

Deliverable title

**Draft of the NDC tracking framework: with
recommendations for NDC tracking Indicator**

Initiative for Climate Action Transparency – ICAT
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Draft of the NDC tracking framework:
with recommendations for NDC tracking Indicator

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PREPARED UNDER

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CONTENTS

Deliverable title:	3
AUTHORS	3
DISCLAIMER	3
PREPARED UNDER	3
LIST OF ACRONYMS	5
SECTION 1	6
EXECUTIVE SUMMARY	6
INTRODUCTION	7
BACKGROUND	8
SCOPE AND OBJECTIVE	8
METHODOLOGY	9
IN-DEPTH DESK REVIEW	9
TRAINING TUTORIAL ON THE USE OF GACMO	9
ANALYSIS OF THE WET SECTORS MITIGATION POTENTIAL	9
STAKEHOLDER ENGAGEMENT	10
SECTION 2	11
INTRODUCTION	11
NDC WET SECTOR TRACKING TOOL	11
PRESENTATION OF THE WET SECTORS MITIGATION ACTIONS AND TARGETS PER SECTOR	12
○ WASTE SECTOR	12
○ ENERGY SECTOR	13
TRANSPORT SECTOR	13
INSTITUTIONAL ARRANGEMENTS	14
REPORTING	16
COUNTY-LEVEL	16
GUIDE TO DATA COLLECTION AND REPORTING TEMPLATE	23
RECOMMENDATIONS FOR DEVELOPING NDC TRACKING FRAMEWORK INCLUDING TRACKING INDICATORS	25
ANNEXES	26
STAKEHOLDER LISTING	26

LIST OF ACRONYMS

BAU	Business as Usual
BUR	Biennial Update Report
EL	Electricity Law
EPA	Environmental Protection Agency
GACMO	Greenhouse gas Abatement Cost Model
GHG	Greenhouse Gas
ICAT	Initiative for Climate Action Transparency
KPI	Key Performance Indicator
MA	Municipal Authorities
MME	Ministry of Mines and Energy
MP	Mitigation potential
NAP	National Adaption Plan
NCCPRS	National Climate Change Policy and Response Strategy
NDC	Nationally Determined Contributions
NEP	National Energy Policy
NRS	National REDD+ Strategy
PAPD	Pro-poor Agenda for Prosperity and Development
REDD+	Reducing Emission from Deforestation and Forest Degradation
RREAA	Rural and Renewable Energy Agency Act
UNEP	United Nations Environment Program
WET	Waste, Energy, and Transport

SECTION 1

EXECUTIVE SUMMARY

As part of her commitment to the 2015 Paris Climate Agreement (PA) under the UNFCCC, the government of the Republic of Liberia has planned to limit its nationwide greenhouse emission by 64% below the projected business as usual scenario by the year 2030. This ambitious target set out in Liberia's Nationally Determined Contributions (NDC) will be achieved through the mixture of unconditional GHG emission reduction of 10% below BAU, which will result in an absolute emission level of 11,187Gg by 2030. While the additional 54% GHG emission reduction will be conditional upon international support, that will result in an absolute emission level of 4,536.64 GgCO₂e by 2030(Environment Protection Agency, 2021).

Nationally Determined Contribution (NDC) will be implemented through 9 sectors of the economy and a set of cross-cutting activities. The sectors are Agriculture, Forest, Coastal Zones, Fisheries, Health, Transport, Waste, Energy, Industry, and cross-cutting activities. Following the development of the revised NDC, an implementation plan was developed. As part of the operationalization of the NDC and NDC implementation plan, through the ICAT project, activities with emission reduction potential from the energy, waste, and transport sectors were retrieved, reviewed, and integrated into the Greenhouse gas Abatement Cost Model (GACMO). The tool will be used to track greenhouse gas emission reduction from the energy, waste, and transport sectors. To ease the tracking of emission reduction activities, from the three sectors, an indicator sheet was developed for the sectors.

The draft NDC WET sector tracking tool was developed using the Greenhouse gas Abatement Cost Model (GACMO). The methodology employed in the integration of the WET sectors mitigation potentials into the GACMO tool includes literature, review of existing policies, strategies, regulation, analysis of the WET sector mitigation intervention and targets outlined in the NDC, and stakeholders' engagement, amongst other. The NDC WET sectors GACMO tool include the relevant sources of GHG emission, the baseline information, and the mitigation potential for each of the three sectors amongst tother.

The tool is aligned with the relevant national policies, strategies, and plans. They include the Pro-poor Agenda for prosperity and development(Plan & Accelerated, 2018), the national climate change policy and repones strategy(EPA), 2018), The national REDD+ strategy, the NDC, the NDC IP, National Energy Policy – An agenda for action and economic and social development, The Rural and Renewable Energy Agency Act, the Electricity Law among others.

INTRODUCTION

The national government of Liberia submitted its Nationally Determined Contribution (NDC) as required under the Paris Agreement (PA) through the Environmental Protection Agency of Liberia (EPA). In its 2021 revised NDC, Liberia commits to reducing its national greenhouse gas emissions by 64% below the projected business-as-usual (BAU) level by 2030, through a combination of the following: unconditional GHG reductions of 10% below BAU, resulting in an absolute emissions level of 11,187Gg CO₂e in 2030; with an additional 54% reduction conditional upon international support, which would result in an absolute emission level of 4,536.64 Gg CO₂e in 2030(EPA, 2021). The unconditional commitment refers to NDC commitment targets Liberia will achieve without additional external support. While its conditional commitment means that the country will need external support to achieve additional reductions (i.e., financial support, technology, knowledge transfer, and capacity-building, among others). The government intends to achieve both the conditional and unconditional NDC commitment through 9 priority sectors and a set of cross-cutting activities. The sectors include Agriculture, Forestry, Fisheries, Industry, coastal zone, health, waste, energy, transport, and cross-cutting.

Succeeding the submission of Liberia's revised NDC, the government of Liberia also developed an Implementation Plan for the NDC (ndcpartnershipplans.com). The NDC IP provides the framework for the achievement of Liberia's mitigation and adaptation NDC targets and actions in each of the nine sectors highlighted. It is the foundation on which the Government of Liberia (GoL) will operationalize its whole-of-government and whole-of-society approach for its contribution to meeting the goals of the Paris Agreement within its domestic agenda and developing proposals to be funded through the international climate finance mechanism.

The NDC IP needs to be complemented with a well-defined tracking tool with the indicators derive directly from the NDC itself. Furthermore, the IP does have a defined tool model for tracking activities with high mitigation potential (for example, LEAP, GACMO, etc). Of the nine (9) NDC sectors, waste, energy, and transport have the highest greenhouse gas emission reduction potential. Therefore, mitigation activities for the three sectors need to be tracked properly and reported. As such, the NDC WET sector's activities were retrieved, reviewed, and integrated into the GACMO model. To ease the tracking of the mitigation activities indicated in the NDC, detailed indicators for the mitigation activities described in the NDC were developed. It is keen to note that the NDC IP and the WET sector tracking tool were developed from the revised NDC.

This document is a detailed description of Liberia's first NDC tracking tool, particularly for the waste, energy, and transport (WET) sector. The WET sector tracking was developed using the Greenhouse gas Abatement Cost Model (GACMO). GACMO is an excel based spreadsheet that can be used to calculate and track reduction in greenhouse gas (GHG) emissions for various

sectors of the economy. GAMCO has been used extensively across many African countries including Ghana, Zambia, Sao Tome, and Principe, Guinea Bissau, Lesotho, Swaziland, and Angola among others. The WET sector tracking tool contains two parts: a detailed description of the background, the objective, the scope, methodology, and analysis of the WET sector's mitigation reduction potential, an indicator sheet for each of the sectors as well as a description of the institutional framework to be employed. The second part is the excel spreadsheet-based GACMO tracking tool itself. It contains Liberia's NDC WET sectors-based line targets, projected mitigation reduction targets, the mitigation intervention activities amongst others.

BACKGROUND

Anchored in Liberia's revised Nationally Determined Contribution (NDC), and other policy documents, the draft WET sectors NDC tracking tool was developed using the July 2021 version of the GACMOC model developed by Joergen Fenhan- UNEP Copenhagen Climate Change Centre. This was done through a technical stakeholder's approach. It was founded by the Initiative for Climate Action Transparency (ICAT) through the United Nations Office for Project Services (UNOPS). The process of developing the draft WET sectors GACMO model tracking tool was led by the Environmental Protection Agency (EPA) and supported by three national consultants. The WET sector tracking tool is expected to serve as an instrument for tracking and reporting on the implementation of the NDC wet sector components. The tool is aligned with the relevant national policies, strategies, and plans. Some of them include the Pro-poor Agenda, the national climate change policy and repones strategy (NCCPRS), The national REDD+ strategy, the NDC, the NDC IP, National Energy Policy – An agenda for action and economic and social development, The Rural and Renewable Energy Agency Act among others. The alignment of the WET sectors tool with the relevant policies is expected to promote national ownership of the tool, as well as, set the platform for the three sectors to take ownership in the context of tracking, and reporting greenhouse gas reduction from their respective perspectives.

SCOPE AND OBJECTIVE

The scope of the task covered the waste, energy, and transport sectors of Liberia's revised Nationally Determined Contribution submitted to the UNFCCC under the Paris climate agreement. While the objective of this assignment was to develop a tracking tool for monitoring progress in the implementation of the waste, energy, and transport (WET) sector targets as described in Liberia's revised NDC.

METHODOLOGY

IN-DEPTH DESK REVIEW

In-depth desk reviews of all relevant literature, policies, strategies, regulations, and plans were conducted. The documents reviewed are described in the background of this report the Useful information gathered from the literature reviewed informed the decision that was integrated into the WET sectors GACMO model.

The GACMO tool used was retrieved from the Initiative for Climate Action Transparency (ICAT) through the Environmental Protection Agency of Liberia. The tool was reviewed and found to be useful in the context of Liberia. Thereafter, the ICAT project provided a tutorial for the consultant on the use of the GACMO model.

TRAINING TUTORIAL ON THE USE OF GACMO

As part of the literature review process, the national consultants supporting the integration of the WET sector's mitigation potential into the GACMO model were tutored on the use of the GACMO tool by its developer. The tutorial covered how the model function and how to use it for greenhouse gas monitoring, verification, and reporting (MRV).

ANALYSIS OF THE WET SECTORS MITIGATION POTENTIAL

The emission reduction potential estimates used for the WET sector are nationally-driven consolidated and proxy data, sourced mainly from Liberia's revised Nationally Determined Contribution (NDC), NDC Implementation plan, first Biennial Update Report, and first and second national communications, among others. Before being integrated into the GACMO model, these data have been analyzed, processed, and the emission reduction potential for each sector was estimated. These analyses have been based on consolidated data collected as detailed above for the WET sector and, to some extent, slightly differ from the NDC's data and projections. The NDC used projections based mostly on the LEAP model using economic data and population statistics at the national level for all sectors, which is more of a top-down approach as compared to the analysis conducted for the WET sector, which used a bottom-up approach. Emission reduction potential estimates in GgCO₂eq are presented in the proceeding section below and those are also captured into the GACMO model.

STAKEHOLDER ENGAGEMENT

The consultants engaged with and are still engaging with various stakeholders relevant to the NDC WET sectors in Liberia. Key amongst the stakeholders engaged were the EPA, the Monrovia City Corporation (MCC), Green Cities, Evergreen Recycling Institute, Ministry of Mines, Ministry of Transport, and the Liberia Electricity Corporation (LEC). The engagement was conducted through physical meetings and mobile phone calls. A full list of the stakeholder engagement and their roles is provided below.

SECTION 2

INTRODUCTION

In this section of the report, we present details on the NDC WET sectors tracking tool. The overall mitigation potential of the NDC WET is presented. As earlier noted, the GACMO model will be used to track the implementation of the quantifiable mitigation actions and targets for each of the sectors. The quantitative mitigation targets and actions that were integrated into the GACMO model are presented for each of the three sectors. Furthermore, a detailed indicator tracking sheet for each of the sectors that include the mitigation measures, baseline information, the unit, the target number if available, and the institution responsible for reporting are also presented. The indicator tracking sheet will also be used to track the implementation of the non-quantifiable mitigation actions. We also present a discussion on the WET growth sheet, WET MRV+, and the WET emission reduction graph sheet that we included in the GACMO tool. The implementation arrangement to be employed to operationalize the tracking tool is also described, and a discussion on how the tool should be integrated into the national Environmental Management System (EKMS) is discussed in this section. The section is concluded by outlining the next step in the implementation of the tool.

NDC WET SECTOR TRACKING TOOL

Liberia is committed to the implementation, tracking, and reporting on the progress made in the implementation of its revised Nationally Determined Contribution (NDC) under the Paris Climate Agreement (PA). The WET sectors tracking tool was developed to create a system to monitor and track the implementation of GHG emission reduction activities that are stipulated in the revised NDC. It will be used to ensure effective, and timely reporting on the progress made in reducing national GHG emissions from the WET sectors. This will facilitate the Country's ability to report to the UNFCCC as anticipated under the 2015 Paris Climate Agreement.

The July 2021 version of the GACMO tool was adopted during the development of this tracking tool. The GACMO tool was preferred because it is excel based and user-friendly. Additionally, it has been used in several other African countries in a similar context. The WET sector's GHG emission reduction tracking tool contained mitigation actions and targets data retrieved from Liberia's 2021 Nationally Determined Contribution (NDC). The data were retrieved, reviewed, and analyzed for their mitigation potential. GHG emission reduction activities were identified, and baseline and projected GHG emissions were identified and integrated into the GACMO

tool. Details of data that were integrated into the GACMO model and how the tool will be used are described below as well as in the guidance tap of the WET sectors GACMO tool.

A group of technicians from the WET sectors comprising the Waste Focus Person from Monrovia City Cooperation (MCC), Energy Focus Person from the Ministry of Mines and Energy Ministry (MME), and the Focus Person from the Ministry of Transport (MOT), and the relevant technical staff from the Environment Protection Agency (EPA) were trained on how to use the tool. The technicians are also expected to train county-level technicians who will be required to use the tool. ++ The training was facilitated by a team of national consultants hired to develop the tool.

QUANTIFIABLE MITIGATION ACTIONS AND TARGETS INTEGRATED INTO THE GACMO TOOL

The result of the review of the Liberian’s revised NDC quantitative Mitigation Actions in the WET sectors has identified 5 mitigation actions in the Energy sector, 3 Waster sectors, and 2 in the Transport sectors, totaling a total of ten (10) mitigation actions. These mitigation measures have a potential of 4,349.05 GgCO₂eq constituting 35 percent of the total GHG reduction potential of Liberia. Apart from the quantifiable mitigation actions, the revised NDC also has unquantifiable mitigation actions. The proceeding section, presents each sector, their quantitative as well as qualitative mitigation actions and potential as presented in the Revised NDC.

PRESENTATION OF THE WET SECTORS MITIGATION ACTIONS AND TARGETS PER SECTOR

○ WASTE SECTOR

Mitigation Action:

Overall GHGs reduction target: reduce GHG emissions from the waste sector by 7.6% below BAU levels by 2030

1. Reduce emissions by 25.63 Gg CO₂e per year by supporting the implementation of a landfill gas recovery system on When Town Landfill by 2022;
2. Reduce emissions by 25.63 Gg CO₂e per year by supporting the implementation of a landfill gas recovery system on Cheeseman burg Landfill by 2025;
3. 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;

Total GHG Emissions reduction: 260.5GgCO₂eq

○ **ENERGY SECTOR**

Mitigation Actions and Targets:

Commitment: Overall emission reduction potential in percent for the Energy Sector: 40.6% below BAU levels by 2030

1. Reduce emissions by 79.8 Gg CO₂e per year by the installation of 100 MW RE plants;
2. Reconnection of Monrovia clients to the grid. Reduce emissions by 124.15 Gg CO₂e per year;
3. Development of off-grid small hydropower plants (HPP) and on-grid ones via PPAs; Reduce emissions by 15.4 Gg CO₂e per year by installing a batch of several sites with 20 MW capacity;
4. Reduce emissions by 0.52 Gg CO₂e per year supporting the installation of in total of 10 MW Capacity PV Plants with an output of 2 GWh/year by 2025;
5. Reduce emissions by 588 Gg CO₂e per year by making sure 60% of households using fuelwood or charcoal are supplied with energy-efficient cookstoves by 2025;

Total GHG Emissions Reduction: 4,039.35GgCO₂eq

TRANSPORT SECTOR

Mitigation action

Liberia commits to reducing GHG emissions by 15.1% below BAU levels by 2030

1. Reduction of 16.9 GgCO₂e in 2030 by the introduction of electric vehicles with a focus on kekehs (for private use);
2. Reduction of 32.3 GgCO₂e in 2030 by supporting the transformation of National Transit Authority (NTA) buses and private vehicles (cars and taxis) to Compressed Natural Gas (CNG); by 2030;

Total GHG Emissions reduction: 49.2GgCO₂eq

1. Table of Mitigation Analysis

The analysis of WET mitigation reduction potential and data gap conducted as presented in the table below (Table 1) demonstrate that mitigation potential estimated for the WET sector are taken from many sources and estimated using similar assumptions used in the LEAP model for the NDC Projection. The NDC projection was key on the entire sectors at the national level and did not differentiate sector emissions and or potentials. Using similar assumptions like population and economic growth rates, combined with local data, projections and mitigation potential are estimated at the sector level for Waste, Energy, and Transport with some estimates showing high biases, and these are noted in the table.

The NDC Based year (2015 Emission): 5,357.75GgCO₂eq
 The End year (BAU) (2030) Emission Project: 12,429.81 GgCO₂eq

¹ Kekeh – is a tricycle used in Liberia for public transportation. It is mainly used in urban cities and towns like Monrovia

BAU Emissions for WET sectors							
Sector	Base year	GHG emissions (Base year)	Source	Projection 2030	Source	Mitigation potential (GgCO ₂ eq)	Comments
Waste	2015	396.26	BUR1	919.3	Estimated	260.5	
Energy	2015	987.40	BUR1	2,290.73	Estimated (high bias) due to lack of data	4,039.35	The mitigation reduction for the Energy sector is almost 1.8 times the emission projection
Transport	2015	174.24	15% of Energy total	404.2	Estimated (high bias)	49.2	
Total		1,557.9		3,614.23		4,349.05	

INSTITUTIONAL ARRANGEMENTS

At the national level, the National Climate Change Steering Committee (NCCSC) has overall responsibility for Climate Change policy in Liberia (the Republic of Liberia, 2018). The National Climate Change Secretariat (NCCS) is housed in the EPA, and it is responsible for carrying out and coordinating the daily operations of the NCCSC. The Environmental Protection Agency (EPA) of Liberia which is the National Designated Authority (NDA) for the UNFCCC through the office of the Multilateral Environmental Agreements Coordinator and the Kyoto Protocol, is responsible to coordinate along with all other relevant ministries and agencies to fulfill the implementation of major activities under the national climate change policy and response strategy. EPA is the lead agency responsible for the implementation of Liberia’s Climate actions and it is in discussion with its partners to form the NDC Implementation Unit. The Unit when established, will be responsible to drive the implementation of Liberia’s NDC, monitoring and evaluating progress, developing tools, and training sectorial stakeholders to track and report on the implementation of Liberia’s NDC.

WET SECTORIAL INSTITUTIONAL ARRANGEMENT

For Liberia to track and report adequately on its GHGs emissions reduction for the three mitigation sectors (Waste, Energy, and Transport), it is important to state how data collection will be done and the needed government support for the continual implementation of WET sectors NDC tracking both at the county and national levels.

The table below shows how data will be collected, analyzed, and sent to the EPA of Liberia for reporting.

Institution	Description of institutional arrangement	Comments
Environmental Protection Agency (EPA)	<ul style="list-style-type: none"> • The overall role of the EPA is to provide policy guidelines for climate change-related activities. • Coordinates inter-ministerial collaboration between line ministries and agencies involved in climate change. • Mobilizes financial and technical resources for tracking the implementation of the WET sector NDCs actions and targets 	The Environmental Knowledge Management System (EKMS) in the EPA will serve as the central point for data storage and reporting.
Ministry of Finance and Development Planning (MFDP)	<ul style="list-style-type: none"> • Formulates and allocates financial resources for climate change-related activities in Liberia. • Provides monitoring and evaluation functionalities to ensure that funds allocated are adequately utilized to meet deliverables. 	EPA will collaborate with heads of the WET sectors to ensure that the Ministry of Finance Development & Planning allocates financial resources for the operationalization and the use of the NDC WET sector tracking tool

Ministry of Mines and Energy (MME)	Responsible for collecting activity data for the energy sector through the NDC hub	Some of the activity data include: Number of RE plants installed, Number of households connected to the national grid, Number of energy-efficient cookstoves distributed, Number of off grids HHP installed per year, Number of PV plants installed per year, etc
Ministry of Transport (MoT)	Responsible for collecting activity data for the energy sector through the NDC hub	Some of the activity data include: Number of electric kekeh/three wheels introduced, the Number of vehicles using compressed natural gas, the Number of vehicles labeled that register the level of GHG emissions for each vehicle, etc
City Corporations	Responsible for collecting activity data for the waste sector through the NDC hub	Number of gas compressors installed, Number of composts produced, etc

REPORTING

The NDC Waste, Energy, and Transport (WET) sectors tracking tool is prepared under the assumption that management decisions are reached as close as possible to the activity that inspires requisite staff to respond quickly to changing needs and situations and spurs economic use of resources. Given that data will be collected at two levels (county and national), the sector focal person at each level should understand the relevance of their roles in collecting and reporting requisite information. This will ensure that the data collected are of high quality and relevant to management decision-making.

COUNTY-LEVEL

The technicians trained at the county level to use the NDC Tracking tool will lead the tracking of the GHG emission reduction activities. This will include data collection, analysis, and reporting. Implementing partners or NGOs participating in WET sectors NDC GHG emission reduction efforts in the county will share information relevant to their respective areas of operation with the County Office using the Environmental Sector Working Group (ESWG) and the EPA sectorial clearance unit for onward submission to the central office at the national level. NGOs or implementing partners involved in implementing WET sector NDC-related development efforts at the county level will be expected to submit reports to the County Office quarterly. The County reports will then be transmitted to the national office for consolidation and reporting.

NATIONAL LEVEL

The technicians trained at the national level will assist the EPA to compile and collate data from the counties. Requisite divisions and/or units and the existing focus person for waste at the city cooperation, Ministry of Mines and Energy; and the Ministry of Transport will submit reports to their respective corresponding departments to be included in the entity's progress reports, with copies to the EPA. The EPA, in turn, will prepare analyzed reports from reporting entities to the NCCS. The NCCS will review these reports and provide feedback to the implementing entities through EPA's NDC Coordinating Office or the NDC implementation unit when established. To ensure an effective feedback mechanism, the EPA will share the feedback from the NCCS with implementing entities of NDC activities through the focal persons and unto the county.

Noting that where findings are not used at the level of collection (county/national), data reporting can become irregular and of poor quality. The City Cooperation (CC), Ministry of Transport (MOT) Ministry of Mines and Energy (MME), the Environmental Protection Agency, (EPA), and NGOs must exert every effort to equip data collectors with the capacity to collect and utilize reports and feedback at the operational level. This will be possible when technicians are part of formulating the annual work plans and budgets embedded with the WET sector's NDC activities to inform set indicators. This is a justification for quarterly progress review meetings by each sector's stakeholders. In other words, quarterly progress review meetings should not be held only at the national level, but also at the county to allow for feedback from participants at this level. This can be achieved if progress reviews are held at all levels which afford stakeholders at each level to participate and provide input.

During quarterly progress review meetings, only performance data should be presented based on "where were we" (baseline), "where do we want to go" (planned), and "where we are now" (actual) per indicator. Findings and recommendations should be formulated as close as possible to critical outcomes. A separate report with detailed data can be presented in an annex/appendix. Table 2 presents key points of analysis and questions to be considered during the presentation of progress reports of the NDC.

The waste, energy, and transport sectors will serve as sources of data as each executes activities of the NDC. Hence, data will be collected from more than one group of actors. This makes it possible to compare data from various sources and check their reliability. These sources will include but are not limited to the statistical units of implementing entities as well as the various reports (i.e., annual and quarterly reports, commissioned studies, etc.)

NDC WET SECTORS TRACKING TOOL INDICATOR SHEET

WASTE SECTOR								
Mitigation measured as described in the NDC	Key performance Indicator (KPI)	Unit	Base line	Target number	Target year	Reporting frequency	Means of verification	Responsible Institution /person
Reduce GHG emissions from the waste sector by 7.6%	Percentage of emission reduced below per year	%	BAU	7.6	2030	Quarter & Annual reports	Quarter & Annual reports	City Cooperation /All waste focus persons
Support the implementation of a landfill gas recovery system on When Town Landfill by 25.63 Gg CO2e per year	Number of gas compressors installed, the number of GHG emissions reduced per year,	Gg CO2e, No.	BAU, 0	25.63 Gg CO2e per year, 1	22	Quarter & Annual reports	Quarter & Annual reports	City Cooperation /All waste focus persons
Support the implementation of a landfill gas recovery system on Cheeseman burg Landfill by 2025	Number of gas compressors installed, the number of GHG emissions reduced per year,	Gg CO2e, No.	BAU, 0	25.63 Gg CO2e	2025	Quarter & Annual reports	Quarter & Annual reports	City Cooperation /All waste focus persons
support the development of small-scale composting of market waste with	Number of composts produced per year	Ton	0	500 tons per year	2025	Quarter & Annual reports	Quarter & Annual reports	City Cooperation /All waste focus persons

a production of 500 t/year each; by 2025.								
ENERGY SECTOR								
Mitigation measures described in the NDC	Key performance Indicator (KPI)	Unit	Base line	Target number	Target year	Reporting frequency	Means of verification	Responsible Institution/person
Reduce GHG emissions from the energy sector by 40.60%	Percentage of emissions reduced per year	%	BAU	40.6	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Mines and Energy/Energy Focus person
Install 100 MW RE plants	Number of RE plants installed	MW	0	100	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Mines and Energy/Energy Focus person
Reconnection of Monrovia clients to the grid by which 100% of the owners of individual generators will switch to the distribution network, by 2030	Percent of Monrovia clients reconnected to the grid per year, Amount of GHG emission reduced per year	%, Gg CO ₂ e	BAU	100, 124.15	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Mines and Energy/Energy Focus person
Installation of off-grid small hydropower plants	Number of off grids HHP installed per year, Number of GHG emissions reduced per year	No,	BAU	15.4	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Mines and Energy/Ene

(HPP) with 20 MW capacity		Gg CO ₂ e						rgy Focus person
Installation of on-grid ones via PPAs with 20 MW capacity	Number of on-grid PPAs installed with 20 MW capacity per year, GHG emission reduced per year	No, Gg CO ₂ e	BAU	15.4	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Mines and Energy/Energy Focus person
Installation of PV Plants with an output of 2 GWh/year	Number of PV plants installed per year, Number of GHG emissions reduced per year	No, MW, Gg CO ₂ e	BAU	10, 0.52	2025	Quarter & Annual reports	Quarter & Annual reports	Ministry of Mines and Energy/Energy Focus person
60% of households using fuelwood or charcoal supplied with energy-efficient cookstoves by 2030	Percentage of households supplied with energy-efficient cook stove per year, Number of GHG emissions reduced per year	%, Gg CO ₂ e	BAU	60%, 588	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Mines and Energy/Energy Focus person
Transport								
Mitigation measures described in the NDC	Key performance Indicator (KPI)	Unit	Base line	Target number	Target year	Reporting frequency	Means of verification	Responsible Institution/person
Reduce GHG emissions by 15.1% below BAU levels by 2030	Percentage of GHG emissions reduced	%, Gg CO ₂ e	BAU	15.1	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person
Introduce electric vehicles with a	Number of electric kekeh/three wheels		BAU	16.9	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person

focus on kekehs (for private use);	introduced, amount of GHG emission reduced	No, GgC O2e						
Support the transformation of National Transit Authority (NTA) buses and private vehicles (cars and taxis) to Compressed Natural Gas (CNG);	Number of vehicles using compressed natural gas, Amount of GHG emission reduced,	GgC O2e		32.3	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person
Implement a vehicle labeling system that registers the level of GHG emissions for each vehicle	Number of vehicles labeled, The amount of GHG emissions reduced	No, GgC O2e	0	Not available	2025	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person
Implement a fee bate/rebate program through which the government levies fees on relatively high GHG emitting vehicles and provides rebates on lower-emitting vehicles	Number of vehicles charged with fee bate/rebate Number vehicle	No, GgC O2e	0	Not available	2025	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person
Increase awareness about better ways of driving cars	Number of policies in place that promotes better ways of	No	0	Not available	2025	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person

through eco-driving, speed reduction and use of well-adjusted motors, electric and Compressed Natural Gas Vehicles, and promotion of public transport	driving, Number of awareness created							
Promote diesel particulate filters for road and off-road vehicles.	Number of diesel particulate installed on vehicles, Number of GHG emission reduced,	No, GgC O2e	0	Not available	2030	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person
Build infrastructure that foster the development of a bus public transport network for Monrovia. Design a transport interchange hub program	Number of infrastructures built, transport and interchange hub established,	No,	0	Not available	2025	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person
Develop a sustainable transport policy by 2025.	No of policy developed	No	0	Not available	2025	Quarter & Annual reports	Quarter & Annual reports	Ministry of Transport/Focus person

GUIDE TO DATA COLLECTION AND REPORTING TEMPLATE

Focus of Analysis	Technique of Analysis	Questions to be Answered
Description of the WET sector mitigation interventions described in the NDC	<ul style="list-style-type: none"> • Compare the actual performance of the WET sector's implementation intervention against targets • Compare the current performance of the implementation of the WET sector to the baseline • Analyze the performance trends 	<ul style="list-style-type: none"> • Is the NDC WET sector's implementation on track? • Was the anticipated target met? Why and why not? • How is this period's performance compared to the last period? • What happened that we did not expect? Did it lead to any positive or negative unintended consequences? • Are our new interim targets needed, or do we need to review the target? • Are we adequately reaching all the required target groups and/or sites? • What are the weaknesses of the program; do they need to be improved or phased out? • What are we doing right? Can we be doing more of this and applying this strategy to other areas? • Do we need additional funding or expansion of the program? • How can we apply lessons learned to improve outcomes across the NDC implementation? • Is there sufficient coordination across sectors to ensure efficient and effective NDC implementation?

Integrations of the NDC WET tracking tool into the Environmental Knowledge Management System (EKMS)

Description of EKMS

The EKMS is an online integrated information sharing platform that was created as an output of the Cross-Cutting Capacity Development (CCCD). It serves to bridge the knowledge gap between the Environmental Protection Agency (EPA) of Liberia, development partners, and governmental as well as non-governmental entities that have clear linkages with environmental policies and development. The essence of EKMS is also intended to increase access to and dissemination of information and promote adequate public awareness and

education. The EKMS is hosted at the Environmental Protection Agency (EPA) of Liberia.

Integrating the Tracking tool into the EKMS

As previously noted, the various sector's focus persons will be responsible to collect and process the data needed to be fed into the WET sector tracking tool that is managed by the EPA. The tool will be disseminated among the Waste, Energy, and Transport sector focus persons seated in the NDC hub established through the CBIT project. After the relevant data are collected and verified, the focus person will integrate the data into the tracking tool. Thereafter, he or she will be responsible to ensure that the tool is uploaded to the EKMS online platform. The tracking tool needs to be uploaded to the EKMS because it creates easy access to information with regards to tracking the implementation of the WET sector emission reduction activities. Furthermore, it enhances transparency with regards to the implementation of GHG mitigation activities as well emission reduction in the WET sectors.

Recommendations for developing NDC tracking framework including tracking indicators

NDC Indicators

- Make sure stakeholders will not be overburdened with NDC reporting. Stakeholders are in principle to report relevant data, not to perform additional assessments, calculations, or GHG emission reduction estimates
- Make sure that NDC indicators address mitigation measures and policy instruments. Note that tracking measures that do not have relevant policy instruments are in principle tracking the BAU scenario
- Where relevant integrate NDC implementation indicators into the NDC implementation plan for each measure and policy instrument (disaggregated on activity level)
- For each key quantitative indicator determine levels at which corrective actions are triggered

NDC Indicators and the National MRV System

- Make sure that for reporting the NDC indicators relevant legal arrangements will be in place (responsibilities/formats/content/deadlines/quality control procedures)
- Identify if a specific indicator has already been collected/reported through other non-climate-related reporting frameworks. No duplication
- Don't duplicate the institutions. If the collection of similar data is already entrusted to some dedicated organization, endeavor to expand the scope of their activities rather than establishing a new institution to manage NDC indicators tracking.
- If existing reporting platforms exist for other purposes, adjust/expand them to serve NDC tracking purposes.
- Top-down emission-related NDC tracking indicators shall use data from national GHG inventory (same methodologies, reporting frequency)

NDC Indicators and reporting entities

- Make sure reporting entities are covered with legal framework/arrangements
- Dedicate sufficient time to train and prepare reporting entities for new reporting requirements.
- Prepare clear and user-friendly reporting templates with methodological explanations.

- Make sure reporting templates will allow for transparent revisions of already reported data
- Make sure that reporting entities will follow the QC procedures before the data submission

Do test trials with selected institutions to further improve the NDC tracking system before legal arrangements enter into force.

ANNEXES

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