Mission should a decision be made to pursue this idea further.

2. Governance & Vulnerable Populations Office programs

Fewer opportunities present themselves in terms of Proactive Co-Benefits from the types of programs that the GVP Office intends to pursue. Opportunistic Co-Benefits, however, could arise in nearly all of the planned programmatic areas. Transparency and accountability often moves from abstract concepts to concrete actions when put in the context of water and air quality, land use change, economic policy formulation, or other areas of governance where citizen interest and engagement is high.

The same is true when programs are addressing human rights and "no fear, no favor" application of the rule of law. To the extent that strengthening capacity among members of the legal profession is part of the programmatic approach, there could be modules on environmental law as part of training curricula. Those interviewed for this analysis were consistent in stating that the legislative framework for conservation and environmental management is quite good; what often is lacking is implementation because prosecutors, judiciary, and other parts of the legal system are unfamiliar with the laws and how to apply them.

One area where proactive co-benefits can be identified is in the Mission's work with civil society. There is a relatively small network of NGOs and CSOs working on environmental issues in Sri Lanka, yet they are generally well-respected for their level of expertise and competence. Given the long history of good environmental management for which the country is renowned, especially the ancient systems of water management, the ayurvedic healing arts, and the Buddhist tradition of respecting all forms of life, it may be relatively simple to mobilize advocacy support around issues of water quality, forest or grassland conversion, loss of reefs or wetlands, or other issues of local importance in different parts of the country. The adage that "people, like ecosystems, self-organize to become what best fits conditions" may be a truism in the Sri Lankan context. If an issue is important in a community, supporting them to give voice

[71] USAID does not support any specific certification system as a matter of policy.

to their concerns and recommended solutions can be a powerful tool for promoting inclusivity in civic engagement, building both government's understanding of accountability and citizen's understanding of the rights and responsibilities of the populace in a democratic society.

For the media aspect of this objective, USAID has a rich history of successes in training journalists to report environmental issues accurately and to explain scientific principles to the public. Something as potentially nebulous and "squishy" as Sustainable Development Goals can seem far removed from the daily lives of ordinary people, yet well-trained journalists can support positive momentum toward meeting these or other national priorities related to green growth.

Although time was very limited in meeting with the GVP Office, and that was not in the context of this analysis, the brief explanations provided to the team seemed to indicate that the disaster risk reduction activities could be more innovative and current. If this is an objective to be continued under the CDCS, the team recommends that USAID/Sri Lanka engage with climate change and resilience expertise within the Agency or among other entities in Sri Lanka to shift away from coping strategies toward adaptation. Specifically, it seems that the DRR program is focused solely on episodic events (flood, drought, cyclone, or tsunami) rather than more comprehensively examining slow-onset disasters – such as acidifying oceans or declining water quality – which can be equally or more destructive (although certainly less dramatic) and more easily avoided or overcome.

Finally, the GVP objective of continuing to build reconciliation among and across different communities should proceed with caution when resettlement is part of USAID support. The team fully understands the Mission's reluctance to engage on the contentious issues of land and water allocation, given the current uncertainty about long-term programming in Sri Lanka. Nevertheless, at least half of those interviewed for this analysis expressed the view that land and water allocation issues were part of the underlying drivers of forest and biodiversity degradation. Resettlement programs that encourage "opening new land" by clearing forests, grasslands, or wetlands contribute to this degradation; USAID cannot support these, even indirectly. Ongoing monitoring of implementing partners is critical to ensure compliance with FAA 118 & 119 as well as 22 CFR 216 (environmental procedures), in addition to Agency policies.

VI. Conclusions and Recommendations

Rather than repeat the discussions earlier, a very brief synopsis is presented here. The good news is that Sri Lanka, unlike most of her neighbors in Asia, is not facing a crisis in terms of loss of tropical forests or biodiversity. With a large percentage of its ecosystems well-represented within the network of protected areas, and reasonably good management of that network along with comparatively high skills levels in the conservation work force, Sri Lanka is in an enviable position. In fact, there is an opportunity for the nation to serve as a model for other countries in the region through South-South exchange efforts.

There are, of course, areas of improvement. Current challenges include habitat degradation among dry zone forests, grasslands, mangroves, coral reefs, and other key ecosystem types. Another key challenge is overuse of agricultural chemicals (fertilizers and pesticides) impacting aquatic environments with direct effects on human as well as ecosystem health. The large network of wetlands, estuaries, and lagoons that provide Sri Lanka with much of its exceptional rates of endemism – and make it a globally important area for migratory birds and marine species – face a growing accumulation of detrimental effects if excessive agrichemical runoff continues unabated. Forest and grassland conversion to commercial agriculture and

pastureland is another area of growing concern, and where USAID/Sri Lanka needs to carefully monitor its programs to ensure that they do not contribute to loss of natural capital assets.

USAID/Sri Lanka does not have, nor is expecting to initiate, biodiversity or forest conservation programs. The continuing and planned parts of the Mission portfolio are entirely focused on economic growth and democratic governance – for very good reasons. The programs being designed do present opportunities for supporting conservation as a co-benefit. Table 6 summarizes some ideas for how either proactive co-benefits or opportunistic co-benefits may be realized while also meeting the core objectives of the CDCS.

Table 6: Potential USAID/Sri Lanka actions to support conservation of forests and biodiversity

Program Objective	Potential areas for achieving conservation co-benefits
Public Financial Management	• Incorporate valuation of ecosystem services into National Accounts – reportedly an area of interest to the GSL, with high-level political support; requires feasibility analysis • Public procurement reform includes transparent and consistent application of laws and regulations related to forest or grassland conversion – i.e., more than financial integrity
Business Enabling Environment	• Actively seek ways to promote and encourage green investment – could include a range of actions such as selecting sectors of interest to impact investors (clean energy, deforestation-free products)
Youth Empowerment	• Actively seek economic sectors with relatively high ratios of entry-level positions more applicable to relatively less experienced job seekers – tourism industry and estate crops (e.g., fuelwood supply to tea estates) may be options worth exploring for viability and feasibility
Strengthening Democratic Governance	• Recognize and take advantage of opportunities to engage in transparency and accountability of public officials in conducting their duties related to water quality, land use change, or other environment-related topics where opportunistic co-benefits are possible
Support to Civil Society and Media	• Proactively seek opportunities to engage the small but generally competent groups actively engaged on environmental issues, whether in coastal, highland, dry zone, or wetland ecosystems • Engage journalists to build momentum for positive change through their reporting – for example, explaining challenging concepts such as Sustainable Development Goals to the public
Improve Rule of Law and Human Rights	• Recognize and take advantage of opportunities to engage on human rights issues related to water quality, land allocation and compensation, or other topics with high public interest • Proactively seek opportunities to train legal professionals on the existing legislative framework for environmental management – generally considered to be good but with uneven implementation
Address Social Cohesion and Reconciliation	• Do No Harm with resettlement programs by ensuring that they are not supporting conversion of natural forest or wetlands to irrigation schemes or agricultural estates • Proactively seek opportunities to facilitate co-benefits through improved (and more accessible) water supply – for example avoiding surface water or groundwater sources tainted with pesticides
Disaster Risk Reduction	• Engage with climate change and resilience expertise to shift focus from coping to adapting – begin to incorporate slow-onset disasters in addition to (or instead of) an approach based on extreme events

Annex 1

Stakeholders Consulted

Name	Organization
Mrs. Pathma Abeykoon	Director, Biodiversity Ministry of Environment
Prof. Devanka Weerakoon	Coordinator, Biodiversity and Ecosystems, IUCN
Mr. Shamen Vindanage	Program Coordinator, IUCN
Mr. Anura Sathurusinghe	Conservator General of Forests, Forest Department
Mr. Upali Marasinghe	Secretary of the Ministry of Plantation Industries
Hon. Lakshaman Wasantha Perera	Deputy Minister of Plantation Industries
Dr. I Sarath B Abeysinghe	Director/ CEO Ministry of Plantation Industries, Tea Research Institute
Mr. R.R.I V.H. Lakshman Rodrigo	Liaison Officer, Socioeconomic Specialist Group IRRDB
Dr. Buddhi Marambe	Director Agriculture Education Unit, Department of Crop Science, Faculty of Agriculture, University of Peradeniya
Dr. Siril Wijesundara	Research Professor National Institute of Fundamental Studies, Hantane Rd, Kandy
Prof. G. L. L. Pradeepa Silva	Department of Animal Science, Faculty of Agriculture, University of Peradeniya
Prof. D.K.N.G. Pushpakumara	Department of Crop Science, Faculty of Agriculture, University of Peradeniya
Mr. Meegasmulla	Secretary Ministry of Sustainable Development & Wildlife
Mr. Rathnayake	Additional Secretary Ministry of Sustainable Development and Wildlife