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Research Paper

Policy Gaps and Needs Analysis for the Implementation of NDCs on **Adaptation** and **Loss and Damage** in **Bangladesh, Nepal** and **Sri Lanka.**

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List of Abbreviations

CBD	Convention on Biological Diversity
CBO	Community Based Organizations
CCA	Coast Conservation Act
CCCRA	Child Centered Climate Risk Assessment
CCD	Coast Conservation Department
CEA	Central Environment Authority
CEA	Central Environmental Authority
CITES	Convention on International Trade in Endangered Species
CKDU	Chronic kidney diseases of uncertain origin
COP	Conference of the Parties
DAFH	Department of Animal Production and Health
DGP	Development Guide Plan
DMC	Disaster Management Centre
DOA	Department of Agriculture
DSA	Daily Subsistence Allowance
DWLC	Department of Wildlife Conservation
EIA	Environmental impact Assessment
EOC	Emergency Operations Centre
EU	European Union
FFPO	Flora and Fauna Protection Ordinance
GDP	Gross Domestic Product
GHG	Green House Gas
IAS	Invasive Alien Species Act
IDPs	Internally Displaced Persons
IEE	Initial Environmental Examination
IMO	International Maritime Organization
INDCs	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
IVS	Invasive Alien Species

LUPPD	Land Use Policy Planning Department
MAB	Man and the Biosphere Program
MEPA	Marine Environment Protection Authority
MH&C	Ministry of Housing and Construction
MMP&WD	Ministry of Megapolis and Western Development
NAP	National Adaptation Plan
NAQDA	National Aquaculture Development Authority of Sri Lanka
NARA	National Aquatic Resources Research and Development Agency
NBRO	National Building Research Organisation
NBSAP	National Biodiversity Strategy and Action Plan
NCDM	National Council for Disaster Management
NDCs	Nationally Determined Contributions
NEOP	National Emergency Operation Plan
NITF	National Insurance Trust Fund
NLDB	National Livestock Development Board
NPPC	National Physical Planning Council
NSF	National Science Foundation
OFCs	Other Food Crops
SDGs	Sustainable Development Goals
SLCB	Sri Lanka Convention Bureau
SLCG	Sri Lanka Coast Guard
SLITHM	Sri Lanka Institute of Tourism & Hotel Management
SLLRDC	Sri Lanka Land Reclamation & Development Corporation
SLTDA	Sri Lanka Tourism Development Authority
SLTDA	Sri Lanka Tourism Development Authority
SLUMDMP	Sri Lanka Urban Multi-Hazard Disaster Mitigation Project
UDA	Urban Development Authority
UN	United Nations
UNCHR	United Nations High Commissioner for Refugees
UNCLOS	United Nations Convention on the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change
WIM	Warsaw International Mechanism

1. Abstract

Nationally Determined Contributions (NDCs) are voluntary commitments by Parties to the Paris Agreement for climate action through mitigation, adaptation, and loss and damage. Sri Lanka submitted its NDCs to the UNFCCC in 2015 and divided them into four key thematic areas of focus: adaptation, loss and damage, mitigation, and means of implementation. They concentrate on the sectors of energy, transportation, industry, waste, and forestry for mitigation, health, food security, water and irrigation, coastal and marine, biodiversity, human settlements, and tourism for adaptation, and loss and damage as a cross-cutting priority for climate action.

This sector-based approach means that each sector has relevant laws and policies that will be applicable to the implementation of the NDCs, requiring amendments or review, as well as needing new laws and policies to be introduced to facilitate the implementation of NDCs. Sri Lanka at present does not have a law on climate change. However, the country had developed its National Adaptation Plan and also the National Climate Change Policy.

This research paper identifies through analysis of existing laws, policies and relevant strategies and plans, and stakeholder consultations the policy gaps and needs for the implementation of NDCs for adaptation and loss and damage in Sri Lanka, and recommendations to address them. It also studies the integration of thematic areas related to SDGs, Sendai Framework for Disaster Risk Reduction, and gender responsive actions into the NDCs and NAP of Sri Lanka with the aim to facilitating the formulation of

efficient actions to build climate resilience in the key economic sectors related to adaptation and loss and damage of the NDCs of Sri Lanka.

There are several gaps and needs to be addressed on the policy and legal level for the effective implementation of the NDCs of Sri Lanka. A major gap is the lack of laws for implementing NDCs, or the non-implementation of existing laws in an efficient manner. However, some of the gaps and needs identified as legal and policy gaps are being addressed through initiation of new polices and laws, that are at present in their draft versions.

Further, policies in many sectors need to be expanded, for example with a waste management component in the health and water sectors, with protection of irrigation systems, for the extraction of groundwater, or for integrated water resources management. In the agriculture sector, many key laws provide opportunities to integrate climate change and climate action, for example the development of seeds and food security or laws surrounding fertiliser use, which will be opportunities to integrate climate change adaptation into sectoral laws and policies.

There is also a need for enhanced coordination with sectoral ministries and entities for the implementation of NDCs and climate actions, as well as to build capacity and to enhance the mainstreaming of climate action in many ministries, and the coordination between the authorities and local stakeholders such as farming or coastal communities, people living in rural parts of the country. Surveillance or monitoring system are also

highlighted as a need, and could be built up in many areas, for example health, water, irrigation, and disaster risk reduction.

The overlapping of institutions and the duplication of laws and mandates make the implementation of NDCs more difficult. Research is needed in many areas and would greatly improve the government's ability to address climate change impacts.

Many government ministries and departments lack of technical experts, and qualified human resources. Both government staff and local stakeholders need capacity building and awareness creation on climate change impacts, climate risks, and climate action.

It is also important that the legal policy experts who draft laws and policies on climate change related aspects are capacity built on climate change impacts. This is an important element in ensuring that the laws and policies related to different sectors linked to NDC implementation integrate climate change to them.

There is also a lack of awareness on biodiversity and climate change and on climate-induced migration, as well as on

international mechanisms such as WIM or the Sendai Framework. Financial and technological gaps pose further challenges to NDC implementation. There is an absence of data or data sharing mechanisms in many sectors, for example regarding weather and climate data for agriculture or regarding early warning systems for climate-related disasters are not freely accessible to the public.

Integrating both SDGs and international DRR processes and mechanisms such as the WIM, the Sendai Framework, or the InsuResilience Global Partnership into NDC implementation could create strong synergies or co-benefits for both sides. Sustainable development and climate adaptation action provide an opportunity to work together and achieve common goals and targets.

Addressing the gaps, needs, and constraints of NDC implementation Sri Lanka and Implementing the NDCs in an effective manner is vital to prepare for the impacts of climate change as well as conserve or build a resilient and sustainable society, economy, and natural environment.

2. Introduction

Nationally Determined Contributions (NDCs) are a key component of the Paris Agreement under the UNFCCC process. These voluntary submissions by Parties to the Paris Agreement are commitments for climate action that focus on mitigation, adaptation, and loss and damage.¹

Sri Lanka submitted its NDCs to the UNFCCC in 2015, ahead of the 21st Conference of Parties (COP 21) held in Paris. Termed as Intended Nationally Determined Contributions (INDCs) prior to the ratification of the Paris Agreement, they were converted to NDCs upon ratification.

Sri Lanka's NDCs present four key thematic areas of focus: adaptation, loss and damage, mitigation, and means of implementation. They concentrate on the sectors of energy (electricity generation), transportation, industry, waste, and forestry for mitigation and on the sectors of health, food security (agriculture, livestock, and fisheries), water and irrigation, coastal and marine, biodiversity, urban, city planning, and human settlements, and tourism and recreation for adaptation, as well as loss and damage as the priority sector for climate action.²

Interlinked with Sri Lanka's commitments on climate change relevant to adaptation and loss and damage under NDCs, are also the actions proposed under the National Climate Change Adaptation Plan of Sri Lanka (2016 - 2025) hereon referred to as

the NAP of Sri Lanka.³ It highlights key sectors for adaptation action in Sri Lanka, to which the NDCs on adaptation for Sri Lanka closely correlate.

Further, the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction (Sendai Framework)⁴ are also connected to climate action and resilience building to climate risks. Their integration into climate change laws, policies and plans contribute to avoid duplication of action, and investment, while contributing to resilience building of vulnerable communities and ecosystems.

This research paper identifies through analysis of existing laws, policies and relevant strategies and plans, and stakeholder consultations the policy gaps and needs for the implementation of NDCs for adaptation and loss and damage in Sri Lanka, and recommendations to address them. It also studies the integration of thematic areas related to SDGs, Sendai Framework for Disaster Risk Reduction, and gender responsive actions into the NDCs and NAP of Sri Lanka with the aim to facilitating the formulation of efficient actions to build climate resilience in the key economic sectors related to adaptation and loss and damage of the NDCs of Sri Lanka.

Further, it is important to note that the research paper's preparation is interlinked with the NDC review process for Sri Lanka, and has contributed to the identification of key gaps and needs in the

¹ (United Nations, 2015)

² (Ministry of Mahaweli Development and Environment, 2016)

³ (Ministry of Mahaweli Development and Environment, 2015)

⁴ (United Nations Office for Disaster Risk Reduction, 2015)

implementation of NDCs of Sri Lanka, and the initial consultative process for the development of the reviews NDCs of Sri

Lanka, which will be submitted to the UNFCCC Secretariat in 2020.

3. Methodology

This research paper has been prepared based on desk research, interlinked with a consultative process through interviews, sectoral and national level multi-stakeholder consultations. Key national documents on climate change, sustainable development, disaster risk management and disaster risk reduction, and relevant sectoral policies were reviewed during the research. Findings of the research were validated through consultation meetings and workshops. The consultative process of this research has been closely linked with the NDC review of Sri Lanka, with a wide contribution of the government entities implementing actions at national, and sectoral level.

The final research product has been prepared taking into consideration the feedback and comments received from the meetings and workshops, and included where relevant. This paper has been prepared with the aim of contributing to developing the baseline for identifying the key gaps and needs in laws and policies for the implementation of present NDCs of Sri Lanka, as well as identifying the key gaps and needs to be addressed in the review of NDCs of Sri Lanka, a national process which is envisaged to be terminated upon the submission of the reviewed NDCs to the UNFCCC Secretariat in 2020.

The research methodology applied is as follows:

- **Policy Gaps and Needs Analysis:** Laws and policies related to all sectors that are included in the NDCs and the NAP, as well as related to cross cutting thematic areas have been analysed to

identify the gaps and needs in laws the policies for the implementation of current NDCs of Sri Lanka. These sectors include energy (electricity generation), transportation, industry, waste, forestry, health, food security (agriculture, livestock, and fisheries), water and irrigation, coastal and marine, biodiversity, urban city planning and human settlements, and tourism and recreation, and loss and damage. Cross cutting thematic areas focused on gender, social and economic development, technology and finance.

- **Sectoral and National Level Multi-Stakeholder Consultations and Workshops:** Based on the initial legal and policy analysis for the laws and policies related to climate change and sustainable development in Sri Lanka, sectoral meetings were conducted for the adaptation and loss and damage NDCs related sectors of Sri Lanka. Key stakeholders from government entities, civil society organisations (CSOs), research institutions and think tanks, private sector, and academia were invited for the consultations. Data collection through consultations were based on discussions with the stakeholders and inputs on the present status of NDC implementation, and data provided on gaps and needs existing for the implementation of the sectors' NDCs by the participating stakeholders. A total

of eighteen sectoral and national consultations were conducted for this purpose, and almost 250 multi-stakeholders participated in these activities.

- **Preparation of the Initial Draft:** Following the sectoral consultations, the first draft of the research paper was drafted. The findings of the research paper were presented to around 70 stakeholders who were among key multi-stakeholders involved in the NDC implementation process in Sri Lanka. The feedback and inputs

received during the workshop have been incorporated into the final version of the research paper.

- **Recommendations and Feedbacks:** Recommendations and feedbacks were generated by the researchers based on the inputs received during the stakeholder consultations, national level workshop, as well as the information provided by key stakeholders through the data collection survey.

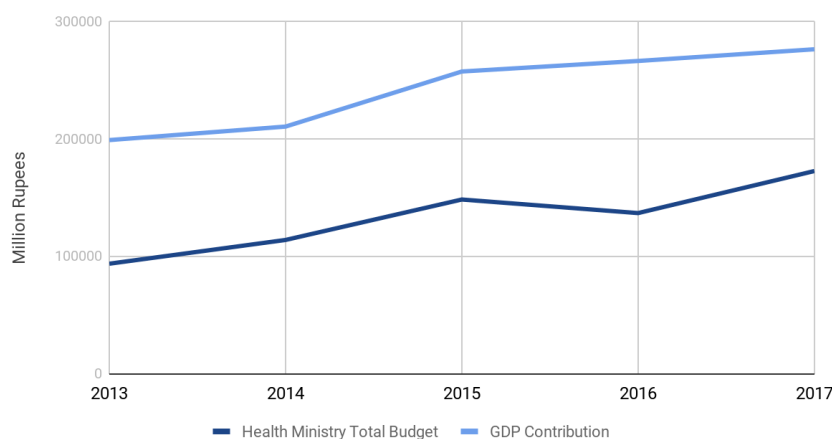
4. Health Sector

4.1 Introduction

Sri Lanka has a unique healthcare sector that includes both public and private hospitals and institutes. Public hospitals provide free healthcare to citizens while the more affluent and insured individuals may seek the services of private hospitals and institutes⁵.

In comparison to other developing nations, Sri Lanka's health sector is relatively highly developed. Despite being

Health Sector Expenditure and GDP Contribution



a lower middle income country, Sri Lanka's health indicators are similar to developed countries in the region.⁶ Accordingly, Sri Lanka has made great strides in areas such as maternal and child health and infectious disease control.⁷ However, despite these achievements, the health sector faces a number of

challenges due to increasing trends in new epidemics and the adverse impact climate change has on them. New trends in epidemics such as vector, rodent, water and food borne diseases are likely to be exacerbated by climate change.⁸ Therefore, the NDCs of Sri Lanka give special attention to these epidemics.

A major concern within the health sector is the nutritional status of the country and the potential risk climate change poses on the status. It is found that climate change severely impacts the growth and development of children while threatening the productivity of the older and future generations of Sri Lanka.⁹ Thus, since Sri Lanka is yet to achieve the optimal potential of nutrition achievement of the population, climate change poses an additional burden on the health and food sectors in achieving their nutritional targets. Furthermore,

deterioration in health has adverse socio-economic implications. Therefore, it is of paramount importance to address climate change. In such a context, it is important to recognize the issues and problems climate change creates in existing health issues.¹⁰

⁵ (Weerawansa & Samarasinghe, 2017)

⁶ Ibid

⁷ 'The World Bank in Sri Lanka: Overview' (The World Bank, 20 March 2019) <
<https://www.worldbank.org/en/country/srilanka/overview#3>> accessed 31 July 2019

⁸ 'Sector Vulnerability Profile: Health.'(2010).<
http://www.climatechange.lk/adaptation/Files/Health_SVP-Nov-16-2010.pdf >

⁹ Ibid.

¹⁰ Ibid.

The human health exposure to climate variability is twofold: direct and indirect. Extreme weather conditions exemplify direct exposure while changes in quantity of air, ecosystems, agriculture and livelihood infrastructure are examples of indirect exposure.¹¹

With the increase of climate risks, the health impacts are also increased, triggered by different vectors, and other related causes. Taking into account these factors, the NDCs of Sri Lanka have included the following as actions to be taken under the NDCs for health sector for Sri Lanka.

- 1) Establish clinical waste disposal systems in all hospitals in collaboration with relevant agencies
- 2) Control of vector borne and rodent borne diseases (dengue, malaria, and leptospirosis)
- 3) Control of food borne and water borne diseases including Non-Communicable Diseases (NCD) such as Chronic Kidney Disease of Unknown Origin (CKDU) and mental diseases which can increase due to extreme heat and drought.

4.2 Laws, Policies, and Plans Relevant to Health Sector NDCs

There are several laws and policies that relate to the health sector of Sri Lanka. Among these, those that are key laws, policies and plans related to the implementation of NDCs for the health sector, and interlinked to climate change risks are:

¹¹ Ibid.

Health Services Act

The Health Services Act was enacted to provide for the constitution and responsibilities of the Department of Health and for the establishment of Regional Hospitals Board and Hospital Committees, and to secure more efficient administration by the local authorities in relation to public health.¹²

The Act provides that the health department is responsible for providing establishments and services that are considered necessary for the prevention and treatment of diseases and the promotion of the overall health of the people.¹³ The Act further encourage research and studies related to health through granting of scholarships and other facilities to persons employed or proposed to be employed by the department and by providing financial aid and other assistance to institutes engaged in research related to health or providing courses of study.¹⁴ It also allocates the responsibility of taking as well as developing and encouraging measures for the investigation or prevention of disease and for the improvement of public health to the Department of Health, which includes research, epidemiological investigations and the dissemination of information.¹⁵

National Health Policy Sri Lanka

The Health Policy of Sri Lanka has as its mission to achieve the highest attainable health status through promotive, preventive, curative and rehabilitative services which are of high quality and accessible and available to the people, thereby contributing to the social and

¹² Long title, Health Services Act No.3 of 1977

¹³ 5(a) Ibid

¹⁴ 5(b) Ibid

¹⁵ 5(c) Ibid

economic development of Sri Lanka.¹⁶ It indicates that whilst recognising that the proposed changes need to accommodate demographic, epidemiological, and socio economic transitions.¹⁷ Issues related to the policy have been identified as preventive health services, curative care services, and rehabilitative care services as well as in health administration and health financing.

Under the issues related to preventive health services¹⁸ the policy makes references to climate change, and highlights the need to develop mechanisms to minimise the health impacts due to climate change and climate anomalies. It further suggests promoting green environment/environmental sustainability and allocating attention to non-communicable diseases, chronic kidney diseases of uncertain origin (CKDU), and communicable diseases; Malaria and Filariasis focusing on enhanced surveillance activities; and the need for more vigilant migrant health units. Among other aspects focused on is the mental health sub-programme under the rehabilitative health care services¹⁹ which interlinks with climate change impacts such as non-economic losses and damages due to climate induced disasters.

The Health Policy of Sri Lanka broad strategic directions²⁰ include as one of the key areas of focus and developing mechanisms to minimise the health impact of climate change and climate anomalies. Among other aspects focused on are strengthening of surveillance of food and water borne diseases; developing a comprehensive health

system to reduce the burden of CKDU; maintaining zero transmission of malaria and Filariasis; reducing the occurrence of dengue outbreaks through multi-sectoral involvement, mortality and morbidity due to Noncommunicable diseases (NCD)CD; safeguarding the natural environment and prevent environmental related health hazards.

Quarantine and Prevention of Diseases Ordinance

This ordinance provides the legal basis for the control and preventing the introduction of the plague and all contagious or infectious diseases into Sri Lanka and to prevent the spread of such diseases in and outside Sri Lanka.²¹

Disease control is a one of the main focal points under the NDCs of the health sector. NDC 2.2 of the health sector refers to maintaining a malaria free status under which surveillance and screening of migrants from malaria endemic areas and establishing an early and rapid response system in the event of outbreaks are identified as necessary actions. As some of the diseases that were deemed as eradicated in Sri Lanka, such as Malaria, assumed as being in risk of spreading due to impacts of climate change,²² and the migrant workers coming into Sri Lanka without a proper screening process, the relevance of the Ordinance has been heightened.

The definition of disease for the purpose of this ordinance is “any disease of a contagious, infectious or epidemic nature” which encompasses the potential spread of new health hazards that could be spreading due to climate change

¹⁶ Health Policy Sri Lanka 2016-2025

¹⁷ Ibid

¹⁸ Health Policy (n.3)

¹⁹ Ibid

²⁰ Ibid

²¹ Quarantine and Prevention of Diseases Ordinance 1897

²² Input gathered through stakeholder consultations, Health Sector, Ministry of Mahaweli Development and Environment

impacts, of could be introduced to Sri Lanka due to a vector that is not within Sri Lanka, but is introduced to Sri Lanka due to foreign factors but able to survive in Sri Lanka due to change of environmental factors and climatic changes.

The National Policy on Health Information (2016)²³

The National Policy on Health Information was designed to address the information gaps in the health sector such as the lack of clear policies on health information management, compartmentalization of the information governance mechanism, inadequate coordination among existing information systems, limited data sharing.²⁴

It aligns with the objectives set out in the National Health Policy, and interlinks with overcoming the gaps and needs related to information needed for achieving national health goals, including facilitating informed decision-making process. The Policy connects with achieving monitoring and reporting needs related to the NDCs of the health sector, and aims to address a gap that has been highlighted in many sectors related to lack of, inadequate management, and non-access to data/information.²⁵

4.3 Gaps and Needs for the Implementation of Health Sector NDCs

Existing gaps and needs for the implementation of NDCs for the health sector could be categorized under key

areas of focus such as the nonexistence of relevant laws and policies; gaps and needs in coordination and institutional capacity; capacity gaps (technical and financial); lack of means of implementation; and other sector specific gaps.

4.3.1 Gaps and Needs in Policies and Laws

The analysis of laws and policies, and the input received during the stakeholder consultations and via survey provided to the key stakeholders provide that there are several gaps and needs to be addressed on the policy and legal level for the effective implementation of the NDCs of Sri Lanka. Among the key points highlighted is the nonexistence of a waste management policy for the health sector in Sri Lanka. Further it has been noted that there is a need for developing Need management guidelines for Leptospirosis.

Additionally due to the risks concerning the spread of Malaria, it has been noted that there needs to be a stronger process in place for screening of migrant workers coming into the country, and the need for strengthening of the existing process, as well as the implementation of present laws related to migrant workers to ensure that the laws are applied in a manner which avoids illegal migrant stays without proper documentation. It was noted during consultations that many migrant workers arrive to Sri Lanka without the proper visa, and that they remain for a longer period as workers that are not documented. The experts attending the consultations have highlighted the need to address this, so as to avoid the risk of

²³ The National Health Policy on Health Information (2016), Ministry of Health, Nutrition and Indigenous Medicine

²⁴ Ibid

²⁵ Inputs received during sector consultations of key stakeholders, Ministry of Mahaweli Development and Environment.

diseases such as Malaria from spreading in Sri Lanka.²⁶

4.3.2 Gaps and Needs in Institutions and Coordination

Among the key gaps and needs that were highlighted are the gaps and needs in institutional coordination for the implementation of NDCs of the health sector, and the capacity to implement them. It was noted that there is a lack of a good surveillance and monitoring systems, a need for a comprehensive monitoring system for vector and rodent borne diseases; need for diagnostic and screening facilities needed.

Additionally, the stakeholders have indicated the need to enhance institutional capacity for treating patients with chronic kidney disease of unknown origin (CKDU). The inputs provided by stakeholders also highlight the need for strengthening laboratory capacity to diagnose diseases and the need for a coordinated method for addressing health issues during extreme events.²⁷

4.3.3 Capacity Gaps and Needs

The stakeholders highlighted gaps and needs in financial capacity (the availability of finance, and the capacity to raise funds for the implementation of NDCs) and technical expertise related to the NDCs of the health sector. They provided examples of gaps and needs in finance, and the need to address the lack of capacity to develop proposals based on true estimates. Further lack of technical expertise and availability of technical

information to be accessed such as lack of research on different issues related to the NDCs of the health sector were also highlighted such as research on vector borne diseases which links with the implementation of NDC 2 of the health sector. Among other research gaps highlighted are the lack of research on effects of heat and drought on mental health, particularly on young children, mosquito breeding; lack of studies about waste water treatment process. However, existing laws provides responsibility to the Department of Health, Subject to general or special directions as may be issued by the Minister, and the availability of moneys granted from the Consolidated Fund in conformity with the provisions of Article 150 of the Constitution, encourage and provide assistance to health-related research²⁸. The implementation of such action subject to the conditions listed being satisfied, would facilitate addressing the gaps and needs related to research highlighted by the multiple stakeholders attending the consultations.

Stakeholders, also highlighted the need for recording mechanisms of the actual causes for the disasters; disaster risk preparedness. They further highlighted the gaps in capacity for diagnosis, and the need for building the capacity in this area of the health sector. Additionally, it was also highlighted that there is a need for data, and access to data such as meteorological data.

²⁶ Key stakeholder consultation for the Health Sector, Ministry of Mahaweli Development and Environment of Sri Lanka

²⁷ Ibid

²⁸ Section 5, Health Services Act of 1952

5. Food Security Sector

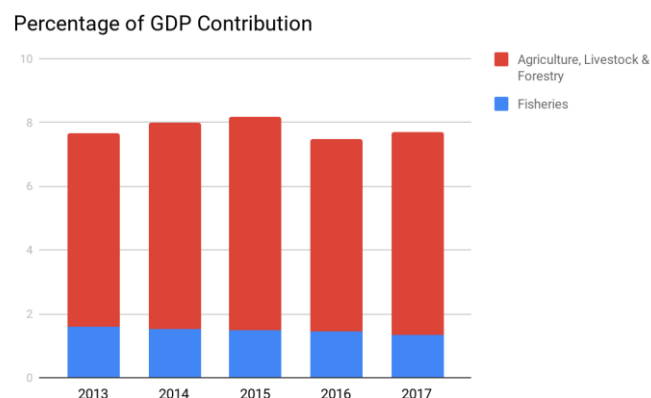
5.1 Introduction

World food supply is threatened, and climate change impacts are aggravating the existing stressors that cause risks to the food security sectors. At the global level, approximately 821 million people are undernourished, 151 million children under 5 are stunted, 613 million women and girls aged 15 to 49 suffer from iron deficiency. Food security is face non-climate stressors such as population and income growth, demand for animal-sourced 10 products, and from climate change. These threaten the availability, access, utilisation, and stability of food security.²⁹

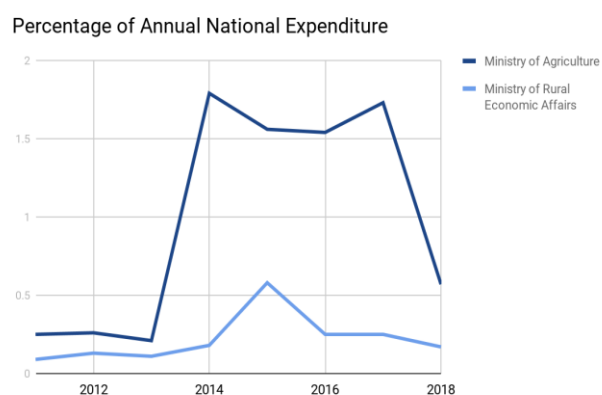
Food security is a priority sector since it is among the most vulnerable sectors to prolonged droughts, flash floods and other adverse effects of climate change. In Sri Lanka, food security consists of three major areas: agriculture, livestock and fisheries. Within these sectors, the priorities as stated by National Adaptation Plan for Climate Change in Sri Lanka (NAP) are rice, other food crops (OFCs), horticultural crops, sugarcane, and land degradation.³⁰ As stated above, experts indicate that climate change will affect food security, food availability, food accessibility, food utilisation and food systems stability, which in turn has direct impacts on human health, livelihoods, food production and distribution channels. As a agriculture-based economy, Sri Lanka faces significant impacts due to extreme weather events

and temperature fluctuations in the dry zones and wet zone.

IPCC science provides with high confidence that food security and climate



change have strong gender and equity dimensions. However, this remains to be integrated into Sri Lanka's NDCs on food security. Across the world, women play a key role in food security. While recognizing regional different it needs to be noted that impacts of climate change vary among diverse social groups depending on different factors, among which gender is one.³¹



²⁹ AR5, IPCC

³⁰ National Climate Change Adaptation Plan of Sri Lanka (2016 – 2025)

³¹ AR5, IPCC

5.2 Agriculture Sector

Crop production mainly depends on the prevailing weather conditions, and is directly affected by the adverse impacts of climate change. Agriculture is among the most climate sensitive sectors of Sri Lanka, and climate-related hazards have significantly affected the agricultural production and farm assets of the country.

High climate sensitivity and livelihood dependency of a large section of population makes food security a highly vulnerable sector to climate change impact that needs special attention in the NAP of Sri Lanka. It is evident that both long term, gradual changes, such as rising temperatures and erratic rainfall patterns, as well as extreme climate conditions such as severe droughts and floods are taking a toll on Sri Lanka's agricultural production.³²

72% of Sri Lanka's population lives in rural areas and the livelihood of many link directly or indirectly to agriculture. Out of agriculture exported from Sri Lanka, spices and allied products is second only to tea. In spite of technology advances made on improved crop management, irrigation, plant protection and fertilization, weather and climatic remain the key factors of agricultural productivity.³³

Sri Lanka's agriculture sector consists of domestic and export subsectors and employs a large part of the country's population. The agriculture sector contributes around 4.7% of the total GDP, 7.9% if livestock, fisheries, and forestry are included as well.³⁴ Out of Sri Lanka's

total labour force of almost 8.6 million people, more than 2.1 million are working in the agriculture sector. Roughly one in four Sri Lankan workers is employed in agriculture, and around 90% of poor households earn their living from the rural agricultural economy.³⁵

Sri Lankan agriculture revolves around two main seasons, Yala and Maha, and a variety of different crops cultivated in the dry zone and the wet zone of the island.⁵ The main crop is paddy, which is mostly rain-fed during Maha and relies on tank water during Yala season. Rainfed highland agriculture includes grains, pulses, various vegetables, chilies, and onions, and additional home garden cultivation of perennial fruits and seasonal vegetables is widespread throughout the country. Furthermore, there are also plantation and export crops such as coconut, tea, or rubber.³⁶

Sri Lanka's has submitted the following actions as NDCs for the agriculture sector:

- 1) Promote/introduce/develop Integrated Pest Management (IPM) practices to minimize pest damages to improve environmental impacts and health.
- 2) Develop/introduce varieties resistant/tolerant to biotic and abiotic stresses arising from climate change.
- 3) Re-demarcate Agro Ecological Regions (AERS) maps of Sri Lanka with current climate and future climate and recommend appropriate crops for different areas to reduce vulnerability to climate change impacts.³⁷

³²“ Policy Insights’ - Institute of Policy Studies of Sri Lanka - 17th September 2018

³³ *ibid*

³⁴ (Government of Sri Lanka, Department of Census and Statistics, 2019)

³⁵ (Department of Census & Statistics, 2018)

³⁶ (Senaratne, 2017)

³⁷ Nationally Determined Contribution of Sri Lanka (2016)

- 4) Introduce suitable land and water management practices for central highlands and other marginal areas to minimize land degradation and to improve the land and water productivity.

5.2.1 Laws, Policies, and Plans Relevant to Agriculture Sector NDCs

There are several laws, policies and plans that focus on the agriculture sector of Sri Lanka. This section of the research will focus on the key laws and policies related to the sector, to identify that existing gaps and needs for their implementation. Among the key laws and policies studied are the following:

Control of Pesticides Act, No. 33 of 1980

Control of pesticides Act was enacted to regulate the import, packing, labelling, storage, formulation, transport, sale and use of pesticides, and to appoint a Licensing Authority, and a technical and advisory committee. The technical and advisory committee make national policies and assist the registrar in technical issues. The Act interlinks with NDCs of the agriculture sector, through the focus on the preparation and implementation of Integrated Pest Management proposed as an adaptation action.

Seed Act No. 22 of 2003³⁸

Seed Act of Sri Lanka has as its objective to regulate the quality of seed, and planting materials, and other relevant matters thereto. A National Council has been initiated for the purpose of this Act, with the aim of facilitating its implementation.

³⁸ Seed Act No. 22 of 2003

Functions of the National Council include among others the establishment of guidelines and principles to ensure production and distribution of seed and planting materials of the highest quality; undertake periodic review of the progress of seed and planting materials production; review the quality standards of seed and planting materials, periodically, with a view to developing the seed and planting materials industry; establish appropriate minimum limits for germination viability, genetic purity, physical purity and appearance of seeds and planting materials and maximum limits for genetic impurities, damaged seeds, water content and pests (including weed seeds) allowed in seeds available in the market.³⁹

The Act connects with the NDC commitments of Sri Lanka, which focuses on developing climate resilient seed varieties as an adaptation measure.

Regulation of Fertilizer Act No. 68 of 1988

The Act has as its purpose to regulate the importation, manufacture, formulation and distribution of fertilizer and to provide for matters connected therewith or incidental thereto.⁴⁰ The Act introduces measures for the importers, manufacturers, formulators and distributors of fertilizers requiring licenses to be obtained for matters related to the Act.⁴¹ The Act's interpretation of fertilizer does not cover animal and vegetable manures and covers blending or mixing of different ingredients of fertilizers.⁴² The Act is of importance due to Nitrogen use in fertilizers and the overuse of the

³⁹ Section 6, Seed Act No.22 of 2003

⁴⁰ Preamble, Regulation of Fertilizer Act No.68 of 1988

⁴¹ Regulation of Fertilizer Act No.68 of 1988. s.12,13,15

⁴² Article 29, Regulation of Fertilizer Act No.68 of 1988. s.12,13,15

ingredient as a chemical substance contributes to greenhouse gas (GHG) emissions resulting in climate change⁴³.

Soil Conservation (Amendment) Act No. 24 of 1996

Soil Conservation (Amendment) of 1996 introduced is an act enacted to make provision for the enhancement and sustenance of production capacity of the soil; to restore degraded land for the prevention and mitigation of soil erosion ; for the conservation of soil resources and protection of land against damage by floods, salinity, alkalinity, water logging, drought; and to provide for matters connected therewith or incidental thereto⁴⁴.

The Act establishes the Soil Conservation Board⁴⁵, which is tasked with proposing measures, and coordinating activities, research and programs, relating to soil conservation, administering and managing the soil Conservation Fund and advising the Minister on the implementation of the provisions of the Act.⁴⁶

The Act also empowers the minister to declare any defined area as a 'conservation area' for the purpose of the Act and, to make regulations⁴⁷ to preserve the soil fertility and to facilitate the

absorption of moisture, to prevent or to mitigate soil erosion etc.⁴⁸

Further improvements have been made to the Act by the soil Conservation Regulation No.01 of 2009 which prohibits the cultivation of annual crops on any land which consists of a slope of more than sixty percent. In addition to this prohibition there are several prohibitions introduced in relation to the cultivation in order to conserve the soil.

Agricultural and Agrarian Insurance Act No.20 of 1999

The Act is among the key legislations that link with agriculture and climate impacts. However, the NDCs related to the Act are primarily under the loss and damage sector. The Act was set up to provide for the establishment of an agricultural and agrarian insurance board, which provides insurance among others on agricultural and horticultural crops and medicinal plants, livestock, fisheries and forestry.⁴⁹Detailed analysis of this Act will be conducted in the loss and damage section of this paper.

Food Act No. 26 of 1980

The Act is enactment with the aim of regulating and controlling the manufacturing process, importation, sale and distribution of food. Food Act No 26 of 1980 as amended by No 20 of 1991, Food (Hygiene Regulations) No. 29 of 2011, Food (Formaldehyde in Fish) Regulations 2010, Food (Adoption of Standards) Regulations 2008 were also made as amendments to the principal Act but neither of these enactments nor the principal Act has references to climate risks or environmental impacts. It focuses primarily on the manufacturing process

⁴³ Erbas B C and Solakoglu E G, "In the Presence of Climate Change, the Use of Fertilizers and the Effect of Income on Agricultural Emissions", (2017)<<https://www.researchgate.net/publication/320743336> In the Presence of Climate Change the Use of Fertilizers and the Effect of Income on Agricultural Emissions> accessed 19August 2019

⁴⁴ Section 2, Soil Conservation (Amendment) Act, No. 24 of 1996, s.1A

⁴⁵ Soil Conservation (Amendment) Act, No. 24 of 1996, s.1A

⁴⁶ Soil Conservation (Amendment) Act, No. 24 of 1996, s.1C

⁴⁷ Soil Conservation (Amendment) Act, No. 24 of 1996, s.4

⁴⁸ Soil Conservation (Amendment) Act, No. 24 of 1996, s.6

⁴⁹ Agricultural and Agrarian Insurance Act, No. 20 of 1999

and other relevant aspects aforementioned.

Pest Management Plan Sri Lanka 2016

The Pest Management Plan in Sri Lanka introduced in 2016 has among its purposes to promote the use of biological and environmental control methods and the reduction in reliance on synthetic chemical pesticides and they address pest management issues in the context of the project's key interventions.

Under this plan, when the pest control becomes a necessity, first consideration needs to be allocated to the physical and biological measures. Chemical drugs will be considered only if physical and biological measures have failed even in that instance priority will be given to the pollution free chemical drugs.⁵⁰

5.2.2 Gaps and Needs for the Implementation of Agriculture Sector NDCs

Existing gaps and needs for the implementation of NDCs for the agriculture sector could be categorized under key areas of focus such as the nonexistence of relevant laws and policies; gaps and needs in coordination and institutional capacity; capacity gaps (technical and financial); lack of means of implementation; and other sector specific gaps.

5.2.2.1 Gaps and Needs in Policies and Laws

Among the identified gaps is the non-inclusion of relevant information which connects some of the key existing laws and policies to the NDCs of Sri Lanka. While fertiliser is a key contributor to

climate change, climate change is not referred to in the relevant laws of Sri Lanka⁵¹. The production of food which is key to address food security focuses primarily on elements that do not relate to climate stressors impacting food security in the country.⁵² Additionally, other key laws and policies on agriculture such as the development of seeds provides further opportunities to integrate climate change actions,⁵³ and NDCs of the country into the existing mandates interlinked to food security in the country.

5.2.2.2 Gaps and Needs in Institutions and Coordination

The research identified through inputs of relevant key stakeholders for gaps and needs in institutions and coordination for the effective implementation of NDCs of the agriculture sector.

Among some of the gaps identified by the consultations on the agriculture NDCs and NAP related activities highlight the need for effective coordination for the monitoring of pesticide poisoning in farming and rural communities. Additionally the need for coordination between climate change practitioners and the agricultural practitioners was also noted as a gap in coordination among different institutions and entities for the implementation of NDCs for the agriculture sector.⁵⁴ The need for coordination among different entities linked to the implementation of crop insurance in Sri Lanka was also noted, so as to ensure that compensation from climate and natural disasters are easily

⁵⁰ Ministry of Primary Industries and Ministry of Agriculture "Pest Management Plan"- 2016

⁵¹ Regulation of Fertilizer Act No.68 of 1988

⁵² Food Act, No.26 of 1980

⁵³ Seed Act No. 22 of 2003

⁵⁴ Stakeholder consultation for the review and update of the NDCs and the NAP of Sri Lanka, Ministry of Mahaweli Development and Environment

accessible to communities that are impacted by them.

5.2.2.3 Capacity Gaps and Needs

Among capacity gaps and needs are the institutional capacity which is highlighted. These include the state corporation being positioned for efficient/effective use of indigenous knowledge on agriculture. Additional institutional capacity highlighted as gaps and needs points to the need for experiments through the Department of Agriculture.

There is also institutional capacity, human resource related, for having an identified team set up for effective pest and disease management.

Other capacity and awareness needs includes the need for farmer education and training via agriculture extension services to equip them for the implementation of NDCs of Sri Lanka. This also includes awareness and capacity building of farmers to not utilize chemical based fertilisers, and to pesticide dependent pest control practices and to adopt the use of botanical pesticides and biological controls.

Additionally it has also been highlighted the need for capacity for using weather and climate data for developing climate adaptation actions for the agriculture sector, and resilience building of communities to climate impacts through the implementation of NDCs.

5.3 Livestock Sector

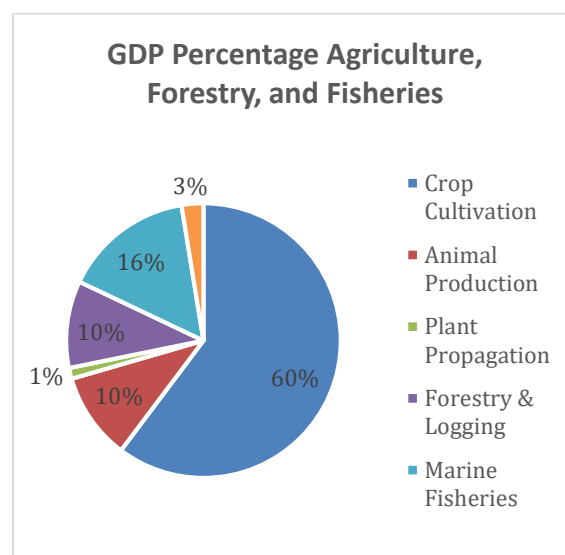
5.3.1 Introduction

Livestock is one of the economic sectors vulnerable to climate impacts. It forms a major segment of the food industry of the rural households, and includes food

production, as well as employment and income. The dairy industry is considered the most important area for investment and development in the livestock sector.⁵⁵

Sri Lanka's livestock sector mainly comprises of cattle, buffaloes, goats, sheep, pigs and poultry.⁵⁶

Climate change is considered among threats to the livestock sector. The rising temperature and uncertainties in rainfall associated with global warming are likely to increase the frequency and magnitude of climate variability and extremes. The major risks that have been identified so far as impacting the livestock are drought, flood and heat that impact the livestock and the livestock industry.



The following NDCs have been developed to address the climate risks and build resilience to climate change impacts for the livestock sector:

- 1) Identify vulnerabilities in the livestock sector
- 2) Introduce adaptive measures to avoid or minimize adverse effects

⁵⁵ "Constraints experienced by veterinarians while performing their duties," TC Ratnayake, PVK Sasidar, J Gupta and BS Meena (2015)

⁵⁶ Statement of Corporate Intent, National Livestock Development Board (2019)

- 3) Mitigate GHG emissions by adopting smart and green livestock practice
- 4) Promote responsible consumption and sustainable production
- 5) Enhance education, awareness and capacity building⁵⁷

5.3.2 Laws, Policies, and Plans Relevant to Livestock Sector NDCs

The livestock sector does not have many laws and policies that are directly relevant to the NDCs. Among those that are identified are:

Animals Act No. 29 of 1958

Animals Act was enacted to regulate the slaughter of animals, removal of animal from one administrative district to another, to issue vouchers in respect of the animals which have been branded, to regulate the sale and transfer of such animals, to provide improvement measures for the improvement of the breed of animals and to repeal buffalos protection Ordinance, the cattle Ordinance and the cattle trespass Ordinance⁵⁸. Offenses under the Act are declared as “cognizable offences” under the Section 3D

Animals (Amendment) Act, No. 10 of 2009 has inserted a new section 3AA to the Act No.29 of 1958 further strengthening the laws which are against persons who had committed offences under the Act.

6.3.2.2. Animals Breeding Policy of Sri Lanka (2010)⁵⁹

⁵⁷ Nationally Determined Contributions of Sri Lanka (2015)

⁵⁸ Animal Act No.29 of 1958

⁵⁹ Animals Breeding Policy of Sri Lanka: Guidelines and Strategies for Sri Lanka (2010), Ministry of Livestock and Rural Community Development

The policy is connected to the NDC implementation of Sri Lanka, which focuses on selection of suitable breeds based on the identified climate risks for Sri Lanka. It focuses on national breeding policy guidelines for cattle, buffaloes, goats, sheep and pigs, both in the field and in the state farms. The Policy also presents sections on conservation and utilization of indigenous animal genetic resources with a focus on indigenous breeds and the necessity to conserve and develop them. It also focuses on long term strategies in cross breeding programmes while conserving the indigenous animal genetic resources is highlighted.⁶⁰ The Policy is related to the NDCs on the livestock sector, as well as adaptation action as it has a focus on the aspects linked to resilience building of animals to climate change impacts, and the selection of appropriate breeds for different regions facing climate impacts.

Animal Diseases Act No.59 of 1992

The Act provides for the control, and prevention of diseases of animals. It identifies and vests power in different entities with regard to addressing diseases identified among animals. It also provides for the steps to deal with infected areas, including immunization of animals.⁶¹ With the impacts of climate change affecting the health of animals, this Act would be of relevance to addressing climate risks to the livestock sector in Sri Lanka.

5.3.3 Gaps and Needs for the Implementation of Livestock Sector NDCs

Existing gaps and needs for the implementation of NDCs for the livestock sector could be categorized under key

⁶⁰ Ibid

⁶¹ Section 7, Animal Diseases Act No.59 of 1992

areas of focus such as the nonexistence of relevant laws and policies; gaps and needs in coordination and institutional capacity; capacity gaps and other sector specific gaps.

5.3.3.1 Gaps and Needs in Policies and Laws

Among the gaps and needs highlighted through consultations and other data collection processes are the non-existence of reliable Environment Impact Assessment (EIA) process which would allow the livestock sector to plan on the environmental impacts to the sector.

The experts and the key stakeholders highlighted also the need for a dedicated policy / programme at ministry and departmental level. And it was further highlighted that the laws that facilitate the creation of GHG emissions need to be assessed and repealed.

The stakeholders further highlighted that there is a need for developing a national policy which addresses climate change impacts on the livestock sector of Sri Lanka.⁶²

5.3.3.2 Gaps and Needs in Institutions and Coordination

Among the institutional needs highlighted is the need to add and establish fodder farms in Sri Lanka. It was also highlighted that capacity building, and assistance needs to be provided agencies for implementation of NDCs on the livestock sector.

Further institutional caps and needs included the need for research stations on livestock sector and climate change, and the stakeholders indicated the need for

universities that would focus on these aspects.

It was also noted that the Ministry of Mahaweli Development and Environment (the focal point to the UNFCCC) needs to establish a project or a programme to specifically address climate change related actions in the different sectors.⁶³

5.3.3.3 Capacity Gaps and Needs

Among the capacity needs highlighted by the stakeholders is the need for new animal breeding methods, identifying new breeds and breeding material suitable for vulnerable climate conditions is needed.

Financial capacity is also among the needs highlighted, and the stakeholders indicated that financial capacity should be provided by the Department of Animal Production and Health (DAPH) and Ministry of Mahaweli Development and Environment and National Livestock Development Board (NLDB.). Further, the inputs indicated that the stakeholders identified the need for technical capacity, which according to there needs to be allocated to the Department of Agriculture.

Among other technical gaps and needs highlighted is the need providing technical capacity to State departments, post-harvest technology. Further it is indicated that awareness programmes are needed to introduce new technological methods.

And another gap that has been indicated is the data management needs, and the need to establish a data system.⁶⁴

⁶² Livestock sector consultations for the review of NDCs of Sri Lanka, Ministry of Mahaweli Development and Environment (2019)

⁶³ Livestock sector consultations for the review of NDCs of Sri Lanka, Ministry of Mahaweli Development and Environment (2019)

⁶⁴ Ibid

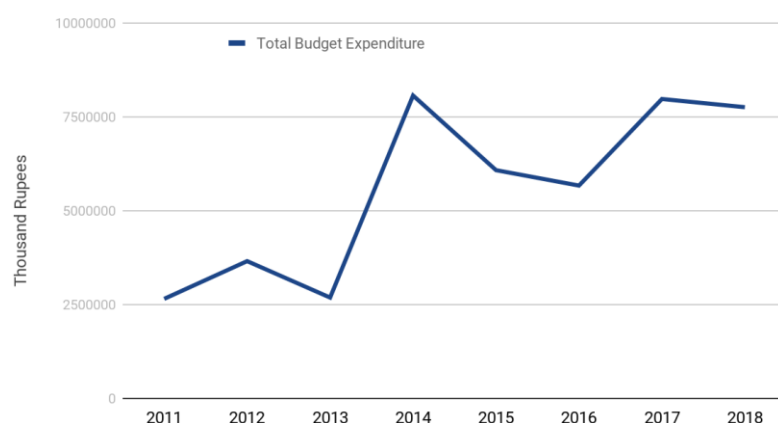
5.4 Fisheries Sector

5.4.1 Introduction

The fisheries sector in Sri Lanka plays a vital role for socio-economic development by providing direct and indirect employment opportunities to close to 560,000 people and livelihoods for more than 2.7 million people in coastal communities. Furthermore, it provides more than 60% of the animal protein requirement of the country's population.

The fishery industry comprises coastal, offshore/deep-sea, and inland sub-

Ministry of Fisheries and Aquatic Resources Development



sectors. Despite this importance, the fisheries sector contribution to the Gross Domestic Production (GDP) has reduced from almost 1.6% in 2014 to 1.3% in 2017.⁶⁵

NDCs of Sri Lanka for the fisheries sector include the commitments to:

- 1) Establish fish barricade devices for each perennial reservoir to prevent fish escape, in consultation with the Irrigation Department.

⁶⁵ Fisheries Industry Out-Look 2017, National Aquatic Resources Research Development Agency (2017)

- 2) Cryopreserve for stocking fish sperms for artificial breeding.
- 3) Convert existing open breeding facilities into indoor facilities and design same as at inception of construction to control temperature impacts.
- 4) Introduce appropriate fish fingerlings stocking programme for stock enhancement for culture fisheries.
- 5) Develop temperature tolerant species to aquaculture and promote mari-culture.

6) Minimise aquatic pollution due to water scarcity in lagoons and inland water bodies

7) Increase the production capabilities of fisheries, aquatic resources in lagoons.

5.4.2 Laws, Policies, and Plans Relevant to Fisheries Sector NDCs

Among the key laws and policies relevant to the fisheries sector include both national and international ones. However, for the purpose of this research, the priority has been allocated to the domestic legal and policy instruments which relate to the sector.

5.4.2.1 International Legal Framework

International obligations and EU market regulations has urged a movement of legal and policy measures to address conservation and environmental consciousness. As a result of the 2008 EU Regulation 1005/2008 that required all countries exporting fishery products to EU

to implement conservation measures, Sri Lanka has introduced a number of amendments to incorporate the international obligations on responsible fishing.

United Nations Fish Stock Agreement

This agreement was initiated as a response to a fisheries management crisis involving a class of transboundary fishery resources. It was ratified by Sri Lanka in October 1996.

Among the commitments of the parties is the requirement for States to cooperate to ensure conservation and promote the best utilization of fisheries resources both within and beyond the EEZs.⁶⁶

5.4.2.2 Domestic Legal Framework

Fisheries and Aquatic Resource Act No. 2 of 1996

This is an Act enacted for the management, regulation, conservation and development of fisheries and aquatic resources in Sri Lanka. Part IV of the Act is about the protection of fish and other aquatic resources. Act has empowered the minister to designate areas of Sri Lanka waters or land adjacent as fisheries management areas⁶⁷. Further minister is empowered under the Act, to declare closed and open seasons for fishing⁶⁸ and fisheries reserves. Section 3 of the Act provides for the establishment of fisheries and aquatic resources advisory council.⁶⁹

The Fisheries and Aquatic Resources Act as amended by Act No. 2 of 2006 is an

⁶⁶ Tharindu Dilshan – University of Sri Jayawardanapura “Implementations of the law of the sea convention in Sri Lanka”

⁶⁷ Fisheries and Aquatic Resource Act No.2 of 1996, s. 31

⁶⁸ Fisheries and Aquatic Resource Act No.2 of 1996, s.34

⁶⁹ Fisheries and Aquatic Resource Act No.2 of 1996, s. 4

important amendment which has introduced a regulation method, a licensing system, for the purposes of engaging in aquaculture operations.

For the purposes of the Act aquaculture operations are defined as conduct of aquaculture in any area, enclosure, pond, impoundment, premises or structure set up or used for the cultivation of aquatic plants or organisms including fish for commercial purposes and includes any bed or raft or other structure used for the cultivation of pearl oyster and other shellfish. This definition and the grounds under which the licences are to be given should be interpreted with the NDCs in mind, and in the implementation of the Act such priorities should be given effect to, as environmental concerns have been considered as a ground for cancellation of licence given.

The Fisheries (Regulation of Foreign Fishing Boat) Act No. 59 of 1979

This act was enacted to regulate, control and manage fishing and related activities by foreign boats in Sri Lanka waters and other related matters.

5.4.3 Gaps and Needs for the Implementation of Fisheries Sector NDCs

5.4.3.1 Gaps and Needs in Policies and Laws

Among the gaps and needs of policies for the implementation of NDCs of the fisheries sector includes the non-existence of relevant laws, and the lack of relevance to the NDCs of the existing laws.

For example, the Fisheries and Aquatic Resource Act No.2 of 1996 does not have direct provisions relating to the NDCs.

The legal and policy framework in Sri Lanka is centred on setting up the

institutions and specifying their powers and functions, such as, National Aquaculture Development Authority of Sri Lanka Act 1998, Fisheries (Regulation of Boats) Act No 59 of 1979. However, this does not have interlinks to climate change.

5.4.3.2 Gaps and Needs in Institutions and Coordination

The key stakeholders' inputs received point to the need for adopting standard practices for improved fisheries and aquaculture management, as well as ecosystem management and integrated coastal management for fisheries. Further, it has also been highlighted that the coordination among relevant stakeholders in the fisheries sector for the

implementation of NDCs of the sector, needs to be enhanced.

5.4.3.3 Capacity Gaps and Needs

Capacity gaps and needs identified point to the need for research on the improvement of fertilization and hatching rates with cryopreserved sperm. Additionally, it has been highlighted that the entities that needs to implement NDC actions, and other key stakeholders of the fisheries sector has gaps in technical capacity on climate change. The stakeholders have highlighted the need for building technical capacity of the key stakeholders on climate change and NDCs, to facilitate the better implementation of NDCs of this sector.

6. Water Sector

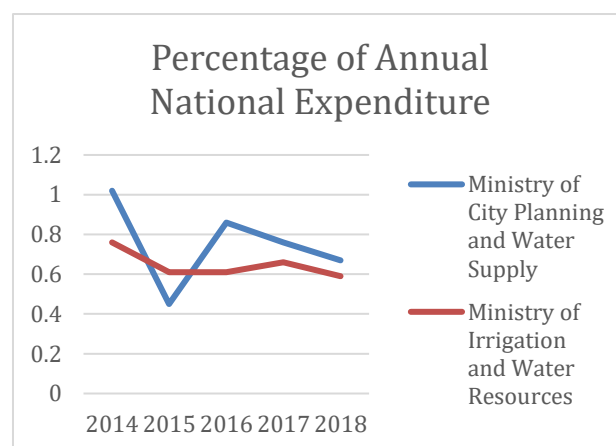
6.1 Introduction

Sri Lanka has an agriculture-based economy which heavily relies on water resources. In addition, about 31% of the country's electricity is generated by hydro-power.⁷⁰ Although Sri Lanka is not recognized as a water scarce nation, human activities have threatened and continue to threaten the quality of water resources while climate change poses a number of new challenges.⁷¹

For example, Sri Lanka's coastal area has limited water resources suitable for human use. These resources are shared among the 30% of Sri Lanka's population that lives along the coastlines. Due to human activities such as over-extraction and pollution as well as climate change impacts like saltwater intrusion and sea level rise, these resources are now more stressed than ever. Similar problems have arisen in the hill country, where human activities caused a decrease in the annual water yield,⁷² or the Dry Zone, where erratic rainfall patterns and prolonged droughts cause an increasing scarcity of water.

Further, research presents that Sri Lanka does not face a water availability issue. Instead, the biggest challenge for this sector is water management. It is

estimated that more than 50% of the country's rainfall goes to the sea and cannot be utilized.⁷³ The risk of seawater intrusion into groundwater is prevalent in some dry zone regions while 60–70 percent of the water in several river basins in Sri Lanka is released into the sea. Therefore, it is considered that water management needs to be the focal point of the water sector.⁷⁴



To address the issues related to water security, Sri Lanka has taken a number of initiatives such as the promotion of rainwater harvesting ponds, agro-wells, micro irrigation technology and the augmentation of minor and major irrigation to address the issues concerning the water sector.⁷⁵ In addition, a dam safety and water resources planning project has been implemented with the aim of better managing the allocation of water resources.⁷⁶

⁷⁰ 'Key Water Issues' (IWMI)

<<http://www.iwmi.cgiar.org/where-we-work/asia/south-asia-region/sri-lanka/key-water-issues/>> accessed 29th July 2019

⁷¹ Water Scarcity in Sri Lanka, IWMI (2007)

⁷² 'Key Water Issues' (IWMI)

<<http://www.iwmi.cgiar.org/where-we-work/asia/south-asia-region/sri-lanka/key-water-issues/>> accessed 29th July 2019

⁷³ 'Colombo Development Dialogues 2: Water Security and Climate Variability' (2018)<

https://www.undp.org/content/dam/srilanka/docs/localpublications/UNDPLKA_CDD2%20Policy%20Paper_E.pdf > accessed 11th July 2019

⁷⁴ Ibid

⁷⁵ Ibid, 41.

⁷⁶ Ibid ,41-42.

The NDCs for the water sector include the commitments to:

- 1) Establish erect sand bags across the river during the drought season to prevent saline water intrusion wherever intakes are subjected to saline water intrusion
- 2) Identify new water supply projects and schemes and implemented in areas with water scarcity
- 3) Water safety management plans for the entire country to overcome pollution and climate change related issues
- 4) Improve protection and conservation measures in all drinking water catchment areas
- 5) Implement permanent water supply schemes with pipeline systems through new water supply schemes
- 6) Establish a few mobile laboratories to ensure safety during water supply
- 7) Establish monitoring and recording of saline water intrusion into drinking water sources during the drought period.
- 8) Establish the safety of water management facilities and minimize disturbances to water supply due to extreme weather events

6.2 Laws, Policies, and Plans Relevant to Water Sector NDCs

Among the laws and policies related to the water sector of Sri Lanka are:

Water Resources Board Act No 29 of 1964, No 42 of 1999

This Act established the Water Resources Board, which has an advisory role and is itself advised by an Inter-Departmental Advisory Committee.⁷⁷ In terms of Section 12 of the Act, Board has a duty to advise the minister on the matters relating to among others *the control*, regulation and development, including the conservation and utilization of the water resource, the promotion, construction, operation and maintenance of scheme of irrigation, drainage, flood control and hydraulic power, the promotion of afforestation, the control of soil erosion, the prevention of the pollution of rivers, streams, and other watercourses, the formulation national policies relating to the control and use of the water resources of the country, preparation of comprehensive.⁷⁸

The Water Board Act does not specifically mention or address climate change. However, the duties of the water board are framed in a manner that indirectly contributes to the adaptation measures taken to face the challenges posed by climate change.

Section 14(1) of the Act provides for the establishment of an Inter- Departmental Advisory Committee to the Water Resources Board. The composition of the advisory committee was amended by amendment act no 42 of 1999.⁷⁹ The committee brings a cross- sectoral approach and outlook to matters related to the water resources of Sri Lanka.

National Drinking Water Supply Policy

The preamble to the policy identifies key issues and challenges facing the water supply sector of Sri Lanka. Environmental degradation, pollution due to urbanization and lack of policies and institutional

⁷⁷ Water Resources Board Act No 29 of 1964

⁷⁸ Ibid

⁷⁹ Water Resources Board (Amendment) Act No 42 of 1999, s.3

constraints are some of the issues recognized under the preamble.⁸⁰

The objective of the policy is to provide a proper framework and guidelines to improve the “national service coverage in safe water through mobilization of efforts and resources of stakeholders of the sector.”⁸¹ Furthermore, this policy recognizes the access to safe drinking water as a basic right.⁸²

The policy will be applied to two sub sectors, the rural water supply sub sector, and the urban water supply sub sector.⁸³ The policy principles on which the Policy is based on highlight that the government will act as the custodian of the water resources and manage such resources on behalf of the people in an effective and equitable manner consistent with social, economic and environmental needs of present and future generations.⁸⁴

The Policy aims to ensure adequate supply of water through proper environmental conservation⁸⁵ and involves awareness programmes promoting research in developing innovative ideas for continuous improvement of cost effectiveness and efficient use of resources in the provision of water services. It also includes building capacity to develop professional standards required to address issues

⁸⁰ Ministry of Water Supply & Drainage “National Drinking Water Policy” 1

<http://waterboard.lk/web/images/contents/organization/policies/national_drinking_water_policy.pdf> accessed 18 August 2019

⁸¹ Ministry of Water Supply & Drainage “National Drinking Water Policy” 2

<http://waterboard.lk/web/images/contents/organization/policies/national_drinking_water_policy.pdf> accessed 18 August 2019

⁸² Ibid

⁸³ Ibid 3

⁸⁴ Ibid 2

⁸⁵ Ibid 8

related to safe water in the changing socio-economic environment.⁸⁶

Further, the Policy includes a component on disaster preparedness which focuses on ensuring that the water supply sector is prepared to provide water for drinking and hygiene purposes for communities affected by disasters.

Mahaweli Authority of Sri Lanka Act No. 23 of 1979 as amended by 59 of 1993

This Act established the Mahaweli Authority, which is responsible for implementing the Mahaweli Ganga development scheme. Section 3(1) provides that the minister can declare any area as a special area which in his opinion can be developed with the water resources of the Mahaweli Ganga or any major river. Once the order has been published by a gazette the approval of the parliament needs to be sought.

Functions of the authority are “to plan and implement the Mahaweli Ganga Development Scheme including the construction and operation of reservoirs, irrigation distribution system and installations for the generation and supply of electrical energy; Provided, however, that the function relating to the distribution of electrical energy may be discharged by any authority competent to do so under any other written law: to foster and secure the full and integrated development of any Special Area; to optimise agricultural productivity and employment potential and to generate and secure economic and agricultural development within any Special Area; to conserve and maintain the physical environment within any Special Area.”⁸⁷

Further, the authority is empowered to “construct, maintain and operate such

⁸⁶ Ministry of Water (n 3) 9.

⁸⁷ Section 12, Ibid

dams, channels, drainage systems, and other irrigation works and structures for the purpose of achieving its objects; take such measures as may be necessary for water-shed management and control of soil erosion; provide advisory and farmer training services to improve cultivation techniques, water management, soil management and the preservation of the physical environment.”⁸⁸

New Villages Development Authority for Plantation Region Act No. 32 of 2018

This Act established the New Villages Development Authority for the Plantation Region which is responsible for “coordinating the planning and implementation of the development projects under this act.”⁸⁹ Functions of the Authority includes strengthening “conservation measures at all levels, both preventive and remedial, aimed at minimizing physical degradation of land and water resources and eliminating environmental pollution in the designated areas.”⁹⁰

National Water Supply and Drainage Board Law No 2 of 1974 as amended by Act No. 13 of 1992

The Act established the national water supply and drainage board. General duties of the board in its area of authority is stated as follows in the Section 16 (a), (c), (d) of the Act which are “to develop, provide, operate and control an efficient, coordinated water supply and to distribute water for public, domestic or industrial purposes; to take over and carry on any water supply or sewerage undertaking transferred to the Board under Section 57; to take over carry on any water supply or sewerage undertaking

of any local authority transferred to the Board under section 64 by a voluntary transfer Order or compulsory transfer Order.”

The power to supervise and control water works and sewage works installed for joint schemes is vested in the Board, including the power to fine the misuse of water (fine not exceeding 1000 rupees while the board can recover the value of the water misused.)⁹¹

Sludge Management Policy for Water Treatment Plants 2012

In the past, Sri Lanka did not have a policy to address the issue of wastewater emanating from water treatment plants.⁹² This policy was formulated to address this gap.

The policy identifies that a large amount of wastewater is discharged from water treatment plants as a result of backwashing rapid sand filters and release of accumulated sludge in sedimentation tanks.⁹³ The policy is aimed at treating wastewater from water treatment plants.

Coast Conservation and Coastal Resources Management Act No. 57 of 1981, as amended by 64 of 1988 and 49 of 2011

This Act was enacted to administrate the coastal zone of Sri Lanka. The term coastal zone encompasses landward boundaries, and the Act can be incorporated in addressing some inland water related issues. The Act has mainly focuses on the administration of the coastal area and,

⁸⁸ Section 13, Ibid

⁸⁹ New Villages Development Authority for Plantation Region Act No 32 of 2018, s.3.

⁹⁰ Section 6(j), Ibid

⁹¹ National Water Supply & Drainage Board (Amendment) Act, No. 13 of 1992, s.30

⁹² Ministry of Water Supply and Drainage “ Sludge Management Policy for Water Treatment Plants 2012” 1

http://www.waterboard.lk/web/images/contents/organization/policies/sludge_management_policy.pdf accessed 19 August 2019

⁹³ Ibid

but has its focus on the inland water boundaries as well.

6.3 Gaps and Needs for the Implementation of Water Sector NDCs

There are several gaps and needs identified for the implementation of NDCs for the water sector. Among these are the nonexistence of relevant laws and policies; gaps and needs in coordination and institutional capacity; capacity gaps and other sector specific gaps.

6.3.1 Gaps and Needs in Policies and Laws

The input received from key stakeholders and the experts on the water sector highlight the need to amend the Irrigation Act and the Flood Management Act to ensure that water pollution is effectively addressed. The need for a solid water management plan has been noted, a river basin plan for water sector. Further, the need to expand the monitoring plan for water quality and sediment transport is among the gaps highlighted. Among other aspects highlighted as gaps and needs is the lack of awareness on laws and policies related to climate change, NDCs, and also the water sector. The stakeholders also highlighted the need for aligning the water sector laws and policies with the SDGs to safely manage issues related to sanitation, and the mandatory for the provincial councils to engage in actions related to this topic. And the need for each project including an environment management plan was highlighted as well.

⁹⁴

6.3.2 Gaps and Needs in Institutions and Coordination

The institutional gaps and needs highlight the need for establishing an institutional structure to prevent salt water intrusion, and appropriate methodologies to address it. Among the coordination gaps highlighted include the need for enhancing institutional coordination for the implementation of water sector NDCs.

Further gaps include the lack of a monitoring system for the water sector, and the implementation of NDC related actions. This has been expressed as a need which needs to be addressed to facilitate the effective implementation of NDCs of the sector.

6.3.3 Capacity Gaps and Needs

Among the capacity gaps and needs highlighted is the financial support needed for the implementation of NDCs of the water sector. Among the key areas highlighted is the lack of funding for climate change adaptation actions for the water catchment areas which needs protection as water for consumption. The country needs also a proper monitoring process to test secondary contamination of pipe water, as well as saltwater intrusion. Additionally, the stakeholders have pointed to the need for building capacity on climate change, and the NDCs process to among the key stakeholders of the water sector.

⁹⁴ Multi-stakeholder consultation on NDC revision for the water sector, Ministry of Mahaweli Development and Environment, Sri Lanka (2019)

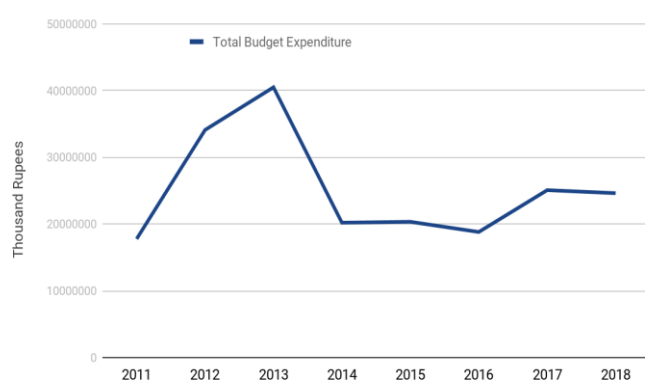
7. Irrigation Sector

7.1 Introduction

Sri Lanka has a rich irrigation heritage and its agriculture-based economy relies heavily on the irrigation sector. The Department of Irrigation has a mandate to develop and manage water and land resources for sustainable use while providing water for agricultural purposes.⁹⁵

The Irrigation Department maintains 756,000 acres of irrigation land, 75% of total irrigation land in major irrigation, and 340 irrigation schemes around the country. Through this irrigation land, the Irrigation Department contributes to 75% of the rice production in Sri Lanka.⁹⁶ The Mahaweli Authority of Sri Lanka is also a part of the institutional framework of the irrigation sector and manages irrigation water for 101,526 hectares of land in the dry zone.⁹⁷

Ministry of Irrigation and Water Resources Management



⁹⁵ Irrigation Department Sri Lanka <

<http://www.irrigation.gov.lk/>

⁹⁶ Irrigation Department <

<http://irrigationmin.gov.lk/irrigation-department/index.html>

⁹⁷ Mahaweli Authority of Sri Lanka <

<http://mahaweli.gov.lk/en/index.html>

The irrigation sector faces several challenges due to climate change due with adverse impacts on rainfall patterns. According to the rainfall data available, Sri Lanka has long-term cycles of wet and dry periods. However, Sri Lanka's irrigation schemes were designed and built in the 1970s based on the prior three decades of data from a previous wet period. This highlights the need for enhancing the existing irrigation schemes to accommodate the present and future climate scenarios⁹⁸ by considering long-term cycles of wet and dry periods when designing irrigation schemes.⁹⁹

Further, it is important for the irrigation sector to function efficiently as any drawbacks in the sector can have an adverse impact on other sectors such as agriculture, water and health, other sectors that are dependent on efficient and consistent water supply for activities of those sectors.

The NDCs of Sri Lanka for the irrigation sector include commitments to:

- 1) Restore and rehabilitate all abandoned tanks and irrigation canals of Sri Lanka.
- 2) Establish water flow and sediment loads monitoring systems in selected streams in the central highlands.
- 3) Introduce boreholes/tube wells as a drought intervention for

⁹⁸ 'Colombo Development Dialogues 2: Water Security and Climate Variability'(2018)<

https://www.undp.org/content/dam/srilanka/docs/localpublications/UNDPLKA_CDD2%20Policy%20Paper_E.pdf > accessed 11th July 2019

⁹⁹ Ibid

domestic water supply.

- 4) Enhance productivity of irrigation water use by introducing improved on-farm water application technologies.
- 5) Assess river floods and mitigation measures and early warning systems for possible flash floods.
- 6) Develop water resource management plans and strategies for selected major rivers in Sri Lanka adopting traditional knowledge and new technology.
- 7) Adopt water-efficient technologies to 'harvest' water, conserve solid moisture (e.g. crop residue retention) and reduce siltation and saltwater intrusion.
- 8) Modify irrigation techniques, including amount, timing or technology.
- 9) Introduce conservation measures for irrigation of tanks and canals to ensure a sustainable water supply.

7.2 Laws, Policies, and Plans Relevant to Irrigation Sector NDCs

There are several laws and policies that are related to the irrigation sector. Some of those that are of importance are elaborated in the following section.

Agrarian Development Act¹⁰⁰

This Act repealed the Agrarian Services Act of no 58 of 1979 and provides for the establishment of agrarian development councils, land bank and agrarian tribunal. Among the matters covered are those related to landlord and tenant cultivators of paddy land. The functions of the

¹⁰⁰ Agrarian Development Act No 46 of 2000

development councils under the Act include utilising funds to repair, maintain and develop irrigation works within its area of authority; to maintain 2nd develop irrigation works within its area of authority.¹⁰¹

The Act also provides for farmer based water management system, and provides the supervision of every tank, dam, canal, water course, embankment reservation or other irrigation work, within the area of authority of any Farmer's organization to be under the of farmers organization.¹⁰²

Under the Section 84(1) persons are prohibited from allowing the flow of waste matter to paddy lands or watercourses. Commissioner General is empowered to issue orders¹⁰³ against the persons who contravene this section, and empowered to seek assistance from the peace officers and to use force as necessary to ensure that the order is complied.¹⁰⁴

The Act regulates the dumping of waste matter into any channel, canal, water course, irrigation reservation or paddy land, which is prohibited. And it also highlights that every farmers' organisation within its area of authority shall ensure the efficient management of water, irrigation works and water used for agricultural activities.¹⁰⁵

Irrigation Ordinance No. 32 of 1946 amendments 1951, 1968, 1973, 1983, 1990 and 1994

The Ordinance focuses on the construction and maintenance of irrigation works, as well as their

¹⁰¹ Section 52, Ibid

¹⁰² Section 81, Ibid

¹⁰³ Agrarian Development Act, No 46 of 200, s. 84(2)

¹⁰⁴ Agrarian Development Act, No 46 of 200, s. 84(3)

¹⁰⁵ Agrarian Development Act, No 46 of 200, s 86

protection. Among the aspects connected to the protection and conservation of water includes “the prevention of the obstruction, diversion, or cutting of any ela, channel, or other watercourse comprised in the irrigation work, or of any other damage thereto ; the prevention of any encroachment upon any such ela, channel, or watercourse;_the prevention of any interference with any sluice, dam, or regulating machinery or device in or upon any such ela, channel, or watercourse;__the prevention of the obstruction of or interference with any road or path comprised in the irrigation work; the construction of field channels and dams in approved places and in accordance with approved alignments; the prevention of the waste of any water supplied from the irrigation work; the prevention of the obtaining of water from any such ela, channel, or other watercourse in any manner not authorized; the prevention of the diversion by any act or omission, of such water from any of the purposes for which it is intended;_the limitation of the extent of land for which water will be supplied in each season for cultivation under the irrigation work and the fixing of dates for the commencement and completion of the supply of such water in each season;” etc¹⁰⁶

7.3 Gaps and Needs for the Implementation of Irrigation Sector NDCs

Among the policies and laws related to the Irrigation sector, there have been key gaps and needs that have been identified. Among these are the lack of laws and policies relevant to the NDCs, and the lack of and need for efficient implementation

¹⁰⁶ Irrigation Ordinance no 13 of 1994, s.93-96

of laws and policies of the sector; institutional and coordination gaps and needs; capacity gaps and other related gaps.

7.3.1 Gaps and Needs in Laws and Policies

Among the gaps and needs related to laws and policies is the need for amendments of existing laws. Among these is the Irrigation Ordinance no 32 of 1946 amendments 1951, 1968, 1973, 1983, 1990 and 1994 to ensure that climate risks are addressed efficiently, in line with the priorities identified for the water sector. This includes the need for stronger implementation of actions against the violation impacting the irrigation. The need for enhancing provisions for water resource planning is also among the needs for legal amendments to address climate risks to the irrigation sector.

The stakeholders further highlighted the need for guidelines related to extraction of ground water in the ground water monitoring and management plan, and a national level water safety plan. Additionally, the need for an integrated water resources management (IWRM) policy incorporating climate change adaptation and integrating to governance systems is also noted.¹⁰⁷

7.3.2 Gaps and Needs in Institutions and Coordination

Among the gaps and needs identified for the institutional capacity and coordination on the irrigation sector, the need for coordination of climate change related

¹⁰⁷ Multi-stakeholder and expert consultation on the revision of NDCs of the Irrigation Sector, Ministry of Mahaweli Development and Environment, (2019)

actions being integrated into the coordination system of the sector is highlighted. Further, improved coordination between the farming community and the authorities has been indicated as a need. Further, the need for institutionalising integrated water resources management within the water governance system was noted. Institutional gaps and needs include the need for capacity among institutions on NDC implementation which is highlighted, as well as the need for the implementation of water management programmes. The need for quality human resources for implementing actions related to NDCs has been highlighted as a gap related to the institutional capacities.

7.3.3 Capacity Gaps and Needs

Capacity gaps and need highlighted for the irrigation sector include the gaps and

need in technical capacity, and need for resources for the implementation of NDCs on irrigation. Technical needs include capacity related to the use of advanced technology on water resource management, and implementing efficient water use programs. The stakeholders highlighted also the need for financial allocations for improvement of the irrigation sector actions.

Other gaps and needs highlighted for the irrigation sector includes research on climate change impacts on the irrigation sector which will contribute to decision making. Capacity to integrate climate change into the irrigation sector has also been noted, as well as on addressing water pollution. Additionally, the need to create awareness on climate change, the implementation of NDCs in the irrigation sector, and efficient water use have been highlighted as well.

8. Coastal and Marine Sector

8.1 Introduction

Sri Lanka's coastal belt accommodates approximately one third of its total population.¹⁰⁸ Its coastal economy boasts a high level of infrastructure and contributes to almost 44% of the country's gross domestic product (GDP), mainly through income from tourist hotels, industrial units, agriculture, and coastal and offshore fishing enterprises.¹⁰⁹ The varied topography and climate also provide ideal conditions for maintaining a rich and disparate coastal biodiversity.

However, climate change impacts have created adverse impacts on the sector such as sea level rise which may result in the destabilisation of the coastal economy, food insecurity, and the loss of life.¹¹⁰ Furthermore, the intensification of agricultural production and deforestation have aggravated coastal soil erosion and led to the degradation of coastal land and resources¹¹¹ presenting the potential to reduce the country's productivity, facilitate the continuing loss of marine wildlife and coastal ecosystems,

unemployment, and communal displacement.

Although Sri Lanka has initiated coastal resource management projects like the Northeast Coastal Community Development Project¹¹² to improve natural resource mapping, coastal resources planning, and fisheries development (which would simultaneously assist Sri Lanka in identifying and adapting to the adverse effects of climate change), the implementation of these projects has been severely affected by the 2004 tsunami and the civil war. Many coastal resources projects have suffered and are in need of government funding to introduce new initiatives and maintain the operational functions of the coastal infrastructure.¹¹³

The laws and policies of the sector have attempted to alleviate this issue through provision of an Advisory Council through the 2011 Amendment to the Coast Conservation and Coastal Resource Management Act (per s. 6 as amended). This Advisory Council is to consist of secretaries to the ministries to which the assigned subjects include of coast conservation, plan implementation, tourism, urban development, public administration, industries, environment, fisheries and aquatic resources, the departments including National Aquatic Resources, Research and Development Agency, National Aquatic Resources Research and Development Agency, Urban Development Authority , Central

¹⁰⁸ (Ministry of Mahaweli Development and Environment, 2015)

¹⁰⁹ COMMUNITY PERCEPTION TOWARDS A SET BACK AREA : A CASE STUDY IN GALLE DISTRICT, SRI LANKA

¹¹⁰ <https://indi.ca/2015/09/sri-lankas-rising-sea-level-with-maps/>

¹¹¹ ADB. 1992. Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Sri Lanka for the Fisheries Sector. Manila Ministry of Environment and Natural Resources. 2003. Caring for the Environment 2003–2007–Path to Sustainable Development. Sri Lanka. This document succeeded the series of the National Environmental Action Plans.

¹¹² <https://www.adb.org/sites/default/files/linked-documents/cape-sri-agriculture-natural-sector.pdf>

¹¹³ Ibid.

Environmental Authority, Geological Survey and Mines Bureau, Land Commissioner and academics. This Council is empowered to only provide advice on specific matters and the mandate is limited under the law.

The coastal and marine sector strategic policies include the introduction of sea level monitoring mechanisms to climate forecast sea level changes; establishing new mechanisms to map inundation prone areas due to sea level rise; mapping and introducing coastal associated habitat restoration; enhancing capabilities on coastal belt mapping, and coastal green belt coverage for better carbon sequestration.

The NDCs of the sector includes commitments to:

- 1) Establish an accurate sea level rise forecast system for Sri Lanka.
- 2) Map inundation prone areas assessing vulnerability to sea level rise along the coastal belt.
- 3) Restore, conserve and manage coral, sea grass, mangroves and sand dunes in sensitive areas.
- 4) Prepare risk maps for the coastal zone with mapping. With 0.5m contour intervals and take appropriate actions.
- 5) Establish 1000 ha of coastal forests and a green belt along the island.

8.2 Laws, Policies, and Plans Relevant to Coastal and Marine Sector NDCs

The coastal and marine sector has many laws and policies that connect to the areas of focus of the NDCs. Among the key ones are the international conventions ratified by Sri Lanka, and other domestic

legal and policy instruments. The following sections focus on the existing laws and policies that interlink with the NDCs of the sector.

8.2.1 International Conventions Ratified

Sri Lanka is a party to the United Nations Convention on the Law of the Sea of 10 December 1982 (UNCLOS). Sri Lanka has ratified UNCLOS on 19 July 1994. The full text of the Convention relates to governing all aspects of ocean space, such as delimitation, environmental control, marine scientific research, economic and commercial activities, transfer of technology and the settlement of disputes relating to ocean matters.¹¹⁴

Sri Lanka ratified also the UN Fish Stock Agreement in October 1996 with the aim to prevent illegal activities and fisheries in Sri Lanka's Seas.¹¹⁵ Other relevant agreements include Agreements with International Maritime Organization (IMO).

8.2.2 Domestic Legal Framework

The domestic legal framework on coastal maritime law contains significant provisions and institutional mechanisms established for the purposes of coastal and marine protection and pollution prevention

Maritime Pollution Prevention Act No. 35 of 2008

This Act provides for the prevention, control and reduction of pollution in the territorial waters of Sri Lanka or any other maritime zones, its FORE-shore and the coastal zone of Sri Lanka and for matters

¹¹⁴ (Dilshan)

¹¹⁵ Ibid.

connected therewith or incidental thereto. The Act is under Port authority and not under Ministry of Fisheries.

Duties of the Authority under the Act as per section 6 of the Act states that The Authority should efficiently and effectively administer and implement the provisions of this Act and the regulations made thereunder, to “formulate and execute a scheme of work for the prevention, reduction, control and management of pollution arising out of ship-based activity; conduct research in collaboration with other departments, agencies and institutions for both the government and the private sector, for the purpose of prevention, reduction, control and management of pollution arising out of any ship based activity or shore based maritime related activity, in the territorial waters of Sri Lanka or any other maritime zone, its fore-shore and the coastal zone of Sri Lanka; take measures to manage, safeguard and preserve the territorial waters of Sri Lanka or any other maritime zone, it's fore-shore and the coastal zone of Sri Lanka from any pollution caused by any oil, harmful substance or any other pollutant; provide adequate and effective reception facilities for any oil, harmful substance or any other pollutant.”¹¹⁶

The Act also provides power of arrest to the Authority “any person who commits an offence under this Act or any regulation made thereunder and may produce him before a Judge of a High Court having jurisdiction or before the High Court exercising admiralty jurisdiction, as the case may be.”¹¹⁷

Coast Conservation Act No. 57 of 1981

¹¹⁶ Maritime Pollution Prevention Act No. 35 of 2008, Section 6

¹¹⁷ Ibid, S. 12

The Coast Conservation Act No. 57 of 1981 14 (CCA) recognizes the Coast Conservation Department as the primary government agency responsible for management of the Coastal Zone. In its long title, the CCA indicates it is bestowing upon the CCD, the mandate to regulate development activities and the planning and implementation of activities for coast conservation.¹¹⁸

And Advisory Council related to the activities of the coastal and marine sector is set up under the 2011 Amendment to the Coast Conservation and Coastal Resource Management Act (s. 6 as amended). This Advisory Council consists of secretaries to the ministries to which the assigned subjects include of coast conservation, plan implementation, tourism, urban development, public administration, industries, environment, fisheries and aquatic resources, the departments including National Aquatic Resources, Research and Development Agency, NARA, Urban Development Authority , Central Environmental Authority , Geological Survey and Mines Bureau, Land Commissioner and academics. This Council is empowered to only provide advice on specific matters and the mandate limited under the law.

Coast Guard Act No. 41 of 2009

Sri Lanka coast guard (SLCG) cooperate closely to ensure coastal security and prevent illegal activities along their maritime boundary, AND functions under the Ministry of Defence. It is a law enforcement agency at sea. Every Coast Guard officer of the Department of Coast Guard shall be deemed to be a peace officer within the meaning for the purposes of the Code of Criminal Procedure Act No. 15 of 1979. Sri Lanka

¹¹⁸ Governance Performance in Integrated Coastal Management Sri Lanka Country Report 2011

Coast Guard has been empowered with legal authority to search and arrest ships, craft and personnel engaged in illegal activities in maritime zone of Sri Lanka and constitute legal proceedings against the offenders¹¹⁹

Fisheries and Aquatic Resource Act No.02 Of 1996

This Act prohibits the use or possession of explosive substances which includes “use or attempt to use any poisonous, explosive or stupefying substance (including dynamite) or other noxious or harmful matter or substance in Sri Lanka Waters for the purpose of poisoning, killing, stunning or disabling any fish or other aquatic resources; carry or have in his possession any poisonous, explosive or stupefying substance (including dynamite) or other noxious or harmful material or substance.”¹²⁰

Under the Act, the Minister may, in consultation with the Minister in charge of the subject of Conservation of Wildlife, by Order published in the Gazette, declare any area of Sri Lanka waters or any land adjacent thereto or both such waters and land to be a fisheries reserve, where he considers that special measures are necessary.¹²¹

The Act also focuses on special protection to the aquatic resources to danger of extinction in such waters or land and to protect and preserve the natural breeding grounds and habitat of fish and aquatic resources with particular regard to coral growth and aquatic ecosystems; regeneration of aquatic life in areas where such life has been depleted; protecting the aquatic medium; promotion of

scientific study and research in respect of such area; and preservation of the natural beauty of such area.

8.3 Gaps and Needs for the Implementation of Coastal and Marine Sector NDCs

The research has identified several gaps and needs for the implementation of NDCs of the coastal and marine sector. They are elaborated as follows:

8.3.1 Gaps and Needs in Policies and Laws

The gaps and needs in policies and laws for the implementation of NDCs for the coastal and marine sector indicates the need for amending the Fisheries Act, integrating climate risks, and other climate impacts on the sector. The need for a strong implementation mechanism and enforcement of law for marine crimes is also noted. Additionally, awareness on relevant laws have been also indicated as a gap related to laws as policies, and the need for strengthening the skill of officials who engage in marine law enforcement and legal proceeding has been also noted.¹²²

8.3.2 Gaps and Needs in Institutions and Coordination

Among the gaps and needs identified as relation to institutional and linked to coordination is the need for establishing a monitoring mechanism to regulate the marine pollution. Also, the need for institutional capacity building is also

¹¹⁹ <http://www.coastguard.gov.lk/>

¹²⁰ Fisheries and Aquatic Resource Act No.02 Of 1996, S.27

¹²¹ Ibid, s.36

¹²² Stakeholder consultation on NDC review for marine and coastal sector, Ministry of Mahaweli Development and Environment (2019)

highlighted through the inputs received by different stakeholders, including the capacity to capacity to conduct legal proceedings, and coordination. A very important gap highlighted is the need for a coordinating body responsible for mapping of the marine and coastal sector, as well as the need for coordination and cooperation between stakeholders, communities, and institutions.

8.3.3 Capacity Gaps and Needs¹²³

Among the capacity gaps highlighted is the capacity needs for monitoring sea level rise. Further, the need for capacity building on technical aspects related to climate change and NDCs is also highlighted, as well as addressing financial gaps for the implementation of NDCs of the sector.¹²⁴

8.3.4 Data Gaps

Coastal and marine sector research identified gaps in data needed for the implementation of NDCs, and also the need for addressing them. Among the data and research needs for thematic focus such as research on climate change, bleaching, and rising sea level temperature. The inputs received on capacity needs by stakeholders also highlighted the need for satellite data and the lack of access to data for stakeholders. In addition to these, among other data needs highlighted are contemporary data on soil erosion patterns; migration of fishing communities; data on diversity indicators, biomass, and carbon stocks. Additionally, the need for research and data on carbon sequestration assessments are also gaps to be addressed.¹²⁵

¹²³ Ibid

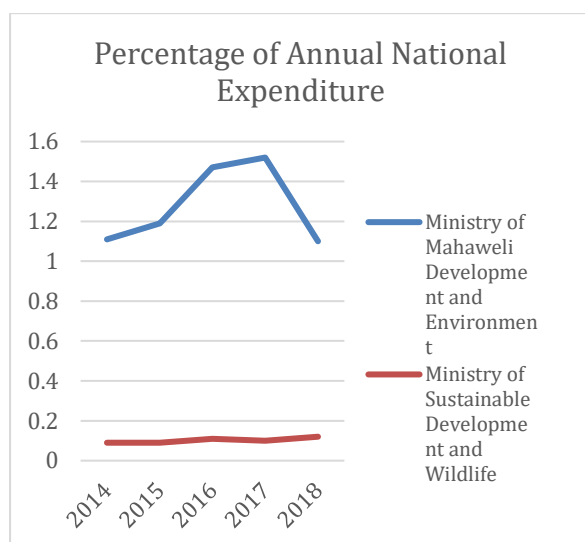
¹²⁴ Ibid

¹²⁵ Ibid

9. Biodiversity Sector

9.1 Introduction

Sri Lanka's diversity of fauna and flora lies in the country's multitude of terrestrial, coastal, and marine ecosystems, including different types of forests, wetlands associated with the rivers originating from the central highlands, and over ten thousand man-made irrigation tanks and reservoirs. The marine and coastal ecosystems feature several distinct types of reefs, estuaries and lagoons, sea grass beds, wide sandy beaches, mangrove forests, and coastal marshes. Considerable biodiversity also exists in human-modified habitats such as plantations, agricultural lands, home gardens, and even built-up areas such as roadsides and urban settlements.



Sri Lanka is one of 35 biodiversity hotspots in the world¹²⁶ and can be grouped into three levels¹²⁷: Ecosystem diversity

¹²⁶ NDCs of Sri Lanka, p.21

¹²⁷ Nimal Gunatilleke, Rohan Pethiyagoda and Savitri Gunatilleke, Biodiversity of Sri Lanka, *J.Natn.Sci.Foundation Sri Lanka* 2008 36 Special Issue 25-62

(comprising marine, maritime and coastal ecosystems, natural forest ecosystems, natural and semi-natural grasslands ecosystems, and inland wetland ecosystems), species diversity, and genetic diversity.

The following section explores the main legislation, policies, and plans that influence the conservation and management of ecosystems and biodiversity in Sri Lanka.¹²⁸ The NDCs of the Biodiversity sector includes commitments to:

- 1) Restore degraded areas inside and outside the protected areas (PA) network to enhance resilience.
- 2) Increase connectivity through corridors, landscape/matrix improvement and management.
- 3) Improve management, and consider increasing the extent of protected areas, buffer zones and create new areas in the vulnerable zones.
- 4) Identify biodiversity hotspots in Sri Lanka and upgrade them.
- 5) Promote traditional methods of biodiversity conservation for increased resilience in agroecosystems.
- 6) Implement community driven conservation projects and programmes.
- 7) Establish and implement ex-situ conservation programs

¹²⁸ ibid

9.2 Laws, Policies, and Plans Relevant to Biodiversity Sector NDCs

There are several laws and policies that relate to the implementation of NDCs of the biodiversity sector in Sri Lanka. Among these are international and national legislations.

The following section will analyse the interlinkages between the NDCs and the existing laws and policies of Sri Lanka.

9.2.1 Ratified International Conventions

Sri Lanka has ratified several international legislations which relate to the biodiversity sector. Among these are

1. UN Convention on Biological Diversity (CBD) in 1992

This Convention is an international legally-binding treaty with three main goals,¹²⁹ i.e. conservation of biodiversity; sustainable use of biodiversity; air and equitable sharing of the benefits arising from the use of genetic resources. The Convention defines biological diversity as “the variability among living organisms from all sources, including, *inter alia*, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.

The Convention requires the contracting parties to develop a National Biodiversity Strategy and Action Plan (NBSAP) which would be instrumental in implementing

¹²⁹ Available at <<https://www.un.org/en/events/biodiversityday/convention.shtml>>

the bio diversity conservation both nationally and globally.¹³⁰

2. Aichi Biodiversity Targets

The Aichi Targets were adopted by the Convention on Biological Diversity (CBD) at its Nagoya conference, which includes a set of 20 global targets under the Strategic Plan for Biodiversity 2011-2020.

The targets are categorized into five main groups which include the following:¹³¹

- i. Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- ii. Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use
- iii. Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- iv. Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services
- v. Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

3. Convention on International Trade in Endangered Species of wild flora and fauna (CITES)

Commonly known under the short-title, CITES, the Convention aims to have international co-operation in regulating the growing threat from the trade in endangered biota. It is important for the protection of wildlife and endangered species in not being victims of international wildlife trade.

¹³⁰ UN Convention on Biodiversity (1994), s. 6

¹³¹ Available at <cbd.int/sp/targets/>

4. Ramsar Convention for the Conservation and sustainable use of wetlands¹³²

This Convention is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

9.2.2 Domestic Legal Framework

1. 1978 Constitution of Sri Lanka Chapter IV

The Constitution of Sri Lanka consists of several Articles that are relevant to climate action in the biodiversity sector. Among these are Article 27 (14) which provides that the State shall protect, preserve and improve the environment for the benefit of the community, and Article 28 that the exercise and enjoyment of rights and freedoms are inseparable from the performance of duties and obligations and accordingly it is the duty of every person in Sri Lanka. It's subsection (f) highlights the need to protect nature and conserve its riches.

However, the provisions of this Chapter do not confer or impose legal rights or obligations and are not enforceable in any court or tribunal. No question of inconsistency with such provisions shall be raised in any court or tribunal.¹³³

2. Flora and Fauna Protection Ordinance, No. 2 of 1907 (as amended) [hereinafter FFPO]

This is the primary legislation on biodiversity, and affords the protection of habitats through the declaration of protected areas, namely National Reserves, Sanctuaries and Managed

Elephant Reserves, which are under the purview of the Department of Wildlife Conservation¹³⁴.

Under the Ordinance, the minister is vested with the power to declare land as reserves and the flora and fauna therein are protected. The Minister may by Order published in the Gazette declare that any specified area of State land shall for the purposes of this Ordinance be a National Reserve and may by that Order or by any Order subsequently published in the Gazette declare that the whole or any specified part of any such National Reserve shall be a Strict Natural Reserve; or a National Park ; or a Nature Reserve ; or a Jungle Corridor; or an Intermediate Zone.¹³⁵

Parts II-IV of the Act award protection to different types of animals, varying from mammals, reptiles to amphibians, specified in the Schedules of the Act, more focus has been provided to elephants.

3. Forest Conservation Ordinance, no 16 of 1907¹³⁶, as amended by NO.69 of 2009¹³⁷

The Ordinance protects habitats that species thrive in and ensures the sustainable management of forest resources. It consolidates and amends the law relating to the conservation, protection and sustainable management of the forest resources and utilization of forest produce; to provide for the regulation of the transport of timber and

<https://efl.lk/biodiversity-law-overview-sri-lanka/>

¹³⁵ Flora and Fauna Protection Ordinance No. 2 of 1907, s.2

¹³⁶ Available at

http://www.hrcsl.lk/PFF/Library_Domestic_Laws/Legislation_related_to_Environment/Forests%20Ordinance%20No%2016%20of%201907.pdf

¹³⁷ <https://www.lawnet.gov.lk/2009/12/31/act-no-65-of-2009/>

¹³² <https://www.ramsar.org/>

¹³³ Constitution of the Democratic Socialist Republic of Sri Lanka (1978) Article 29

forest produce and other activities related to such transport.

The Ordinance provides that where an Order has been made, the Conservator-General of Forests shall prepare a Management Plan for Reserved Forests, in such manner as may be prescribed, for the purposes of conservation of biodiversity, soil and water and for the preservation of its unique ecosystem, genetic resources and as a habitat of rare and endemic species of flora and fauna.¹³⁸

The Ordinance provides the authorities for the declaration of conserved forests, and also mandates the protection of reserved trees.

4. Fisheries and Aquatic Resources Act No. 02 of 1996

The Act controls overexploitation of aquatic resources by declaring Fisheries Management Areas and Fisheries Reserves, which are governed by stricter regulations in order to prevent overexploitation of resources and can be used to protect spawning aquatic wildlife. This Act also prohibits the catching of species such as turtles and thresher sharks. It can be used to regulate activities that destroy and degrade marine ecosystems¹³⁹

5. National Heritage Wilderness Areas Act No 03 of 1988

This Act aims to protect biodiverse habitats that offer an aesthetic value, and permits entry for non-extractive uses such as tourism and recreation. Sinharaja National Heritage is the only protected area designated by the Act.

6. National Environmental Act No. 47 of 1980¹⁴⁰

The Act interprets “environment” as the physical factors of the surroundings of human beings including the land, soil, water, atmosphere, climate, sound, odors, tastes and the biological factors of animals and plants of every description;¹⁴¹

It establishes Environmentally Protected Areas which need not necessarily be situated in state lands. Such lands, notwithstanding private ownership, are regulated by the Central Environmental Authority.

The Act also relates to the approval of projects, and requires project implementers to submit of initial environmental examination report, and environmental assessment report for approval. The Act also provides the power to issue directives and regulations with respect to conservation of the environment.

9.2.3 Legislative Instruments that Address the Threat of Habitat Degradation

1. Marine Pollution Prevention Act No 35 of 2008

The Act to provides for the prevention, control and reduction of pollution in the territorial waters of Sri Lanka or any other maritime zone, its fore-shore and the coastal zone of Sri Lanka. It repealed the Marine Pollution Prevention Act, No.59 of 1981 by Section 59. , and establishment of the Marine Environment Protection Authority which, under the direction and control of the Minister, is responsible for

¹³⁸ Forest Conservation Ordinance, No. 62 of (1907) s.3 (2)

¹³⁹ *Id.*

¹⁴⁰

<https://www.lawnet.gov.lk/1947/12/31/central-environmental-authority-3/>

¹⁴¹ National Environmental Act No. 47 of 1980, s.33

the administration of the provisions of the Act.

2. Soil Conservation Act, No. 25 of 1953 (As amended by No. 29 of 1953)¹⁴²

The Soil Conservation Act No 25 of 195, No 24 of 1996, established a Soil Conservation Board that includes the secretaries to the Ministries of Environment, Land, Mahaweli Development, Housing and Construction, Highways, Plantation Industries, Agriculture, Finance, Provincial Councils, Mines and Minerals, Forestry, and Irrigation, the Director General of Agriculture, the Director of Coast Conservation, the Director General of the Board of Investment, the Director General of the Urban Development Authority, the Chairman of the Central Environmental Authority, representatives from two NGOs which are empowered to propose measures, research and coordinate activities on enhancement and the sustenance of the productive capacity of the soil, restoration of the productive capacity of land, protection of land vulnerable to degradation, and conservation of water and watersheds; prevention of soil erosions.

3. Coast Conservation Act, No. 57 of 1988

This Act makes provision for the survey of the coastal zone, the preparation of a coastal zone management plan, and regulate and controls development activities within the coastal zone. It also makes provision for the formulation and execution of schemes of work for the coast conservation and establishes a Coast Conservation Advisory Council. Among other functions, the Council has the role of advising the ministry on all

development activities proposed to be implemented in the coastal zone; reviewing the Coastal Zone Management Plan and the environmental impact assessments furnished in connections with the application of permits.¹⁴³

9.2.4 Other Documents

1. National Biodiversity Strategy and Action Plan (NBSAP)

The Strategy and Action Plan was published in 1999, with Ministry of Mahaweli Development and Environment, focal ministry. Following the 10th meeting of the Conference of Parties (COP) of CBD, 2010, "National Biodiversity Planning to Support the Implementation of the CBD 2011-2020 Strategic Plan in Sri Lanka" project was initiated. The NBSAP was revised and updated for the period from 2016- 2022, to take into account the Aichi targets.

9.3 Gaps and Needs Identified for the Implementation of NDCs for the Biodiversity Sector

The biodiversity sector has many laws, both international and domestic, as well as policies and plans that connect with the NDCs.

However, there are also many gaps on different aspects on the implementation of NDCs that have been highlighted. The following section list the gaps and needs that have been identified through this research paper.

¹⁴² <https://www.lawnet.gov.lk/1949/12/31/soil-conservation/>

¹⁴³ Coast Conservation Act, No.57 of 1988, s.7

9.3.1 Gaps and Needs in Policies and Laws

The degradation of biodiversity notwithstanding the wide array of legal instruments and regulations demonstrate that effective implementation of the prevailing legal instruments is pivotal. Among the gaps and needs identified is the failure of the policy and legal framework to recognize that protective measures alone cannot save species threatened with extinction. The need for the newly drafted Invasive Alien Species Act is highlighted to remedy gaps in current legislature and offer a stronger basis for the control and management of IAS which pose a threat to native and endemic species.

While Sri Lanka possesses this legal framework within which biodiversity can be protected, updating protected species lists on the FFPO to automatically include species that are protected under the CITES treaty which Sri Lanka is party to, as well as standardizing how biodiversity is evaluated in EIA and IEE reports are some measures that can be taken to make these laws more effective .

Additionally, the lack of implementation of laws and policies related to NDCs on biodiversity is one of the key gaps identified. This is primarily described by key stakeholders to be due to the lack of coordination and capacity building which is needed to implement existing policies and plans

The stakeholders also proposed the need for laws that cover buffers zone which are currently not included in the legal framework in Sri Lanka and has adopted an informal community management system. Therefore, the Forest Ordinance will have to be amended to include buffer zones.

The Environmental Act does not provide sufficient monitoring regulation and since most of the environmental protected area are privately-owned, it is hard to implement the existing policies. This highlights the need for policies and laws to include elements related to monitoring of regulations.¹⁴⁴

9.3.2 Gaps and Needs in Institutions and Coordination

An institution should be awarded the clear mandate to realize NDC1, Restoration of degraded areas inside and outside the Protected Area (PA) network to enhance resilience. Although partial realization of NDC 1 could be achieved under the FFPO, since the ambit of the Act does not cover outside of the Protected Areas, as defined by the Act, full realization could be problematic.

It should also be considered that NDCs such as 2 and 6 are dependent on community awareness and support. Therefore, it is vital that an institution with a clear legal mandate is established to realize such NDCs that are integrally related with the community.

Community awareness programs would have to be conducted in order to garner the support of the communities so that the citizens and residents of Sri Lanka would comprehend the importance of active contribution of each stakeholder in realizing the NDCs for the biodiversity

A lack of strong intergovernmental coordination mechanisms is another need, and establishing a strong intergovernmental mechanism for coordination in protecting biodiversity with the Ministry of Environment as the

¹⁴⁴ Multi-stakeholder consultation on the NDC revision process for biodiversity sector, Ministry of Mahaweli Development and Environment (2019)

responsible agency would go a long way to make this possible.

A need for more thorough management of environment protection areas has also been noted.

9.3.3 Capacity Gaps and Needs

It is noteworthy that NDCs 5 and 7 are unique and requires technical knowledge. Therefore, a panel or a sub-committee of experts would need to be given a clear mandate through a legislative enactment which would be accountable to realize it. Since NDCs 5 and 7 are technical in nature, conducting research would also be vital in successful realization thereof. The stakeholders highlighted the need for capacity building on technical aspects linked to NDCs on the biodiversity sector, and research on them.

Additionally, capacity gaps and needs refer to the need for a mechanism or mechanisms for capacity development. Another gap and need highlighted is the need for awareness programmes on

biodiversity and climate change which will increase awareness on impacts of climate change on the biodiversity sector. Further, the need for financial capacity is also highlighted.

9.3.4 Data Gaps

The sector notes gaps in data and research for the implementation of NDCs on the biodiversity sector. Among these are the need for research and data on identifying biodiversity loss due to the impacts of climate change, and the need for research into spreading invasive fauna species in inland water bodies which will contribute to controlling the spread of invasive species.

Further data gaps identified relate to data on biodiversity hotspots in Sri Lanka. Need for more research to identify hotspots due to climate change impacts is among needs and gaps highlighted by the stakeholders of the sector.

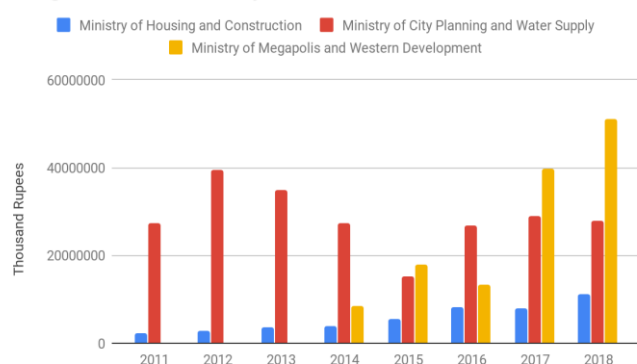
10. Urban, City Planning, and Human Settlement Sector

10.1 Introduction

The adverse impacts of climate change are experienced across sectors. In the coming years, it is predicted that the impacts of climate change will hinder future development programmes and severely affect human settlements.¹⁴⁵

Human settlements in Sri Lanka are mainly found in the wet zone¹⁴⁶ while the dry zone has always remained sparsely populated. As of 2012, Sri Lanka's official urban population is 18.2%¹⁴⁷ and a majority of Sri Lanka's population is concentrated in rural areas.¹⁴⁸ The coastal region of the country is characterized by urban areas, tourism infrastructure, and

Budget Allocation for Key Ministries



¹⁴⁵ Ministry of Housing and Construction of the Government of Democratic Socialist Republic of Sri Lanka, 'Housing and Sustainable Urban Development in Sri Lanka' (Third United Nations Conference on Human Settlements Habitat III, October 2016)

¹⁴⁶ Sector Vulnerability Profile: Urban Development, Human Settlements and Economic Infrastructure <http://www.climatechange.lk/adaptation/Files/Urban_SVP_Nov-16-2010.pdf> accessed 5 August 2019

¹⁴⁷ Ministry of Housing (n 34)

¹⁴⁸ Ibid 3

industries.¹⁴⁹ The human settlements located there are exposed to many direct or indirect impacts of climate change, including floods, landslides, droughts, sea level rise, disease carrying animals, temperature rise, and increased demand for electricity.¹⁵⁰ The wet zone is affected by periodic flooding and landslides¹⁵¹, the dry zone by droughts¹⁵², and sea level rise and the increasing frequency and intensity of storms threaten the coastal region.¹⁵³

Increasing concentration of population in urban areas, the government objectives related to human settlements and urban development in the dry zone,¹⁵⁴ and the economic importance of the coastal regions¹⁵⁵ make it vital for housing and infrastructure to be capable of withstanding the impacts of climate change, which highlight the need for taking action based on the climate commitments that Sri Lanka has undertaken as NDCs for the sector.

The NDCs of the Human Settlement and Infrastructure sector commit to:

- 1) Mainstream climate reliance in physical and urban planning and incorporated them for planning for development projects.

¹⁴⁹ Sector Vulnerability Profile: Urban Development (n35) 13

¹⁵⁰ 'Enable Climate Resilient and Healthy Human Settlements' <<https://www.adb.org/sites/default/files/project-document/62503/43173-01-sri-dpta-03.pdf>> accessed 12 August 2019

¹⁵¹ Sector Vulnerability Report: Urban Development (n 35)8

¹⁵² Ibid 9

¹⁵³ Ibid 13

¹⁵⁴ Ibid 9

¹⁵⁵ Ibid 13

- 2) Development of disaster prevention and environment friendly mechanisms especially for floods in western province and incorporate them for planning in development projects
- 3) Promote climate resilience building designing and alternative materials for construction.
- 4) Minimize the impacts on human settlements and infrastructure due erratic changes in population.
- 5) Enhance the resilience of human settlements and infrastructure to extreme weather events.
- 6) Minimize the impact of sea level rise on coastal settlements and infrastructure.
- 7) Greening cities by introducing urban forest parks, rooftop gardens, vertical gardens, wetland parks and roadside planting.

10.2 Laws, Policies and Plans Related to Human Settlement Sector NDCs

National Housing Development Authority Act, No. 17 of 1979

The powers and functions of the Authority are-to prepare and execute proposals, plans and projects for, among which is the resettlement of persons displaced or likely to be displaced by any of the operation of the Authority. The provision does not empower the Authority to minimize the impacts on human settlements and infrastructure due erratic changes in population.

Urban Settlement Development Authority Act, No. 36 of 2008

The Act provides the powers and functions of the Authority, which include

the functions to formulate and execute proposals, plans, projects and action programs also giving due consideration to such as may be received from communities of the urban settlements to improve living conditions of such settlements; to implement related programs of development work which will improve the living conditions of the urban settlement engaging wherever possible the involved communities to the optimum level.¹⁵⁶

National Physical Planning Policy and Plan Sri Lanka -2030 National Physical Planning Department (NPPD)

The objectives of the Policy include ensuring that the people of Sri Lanka live in areas that are safe from natural disasters and the effects of global warming including rising sea level. It further refers to a settlement pattern that reduces the number of people living in vulnerable areas. The strategies of the Policy include among others encouraging the development of new urban settlements and supporting infrastructure in areas that have minimal risk from natural disasters; ensuring that the implications of climate change, earthquakes and possible tsunami situations are considered in the expansion and development of urban settlements in coastal areas. These also include actions to encourage the gradual shifting of dwellings, infrastructure and urban settlements located in areas vulnerable to natural disasters to safer locations.¹⁵⁷

¹⁵⁶ Urban Settlement Development Authority Act, No.36 of 2008

¹⁵⁷ National Physical Planning Policy and Plan Sri Lanka - 2030 National Physical Planning Department (NPPD)

National Housing Policy Revision of January 2017 (Ministry of housing and construction)¹⁵⁸

The Policy aims to encourage the development of alternative constructions technologies and materials that are environmentally sound and popularized amongst communities. It connects with the NDCs of the sector which related to technology and material in infrastructure development and planning.

10.3 Gaps and Needs for the Implementation of NDCs

There are several gaps and needs related to the implementation of NDCs on urban city planning, infrastructure and human settlements which were identified during the data collection conducted.

The synthesis of the identified gaps and needs is provided in the next section of this research.

10.3.1 Gaps and Needs in Policies and Laws

Among the gaps and needs identified for the implementation of NDCs of the sector are the need for more general laws and policies for implementing adaptation actions. The need for amending the existing laws and policies to facilitate the implementation of NDCs was also highlighted.

Further, it was noted that there is a need for a stricter policy framework. Additionally, the need for effective implementation of existing laws and policies related to the sector has been noted.

10.3.2 Gaps and Needs in Institutions and Coordination

The need to include the relevant agencies of the sector was highlighted by key stakeholders. For example, agencies such as the River Valley Development and the Mahaweli Development Authority, the Irrigation Department: Settlement Planning Division, the National Physical Planning Council (NPPC) were highlighted as institutions that need to be included as entities with responsibilities in implementing and being part of the coordination of the implementation of NDCs.

Further, enhanced coordination among the stakeholders, and key institutions related to the NDCs of the sector is also noted as a key need, as well as mainstreaming climate resilience into laws, policies and plans was noted as a need in the institutionalising of NDCs into the sector activities.

¹⁵⁸ <https://houseconmin.gov.lk/regulation-and-acts/>

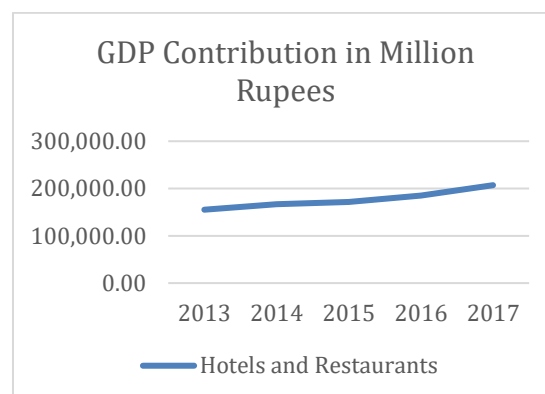
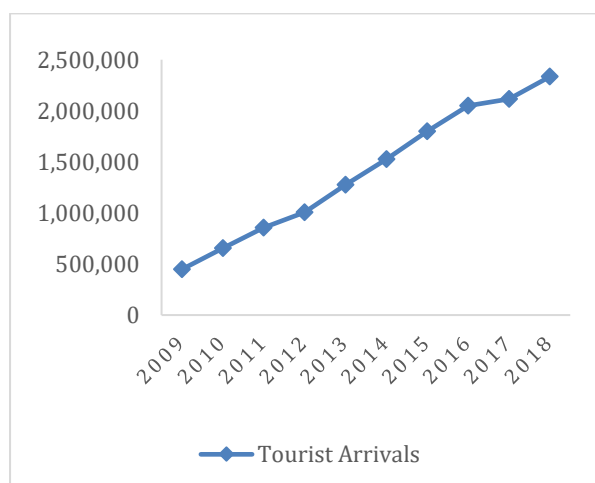
11. Tourism and Recreation Sector

11.1 Introduction

Sri Lanka is an attractive destination for tourists due to its geographical location, its scenic and sunny beaches, cultural heritage, rich biodiversity, opportunities for nature recreation (e.g. whale watching, beach surfing, and wildlife) and comfortable climate zones.

The tourism industry is the third largest contributor to per capita income in Sri Lanka.¹⁵⁹ On the other hand, the Tourism and Recreation sector is recognized as climate-sensitive and has already been adversely affected by the negative impacts of climate change and related disasters.

Tourism and recreational activities are highly impacted by climate risks, and it is important that the country takes adaptation measures to address the climate risks and impacts.



Sri Lanka's tourism industry focuses on strategic policies the enhancement of tourism development focusing on climate change and its impacts; arranging necessary remediation action on the preparedness of tourism and recreation operation due to extreme weather conditions; introducing promotional strategies to tourism and nature destinations special attention to climate change impacts scenarios and waste management, solid and wastewater management, in tourism areas.

The Tourism and Recreation sector has the following NDCs:

- 1) Adjustment of tourism and recreation industry to altered conditions of the destinations.
- 2) Increase the preparedness of tourism and recreation operation to extreme weather conditions.
- 3) Assess the current promotional strategies in connection to emerging scenarios of climate change; beach tourism and nature destinations.
- 4) Improve energy efficiency in tourism establishments by using

¹⁵⁹ 'The economies of climate change in Sri Lanka' DailyFT (Sri Lanka, 27 July 2018) <<http://www.ft.lk/business/The-economies-of-climate-change-in-Sri-Lanka/34-659799>> accessed 13 August 2019

available best alternative environmentally friendly energy sources, solar and wind power, biomass.

- 5) Introduce resources management mechanism into tourism in order to minimize damage to the existing ecosystem by contributing in waste management, solid and wastewater, in tourism areas which could affect to the ecosystem.

11.2 Laws, Policies, and Plans Related to Tourism Sector NDCs

Among the key laws and policies relevant to the NDCs of the sector are:

Tourism Act, No. 35 of 2008¹⁶⁰

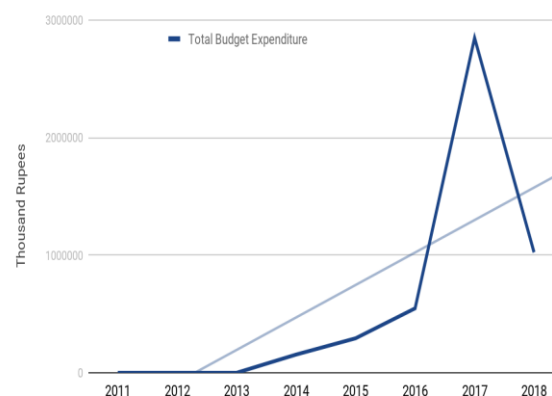
This Act repeals Tourist Board Act, No. 10 of 1966 and establishes the Sri Lanka Tourism Development Authority.¹⁶¹ Objectives of the Authority among others are to develop Sri Lanka as a tourist and travel destination both in Sri Lanka and abroad; advise the Minister in charge of the subject of Tourism on matters relating to travel and the tourism industry, within the policy formulated by the Cabinet of Ministers, in relation to this sector; provide guidance to the Sri Lanka Tourism Promotion Bureau to develop, promote and market Sri Lanka as a tourist and travel destination both in Sri Lanka and abroad; work towards the enhancement of the tourism and travel sectors in order to secure a contribution for the expansion

¹⁶⁰

http://www.sltda.lk/sites/default/files/Tourism_%20Act_%202005_0.pdf

¹⁶¹ Tourism Act of No.35 of 2008, s.2

Ministry of Tourism Development



and development of Sri Lanka's economy.¹⁶²

Sri Lanka Tourism Vision 2025¹⁶³

Sri Lanka Tourism Vision 2025 recognizes that tourism in Sri Lanka has not reached its potential and strives to develop by transforming tourism strategy to increase investment and employment. Further, it aims to develop a detailed strategic plan to achieve this transformation.

11.3 Gaps and Needs for the Implementation of Tourism Sector NDCs

Gaps and needs for the implementation of NDCs related to the sector were identified through expert interviews, consultations and national level workshops.

These are presented in a synthesis version below.

11.3.1 Gaps and Needs in Policies and Laws

Among the gaps and needs highlighted for the implementation of NDCs of the

¹⁶² Tourism Act of No. 35 of 2008

¹⁶³

http://www.pmooffice.gov.lk/download/press/D0000000061_EN.pdf

sectors is the need for climate proofing its laws and policies.

The need for capacity building key stakeholders of the sector on laws and policies, as well as the NCDs being integrated into the laws and policies related to the sector is also highlighted.

11.3.2 Gaps and Needs in Institutions and Coordination

The need for including certain institutions to the relevant entities responsible for the implementation of NDCs was highlighted. This includes entities such as the Meteorological Department of Sri Lanka, Local Authorities, and Provincial Councils that have relevant functions.

Additionally, the need for enhancing of the coordination and monitoring mechanisms for NDC action was also highlighted by the stakeholders of the sector.

11.3.3 Capacity Gaps and Needs

The need for awareness regarding climate change is noted, and the need for conducting capacity building and awareness creation activities such as conducting provincial awareness, actions

are proposed to address the needs identified.

There is also the need for enhancing the technical capacity and financial assistance to be provided to the key entities implementing the NDCs, and other key stakeholders of the sector.

11.3.4 Gaps and Needs in Data

Gaps in data as well as the need to access data and information have been highlighted as key gaps for the tourism and recreation sector. Among these the lack of identified high-risk areas and data for identification of high-risk areas have been highlighted.

There is also a gap in data and information sharing among stakeholders, including sharing practices amongst stakeholders and the need to develop a data-sharing mechanism to identify the sector-based impacts of climate change.

Additionally, the stakeholders identified the need for a coherent database which will facilitate the distribution of relevant information and data, to stakeholders interested in accessing such data for climate action.

12. Loss and Damage Sector

12.1 Introduction

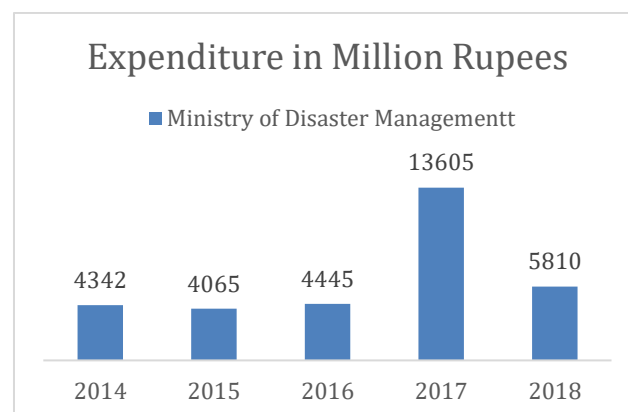
“Loss and damage” refers to climate impacts that exceed the adaptive capacity of countries, communities, and ecosystems.¹⁶⁴ As Sri Lanka is highly vulnerable to slow- and sudden onset impacts of climate change,¹⁶⁵ including extreme weather events and climate-related disasters,¹⁶⁶ the loss and damage sector is of vital importance and has therefore been featured as one of the sectors of the NDCs.¹⁶⁷

To help address losses and damages due to climate change impacts in vulnerable developing countries, the parties to the UNFCCC established the Warsaw International Mechanism for Loss and Damage (WIM) in 2013. The WIM is tasked with enhancing knowledge and understanding of comprehensive risk management approaches, strengthening dialogue and coordination between relevant stakeholders, and enhancing action and financial, technical, and capacity-building support.¹⁶⁸

In 2015, the UN also adopted the Sendai Framework for Disaster Risk Reduction to provide a global framework for disaster risk reduction and risk management. Among the important actions to achieve this, the Sendai Framework names promoting “mechanisms for disaster risk transfer and insurance, risk-sharing and

retention and financial protection, as appropriate, for both public and private investment in order to reduce the financial impact of disasters on Governments and societies, in urban and rural areas.”¹⁶⁹

As Sri Lanka places high importance on the cross-cutting issue of loss and damage, it has established a Ministry of Disaster Management and started several initiatives to assess the country’s climate risks. These include national level actions as well as sectoral and sub-national level geographical unit-based assessments.



One of the initiatives is the country’s Third National Communication to the UNFCCC (not yet publicly available) which has conducted climate risk assessments for all key economic sectors under the adaptation NDCs of the country. This includes the human health, food security (agriculture, livestock and fisheries), water and irrigation, coastal and marine, biodiversity, urban infrastructure and human settlements, tourism and recreation, and loss and damage sectors,

¹⁶⁴ (Climate Analytics, 2019)

¹⁶⁵ (Eckstein, Hutfils, Marie-Lena, & Wings, 2018)

¹⁶⁶ (Disaster Management Centre/Asia Pacific Alliance for Disaster Management Sri Lanka, 2017)

¹⁶⁷ (Ministry of Mahaweli Development and Environment, 2016)

¹⁶⁸ (United Nations Framework Convention on Climate Change, 2019)

¹⁶⁹ (United Nations Office for Disaster Risk Reduction, 2015)

and the risk assessments have been conducted through a participatory process for identification of the key indicators for each sector, and the weights allocated for each one for calculating the potential climate risks.

Based on the climate risks identified, suitable climate adaptation measures will be identified and prioritized for the implementation in the relevant geographical areas with high climate risks.

The NDCs for Loss and Damage are as follows:

- 1) Improve the forecasting capabilities at all-time scales.
- 2) Analyse total loss and damage of climate induced disasters from 2000 and the gap that was not compensated/recovered. This includes making recommendations to establish a mechanism at the national level which will contribute to the Warsaw International Mechanisms for Loss and Damage in an effective and efficient manner.
- 3) Establish a local mechanism in line with the Warsaw International Mechanism for Loss and Damage.
- 4) Strengthen the existing national mechanism to recover the loss and damage to the maximum possible.
- 5) Introduce possible insurance schemes to recover the loss and damage to livelihood, properties, infrastructure, agriculture and fisheries, and other affected sectors due to adverse impacts of climate change.

12.2 Laws, Policies, and Plans Relevant to Loss and Damage Sector NDCs

There are domestic laws that Sri Lanka has developed which interlinks with the NDCs of the loss and damage sector.

Some of the key laws and policies are as follows:

Sri Lanka Disaster Management Act No. 13 of 2005

The Sri Lanka Disaster Management Act was enacted in 2005 and provides the legal basis for a disaster risk management system in the country. It establishes the National Council for Disaster Management¹⁷⁰, Disaster Management Centre¹⁷¹. It also sets up technical advisory committees, and the mandate for preparing disaster management plans as well as the declaration of a state of disaster. The Act also deals with the compensation allocation for disasters. Act established the National Council for Disaster Management (NCDM) and the Disaster Management Centre (DMC).

The Act highlights the need for effectively dealing with disasters, from a national perspective and preparing national policy and plan, and also appointing centrally coordinated committees and institutions to implement them.¹⁷² Further, the sectors indicated in the Act, covers almost all the sectors of NDCs for adaptation including environment, health, coastal, irrigation, fisheries etc.

The functions of the Council include many overlaps and interlinkages with the NDCs for the loss and damage sector. Among

¹⁷⁰ Sri Lanka Disaster Management Act, No. 13 of 2005, section 2

¹⁷¹ Sri Lanka Disaster Management Act, No. 13 of 2005, section 8

¹⁷² Sri Lanka Disaster Management Act, No 13 of 2005, Preamble

the functions are the formulation of a national policy and program on the management of disasters which shall provide for the protection of life of the community and environment from disaster and the maintenance and development of disaster affected areas; the effective use of resources for preparedness, prevention, response, relief, reconstruction and rehabilitation; the enhancement of public awareness and training to help people to protect themselves from disasters; capacity building, among persons living in areas vulnerable to disaster, in relation to risk management and the application of disaster management and mitigation practices.¹⁷³

National Policy on Disaster Management (2010)

The Policy provides the overarching principles, preferred outcomes for disaster management, policy directives related to disaster management in Sri Lanka. It also aims to focus on inadequate coordination among stakeholder agencies, duplication of efforts and insufficient policy directives to reduce the human and economic impacts of disasters.¹⁷⁴ The legal mandate for the creation of the Policy stems from the Disaster Management Act of Sri Lanka.

The Policy provides for the need to focus on multi-sectors, multi-stakeholders and multi-localities, multi-temporal planning in addressing disasters, and reducing disaster risks. Further, it highlights the collective responsibility in addressing disasters, as disaster risk management is not just a single organization's role, but the role of multiple stakeholders such as the government, media, private sector,

civil society organisations, international organisations etc.

National Disaster Management Plan (2013-2017)

The goal of the National Disaster Management Plan is to reduce disaster impact on communities, infrastructure, lifeline facilities, shelter, agricultural property, economic and development activities in Sri Lanka. The Plan focuses on relive, immediate recovery, rehabilitation and reconstruction related to disasters.¹⁷⁵

This includes response, relief and immediate recovery of essential services, and medium- and longer-term reconstruction and rehabilitation to a higher standard than before the occurrence of the disaster.¹⁷⁶

The upgrading and review of the Plan will be conducted with the coordination by DMC with the participation of multiple stakeholders. The timeline for upgrading is indicated as done when needed, or the country situation so demands. This is indicated as potentially after a review in 5 years; after a major disaster or if any other situation arises demanding a change in the plan.

Agricultural and Agrarian Insurance Act No.20 of 1999

The Act provides for the establishment of an agricultural and agrarian insurance board, which will address the needs for insurance to among others agricultural and horticultural crops, livestock, fisheries and forestry. The Act repeals the Agricultural Insurance Law, No.27 of 1973.

¹⁷³ Disaster Management Act No. 13 of 2005, s.4

¹⁷⁴ National Policy on Disaster Management (2010), Preamble

¹⁷⁵ "National Disaster Management Policy of Sri Lanka" <<https://groundviews.org/wp-content/uploads/2018/12/Jan.-2011National-Disaster-Management-Policy-of-Sri-Lanka.pdf>> accessed August 14, 2019

¹⁷⁶ Ibid

¹⁷⁷It is among one of the pioneering initiatives of the world, catering to climate and disaster risks being compensated through insurance and relates to the NDCs under the loss and damage sector.

12.3 Gaps and Needs for the Implementation of Loss and Damage Sector NDCs

Many gaps and needs have been identified for the implementation of NDCs of the loss and damage sector. Among those are:

12.3.1 Gaps and Needs in Policies and Laws

The implementation of NDCs under the loss and damage sector, requires a study of many sectors of laws and policies. The NDCs include the establishment of a national mechanism to facilitate the WIM, which caters to issues such as gender, migration, risk transfer. To address these aspects, it is important to draft laws and policies that focus on climate induced migration, gendered impacts of climate change losses and damages.

There is also a need to focus on the laws relating to land use, planning and strategic environment impact assessment as losses and damages due to ensure that communities are not allowed to continue to expose them to identified climate risks. Further, laws are needed providing access to climate data to stakeholders, which will be accessible free of charge, contributing to enhanced climate risk assessments. Additional gaps and needs highlighted is the need to have clear policies and

guidelines for compensation which are made aware to the communities.

12.3.2 Gaps and Needs in Institutions and Coordination

Need for improving the coordination structure, and also clarity of the institutional structure and political leadership for the implementation of NDCs is indicated as much needed.

An enhanced institutional setup for paying compensation is highlighted as a need for implementing the NDCs of the sector. Overall need for improving the coordination with multi-stakeholders in implementing NDCs related to loss and damage is noted as a need to be addressed as well.

12.3.3 Capacity Gaps and Needs

Among the capacity gaps identified is the non-existence of a capacity building mechanism. Further, the lack of technical capacity for having effective early warning systems in landslide prone areas were noted. Additional technical needs highlighted are the need for automated rainfall measurement systems in rural areas.

Financial capacity could be noted as a gap as well, and the continued awareness creation on addressing disasters.

Among specific capacity gaps highlighted, are the need for capacity building on technical aspects related to climate change, loss and damage, WIM, climate risk transfer. Additionally, the stakeholders have highlighted the need for conducting training workshops on climate change and NDCs, the different methods of calculating risk and compensation, and other technical

¹⁷⁷ Agricultural and Agrarian Insurance Act No.20 of 1999, preamble

aspects related to the loss and damage topic under the climate change processes.

12.3.4 Gaps and Needs in Data

A need for more data has been especially noted for this sector, including a groundwater data system, a national data collection on disaster insurance payments, and weather data. Data entering is not actively done even though the system is available, and there is a need to introduce effective data entry mechanisms.

Furthermore, a lack of a landslide early warning system was identified as a need for land slide prone areas. Lack of research on different specific focus areas of loss and damage sector are also highlighted. Data preparation and collection on climate induced migration, gendered impacts of disasters, as well as impacts of slow onset disasters.

13. Recommendations & Conclusion

There are several gaps and needs to be addressed on the policy and legal level for the effective implementation of the NDCs of Sri Lanka. A major gap is the lack of laws for implementing NDCs, or the non-implementation of existing laws in an efficient manner. However, some of the gaps and needs identified as legal and policy gaps are being addressed through initiation of new polices and laws, that are at present in their draft versions.

Further, policies in many sectors need to be expanded, for example with a waste management component in the health and water sectors, with protection of irrigation systems, for the extraction of groundwater, or for integrated water resources management. In the agriculture sector, many key laws provide opportunities to integrate climate change and climate action, for example the development of seeds and food security or laws surrounding fertiliser use, which will be opportunities to integrate climate change adaptation into sectoral laws and policies.

There is also a need for enhanced coordination with sectoral ministries and entities for the implementation of NDCs and climate actions, as well as to build capacity and to enhance the mainstreaming of climate action in many ministries, and the coordination between the authorities and local stakeholders such as farming or coastal communities, people living in rural parts of the country. Surveillance or monitoring system are also highlighted as a need, and could be built up in many areas, for example health, water, irrigation, and disaster risk reduction.

The overlapping of institutions and the duplication of laws and mandates make the implementation of NDCs more difficult. Research is needed in many areas and would greatly improve the government's ability to address climate change impacts.

Many government ministries and departments need capacity building on the technical expertise related to the implementation of NDCs, and the interlinkages between sectoral actions and climate change impacts. Further, both government staff and local stakeholders need capacity building and awareness creation on climate change impacts, climate risks, and climate action.

It is also important that the legal policy experts who draft laws and policies on climate change related aspects are capacity built on climate change impacts. This is an important element in ensuring that the laws and policies related to different sectors linked to NDC implementation integrate climate change to them.

The need for awareness creation on different aspects related to NDCs has been highlighted. For example, awareness on climate change impacts on the livestock sector, climate-induced migration, as well as on international mechanisms such as WIM or the Sendai Framework.

Financial and technological gaps pose further challenges to NDC implementation. There is an absence of data or data sharing mechanisms in many sectors, for example regarding weather and climate data for agriculture or regarding early warning systems for

climate-related disasters are not freely accessible to the public.

During the course of research for this paper, a number of general recommendations across sectors has emerged. These recommendations are as described in the following section.

13.1 Recommendations

- Strengthen the integration of SDGs and NDCs to create synergies between both processes and interlink climate action and development.
- Strengthen coordination and build capacities of climate change practitioners, government agencies, and local stakeholders.
- Review and revise as appropriate gender responsiveness of NDCs and NAP of Sri Lanka
- Financial and Technological
- Enhance the existing monitoring mechanisms, and introduce where they are not available.
- Leverage additional private sector funding and enhance public-private partnerships to strengthen implementation.
- Develop an implementation and financing plan for NDC actions on national and local level based on the revised NDCs.
- Improve collection and accessibility of data in all sectors.

- Improve integration with and awareness of WIM and the Sendai Framework.
- Integrate climate-induced migration aspects into loss and damage sector.

13.2 Conclusion

Addressing the gaps and needs for NDC implementation in Sri Lanka is not a small task, but the government is dedicated and the basic institutional setup in place. The above recommendations can provide a direction for allocating resources and priorities and enable the line ministries and other government institutions to mainstream climate action, especially in the adaptation and loss and damage sectors, more effectively and comprehensively into to their policies, plans, strategies, and projects.

Integrating both SDGs and international DRR processes and mechanisms such as the WIM, the Sendai Framework, into NDC implementation could create strong synergies or co-benefits for both sides. Sustainable development and climate adaptation action provide an opportunity to work together and achieve common goals and targets.

Addressing the gaps, needs, and constraints of NDC implementation Sri Lanka and Implementing the NDCs in an effective manner is vital to prepare for the impacts of climate change as well as conserve or build a resilient and sustainable society, economy, and natural environment.

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