

Initiative for Climate Action Transparency – ICAT



Revision to NDCs in Waste sector in Sri Lanka Scoping Study (Recommendations and Inputs for NDC Revision)

Initiative for Climate Action Transparency - ICAT –

REVISION TO NATIONALLY DETERMINED CONTRIBUTIONS IN WASTE SECTOR IN SRI LANKA

DELIVERABLE 1: SCOPING STUDY (RECOMMENDATIONS AND INPUTS FOR NDC REVISION)

ClimateSI, 2020

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Climate Smart Initiatives (Pvt) Ltd.,
Sri Lanka.



List of Acronyms

ADB	Asian Development Bank
BAU	Business As Usual
CAIT	Climate Analysis Indicators Tool
CCS	Climate Change Secretariat
CDM	Clean Development Mechanism
CEA	Central Environmental Authority
CH ₄	Methane
CIFF	Children's Investment Fund Foundation
ClimateSI	Climate Smart Initiatives (Pvt) Ltd
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
EDGAR	Emission Database for Global Atmospheric Research
GACMO	The Greenhouse Gas Abatement Cost Model
GHG	Greenhouse Gas
ICAT	Initiative for Climate Action Transparency
INDC	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
LA	Local Authority
MAC	Marginal Abatement Cost
MEWR	Ministry of Environment Wildlife Resources
MHIM	Ministry of Healthcare and Indigenous Medicine
MMDE	Ministry of Mahaweli Development & Environment
MMWD	Ministry of MegaPolis & Western Development
MoF	Ministry of Finance
MPHPL	Ministry of Public Administration, Home Affairs, Provincial Councils & Local Government
MRV	Monitoring, Reporting & Verification
N ₂ O	Nitrous Oxide
NDC	Nationally Determined Contributions
NSWMSA	National Solid Waste Management Support Center
SNC	Second National Communication
SDG	Sustainable Development Goal
UDP	UNEP DTU Partnership
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNOPS	United Nations Office for Project Services
VCS	Verified Carbon Standard
WRI	World Resources Institute

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Executive Summary

In 2016, Sri Lanka submitted its Nationally Determined Contributions (NDCs) to United Nations Framework Convention on Climate Change (UNFCCC) in order to support achieving the emission reduction objectives under the Paris Agreement. The Parties to the Paris agreement are required to communicate their nationally determined contributions every five years in accordance with decision 1/CP21 and Article 4.9 of the Paris Agreement. As such, Sri Lanka is also required to present its revised NDCs by 2020. This study is conducted basically with the intention of analyzing existing waste sector NDCs and finding gaps in order to identify new list of NDCs.

The NDCs provide a confirmed framework for undertaking mitigation measures across identified sectors, with the requirement to submit updated and more ambitious NDCs every 5 years. Re-visiting the agreed NDCs and measuring the status of these NDCs will be required as per UNFCCC requirements. This report of scoping study with the recommendations and inputs for NDC revisions is the first deliverable of the assignment on reviewing waste sector NDCs in Sri Lanka.

While assessing the previous waste sector NDCs against SMART (Specific, Measureable, Actionable, Relevant and Time-bound) criteria, which were agreed previously with CCS of MEWR while revising transport sector NDCs, it was identified that five main NDCs (NDCs 1,4,5,6,7) out of 7 waste sector NDCs cannot be considered further given the fact that these are not specific and not time bound.

Then, remaining 2 NDCs, and proposed additional NDCs (3 NDCs) through desk review were quantitatively assessed against SMART criteria, and found that all 5 NDCs are aligned with SMART criteria.

These proposed new NDCs will be discussed with the relevant stakeholders, and then GHG effects and sustainable development effects of those prioritized NDCs will be assessed in order to finalize the to finalize the NDCs under the next deliverable.

1. Introduction

1.1. Background

The Paris Agreement is an unprecedented global commitment to combat climate change. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. To this date, 189 Parties have ratified of 197 Parties to the Convention. Sri Lanka also ratified to Paris agreement in 2016.

As per a requirement of Paris agreement, Sri Lanka submitted its first NDCs [1] to the UNFCCC in 2016. Sri Lanka's NDCs comprise of four areas; Mitigation, Adaptation, Loss & Damage and Means of Implementation. The country's total GHG emission represents less than 0.1% of global emissions and the per capita emission is 0.6tCO₂e. Sri Lanka puts its progressive effort to avoid or mitigate the climate change effects emerged in its economic growth, through the NDCs.

NDCs of Sri Lanka are implemented by the relevant ministries with the support from Climate Change Secretariat of Sri Lanka. A coordinating body consisting of relevant ministries provides inputs for the implementation of NDCs

NDCs for Mitigation intends to reduce the GHG emissions against BAU scenario by 20% in the energy sector (4% unconditionally and 16% conditionally) and by 10% in other sectors (transport, industry, forests and waste) by 3% unconditionally and 7% conditionally by 2030.

In 2015, along with 192 other Member States of the United Nations, Sri Lanka pledged commitment to the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs). The Sustainable Development Act was enacted in 2017. The waste sector plays an important role in sustainable development in Sri Lanka. Waste sector NDCs should be directly and indirectly supporting to achieve the sustainable development goals.



Figure 1-1: Sustainable Development Goals and Integrated Waste Management

Source- "Small Island Developing States Waste management Outlook" Publication by Jeff Seadon, Auckland University of Technology [2]

Rationale of this scoping study is to revise the waste sector NDCs through analyzing the gaps of the existing NDCs and recommend a more ambitious new list of waste NDCs addressing those gaps according to the requirement of Paris agreement to revise country NDCs in every five years.

Initiative for Climate Action Transparency (ICAT)

NDC revision of Sri Lanka is progressing under the patronage of Initiative for Climate Action Transparency (ICAT). ICAT was created to cater for the need stated at the Paris Agreement to strengthen national institutions to meet enhanced transparency requirements. ICAT is a neutral, multi-donor fund designed to improve the capacity of developing countries to assess the impacts of their actions to meet their NDCs and bring greater quality, trust and ambition to climate policies worldwide. ICAT is uniquely positioned as one of the MRV programs that

offers newly developed guidance related to the MRV of policies and actions as well as country capacity building work. It builds upon the guidance being developed by UNEP DTU Partnership (UDP), World Resources Institute (WRI), Verified Carbon Standard (VCS) and counts on UDP's network of country partners for enhanced engagements. Roles of the implementing partners are to coordinate with the implementing country, and the selected consultants to achieve the objectives of ICAT project in the implementing country.

1.2. Overall objectives of the revision to waste sector NDCs

Main objective of the assignment is to review and update waste sector NDCs of Sri Lanka. It consists of two parts:

Part 1: Scoping study: Preparation of a list of proposed NDCs based on the criteria agreed by the CCS of MEWR.

Part 2: Mitigation and SD assessment: Application of the GACMO model to quantify the GHG effects of those NDCs as well as Marginal Abatement Cost (MAC) curves; and application of ICAT SD Methodology to assess the SD impacts of the identified NDCs, with the aim of finalizing the list of new NDCs.

1.3. Objective of this deliverable (scoping study)

This report on scoping study, which is the first deliverable of the assignment on reviewing waste sector NDCs of Sri Lanka, will address the part 1 of overall objectives: Preparation of a list of proposed NDCs based on the criteria agreed by the CCS of MEWR.

This scoping study is based on:

- a) Initial assessment of existing NDCs with the criteria agreed with CCS of MEWR.
- b) Desk review of the existing NDCs, national policies and development of waste sector

1.4. Structure of the scoping analysis

There are five chapters in this report. First chapter describes the background and objectives and structure of the assessment. Second chapter stipulates status and trends of the waste sector, GHG emissions coming from waste sector and previous waste sector NDC list. Third chapter of the report discusses national policies on waste sector and strategies that have a relevance to areas of possible emission reduction.

Chapter 4 of the report gives a detailed analysis on gaps in existing NDCs and needs for revision. It identifies drawbacks in the list of previous NDCs and five steps towards the identification of the proposed NDCs for waste sector. Finally, chapter 5 indicates the next steps to finalize NDC revisions.

2. Waste sector of Sri Lanka

2.1. Status and trends

Amount of waste generation in Sri Lanka has increased from around 6,400 ton/day in 1999 to 10,786 ton/day by 2009. The generated waste amount of the Western Province is the largest, accounting for 33% of the total generation amount of the country while that of the Uva Province occupies the smallest share of generation amount (only 5%) among all provinces [3].

Central government agencies that are related to laws and administrations of waste management are:

- I. The Ministry of Public Administration, Home Affairs, Provincial Councils & Local Government (MPHPL), which is responsible for the local government;
- II. The Ministry of Environment and Wildlife Resources (MEWR), which are leading administrative guidance from the perspective of environmental protection;
- III. The Ministry of Healthcare and Indigenous Medicine (MHIM), which are leading administrative guidance from the perspective of health and sanitation
- IV. The National Solid Waste Management Support Center (NSWMSC); and
- V. The Central Environmental Authority (CEA), which are affiliated respectively to the MPHPL and MEWR.

Lack of systems on waste collection, waste transport, intermediate treatment systems, and suitable waste disposal sites have been contributing to aggravate the waste problem in Sri Lanka. The present haphazard waste disposal practices in Sri Lanka have created many environmental problems and numerous nuisances on the public. As a consequence of this practice, entire communities are suffering, and the number of health, social, economic and cultural problems have been created.

2.2. GHG emissions

According to Sri Lanka's second national communication (SNC), total GHG emissions excluding LUCF in 2000 was approximately 19 million tCO₂e, which represents less than 0.1% of global emissions (EDGAR, 2017). GHG emissions of the waste sector in the year 2000 is 2 million tCO₂e as per SNC [4] while it has reached to nearly 13 million tCO₂e by 2014 as per World Resources Institute Climate Analysis Indicators Tool (WRI CAIT). Figure 3 shows the share of GHG emissions in waste sector by different sector in year 2000.

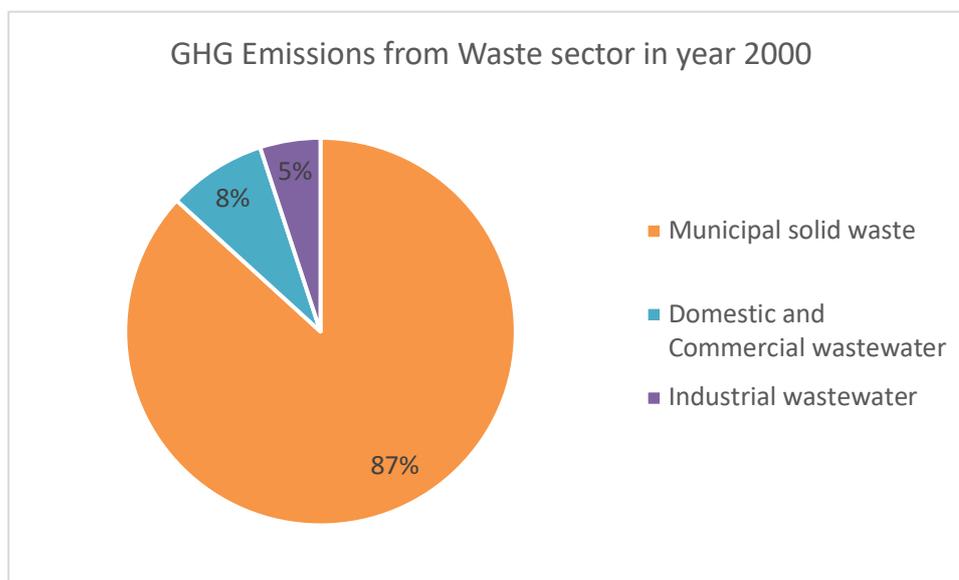


Figure 2: GHG emissions of Waste sector

Source: MoE, 2011 [4]

As per Figure 3, Municipal solid waste accounts 87% of total waste sector emission in year 2000, which is followed by domestic & commercial waste water, and industrial waste water. The main waste collection and disposal systems currently in practice in Sri Lanka are composting, recycling, sanitary land filling, open dumping, waste burning through incineration and waste water treatment.

2.3. Existing waste sector NDCs

Sri Lankan NDCs submitted in 2016 to the United Nations Framework Convention on Climate Change (UNFCCC) aims to reduce 10% of its GHG emissions from the sectors of transport, waste, industry and forestry. This will be 3% unconditional and 7% conditional against BAU scenarios.

3. National priorities for waste sector and climate change

The legal framework of waste management in Sri Lanka consists of five major components namely constitution, Acts and Legislations passed by the Parliament, such as National Environmental Act, Pradeshiya Sabha Act, Municipal Council Ordinance, etc. as well as Provincial Statutes, regulation and guidelines and by-laws of the Local Authorities. In Sri Lanka, the basic legal framework required for waste management is provided under an umbrella of Government, Provincial Council and Local Authority's regulations and legislation.

Waste sector national policies and strategies that have references to the emission reduction actions in NDCs were analysed in this section while the detailed description is included in Annex 01.

3.1. National Solid Waste management Policy (2007)

National Policy on Solid Waste Management (2007) has developed by the Ministry of Environment and wildlife Resources, Central Environmental Authority and Local Authorities in consultation with all relevant stakeholders. It covers all three types of waste; solid, liquid and gaseous. The policy documents have been revised in 2018. (Draft file is only available online)

The policy was designed to provide more detailed focused directions for policymakers and implementers covering vertical and horizontal levels in the administrative and management structures of the country. The time span proposed is up to 2030. Highlighted information relevant to emission reduction in the waste sector is listed below.

- ✓ Overall reduction of resource and energy will be used by recycling and reusing waste materials
- ✓ Landfilling will be limited to non-recyclable and non-compostable waste
- ✓ Importation of all types of post-consumer waste will be prohibited to reduce energy consumption during the waste treatments
- ✓ Hazardous Biomedical / Health Care wastes will be managed

3.2. Readiness Plan for Implementation of Intended Nationally Determined Contributions

Climate change secretariat (CCS) under the Ministry of Environment and Wildlife Resources outlined the Readiness Plan for Implementation of Intended Nationally Determined Contributions (INDCs) of Sri Lanka 2017-2019 and listed out the strategies to implement the NDCs. The necessary strategies to achieve the waste sector NDCs, output indicators, timeline, as well as responsible agencies, are listed in the readiness plan.

3.3. National Climate Change Policy (2012)

National Climate Change Policy of Sri Lanka has developed to provide guidance and directions for all the stakeholders to address the adverse impacts of climate change efficiently and effectively. In the National climate change policy of the country, the waste sector strategy is stated to adopt integrated waste management systems for all types of waste assigning priority for the prevention of waste generation with nationally appropriate low greenhouse gas emission technologies".

3.4. National Environment Policy and Strategy

The aim of the policy is to ensure sound environmental management within a framework of sustainable development in Sri Lanka. That Policy is supported by many other policies and strategies developed for other sectors. Ministry of Environment and Wildlife resources and Central Environmental Authority are the key entities to develop waste sector policies and strategies.

- ✓ Practice waste treatment and recycling of water and avoid discharging harmful effluents in industries to the environment
- ✓ Provide for the proper collection and disposal of solid waste, including of hazardous waste, by sanitary land-fill or other suitable means

3.5. The Megapolis Western Region Master Plan 2030

Megapolis and Western Development Master Plan is an active policy in the country for the western province development. Several actions were proposed under the subsections of waste management.

- ✓ Implementing waste to energy projects
- ✓ Establishing a sanitary landfill site in the western province
- ✓ Introducing proper waste management techniques.

3.6. Vision 2025

Sri Lanka's new Vision 2025 sets out a course of reforms to make the country more competitive and lift all Sri Lankans' standards of living. It aims to develop alternative waste treatment processes (Waste to energy).

3.7. Presidential Manifesto 2019

This was published in 2019 to present the future plan within the presidency by His Excellency Gotabaya Rajapaksa. The programme in this manifesto consists 10 key policies aimed at achieving the fourfold outcome of a productive citizenry, a contented family, a disciplined and just society and a prosperous nation. Key waste sector actions are listed below:

- ✓ Sustainable consumption concepts will be introduced from a person's childhood.
- ✓ An action plan will be formulated to safeguard the oceans from pollution, including plastic pollution.
- ✓ Waste sorting and separation will be made mandatory for households and industries. This will go hand in hand with an extensive awareness campaign at the provincial level
- ✓ Proper waste collection systems and designated disposal locations will be introduced, including sanitary landfills shared by more than one Pradeshiya Sabha.
- ✓ Modern techniques and improved incinerators will be introduced to dispose of hospital waste and industrial (chemical) waste.
- ✓ Illegal and irresponsible waste disposers will be identified, and strict action will be taken against such parties.

3.8. National Action Plan for Haritha Lanka Programme- 2009

National Action Plan for the Haritha Lanka Programme is the product of the concerted effort of all relevant ministries who actively participated in its development. In preparing the Plan, short-, medium-, and long-term solutions to meet current and emerging economic and environmental challenges were meticulously explored. Several actions were proposed under the subsections of waste management.

- ✓ Establish solid and liquid waste management programs with appropriate measures to reduce the emission of methane and use CDM to improve the financial feasibility and long term viability of the projects
- ✓ Develop/introduce environmentally friendly and economically viable fish waste disposal systems
- ✓ Integrate strategies to prevent, reduce, re-use and recycling before treatment and final disposal of waste and ensure treatment and final disposal of residual waste
- ✓ Apply zero waste concepts in agricultural farms

3.9. Pilisaru Program

This is a national level programme for solid waste management under the chairmanship of Ministry of Environment and Central Environmental Authority and others. The programme was implemented in two phases.

Phase I (Jan 2009 – Dec 2013)

Phase II (Jan 2014 – Dec 2018)

Target is to introduce small and medium waste treatment system in all local government authorities by the year 2018 and to cover 50% by the year 2016.

4. Gaps in existing NDCs and need for revision

NDCs of Sri Lanka were formulated based on previously submitted INDCs following the principle of common but differentiated responsibilities and respective capabilities. However, given limited guidance and awareness on developing the initial NDCs, Sri Lanka, like other developing countries, had developed some NDCs on a qualitative approach without analysing their GHG effects quantitatively. Then, following list of NDCs for waste sector were communicated to UNFCCC in 2016.

The existing NDCs for the waste sector include:

- NDC 1: Introducing a source separation system at the household level and a proper collection mechanism.
- NDC 2: Improving the compost preparation system for each local authority and increasing the supply of organic fertilizer to agricultural purposes by providing facilities to control the quality of compost and introduce a market for the compost fertilizer production
- NDC 3: Introducing energy generation by waste (waste to energy programmes)
- NDC 4: Improving the waste collection mechanism
- NDC 5: Designing and implementing comprehensive solid waste management strategies for 40% to 60% of LAs before 2030.
- NDC 6: Monitoring of waste management activities
- NDC 7: Systematic management of industrial/hazardous and clinical waste management

Like other developing countries, Sri Lanka has a better understanding as of today, on NDCs as well as how they should be formulated. In addition, there were several visible changes in the waste sector compared to 2016. Some of the waste sector priorities at the time of submitting NDCs in 2016 have now been shifted.

Steps towards developing a new list of NDCs

Step 1 - Check the gaps in the previous NDCs against the agreed criteria

First, a few criteria, which were agreed with CCS of MEWR while revising the transport sector NDCs under ICAT phase1, were applied to evaluate the gaps in previous NDCs. These criteria (detailed information on these criteria are listed under Annex 3) are as follow:

- ✓ Specific – specific mitigation actions,
- ✓ Measuarable - measurability and effect on GHG reduction of mitigation actions,
- ✓ Actionable – financial and political feasibililty of the mitigation action,
- ✓ Relevant – alignment of the mitigation action with national policies and strategies,
- ✓ Time bound – ability to implement within NDC period of 2021-2030

After applying these criteria, NDCs 5, 6 & 7 were removed from the previous NDCs as these three NDCs are not specific and also NDC 1 & 4 were removed due to non- measurable (Annex 2 provides detailed assessment).

Remaining existing NDCs after applying SMART criteria are:

NDC 2: Improving the compost preparation system for each local authority and increasing the supply of organic fertilizer to agricultural purposes by providing facilities to control the quality of compost and introduce a market for the compost fertilizer production.

NDC 3: Introducing energy generation by waste (waste to energy programmes)

Step 2 - Collect ideas for new NDCs

Desk review and information gathered during the previous national work under NDCs were applied to identify new NDCs that will comply with the criteria listed in step 1. This assessment resulted changes to the existing NDCs and also added new NDCs as shown below.

Changes to existing NDCs

NDC 2: Improving the compost preparation system for each local authorities by municipal solid waste

NDC 3: Enhancing energy generation by waste (waste to energy programmes)

Sub NDCs under NDC 3-

3.1 Landfill gas plants with power production

3.2 Incineration with power generation

Proposed additional NDCs

1. Landfill gas flaring
2. Biogas generation from municipal solid waste and industrial wastewater
3. Recycling of paper, plastic, glass, e-waste etc

Step 3 - Assess proposed new NDCs against the agreed criteria

Each remaining NDCs from step 1 and proposed changes to existing NDCs, and additional NDCs under step 2 were assessed against SMART criteria by giving a weight between 1 (least possibility) to 5 (highest possibility) for each criteria. Though actionable criteria has two sub criteria, same weight was given for each sub criteria given the relative importance of this criteria and also to avoid any confusion for the reader.

Then, total weight for each proposed new NDC was calculated with the aim of prioritizing the NDCs as shown in Table 2.

Table 1: Prioritization of newly proposed NDCs

NDC No.	Revised NDCs list (Draft)	Prioritization Criteria						Total weight	Rank
		Specific	Measurable	Actionable (Financial feasibility)	Actionable (Political preference)	Relevant (Alignment with policies (Annex 1))	Time bound		
1	Improving the compost preparation system for each local authorities by municipal solid waste	5	5	4	4	5	4	27	1
2	Enhancing energy generation by waste (waste to energy programmes)								
2.1	Landfill gas plant with power production	5	5	3	3	4	4	24	3
2.2	Incineration with power generation	5	5	3	3	5	4	25	2
3	Landfill gas flaring	4	5	3	4	3	4	23	4
4	Biogas from Municipal Solid Waste and industrial waste water	5	5	3	4	5	3	25	2
5	Recycling of paper, plastic, glass, e-waste etc	4	4	3	5	5	4	25	2

Source: Own work

Step 4 - Check the availability of internationally accepted GHG methodologies

One of the main criteria applied while developing new NDCs was to consider the possibility of measuring the GHG effects. Indeed, this is a crucial criterion as progress of achieving NDCs has to be reported to UNFCCC regularly. Further, measurement of GHG effects has to be conducted in accordance with international good practices. As such, availability of internationally accepted methodologies was analysed before finalising the new NDCs. Therefore, methodologies available in internationally accepted GHG standard setting schemes such as CDM were examined to check the availability of relevant methodologies to measure the GHG effects (Annex 3). Internationally accepted methodologies were available for all proposed new NDCs. As such, these 5 main NDCs and 2 sub NDCs will be discussed at the stakeholder consultations to be held.

5. Next steps

- ✓ Stakeholder consultations will be conducted with CCS of MEWR, CEA, MPHPL and other relevant stakeholders in order to check the alignment of the proposed NDCs with agreed criteria in step 3.
- ✓ For agreed NDCs with the stakeholders, assessment of GHG impacts (marginal abatement costs and emission reduction potential) and sustainable development impacts will be carried out.
- ✓ Prioritized NDCs based on identified after GHG and SD assessments will be discussed with CCS of MEWR, CEA, MPHPL and other relevant stakeholders in order to agree on the final list of NDCs for waste sector.

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Annex 1: Alignment of existing NDCs with National policies

Existing waste sector NDCs	Is NDC aligned with National Policies	Description
1. Introducing a source separation system at the household level and a proper collection mechanism.	Vision 2025	Encouraging citizens to practice proper waste management methods.
2. Improving the compost preparation system for each local authority and increasing the supply of organic fertilizer to agricultural purposes by providing facilities to control the quality of compost and introduce a market for the compost fertilizer production.	National Solid Waste Management Policy 2007	Institutional strengthening and capacity building needs of stakeholders with special emphasis on Local Authorities will be addressed to promote effective waste management.
	National Climate Change Policy (2012)	Adopt integrated waste management systems for all types of waste assigning priority for prevention of waste generation with nationally appropriate low greenhouse gas emission technologies.
3. Introducing energy generation by waste (waste to energy programmes).	Vision 2025	Implementing waste to energy projects.
4. Improving the waste collection mechanism.	National Environmental Policy	Provide for the proper collection and disposal of solid waste, including of hazardous waste, by sanitary land-fill or other suitable means.
5. Designing and implementing comprehensive solid waste management strategies for 40% to 60% of LAs before 2030.	National Solid Waste Management Policy 2007	Institutional strengthening and capacity building needs of stakeholders with special emphasis on Local Authorities will be addressed to promote effective waste management.
	National Climate Change Policy (2012)	Adopt integrated waste management systems for all types of waste assigning priority for prevention of waste generation with nationally appropriate low greenhouse gas emission technologies.

6. Monitoring of waste management activities.	National Solid Waste Management Policy 2007	Regular monitoring and evaluation system will be established to ensure system improvements
		Annual performance reporting and effective monitoring mechanisms will be set in place at LA level.
	National Environmental Policy	Strengthen BOI's capacity to monitor industrial effluents and test the efficacy of waste treatment by industries.
7. Systematic management of industrial/hazardous and clinical waste management.	National Environmental Policy	<ol style="list-style-type: none"> 1. Adopt a policy for ensuring that excessively hazardous and environmentally damaging industries are not set up in the country. 2. Provide for the proper collection and disposal of solid waste, including of hazardous waste, by sanitary land-fill or other suitable means.
	National Climate Change Policy 2012	Adopt integrated waste management systems for all types of waste assigning priority for prevention of waste generation with nationally appropriate low greenhouse gas emission technologies.
	National Solid Waste Management Policy 2007	<ol style="list-style-type: none"> 1. Hazardous Biomedical / Health Care wastes will be managed so as to prevent environmental contamination and to minimize the risks to public and eco systems. 2. Institutional mechanisms will be established to prevent hazardous biomedical / health care wastes entering into the municipal waste streams.

Annex 2: Agreed criteria to revise the NDCs

SMART: Specific, Measurable, Actionable, Relevant, Time bound

Specific – In order to include any NDCs or sub NDCs under waste sector, there should be specific mitigation actions, which have already been identified by the country.

Measurable (Measurability and Effect on GHG reduction) – According to paragraph seven of Article 13 of the Paris Agreement, *“Each party shall regularly provide the following information; (b) information necessary to track progress made in implementing and achieving its nationally determined contributions under article four”*. Measurement, reporting and verification of the progress on NDC implementation are needed to meet aforesaid international reporting requirements. Therefore, one of the main features of any NDC should be the measurability. As such, the existing NDCs were assessed by exploring the availability of internationally accepted methodologies to quantify GHG effects and potential GHG reduction based on expert knowledge before applying the GACMO model to quantify the exact emission reductions.

Actionable (financial and political feasibility of the mitigation action) – Financial feasibility: when selecting the most suitable mitigation actions to be included in the NDCs, it is necessary to consider whether the particular mitigation action can be implemented with the existing or potential domestic or international finance sources based on its financial assessment.

Political preference: when implementing a particular project in the country, the effect on GHG emission reduction is not the only decisive factor. Factors that will have a high influence on the policy makers will have more influence in the political decisions. As such, evaluation of the political preference in implementing those identified mitigation actions will be critical.

Relevant (alignment of the mitigation actions with national policies and strategies) - This criterion provided an opportunity to ensure that the NDCs are well integrated with national development priorities. There are several existing national strategies and policies in relation to waste sector such as, National Solid Waste Management Policy 2007, National Environmental Policy & Strategies 2003, National Climate Change Policy 2012 and Presidential Manifesto

2019 etc. which specify the national priorities in waste sector. When the NDCs are based on existing policies and strategies, NDCs are judged to be very ambitious and preparedness for implementation is quite advanced.

Time bound - In Decision 1/CP21, it was agreed that the information to be provided by parties communicating their NDCs, may include, as appropriate, *inter alia*: time frames and/or periods for implementation. The time-frame given in Sri Lankan NDCs is from 2020 to 2030, and the revised waste sector NDCs will also cover the same time period.

Annex 3: Availability of the methodologies

Revised NDCs list (Draft)	Availability of Methodology to quantify the GHG effect
Improving the compost preparation system for each Local Authority	AMS-III.F: Avoidance of methane emissions through composting. Version 12.0
Landfill gas plant with power production	ACM0001: Flaring or use of landfill gas --- Version 19.0
Incineration with power generation	ACM0022: Alternative waste treatment processes --- Version 2.0
Landfill gas flaring	ACM0001: Flaring or use of landfill gas --- Version 19.0
Biogas from Municipal Solid Waste and industrial waste water	Methane recovery in wastewater treatment --- Version 19.0 Methane recovery in animal manure management systems --- Version 21.0
Recycling of paper, plastic, glass, e-waste etc.	Recovery and recycling of materials from E-waste --- Version 2.0 Avoided emissions from biomass wastes through use as feed stock in pulp and paper, cardboard, fibreboard or bio-oil production --- Version 3.0.1