Assessment of the National Environmental Policy of the Republic of Liberia, 2002 Focusing on the Waste Sector

Initiative for Climate Action Transparency

Initiative for Climate Action Transparency – ICAT
Assessment of the National Environment Policy of Liberia, 2002

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Acknowledgements

This Policy Assessment Review of the National Environmental Policy of Liberia (2002) specifically focuses on the Waste Sector of Liberia. Supported by the Initiative for Climate Action Transparency (ICAT), with technical guidance from the Environment Protection Agency of Liberia (EPA), this report aims to provide policy direction for a future Liberia waste policy – which is currently non-existent.

This report provides policy makers with a keen insight into the challenges of the waste sector and fits well with key recommendations from key stakeholders on how to resolve the perennial issues that plague the sector. The report also provides policy makers with insights into how the waste sector intersects with Liberia's Nationally Determined Contributions (NDC), the global Sustainable Development Goals (SDGs), and some of the country's key development papers crafted to reduce poverty and to mitigate the impacts of climate change.

To conduct this policy assessment of Liberia's waste sector, the consultant held extensive discussions with several stakeholders that included Margaret Beysolow, Waste Focus Person at the EPA; Sennay A. Carlor III, NDC Focal Point at the Monrovia City Corporation (MCC); Frederick Cole, Director General for Service Program at the MCC; Paulita Weh, Deputy Minister for Administration, Ministry of Internal Affairs; Frank Elvis Weah, Site Manager at the Fiama Solid Waste Transfer Station; Amos Smith, Data Officer at the Stockton Creek Transfer Station; Peter Sumowou, Data Officer at Whein Town Landfill, Paynesville City Corporation; Saah Joe Kendamah II, President of the National Association of Primary Waste Community Based Enterprises (NACOBE); Fomuso Ridley Fongwen of the Liberia Solid Waste Association (LISWA), among others. Mr. Mulbah Sayka and Mr Oliver Arkoi from the Ministry of Finance and Development Planning also provided key inputs concerning the sector's linkages with the SDGs and other national development documents.

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Acronyms and abbreviations

AfT	Agenda for Transformation
AU	African Union
BAU	Business as Usual
CBE	Community-Based Enterprises
CBO	Community-Based Organization
EPA	Environmental Protection Agency
GHG	Greenhouse Gas
GoL	Government of Liberia
ICAT	Initiative for Climate Action Transparency
MDGs	Millennium Development Goals
MCC	Monrovia City Corporation
MFDP	Ministry of Finance and Development Planning
NDC	Nationally Determined Contributions
NEP	National Environmental Policy
NSWMP	National Solid Waste Management Policy (NSWMP)
NWC	National Waste Commission
PAPD	Pro-Poor Agenda for Prosperity and Development
PRS	Poverty Reduction Strategy
SDGs	Sustainable Development Goals
SME	Small and Medium Enterprise
SWM	Solid Waste Management
SDGs	Sustainable Development Goals
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank

Definition of key concepts

1.1. Greenhouse gases (GHGs)

Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds (IPCC, 2001 WGIII).

1.2. Climate change

The United Nations Framework Convention on Climate Change (UNFCCC), in Article 1, defines climate change as "changes which are attributed directly or indirectly to human activity, altering the composition of the world's atmosphere, which add to the natural climate variability observed during comparable periods (UNFCCC, 1992). "

1.3. Sustainable Waste Management (SWM)

Sustainable Waste Management (SWM) is the capacity to keep materials in use for as long as possible and minimize the amount of solid, liquid and gaseous waste that is disposed of in landfill or through incineration to reduce GHG. Sustainable Waste management is key to the 'circular economy' where all wastes are no longer wastes – SWM is a critical element to achieving several of the SDGs (i.e. SDG6, SDG7 and SDG11).

1.4. Nationally Determined Contributions (NDC)

Nationally Determined Contributions represent the commitments of each Party to the UNFCCC to reduce greenhouse gas emissions (i.e. GHG mitigation) and adapt to climate change (UNFCCC).

1.5. ICAT assessment guides

ICAT assessment guides are a series of methodologies developed for and by the Initiative for Climate Action Transparency (ICAT) for assessing the GHG, sustainable development and transformational impacts of policies and actions in an integrated and comprehensive manner across all levels of governance.

1.6. Paris Agreement

The Paris Agreement is a legally-binding international treaty on climate change adopted by 196 Parties at the UNFCCC's 21st Conference of Parties (COP 21) in Paris, on 12 December 2015. It entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels (UNFCCC, 2015).

1.7. Sustainable Development Goals (SDGs)

Sustainable Development Goals, also known as the 'Global Goals' were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that, by 2030, all people enjoy peace and prosperity. The 17 SDGs are integrated- recognizing that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability (UNDP).

Abstract

Waste management helps to spur socioeconomic growth for any nation primarily because it not only serves as a mitigating factor against the effects of climate change, but it also bolters the economy by providing jobs and alternative livelihood solutions for the people. In line with the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in June 1992, which highlighted awareness about environmental protection, Liberia has made tremendous efforts by identifying and working on nine sectors with the aim of working with international development partners to provide the required technical and financial support that will strengthen the mitigating potentials of those sectors in combatting climate change. The waste sector has been targeted within Liberia's Nationally Determined Contributions (NDC) as a key development and climate change mitigation driver.

The study applies the ICAT methodology guide for assessing sustainable development impacts to qualitatively assess the impacts of the National Environmental Policy of Liberia and provides possible policy suggestions to accelerate positive actions to deal with waste, enhance cross-sectorial coordination and M&E application that would lead Liberia's waste sector toward low carbon emissions.

In view thereof, the Initiative for Climate Action Transparency (ICAT) through the Environment Protection Agency of Liberia (EPA) has identified the National Environmental Policy of Liberia (NEP) for assessment, with the aim of providing policy direction and recommendations that would strengthen the Waste sector, and proving guidance on how it aligns with the country's development agenda, regional policies and the global Sustainable Development Goals.

The enactment of the NEP in 2002 came at a time when Liberia's infrastructure was seriously destroyed during the fourteen years of civil conflict which significantly undermined the delivery of sanitation services. The public solid waste system collapsed in both urban and rural areas. Indiscriminate open disposal of waste was the most common disposal method in municipalities and local areas across the country in particular, the capital city of Monrovia which hosted the bulk of Liberia's urban population.

Even though some significant achievements have been made in the waste sector especially in Monrovia, waste management remains a challenge. While there is an established solid waste management system in the capital city of Monrovia, other cities and towns across the country are experiencing rapid population growth with the associated potential for increased waste generation in the absence of an organized waste management program. The establishment of a few waste collection centers in Monrovia and a centralized disposal site in Whein Town may be hailed as success stories. However, the backlog of garbage at those centers speaks to the challenges affecting the sector. Also, there are issues of inadequate and improper logistics/equipment, coupled with an acute shortage of manpower/resources that undermine the efficient and effective management of the sector.

This assessment shows that the National Environmental Policy of Liberia, which is currently under review, is the bedrock for establishment of the EPA. A careful review of the NEP shows that its policy actions and recommendations are majorly captured in the waste targets (mitigation and adaptation) outlined in Liberia's Nationally Determined Contributions (NDC). However, the study establishes the lack of a national waste policy, which underpins the myriad of challenges that riddle the sector.

Keywords: Climate change, National Environmental Policy of Liberia, Sustainable Waste; Sustainable Development, ICAT Methodology, Liberia

Introduction

Liberia's revised Nationally Determined Contributions (NDC) was completed and submitted to the UNFCCC in September 2021 with the purpose of guiding actions and policymaking for the country to reduce its GHG emissions and adapt to climate change. The NDC outlines a series of mitigation targets, mitigation actions and policies measures, as well as adaptation targets that align with the Liberia's development policy plan, the Pro-Poor Agenda for Prosperity and Development (1), and the global Sustainable Development Goals (SDGs). In its NDC, Liberia added specific targets as a list of mitigation actions for nine sectors, including the waste sector. The overall target is to reduce GHG emissions from the waste sector by 7.6% below business-as-usual (BAU) levels by 2030. Mitigation actions towards achieving this target, among others, include the implementation of landfill gas recovery systems and developing small-scale composting of market waste.

After the conclusion of the NDC update in 2021, the country now moves towards implementation of the actions and measures that underpin the NDC target. An important aspect of this process will be to ensure that the current policy environment is sufficiently supportive in empowering the relevant agencies in the implementation of the NDC actions and measures. Assessing to which degree NDC actions are backed by current policies will be an important step when considering where policies might need to be recalibrated or new policies to be introduced. This report aims at supporting this process by assessing the most relevant policies in the waste sector for their performance regarding mitigating greenhouse gas emissions as well as supporting other development priorities.

As Liberia does not have a stand-alone waste policy, the assessment focuses on the National Environmental Policy of the Republic of Liberia (2002) (2) because this is the most relevant policy that provides elements for governing the sector.

The assessment takes a holistic approach by looking at what degree the National Environment Policy supports NDC implementation, as well as analyzing the policy's main achievements. In particular, the report also provides an assessment as to what degree the implementation of the waste-related actions and measures in the updated NDC would also bring additional SDG benefits above those already achieved through the implementation of the National Environmental Policy (NEP).

As such, this policy assessment analysis of the National Environmental Policy is geared to provide the EPA and relevant stakeholders understanding on how the above-mentioned mitigation actions proposed in the NDC contribute to the Sustainable Development Goals (SDG) beyond those of the assessed environmental policy. The analysis contained in this report should also support efforts for better communicating the benefits of these actions beyond their immediate GHG reduction impact.

Section I. Methodological Approach

In line with the ICAT Methodology, the Consultant utilized an exploratory ex-post policy assessment approach to gauge the impact of policies and actions in the waste sector. The process encompassed stakeholder meetings with policy makers from relevant ministries and agencies in government dealing with waste issues in Liberia. These included the Environmental Protection Agency (EPA), Monrovia City Corporation, Paynesville City Corporation, the Ministries of Finance and Development Planning, and Internal Affairs. Meetings were also held with stakeholders from the private sector dealing with waste management impacts on climate change.

The Consultant also developed a set of structured semi-open questionnaires to gauge responses from stakeholders. Prior to the submission of these questionnaires, the Consultant held meetings with respondents to explain in detail the objectives of the survey.

Feedback from the respondents who answered the Questionnaires, as well as recordings from stakeholder interviews, formed the basis for a qualitative assessment of stakeholders' views on how the impacts of GHG emissions from the waste sector could be mitigated. The interviews and recordings provided an appreciation of stakeholders' understanding of the National Environmental Policy and other relevant documents dealing with the sector.

The first section of the assessment covers general knowledge gathered from an extensive desk review of various literature dealing the waste management sector of Liberia, considering the revised NDC and other relevant documents mentioned above.

The policy assessment review further speaks to the methodology employed to carry out the study. Findings from the qualitative approaches utilized during the study are incorporated in clearly-mapped out analysis followed by recommendations and conclusion.

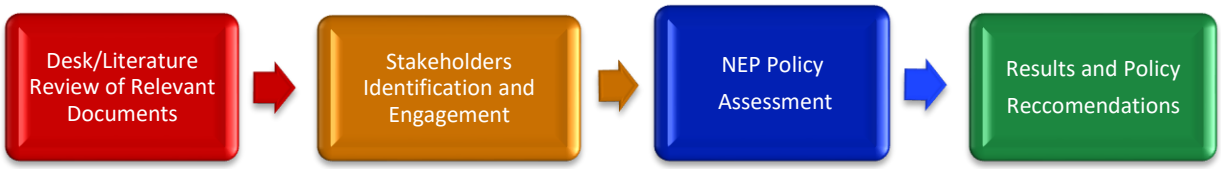

Figure 1: Workflow used to develop the study

Section II. NDC targets, actions and measures

2.1. Nationally Determined Contributions to the waste sector

Nationally Determined Contributions (NDC) are key to the actualization of the Paris Agreement and Liberia's achievement of the long-term climate goals. The NDCs outline how governments can reduce national emissions and adapt to the impacts of climate change. Domestic climate mitigation actions undertaken by countries will determine whether the world achieves the long-term goals of the Paris Agreement and reaches global peaking of greenhouse gas (GHG) emissions as soon as possible.

The NDC implementation and long-term emission reduction strategies have an important role to play in transforming the waste sector, especially in developing countries, where emissions are projected to soar the most. Therefore, transformative, pragmatic and ambitious actions in the waste sector, undertaken in support of climate objectives, should also enable prosperity and economic growth to support of the Sustainable Development Goals (SDGs).

The government of Liberia has committed to implementation of the 2021 revised NDC targets, actions and measures in the waste sector. In so doing, Liberia in 2021 adopted a number of policies, to include the National Adaption Plan (NAP), the National Adaptation Programme of Action (NAPA), and the First Adaptation Communication (AdCom) to the United Nations Framework Convention on Climate Change (UNFCCC) (3). All these NDC-cushioned policies are geared towards implementation of the following waste sector targets, measures and actions:

- Reduce GHG emissions from the waste sector by 7.6% below BAU levels by 2030;
- Reduce emissions by 25.63 Gg CO2e per year by supporting the implementation of a landfill gas recovery system on Whein Town Landfill by 2022;
- Reduce emissions by 25.63 Gg CO2e per year by supporting the implementation of a landfill gas recovery system on Cheesemanburg Landfill by 2025; and,
- Reduce emissions by 0.84 Gg CO2e per year by supporting the development of small-scale composting of market waste with a production of 500 t/year each by 2025.

In terms of the waste sector mitigation actions and policy measures, Liberia has agreed to the following additional actions and measures:

- Strengthen the institutional and legal situation at national and municipal levels by 2025;
- Strengthen operational and financial management capacities at the community and institutional level for integrated waste management by 2025;
- Provide public participation and capacity building through education and awareness raising programs to enhance awareness on proper waste management practice by 2025;
- Strengthen private sector participation by 2023;
- Conduct a feasibility study for biogas and power generation once the landfill recovery system is in place and stable.

As it relates to adaptation targets, Liberia has committed to the following:

- Provide technical/logistical support for improved coverage of waste collection, including the method of waste collection that lead to:
    - Improved waste sorting mechanism;
    - Improved system that incentivizes reuse recycling as well as composting and/or bio-digestion.

As depicted in Table 1 below, the NDC set specific mitigation targets, actions and policy measures for the waste sector. The table also presents an assessment of the coverage level of those targets in the NEP and their implementation status.

Table 1: Degree to which the NDC targets, actions, and measures are covered by the NEP

Measure	Degree of NDC coverage Fully/Partially/Not covered	Assessment
Strengthen the institutional and legal situation for waste management at national and municipal levels by 2025.	Partially covered	The Government of Liberia, in fulfilment of its NDC commitments, must strengthen institutional and legal situation at the national and municipal levels through the allocation of limited resources from budgetary support to relevant institutions dealing with the waste sector, and the promulgation of key legislations
Strengthen operational and financial management capacities at the community and institutional level for integrated waste management by 2025.	Partially covered	Although international development partners are working with the EPA and municipal bodies (MCC, PCC, etc) as well service providers to strengthen operational and financial management capacities at community and institutional level for integrated waste management, such support must be increased if this NDC measure must meet the 2025 milestone
Public participation and capacity building through education and awareness raising programs to enhance awareness on proper waste management practice by 2025 (Link to Health sector).	Fully covered	The Government of Liberia, in collaboration with development partners, has created public awareness and education programs targeting the waste sector, through radio and web portals **(4).** The establishment of Environmental Studies Master's Degree Programs at the University of Liberia, supported by the UNDP's NAP project, is also supportive of increasing public participation, capacity building and education. However, more efforts must be exerted to integrate these initiatives at the community level given the high percentage of illiteracy in vulnerable communities
Strengthen private sector participation by 2023	Not covered	Within the NDC policy, Government has done little to strengthen private sector participation, as mentioned by majority of private sector actors during stakeholder engagements. In this regard, there is a need for government to formulate a waste management policy that makes waste disposal fees mandatory at the primary/household level to incentivize waste management service providers

Reduce emissions by 25.63 Gg CO_2e per year by supporting the implementation of a landfill gas recovery system on Whein Town Landfill by 2022	Partially covered	This NDC measure does not meet the milestone as the Whein Town landfill site is overwhelmed and is expected to soon be decommissioned
Reduce emissions by 25.63 Gg CO_2e per year by supporting the implementation of a landfill gas recovery system on Cheesemanburg Landfill by 2025	Not covered	Ground-breaking for the proposed Cheesemanburg landfill site has not even commenced, making implementation of this policy measure impracticable to meet the 2025 benchmark
Once the landfill gas recovery system is in place and stable, a feasibility study would be done for its use for biogas and power generation	Not covered	Operationalization of the landfill gas recovery system as addressed in the NDC is not yet implemented
Reduce emissions by 0.84 Gg CO_2e per year by supporting the development of small-scale composting of market waste with a production of 500 t/year each by 2025.	Partially covered	The EPA and development partners are working with SMEs in the development of small-scale composting of market waste. However, more support needs to be given to accelerate this measure and meet the 2025 implementation benchmark
Conduct a feasibility study for biogas and power generation once the landfill recovery system is in place and stable	Not covered	Timely implementation of this policy measure, which is contingent on the establishment of landfill recovery system, will face serious challenges since the Whein Town Landfill will soon be decommissioned, to be replaced by the Cheesemanburg Landfill site which construction has not even commenced
Provide technical/logistical support for improved coverage of waste collection, including the method of waste collection, that lead to improved waste sorting mechanism; improved system that incentivizes reuse, recycle as well as composting and/or bio-digestion	Partially covered	For this NDC measure, the MCC and PCC, as well as lead agencies involved in waste collection, are being supported by international development partners. The EPA is also partnering their SMEs and development partners to incentivize reuse, recycle as well composting and/or bio-digestion. However, the Government of Liberia must provide increased budgetary support for waste management systems to be more effective and efficient

2.2 Policy environment for the Waste Sector

There are three key policy documents covering the waste sector. While the Act establishing the Environmental Protection Agency (EPA) and the Act adopting the Environment Protection and Management Law of the Republic of Liberia are important to this policy assessment, the study primarily focuses on the Act adopting the National Environmental Policy of the Republic of Liberia primarily because it covers the climate change mitigation targets, actions and policy measures captured in Liberia's revised NDC. It is also interesting to note that the NEP alone covers a full sub-chapter on waste management and sanitation; while the Act creating the EPA basically classifies waste management as a cross-cutting issue, and the Act adopting the Environmental Protection and Management Law of the Republic of Liberia basically specifies the role of the EPA regarding waste

management in Liberia.

2.3 Legal Framework

Liberia currently does not have an overarching legal framework for solid waste management, and the sector is not governed by a stand-alone policy or strategy. The three most authoritative documents for the sector are the Act creating the Environmental Protection Agency of Liberia (EPA), the Act Adopting the Environment Protection and Management Law of the Republic of Liberia, as well as the Act Adopting the National Environmental Policy of the Republic of Liberia (see Table 2 below).

Table 2: Legal documents sector supporting the NDC targets, actions and measures in the waste

Act	Provisions targeting the waste sector
Act Creating the EPA (5)	The Act which deals with many environmental and cross-cutting issues only has a few provisions on waste. For example, the Act in section 43.1 mandates the EPA to establish standards, guidelines and procedures for solid waste management with relevant line ministries (see page 34 of the policy)
Act adopting the Environment Protection and Management Law of the Republic of Liberia (5)	Within the entire 61-page policy document, only Part V, which deals with pollution control and licensing, speaks of the role that the EPA plays in controlling pollution and licensing procedures, of which waste management is barely addressed. The Act basically specifies the role of the EPA regarding waste management in Liberia.
Act adopting the National Environment Policy (NEP) of the Republic of Liberia (5)	The 38-page policy document provides clear policy directions, with a full sub-chapter focusing on waste management and sanitation. That act succinctly captures these issues in section 5.7 that deals with waste management and the attendant solutions. Moreover, the Act covers the mitigation targets, actions and policy measures captured in the revised NDC

While the Act creating the EPA deals with the institutional aspect of the EPA and its relations to other institutions, the Environment Protection and Management Law and the National Environmental of the Republic of Liberia address the most substantive issues related to the waste sector. The Environmental Protection and Management Law specifies the EPA role as the coordinating and monitoring body responsible for setting policies and guidelines on solid waste management. Section 39 on Solid Waste Management Standards provides guidelines for the EPA in consultation with partners, to develop and publish national guidelines for solid waste management. Such guidelines include strategies and incentives for reducing, recycling and reusing waste. Other relevant sections to the solid waste sector, such as Section 62 and Section 64, reflect on the Prohibition of Solid Waste Pollution, and the Application for Solid and Hazardous Waste Disposal License, respectively [1].

[1] See The Environmental Protection and Management Law, Sections 39, page 33, Section 62, page 42, Section 64, page 42. And, finally, for regarding the Application for Solid and Hazardous Waste Disposal Licences, see Section 58, page 40

2.4 Institutional Framework

The following institutions have legal mandates over solid waste management in the country in accordance with the NEP:

- Ministry of Internal Affairs (MIA) (6): The MIA, which is the lead authority when it comes to solid waste management, mobilizes and ensures participation of municipal and local government entities in the sector;
- Municipal and Local Government Entities: Municipal and local government agencies are involved in street sweeping, collection and disposal of solid waste and beautification, among other waste and sanitation activities;
- Environmental Protection Agency (EPA) (5): The EPA has oversight of environment issues. It coordinates, monitors, supervises and consults with relevant stakeholders on all activities in the protection of the environment and sustainable use of natural resources;
- Ministry of Health (MOH) (7): The MOH is mandated to conduct sanitation inspection and to ensure compliance with public health laws, articles, guidelines, etc. Preventive health, occupational health and health waste management are among its key mandates.[2]
- Ministry of Mines and Energy (MME) (8): The MME provides guidance for geotechnical investigations of engineered landfill sites, oversees the development and management of natural resources, particularly the water resources central to water and sanitation sector and to conduct scientific and technical investigations required for environmental assessments.
- Ministry of Public Works (MPW) (9): The MPW has mandate over the development and construction of solid waste management infrastructure such as transfer stations and engineered landfill disposal sites.

The private sector basically comprises Community Based Enterprises (CBEs) involved in primary water collection; and Small Medium Enterprises (SMEs) (10) who transport waste from designated collection sites to the only land fill site in Whein Town. Most of these private companies are involved in composting, waste material recycling and reuse into biofuel and other alternative energy forms (11).

[2] Liberia has a finalized draft Public Health Act (2019) that is yet to be enacted into law. Chapter 47, pages 240-241 clearly outline healthcare waste issues and the penalties accrued thereof

Section III: Policy Impact and Assessment

3.1 Synopsis of the NEP

The NEP is a policy document which falls in the categories of setting standards and implementing regulations and infrastructure programmes. As a lead environmental policy document that predates almost all other environmental policies and laws, the thirty-eight-page policy document is specifically crafted to ensure Liberia's commitment to ensuring heightened progress in national development, while taking into consideration protection of the environment.

Drafted in 2002 during the twilight era of the Liberian civil conflict, the NEP covers the entire demographics of Liberia, including women, children, students, the elderly, disabled, and people living with HIV, among others. The policy is developed to ensure improvement of the physical environment, improve the quality of life, and of the people, improve the economic and social living conditions of the entire citizenry, present and future generations, as well as ensure reconciliation and coordination between economic development and growth with the sustainable management of the natural resources.

The policy further maintains the protection of ecosystems and ecological processes essential for the functioning of the biosphere; the ensuring of sound management of the natural resources and the environment. The NEP further covers adequate protection of human, flora, fauna, their biological communities and habitats against harmful impacts. Further, it sets out the requirement to preserve biological diversity as well the integration of environmental considerations in sector and socio-economic planning at all levels, throughout the nation. Finally, the NEP calls for seeking common solutions to environmental problems at regional and international levels.

Figure 2: MCC Waste Sector Focal Sennay Carlor and Mr. Paasewe with Whein Town Community Monitors at the Whein Town Landfill site, Paynesville City. Photo: ICAT/EPA @2022

3.2 Coverage of the Policy and corresponding NDC Implementation Status

During the assessment of the National Environment Policy, it was discovered that mainly Section 5.7 (2) (Waste Management and Sanitation) provides cogent strategic policy direction and measures to tackle GHG emissions issues outlined in the NDC as indicated below, namely to:

1. Conduct a comprehensive study of the current waste management system and assess the development needs;
2. Review existing policies/laws/regulations for solid waste and affluent management under relevant agencies;
3. Identify designate and establish land fill sites for all urban areas;
4. Set up a joint monitoring and collaborating units between agencies and institutions responsible for waste management programs and involve local communities;
5. Design and instruct a waste management sensitization program at various levels, especially among women and the youth;
6. Encourage reduction of waste generation, waste separation at source and recycling (industrial/urban);
7. Ensure proper drainage in all urban areas;
8. Encourage and stimulate community-based initiatives for clean environment;
9. Re-enforce waste disposal zoning and the payment rates for solid waste management and effluent disposal; and,
10. Empower local communities to the disposal of wastes.

Because few of the policy measures outlined in Section 5.7 of the NEP are currently being implemented by the EPA, in collaboration with relevant stakeholders, waste management is facing serious setbacks in Liberia. This is especially the case in Monrovia where there is a semblance of organization. However, the country lacks a national waste management policy, as well as the financial resources necessary to deal with the overwhelming solid waste issues. All the stakeholders interviewed during this policy assessment were unanimous in their calls for the enactment of a national solid waste management law, and the provision of financial and technical support from government and Liberia's international development partners to stakeholders involved in waste management – particularly the private sector, as shown in Table 3 below.

Table 3: Table 3: Degree to which the NEP targets, actions, and measures lead to decarbonization

NEP Measure	Degree of coverage by NEP Fully/Partially/Not covered	Assessment
Conduct a comprehensive study of the current waste management system and assess the development needs	Partially covered	This NDC measure falls directly in line with the NEP objective of "reviewing existing policies/laws/regulations for solid waste and effluent management under relevant agencies". In this regard,

		the government of Liberia, to fulfil its NDC commitment, must strengthen the institutional and legal framework at national and municipal levels through the allocation of resources from budgetary support to capacity building with relevant institutions dealing with the waste sector, and the promulgation of key legislations. However, the missing link continues to be the lack of a Waste Management Law that guides the waste sector.
Review existing policies/laws/regulations for solid waste and effluent management under relevant agencies	Partially covered	Supporting this specific NDC measure, the NEP also calls for the "conduct a comprehensive study of the current waste management system and assess the development needs." Herein, international development partners are working with the EPA and municipal bodies (MCC, PCC, etc) and service providers to strengthen operational and financial management capacities at community and institutional level for integrated waste management. However, more support must be targeted towards implementation of this NDC measure if it is going to meet the 2025 milestone.
Identify designate and establish land fill sites for all urban areas	Fully covered	Within the framework of one of the NEP objectives which calls for "designing and instructing a waste management sensitization program at various levels, especially among women and the youth" this specific NDC measure is underway under the supervision of the EPA, municipalities, and waste management service providers.
Set up a joint monitoring and collaborating unit between agencies and institutions responsible for waste management programs and involve the local communities	Partially covered	The Government of Liberia has established an inter-agency coordination system, headed by the EPA, where meetings are held periodically on a rotational basis among agencies. However, the frequency of such meetings must be increased, while the need to include other relevant agencies involved in waste management (especially the private sector) must be highly considered
Design and instruct a waste management sensitization program at various levels, especially among women and the youth	Not covered	This NDC measure is in line with the NEP policy measure that calls for the identification, designation and establishment of land fill sites for all urban areas. Currently, the Whein Town is overwhelmed and of operation, while ground-breaking for the proposed Cheesemanburg landfill site has not even commenced.
Encourage reduction of waste generation, waste separation at source and recycling (industrial/urban)	Not covered	Operationalization of the landfill gas recovering system as addressed in the NEP is not yet implemented
Ensure proper drainage facilities in all urban areas	Partially covered	The MCC and PCC are actively involved in ensuring proper drainage facilities in Monrovia and Paynesville Cities, but even these two primary urban habitats remain challenged when it comes to maintaining proper drainages, as community dwellers regularly used drainages in these cities as waste disposal facilities. Government must enforce waste management ordinances, and ensure the passage of the Waste Management Policy into law, which will

		coverage for entire country
Encourage and stimulate community-based initiatives for clean environment	Partially covered	The Government of Liberia, through the EPA and other line ministries and agencies, is encouraging and stimulating community-based initiatives for clean environment by undertaking projects that involve communities in taking care of their environment **(4)**
Re-enforce waste disposal zoning and the payment rates for solid waste management and effluent disposal	Partially covered	Although waste disposal zoning exists in Monrovia and Paynesville, challenges include the lack of a policy that includes payment rates for waste management and disposal

3.3 NEP assessment results from stakeholder consultations

This assessment of the National Environmental Policy (NEP) has found that the waste management sector currently faces significant challenges. This is primarily because of the lack of a National Solid Waste Management Policy that will serve as policy tool for the waste sector. Although the Ministry of Internal Affairs in 2015 finalized a Draft National Solid Waste Management Policy, it is yet to be enacted into law, basically due to the lack of political will on the part of Government **(6)**. Moreover, the waste sector remains operationally challenged in terms of the lack of implementation of such important mitigation targets as the establishment of a landfill leachate collection system planned with enough capacity for heavy rainfall events, and the establishment of an organic waste diversion system from landfill through segregated organic collection.

Based on feedback received from the policy assessment respondents, through direct interviews and questionnaires, the following information provides valuable insight for a standalone waste management policy direction.

In terms of how stakeholders and respondents perceived the NEP Policy direction as it relates to successful implementation of the NDC targets, actions and measures, it was generally observed that the NEP must be strengthened by the enactment into law of a waste management policy. Observations from the policy assessment showed that many of the waste sector challenges could be resolved by having a standardized Waste Management Policy enacted into law.

The respondents were also of the opinion that for the NEP interventions to be achieved through the NDC implementation targets, measures and actions, the proposed Waste Management Policy must be implemented throughout the entire country. To achieve this, it will be necessary, to identify various stakeholders and assign their responsibilities, thus avoiding any overlapping of responsibilities currently existing among waste management sectorial actors.

In this way, the stakeholders agreed that the new policy must provide clear guidelines that will lead to the establishment of funding structures on how funds required for the management of waste should (and could) be generated and managed at the various levels. In addition to donor funding, the stakeholders and respondents agreed that this intervention must include a specific allotment from the central government via the national budget for waste management in the various cities. This would enable the different municipal authorities, for example, to deal with a framework where

manufacturers, importers and retailers are required to support product return, collection and recovery systems.

When it came to the policy assessment that delved into the linkages between the global Sustainable Development Goals (SDGs) and the NEP, respondents across the board generally found all 17 SDGs relevant to Liberia's waste sector. However, the respondents were specifically keen on Liberia focusing on the attainment of SDG 11 (sustainable cities and communities) whose target 11.6 focuses on reducing the adverse per capita environmental impact of cities, relative to enhancing air quality and dealing with other municipal and waste management issues. Noteworthy also of importance is the stakeholders' consensus on SDG 12 (responsible consumption and production) which targets environmentally sound management of all waste through prevention, reduction, recycling and reuse (targets 12.4 and 12.5) and reduction of food waste (target 12.3).

When it came to whether the NEP is aligned with the NDC in terms of reducing GHG emissions by 7.6% below BAU levels by 2030, the respondents overwhelmingly said "No". In this regard, the respondents and waste management focus persons generally said the Government of Liberia might not meet the expected target of establishing a landfill leachate collection system planned with enough capacity for heavy rainfall events, as well as diverting organic waste from landfill through segregated organic collection within the specified NDC implementation schedule. The respondents specifically cited the absence of a substitute landfill site to the Whein Town site that is set to be decommissioned shortly as a key element in obstructing this NDC target.

With regards to the establishment of a Monitoring, Reporting and Verification (MRV) system, the stakeholders and respondents called for stricter MRV measures to ensure that the waste sector becomes efficient and effective. The establishment of a general MRV workstation, and the establishment of desk offices at relevant government agencies and ministries targeting waste management impacts were MRV coordination concerns highlighted during the NEP assessment processes.

3.4 National development targets of the NEP and impacts on SDGs

Waste management globally is key to the attainment of appreciable improvements in the Human Development Index (HDI) in any country. As the issue of waste is inextricably linked to health, sanitation, environmental, climate impact, as well as the general well-being of human and livestock populations, it is equally important that national governments develop policy solutions to mitigate the hazardous effects of waste that accelerate climate change due to carbonization.

The waste sector faces serious challenges. Therefore, any new policy that targets waste, must be reflective of the seventeen targets of the Sustainable Development Goals (SDGs).

Most people have no regard for the environment as they continue to throw plastics in drainages to be consumed by livestock. Chemicals seeping from immense quantities of dumped waste accelerate the poisoning of groundwater, streams and rivers and lead to the breeding of mosquitoes (SDG6), thus undermining life on land (SDG 15) and marine life in water (SDG 14).

The improper management of waste has led to air pollution, as people have now reverted to the burning of waste because the Government of Liberia, through its municipal authorities, has failed to properly institute policies and measures that efficiently and effectively manage waste from the primary source (households) through the mandatory payment of fees to dispose wastes. Exposure to

open dump sites and waste burning by people have direct and indirect impact on health (SDG3), thus culminating to the adverse effects of climate change.

Importantly, the attainment of livelihood opportunities must incorporate gender, as gender is key to attaining the well-defined waste management policy for Liberia. Through the EPA intervention of livelihood projects in improved communities like West Point, the women and youth are becoming increasingly involved in independent earning opportunities (SDG 5) that protect their families from sicknesses borne from open dumping, defecation and burning of waste.

On the economic front, although Waste Management should generally incorporate SDG 1 which aims for "No Poverty", however, only a small portion of urban population make their living from recovering recyclable materials from waste (SDG 8) in Liberia (12). Of course, some of these informal waste champions who were observed at Whein Town and the two designated waste collection centers in Montserrado County, provide a valuable and often no-cost service that amplifies their role in urban sanitation and resource efficiency (SDG 10). Fair wages and basic employment rights for all waste workers must therefore be prioritized to economically empower service providers in the sector. As seen in Table 4 below, the correlation between waste management and the seventeen sustainable development goals is key to a successful implementation of the NDC targets, actions and measures aimed at mitigating the effects of climate change and developing resilient structures.

Table 4: Additional SDG impacts/benefits to be achieved from implementing Waste Sector's NDC actions and measures

NDC Measures	SDG Benefits	Target
Strengthening of the institutional and legal situation at national and municipal levels by 2025.	**SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable cities and communities for all) **SDG 17**: Strengthen the means of implementation and revitalize the global partnership for sustainable development	**Target 9.1** **Target 11.2** **Target 11.6** **Target 17.19**
Strengthening of operational and financial management capacities at the community and institutional level for integrated waste management by 2025.	**Goal 1**: End poverty in all its forms everywhere (Increased jobs in waste collection and recycling) **SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable cities and communities for all) **SDG 13**: Take urgent action to combat climate change and its impacts Climate Change Adaptation & Mitigation)	**Target 1.1** **Target 9.1** **Target 11.2** **Target 11.6** **Target 13.1** **Target 13.2**
Public participation and capacity building through education and awareness raising programs to enhance awareness on	**SDG 4**: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Increased environmental and health training). By 2030, substantially increase the number of youth and adults who have relevant skill, including technical and vocation skills, for employment, decent jobs and entrepreneurship **SDG 9**: Build resilient infrastructure, promote inclusive and	**Target 4.4** **Target 9.1**

proper waste management practice by 2025 (Link to Health sector).	sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable (urban) transport for all) (Sustainable cities) **SDG 13**: Take urgent action to combat climate change and its impacts Climate Change Adaptation & Mitigation)	 **Target 11.2** **Target 11.6** **Target 13.1** **Target 13.2**
Strengthen private sector participation by 2023	**SDG 1**: End poverty in all its forms everywhere (Increased jobs in waste collection and recycling) **SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable cities and communities for all) **SDG 13**: Take urgent action to combat climate change and its impacts Climate Change Adaptation & Mitigation)	**Target 1.1** **Target 9.1** **Target 11.2** **Target 11.6** **Target 13.1** **Target 13.2**
Reduce emissions by 25.63 Gg CO2e per year by supporting the implementation of a landfill gas recovery system on Whein Town Landfill by 2022	**SDG 3**: Ensure healthy lives and promote well-being for all at all ages (less disease caused by open dumping and burning of waste) **SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable cities and communities for all) **SDG 13**: Take urgent action to combat climate change and its impacts Climate Change Adaptation & Mitigation)	**Target 3.6** **Target 3.9** **Target 9.1** **Target 11.2** **Target 11.6:** **Target 13.1:** **Target 13.2:**
Reduce emissions by 25.63 Gg CO2e per year by supporting the implementation of a landfill gas recovery system on Cheesemanburg Landfill by 2025	**Goal 8**: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all **SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable (urban) transport for all) (Sustainable cities)	**Target 8.5** **Target 8.a** **Target 9.1** **Target 11.2** **Target 11.6**
Once the landfill gas recovery system is in place and stable, a feasibility study would be done for its use for biogas and power generation	**SDG 7**: Ensure access to affordable, dependable, sustainable, and modern energy for all **SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable (urban) transport for all) (Sustainable cities)	**Target 7.3** **Target 9.1** **Target 11.2** **Target 11.6:**

	SDG 13: Take urgent action to combat climate change and its impacts Climate Change Adaptation & Mitigation)	**Target 13.1:** **Target 13.2:**
Reduce emissions by 0.84 Gg CO2e per year by supporting the development of small-scale composting of market waste with a production of 500 t/year each by 2025.	**SDG 3**: Good health and wellbeing (Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination) **SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure). **SDG 11**: Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable cities and communities for all) **SDG 13**: Reduced methane & CO2 from dumping and burning (take urgent action to combat climate change and its impacts Climate Change Adaptation & Mitigation)	**Target 3.6** **Target 3.9** **Target 9.1** **Target 11.6:** **Target 13.1:** **Target 13.2:**
Conduct a feasibility study for biogas and power generation once the landfill recovery system is in place and stable	**SDG 7**: Bioenergy opportunities from processing organic waste **SDG 17**: Ensure access to affordable, reliable, sustainable and modern energy for all (bioenergy from organic waste)	**Target 7.2** **Target 17.9** **Target 17.14** **Target 17.17**
Provide technical/logistical support for improved coverage of waste collection, including the method of waste collection, that lead to improved waste sorting mechanism; improved system that incentivizes reuse, recycle as well as composting and/or bio-digestion	**SDG 7**: Bioenergy opportunities from processing organic waste **SDG 9**: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure) **SDG 17**: Ensure access to affordable, reliable, sustainable and modern energy for all (bioenergy from organic waste)	**Target 7.1** **Target 9.1** **Target 17.14** **Target 17.17** **Target 7.2** **Target 17.9**

Figure 3: How Waste Management Impacts Sustainable Development Goals (Wasteaid.org, 2016)

Figure 3 captures the relationship between a successful waste management system and the attainment of the global Sustainable Development Goals. As indicated above and in tables below, implementation of the NDC waste sector mitigation targets, actions and measures will invariably positively impact decarbonization and reduce Green House Gas emissions in the waste sector, while enhancing cleaner cities, creating employment and training opportunities for the citizens, and reducing pollution in land and water.

Table 5: Direct waste targets of the Global Sustainable Development Goals (SDGs)

Direct Goal	Direct Target
Goal 6: Ensure availability and sustainable management of water and sanitation for all (clean and safe water)	**Target 6.3:** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
Goal 8: Promote sustained, inclusive and sustained economic growth, full and productive employment and decent work for all (More jobs in waste management and recycling)	**Target 8.6** By 2030, substantially reduce the proportion of youth not in employment, education or training
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable (cleaner habitats)	**Target 11:6** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
Goal 13: Take urgent action to combat climate change and its impact (reduced methane and CO2 from dumping and burning)	**Target 13.1** Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	**Target 14.1:** By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forest, combat desertification and halt and reverse land degradation and halt biodiversity loss	**Target 15.1** By 2030, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forest, wetlands, mountains and dry lands, in line with obligations under international agreements
Indirect Goal	**Indirect Target**
Goal 1: End poverty in all its forms everywhere (Increased jobs in waste collection and recycling)	**Target 1.1:** By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture (reduced food waste, more use of organic waste)	**Target 2.1:** By 2030, end hunger and ensure access by all people, the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
Goal 3: Ensure healthy lives and promote well-being for all at all ages (Air pollution)	**Target 3.9:** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Increased environmental and health training)	**Target 4.4:** By 2030, substantially increase the number of youth and adults who have relevant skill, including technical and vocation skills, for employment, decent jobs and entrepreneurship

Goal 5: Achieve gender equality and empower all women and girls (Increased gender mainstreaming in waste sector)	**Target 5.6c:** Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all (bioenergy from organic waste)	**Target 7.2:** By 2030, increase the share of renewable energy in the global energy mix
Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (Increased employment in waste management and recycling)	**Target 8.2:** Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labor-intensive sectors
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Increased recycling industries)	**Target 9.4:** By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries acting in accordance with their respective capabilities
Goal 10: Reduce inequality within and among countries	**Target 10.1:** By 2030, progressively achieve and sustain income growth of the bottom 40 percent of the population at a rate higher than the national average
Goal 12: Ensure sustainable consumption and production patterns (Food loss and waste)	**Target 12.3:** By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

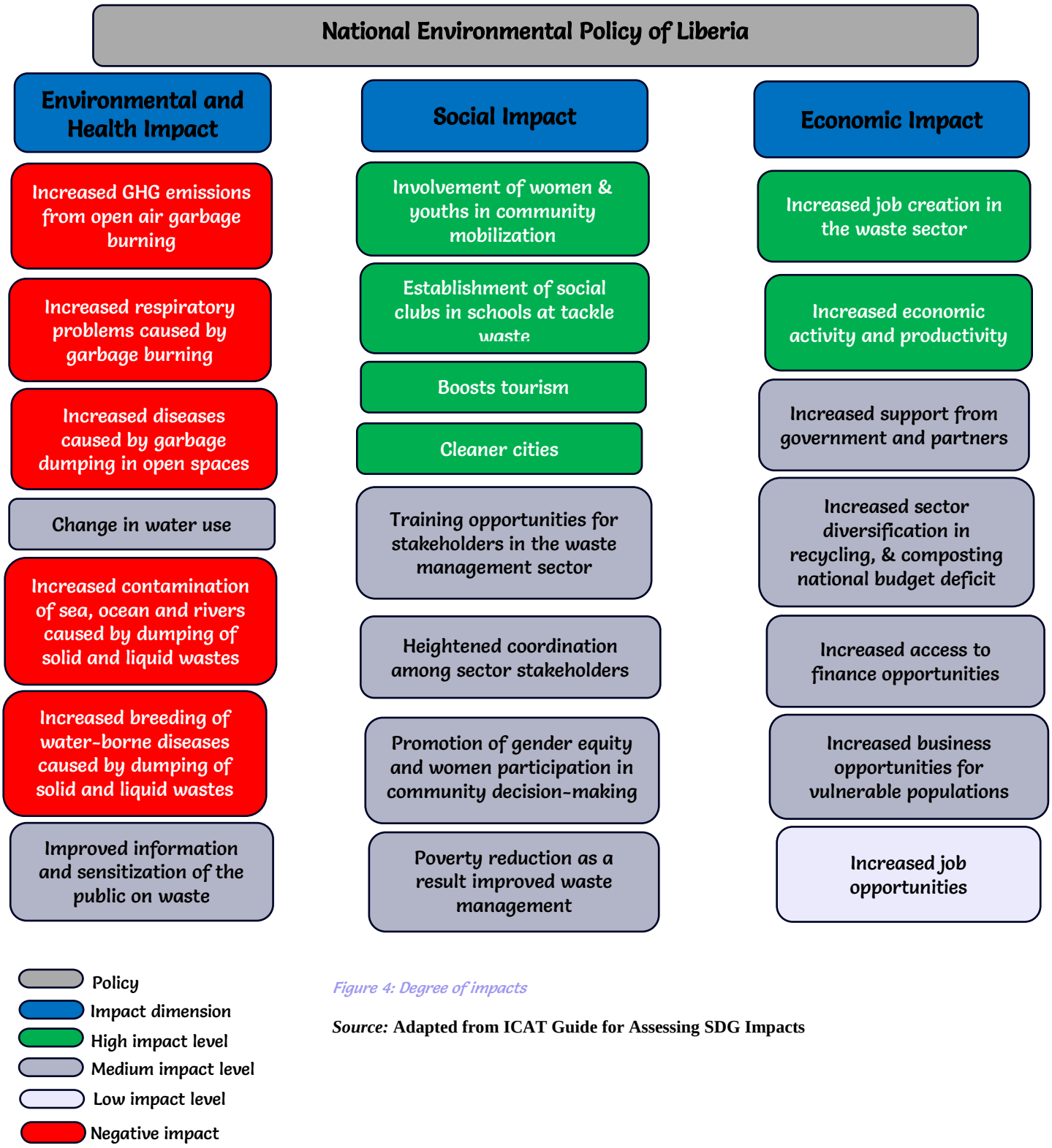

Figure 4: Degree of impacts

Source: **Adapted from ICAT Guide for Assessing SDG Impacts**

Table 6: Nature of specific impacts of the National Environmental Policy of the Republic of Liberia

Dimension	Impact category (Targeted SDGs)	Specific impacts identified	Nature of impact "Positive" "Moderate" "Negative"	Methods/ sources used
Environmental and Health	Climate change mitigation	Increased GHG emissions from open air burning of garbage	Negative	Stakeholder consultation
	Disease	Increased outbreak of malaria and water-borne diseases defecating and dumping of water in waterways	Negative	Stakeholder consultation
	Biodiversity and ecosystems protection	Destruction of ecosystem, loss of biodiversity and reduction in soil quality	Negative	Stakeholder consultation
	Water use change	Contamination of oceans, seas and rivers due to dumping of waste	Negative	Stakeholder consultation
	Waste generation	Overwhelming of waste due to unregulated dumping without proper disposal regimes	Negative	Stakeholder consultation
	Land use change	The overwhelming of cities with solid and liquid wastes with no defined policy on disposal	Negative	Stakeholder consultation
	Mortality rate of vulnerable populations	More deaths among vulnerable populations due to disease outbreaks precipitated by bad waste management	Negative	Stakeholder consultation
	Respiratory illness and death (SDG 3)	Prevalence of respiratory illnesses and other health hazards from waste emissions	Negative	Stakeholder consultation
	Waste management information and sensitization	More citizens becoming aware of the risks of contamination of the environment through waste	Positive	Stakeholder consultation
Social	Community participation and empowerment	Improved community participation in waste management activities	Positive	Stakeholder consultation
	Tourism boost	Increased tourism pull-up for Liberia, thus accelerating growth and development due to clean environment	Positive	Stakeholder consultation
	Gender inclusion	Increased incorporation of women into waste management programs	Positive	Stakeholder consultation
	Training	Increased education for stakeholders within the sector	Positive	Stakeholder consultation
	Poverty reduction	Improvement in citizens' social upward mobility	Moderate	Stakeholder consultation
Economic	Jobs	Increased job creation in the waste sector	Positive	Stakeholder consultation

	Improved systems	Improved operations especially in the quality of system conditions and maintenance of infrastructure	Moderate	Stakeholder consultation
	Jobs	Increased job creation in the transport sector	Positive	Stakeholder consultation
	Revenue	Reduced annual national budget deficit;	Positive	Stakeholder consultation
		Increased annual national revenue	Positive	Stakeholder consultation
	Income	Increased household disposable income due to reduced transport fare and reduced prices of goods and services	Positive	Stakeholder consultation
	Wages	Increased wages for workers in the waste sector	Moderate	Stakeholder consultation
	New business opportunities	Creation of new business opportunities in the waste sector	Positive	Stakeholder consultation
	Economic activity and productivity	Increased economic activity and productivity	Positive	Stakeholder consultation

***Source*: Adapted from WRI (2014) presented in the ICAT Guide for Assessing Sustainable Development Impacts**

Table 6 presents the nature of specific impacts and corresponding impact category captured by the NEP. The analysis drawn from the assessment reveals that except for the health and environment indicator, which was negative for all the eight parameters, social and economic were mostly positive in terms of impact. The assessment of the nature of specific impacts was completed based on stakeholder consultations and the review of relevant literature.

Conclusion

This assessment of the National Environmental Policy of Liberia (2002) has exposed several challenges that undermine effective and efficient in urban areas of Liberia. The assessment further showed that the absence of a standalone National Waste Management Policy is negatively impacting the waste sector and invariably stalling implementation of the waste sector mitigation targets and actions contained in the NDC to deal with waste management issues that are overwhelming national government and municipalities.

The study also points to serious gaps in the waste management sector of the country, heightened by acute shortage of trained manpower and the requisite equipment to adequately handle waste management from the primary household source.

Moreover, stakeholders from various line ministries, agencies and the private sector who were interviewed agree that interagency coordination within the waste sector has not been strengthened, and that MRV mechanisms remain elusive in tracking progress within the sector.

It has also been observed that the Government will face difficulties in meeting the NDC targets with regards to reducing GHG emissions from the waste sector by 7.6% below BAU levels by 2030; reducing emissions by 25.63 Gg CO2e per year by supporting the implementation of a landfill gas recovery system on Whein Town Landfill by 2022; reducing emissions by 25.63 Gg CO2e per year by supporting the implementation of a landfill gas recovery system on Cheesemanburg Landfill by 2025; and reducing emissions by 0.84 Gg CO2e per year by supporting the development of small-scale composting of market waste with a production of 500 t/year each by 2025, if serious efforts are not exerted to ensure that the Cheesemanburg Landfill site is constructed sooner to replace the overwhelmed Whein Town Landfill site which is becoming an environmental hazard.

Recommendations

Inputs from key stakeholders/respondents were garnered from focal points of the EPA, MIA and MFPD, as well as representatives from CBEs, SMEs and Civil Society. Generally, all the stakeholders interviewed raised concern over the lack of a standalone National Waste Management Policy; the lack of access to finance for private sector service providers; the lack of enforcement mechanism to compel households to work with the private sector in disposing their primary wastes; the overwhelming of the Monrovia City Corporation (MCC) and other municipalities as it relatives to waste collection and disposal; the inadequacy of the requisite waste management equipment; the concentration of a waste management system (that is lowly effective) mainly in Monrovia, leaving out the rest of the country; among others.

Policy

1. As it stands, the waste sector lacks a standalone policy. The Government of Liberia must urgently validate and adopt the National Solid Waste Management Policy of Liberia (see Section 3.3, paragraph 1, above) to serve as a guidepost for the Ministry of Internal Affairs and key actors within the sector.
2. Government must ensure the timely implementation of the NDC targets outlined under the waste sector. As it stands, most of the targets might not be implemented given the fact that implementation has not even started. For instance, construction of the Cheeseman Landfill site has not even commenced, even though this site is supposed to replace the Whein Town Landfill site that is now overwhelmed with garbage.
3. Government must ensure the enforcement of primary waste management from the households by incorporating waste disposal fees within utility surcharges.
4. Penalties for unauthorized waste disposal in public places, mangroves and rivers must be standardized and harmonized by national government. It was observed through this review that the levying of penalties and fines is not harmonized.
5. National government must consider privatizing waste management (collection and disposal). This will allow the private sector to play a meaningful role, as it would afford service provide access to finance from the banking sector and international lending institutions.
6. Government must conduct a comprehensive study of the current waste management system and assess the development needs;
7. Government must expedite construction of the Cheeseman Land Fill site which was identified during stakeholder engagements with the MCC as replacement for the haphazard Whein Town facility that is now overwhelmed with garbage and hampered by bad roads;
8. Government and its development partners must expedite the establishment of a centralized MRV Unit to enhance coordination among institutions and agencies dealing with waste management;
9. Government must institutionalize waste management sensitization programs at the Ministry of Information, Culture and Tourism, and community-based structures, targeting especially

students, women, the youths and private sector actors, to encourage reduction of waste generation, waste separation at source and recycling (industrial/urban);

10. The Liberia Water and Sewer Corporation (LWSC) and municipals must be further funded and properly managed to ensure the construction and maintenance of drainages effectively and efficiently in all urban areas.

Operations

1. Actors within the sector (particularly service providers) continue to decry the dearth of logistics and proper equipment to operate within the sector effectively and efficiently. The government of Liberia and its international development partners must ensure the procurement of the requisite logistics and equipment for waste management activities.
2. National government and its development partners must prioritize the establishment of a waste management data center to serve as information hub for the sector.
3. Government and the donor community should channel sufficient resources to service providers involved in the recycling of solid waste.

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2. National Environmental Policy of the Republic of Liberia (2002), Ministry of Internal Affairs, Republic of Liberia.

3. Liberia's First Adaptation Communication to the United Nations Framework Convention on Climate Change

4. Government of Liberia and parterns in 2019 established the Climate Change Knowledge Sharing Platform of Liberia (CCKSP), as well as the Environmental Knowledge Management System (EKMS) to provide free and open access to information from key government institutions.

5. www.epa.gov.lr .

6. Personal interview with Seenay Carlor, MCC Focal Person to the EPA on the Waste Sector, March 2022

7. https://moh.gov.lr/.

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9. https://www.mpw.gov.lr/.

10. https://www.citiesalliance.org/newsroom/news/results/liberia-opportunity-waste-management.

11. Personal interview with Gertrude Anderson, General Manager, Organization for Clean Environment and Neighborhood Services (OCEAN), a CBE involved in primary waste collection and waste recycling, April 2022.

12. Personal interview with Mr. Frederick Cole, Director General for Service Program at the MCC, April 2022.

Annexes

Annex 1: Stakeholder Questionnaire

Initiative for Climate Action Transparency (ICAT) Liberia Project
Policy Impact Assessment (National Environmental Policy of the Republic, 2002)
Stakeholder Questionnaire

Information	Description	Response
Title of policy	Policy name	
Type of policy	Select the type of policy, such as those presented below or categories of policies that may be more relevant to the policy being assessed. Example: • Regulations and standards • Taxes and charges • Subsidies and incentives • Voluntary agreements or actions • Information instruments • Emissions trading programmes • Research, development and deployment policies • Public procurement policies • Infrastructure programmes • Implementation of technologies, processes or practices • Financing and investment	
Description of specific interventions the policy seek to achieve	The specific intervention(s) conducted as part of the policy, such as the technologies, processes or practices implemented to achieve the policy: Example: •**Financial incentives**: The policy provides a financial subsidy of up to 30% of project/benchmark cost for rooftop solar projects. It also provides concessional loans to solar rooftop project developers. • **Eligible technology**: Grid-connected rooftop and small solar power plants with installed capacity of 1–500 kW • **Eligible sectors**: Residential (all types of residential buildings), institutional (schools, health institutions), social sectors (community centers, welfare homes, old age homes, orphanages, common service centers), commercial and industrial facilities • **Contract and payment duration:** Up to 30% of the eligible financial assistance and services charges at the time the proposal is sanctioned; the remaining 70% after successful commissioning of projects after sample verification on submission of requisite claims. • **National budget allocated to the policy:** Approximately $750 million • **Other enabling actions under the policy:** » Training and capacity-building of stakeholders involved in the programme, such as government staff, utilities, regulatory commissions, banks and workers » Development of online portal for rooftop solar systems development programme, and registration of partners, approvals and project monitoring.	
Status of the policy	Whether the policy is planned, adopted or implemented: • Ex-ante (forward-looking/to be implemented) • Ex-post (backward-looking / adopted, currently in effect or has been	

	implemented)	
Date of implementation	The date the policy comes into effect (not the date that any supporting legislation is enacted)	
Date of completion (if relevant)	If relevant, the date the policy ceases, such as the date a tax is no longer levied or the end date of an incentive scheme with a limited duration (not the date that the policy no longer has an impact)	
Implementing entity or entities	The entity or entities that implement(s) the policy, including the role of various local, subnational, national, international or any other entities	
Objectives and intended impacts or benefits of the policy	The intended impact(s) or benefit(s) of the policy Example: (The purpose stated in the legislation or regulation)	
Level of the policy	The level of implementation, such as national level, subnational level, city level, sector level or project level	
Geographic coverage	The jurisdiction or geographic area where the policy is implemented or enforced, which may be more limited than all the jurisdictions where the policy has an impact	
Sectors targeted	The sectors or subsectors that are targeted Example: (Energy supply (grid-connected solar PV))	
Other related policies	Other policies that may interact with the policy being assessed	
Relevant SDGs the policy target.	SDGs the policy focuses on or contributes to. Example: The policy is focused primarily on SDG 3 (Good health and wellbeing), SDG 7 (Affordable and clean energy), SDG 8 (Decent work and economic growth), SDG 9 (Industry, innovation and infrastructure), SDG 11 (Sustainable cities and communities), SDG 12 (Responsible consumption and production) and SDG 13 (Climate action), while also contributing to other SDGs	
Is the policy in line with relevant targets proposed in the NDC? Yes No **(If yes, list specific targets)**	NDC target in the energy sector: **Reduce GHG emission by 7.6% below BAU levels by 2030.** (Mitigation/Adaptation targets) • Supporting the implementation of a landfill gas recovery system on Whein Town Landfill by 2022. • Supporting the implementation of a landfill gas recovery system on Cheesemanburg Landfill by 2025 • Supporting the Development of small-scale composting of market waste with a production of 500 tons per year each by 2025. • Landfill leachate collection system planned with enough capacity for heavy rainfall events. • Divert organic waste from landfill through segregated organic collection • Provision of fire safety structures for landfill • Ensure landfill has more than one access routes and effective drainage system.	
Specific intended targets, such as intended level of indicators	Target level of key indicators, if applicable. •Strengthening of the institutional and legal situation at national and municipal levels by 2025. • Strengthen of operational and financial management capacities at the community and institutional level for integrated waste management by 2025. • Public participation and capacity building through education and awareness raising programs to enhance awareness on proper waste management practice by 2025 (Link to Health sector).	

	• Strengthen private sector participation by 2023. • Once the landfill recovery system is in place and stable, a feasibility study would be done for its use for biogas and power generation	
What are the gaps identified since the date of implementation of the policy?	Example: Financial constraint, Sectorial coordination, favorable environment for investment etc.	
Title of establishing legislation, regulations or other founding documents	The name(s) of legislation or regulations authorizing or establishing the policy (or other founding documents if there is no legislative basis). Example: (Environmental Law of Liberia)	
Monitoring, reporting and verification procedures	References to any monitoring, reporting and verification procedures associated with implementing the policy. Example: (Monitoring and evaluation studies of the policy will be conducted during the implementation period, as follows: • At the primary level of monitoring, channel partners are responsible for monitoring parameters such as end-use verification and compliance. They are also responsible to compile statistical information, such as number of companies involved in the installation. • National monitors would be involved, for data on number of companies and employees active within the sector. • National monitors, consultants, institutions, civil society groups, corporations with relevant experience, and other government organizations would be involved, for ground verification/ performance evaluation on a random sample basis. • MRV data on waste management should be available at the beneficiary level.	
Enforcement mechanisms	Any enforcement or compliance procedures, such as penalties for non-compliance. Example: (If evidence is presented that the applicant's information is incorrect, distributed funds will be paid back)	
Reference to relevant documents	Information to allow practitioners and other interested parties to access any guidance documents related to the policy (e.g. through websites) Example: For more information, see: http://mnre.gov.in/solar/schemes/	
Broader context or significance of the policy	Broader context for understanding the policy Example: The current energy mix mainly consists of imported fossil fuels. Coal remains a dominant source of power generation in India. BMI Research forecasted in 2017 that coal will contribute 66% to India's power generation mix in 2025, and electricity generation from coal will increase by 5.8% between 2016 and 2025. In 2000, 67% of emissions in India were from energy generation and use. India plans a rapid increase in the renewable energy share in the national electricity generation mix, including plans to install 175 GW of renewable generation capacity by 2022. Solar is projected to contribute 100 GW of installed capacity by 2022, from the current 4 GW. Recent auctions have resulted in record low tariffs of Rs 3 (US$ 0.0446) per kWh. Rooftop solar has significant potential to contribute to national energy	

	supply. Rooftop solar installed capacity reached 525 MW in 2015. This accounts for less than 10% of the installed utility scale solar capacity and a very small portion of the total power consumption in the country.	
Key stakeholders	Key stakeholder groups affected by the policy. Example: (Households, institutions (schools, health institutions), businesses, project developers, workers, utilities, banks, energy access programmes, women's organizations and cooperatives, microcredit institutions, and others)	
Other relevant information	Any other relevant information. Example: (Various implementation models are possible under the policy: • solar installations owned and operated by consumers • solar rooftop facility owned by consumers but operated and maintained by a third party • solar installations owned, operated and maintained by a third party • solar lease model, with sale of electricity to the grid • solar installations owned by the utility or distribution company).	

***Source*: Adapted from WRI (2014); Liberia Revised NDC 2021. Examples adapted from India's Ministry of New and Renewable Energy**

Annex 2: List of stakeholders interviewed

Name	Job title	Subject expounded on	Interview date
Carlor, Sennay N.	NDC Focal Point at the Monrovia City Corporation (MCC);	Description of specific interventions, implementation strategy, responsible entities, gaps identified and alignment of the intend of the NEP with targets (mitigation and adaptation) proposed in Liberia's Revised NDC.	March 24, 2022
Akoi, Oliver and Sayka, Mulbah	Analysts, Ministry of Finance and Development Planning	SDGs and targets the policy sought to achieve, alignment of the NEP with other national, regional, and international development plans and strategies	March 28, 2022
Beysolow, Margaret	Waste Focus Person at the EPA	Description of specific interventions, implementation strategy, responsible entities, gaps identified and alignment of the NEP with targets (mitigation and adaptation) proposed in Liberia's Revised NDC.	March 31, 2022
Weah, Frank Elvis	Site Manager at the Fiama Solid Waste Transfer Station;	Scope of operations, successes and challenges in implementation of waste management at location	April 4, 2022
Smith, Amos	Data Officer at the Stockton Creek Transfer Station	Scope of operations, successes and challenges in implementation of waste management at location	April 4, 2022
Sumowou, Peter	Data Officer at Whein Town Landfill, Paynesville City	Scope of operations, successes and challenges in implementation of waste management at location	April 4, 2022
Topayan, Princess Ballah, Quincy Jalloh, Omaru Mulbah, Yassah P. Yah, Bruneh G.	Block A Monitor Block B Monitor Block C Monitor Block D Monitor Block E Monitor	Description of communities' role in monitoring activities at the Whein Town landfill site	April 4, 2022

Dolley, Masiame Reed, Joseph S. Clarke, Samuel	Block F Monitor Block G Monitor Block H Monitor		
Anderson, Gertrude	General Manager, Organization for Clean Environment and Neighborhood Services (OCEAN)	Description of the role of waste management in implementation strategy, responsible entities, gaps identified and alignment of the intent of the NEP with targets (mitigation and adaptation) proposed in Liberia's Revised NDC	April 4, 2022
Kendamah, Saah Joe	President of the National Association of Primary Waste Community Based Enterprises (NACOBE)	Description of specific interventions, implementation strategy, responsible entities, and gaps identified, and alignment of the intent of the NEP with targets (mitigation and adaptation) proposed in Liberia's Revised NDC.	April 4, 2022
Fongwen, Fomuso Ridley	Vice President of the Liberia Solid Waste Association (LISWA)	Description of specific interventions, implementation strategy, responsible entities, and gaps identified and alignment of the intent of the NEP with targets (mitigation and adaptation) proposed in Liberia's Revised NDC.	April 7, 2022
Cole, Frederick	Director General for Service Program at the MCC	Description of specific interventions, implementation strategy, responsible entities, and gaps identified and alignment of the intent of the NEP with targets (mitigation and adaptation) proposed in Liberia's Revised NDC.	April 7, 2022

Annex 3: Pictorial from engagements with stakeholders

Cheesemanburg Landfill – Whein Town site visitation with MCC Director General Fredrick Cole and other members of the Monrovia City Corporation and Paynesville City Corporation on Friday April , 2022 – an eye-opener to challenges facing the waste sector

Tours of the two designated garbage collection center (Fiamah and Stockton Creek) and the Cheesemanburg Landfill Site proved how challenged the MCC is in tackling waste (April 4, 2022)