CLIMATE PROMISE

UNDP DIGITAL 4 PLANET

DRAFT
Companion Guide: Structuring Information for the National Climate Transparency Platform (NCTP)

From the People of Japan
Federal Ministry for Economic Cooperation and Development
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About UNDP

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UNDP's Climate Promise is the UN system's largest portfolio of support on climate action, working with more than 140 countries and territories and directly benefiting 37 million people. This portfolio implements over US$2.3 billion in grant financing and draws on UNDP's expertise in adaptation, mitigation, carbon markets, climate and forests, and climate strategies and policy. Visit our website at climatepromise.undp.org or follow at @UNDPClimate.

About this publication

This product was developed under UNDP's Climate Promise by the Pledge to Impact Programme. Delivered in collaboration with a wide variety of partners, the initiative has supported over 120 countries to enhance and implement Nationally Determined Contributions (NDCs) under the Paris Agreement. From Pledge to Impact is generously supported by the governments of Germany, Japan, United Kingdom, Sweden, Belgium, Spain, Iceland, the Netherlands, Portugal and other UNDP core contributors. This programme underpins UNDP's contribution to the NDC Partnership.

UN Disclaimer

The content expressed in this publication is those of the authors and does not necessarily represent those of the United Nations, including the UNDP or UN Member States. The content is presented for the general case of implementing systems of information that feed into the Enhanced Transparency Framework in the 'average' LDC/SIDS country and may not reflect the specific conditions present in an individual country.

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1 About this Guide

Up-to-date, accurate, and verifiable information is the backbone of transparency for addressing climate change in a single country or globally. It is also the basis for climate change related reporting following the Enhanced Transparency Framework (ETF) of the Paris Agreement and feeds into managing progress and implementing a country's Nationally Determined Contribution (NDC).

This is a companion guide for helping structure climate change related information for national purposes and ETF reporting so that it is setup in a manner that allows for easier input into the National Climate Transparency Platform (NCTP) software developed by UNDP *(see the explanation of the NCTP sub-section 1.1)*. In this regard, this companion guide focuses on the following three key processes:

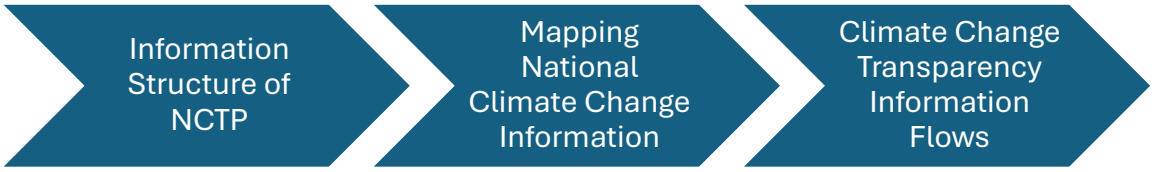

Figure 1: Companion guide's three key processes

These three key processes assist national stakeholders with collecting and preparing climate change related information, where information and institutional setup are unique in each country. To be effective, it is recommended that this companion guide be followed by national stakeholders who address different sectors individually, and the best way to do this is through sectoral working groups where members have extensive knowledge of national activities in a selected sector. Experience shows that it is most effective with sectoral working groups of 3 to 10 people, with most persons representing the sector and at least one with expertise in climate change and ETF reporting.

This companion guide walks these sectoral working groups through each process, and an accompanying EXCEL tool allows the members to input information from each process, see Annexes A through D. In addition, there are some practical help tips for addressing impact information for energy, transport, agriculture, forestry, and waste sectors found in Annexes E through I.

1.1 The National Climate Transparency Platform (NCTP)

The National Climate Transparency Platform (NCTP) is your country's gateway to ensuring robust information gathering, management and reporting following the ETF. The NCTP does this by helping governments optimise the management of information related to climate change actions and support across ministries, agencies, and departments. It also allows the option to easily share this information with parties outside government, such as UNFCCC, development partners, education institutions, etc. By centralising essential data in a single digital location, the NCTP significantly reduces workload, saving thousands of person-hours. Its user-friendly access and standardised reporting tools for ETF information further streamline operations and enhance efficiency.

The NCTP is an integral part of UNDP's open-source Digital for Climate software ecosystem. This Digital Public Good has an open-source codebase and is designed to encapsulate the essence of

effective climate action management, enabling countries to configure, adapt and build on it to meet national requirements.

The NCTP has seven key features.

1. Systemic Information Structure: The different modules in the NCTP follow the information structure often used when countries and development partners plan and implement climate actions. This includes general information on broad climate actions and the more detailed information on sectoral programmes, projects, and activities that fall under each climate action.
2. NDC Progress Tracking: Following the Paris Agreement's Modalities Procedures and Guidelines of the ETF, the NCTP allows users to effortlessly track and report the progress of NDC mitigation and adaptation actions, plus support that is needed and received. This enables standard reporting using some of the critical Common Tabular Formats of the ETF.
3. Tracking National Sustainable Development: Every country and ministry has specific development planning that commonly overlaps with climate actions. The NCTP allows for customised Key Performance Indicators for actions, programmes, projects, and activities that align with national goals and planning.
4. GHG Emissions: The NCTP has a module to help governments project GHG emissions based on different scenarios for sectors and subsectors using standard exponential modelling and/or inputting modelling data from other software and models. Additionally, the module enables the input of GHG inventory results, organised by categories and subcategories, ensuring comprehensive and flexible emissions analysis.
5. Validation: To ensure quality control, governments can assign users to validate the information provided for each climate action, programme, project, activity and support.
6. Standard Reporting: The information for climate action, programme, project, activity, and support is automatically consolidated and reported in the dashboard, along with reporting information using important Common Tabular Formats of the ETF.
7. Assigning Users: the NCTP allows governments to assign users based on the entities they work for (e.g. government departments, education institutions, consultants…) and what information they should have access to both read and input (e.g. for specific sectors…).

Resources for the NCTP are found here on the GitHub Cannel maintained by UNDP's Digital 4 Plant:

https://github.com/undp/Digital-Transparency-System-NDC

2 Introduction to the Information Structure of NCTP

The NCTP structure is based on a common process and information structure used by governments and development partners for managing work to address climate change in a country. This structure is based on the core components of climate actions, programmes, projects, and activities, each with a different purpose in the structure and different types of information. Using this structure, the NCTP allows governments to consolidate information bottom-up for a broad overview of progress in addressing climate change while also allowing for digging into the details of what is happening in sectors.

These components are supported by funding and activities implemented by the national government, private sector, and international development partners. This support commonly involves finance, capacity building, and technology transfer & assistance, as defined in the Paris Agreement.

The information structure is straightforward and is described in Figure 1 below.

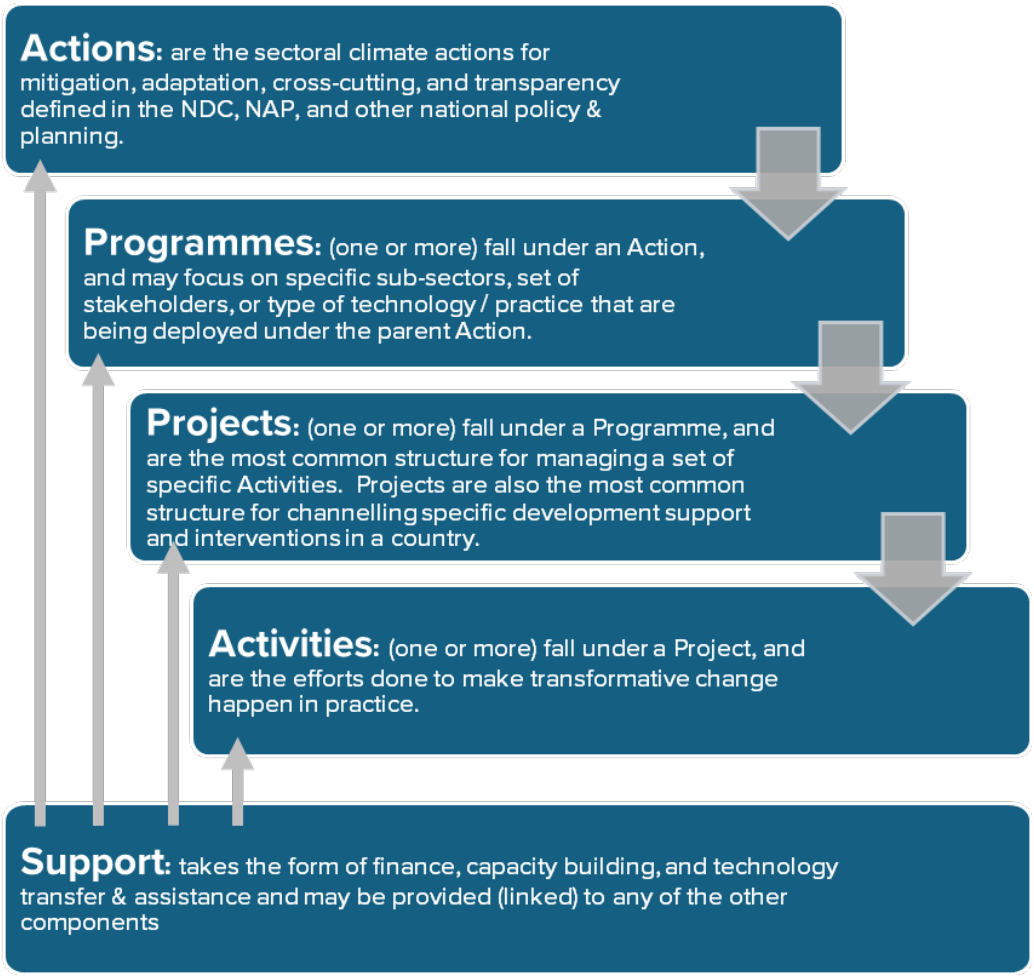

Figure 2: description of components of the information structure

3 Mapping National Climate Change Information

Before including information in the NCTP (and maybe before customising the NCTP), it is helpful for stakeholders and users to map national climate change information using the information structure. UNDP has developed a simple mapping process, and we recommend doing this in sectoral working groups. To help with the process, UNDP has developed a mapping matrix tool where stakeholders can record the mapping results (see Annex A). UNDP proposes to use the following steps in the process as shown in Figure 2.

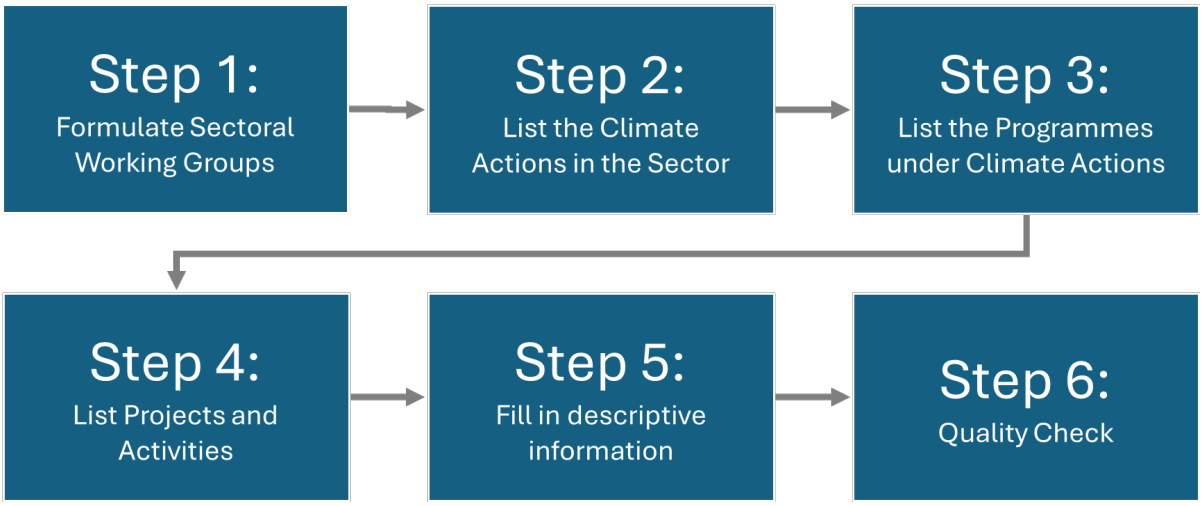

Figure 3: Steps for mapping national climate change information

Step 1: Formulate Sectoral Working Groups

Before formulating sectoral working groups, it is suggested that a person knowledgeable of the climate actions in the country (e.g. national consultant or climate change department) customise the dropdown in the provided Mapping Matrix (spreadsheet tool) to fit the national circumstances. Specifically, the National Implementing Entities and the Sectors & Subsectors addressed by climate actions in the country.

Stakeholders should be divided into sectoral working groups, with one group for each broad sector, or as the case may be, one group for two similar sectors. It is proposed that there be 3 to 10 people in each sector working group, each with knowledge about what is happening in the sector regarding ongoing and planned future actions. It is proposed that one person in the working group be appointed to facilitate/manage the process (e.g. steps), and a person will be appointed to perform a quality check later in the process (e.g. Step 6).

Tip: To ensure a more inclusive and robust outcome in the sectoral working groups, is it good practice to include (when possible) persons with national finance and planning backgrounds in each group and a person from the national climate change office?

Step 2: List the Climate Actions in the Sector

In a face-to-face meeting, the working group should communicate to list the broad climate actions that are taking place in the country or are planned to be implemented in the future. Climate actions include types for GHG mitigation, adaptation, cross-cutting (e.g., both GHG mitigation and adaptation), and transparency (e.g., information systems and reporting). It is essential to list the type of action, the sector impacted, and the primary entity responsible for implementation. It is proposed that climate actions be directly inputted into the provided Mapping Matrix tool. An alternative is to use a flip chart, whiteboard, or coloured post-its to write down the titles of the climate actions. This information can later be inputted into the provided Mapping Matrix tool.

Tip: Climate Actions are already defined in the Nationally Determined Contribution (NDC) and National Adaptation Plan (NAP). Additional climate actions may be described in the national development plan, especially for actions only in the concept and planning stages and not under implementation. Other references include the latest Biennial Update Report (BUR) of Biennial Transparency Report (BTR).

Step 3: List the Programmes under Climate Actions

In a face-to-face meeting, after mapping all the climate actions, the working group should communicate to list the programmes that fall under each of the climate actions that are taking place in the country, both planned and under implementation. It is essential to list the type of programme, the sector and sub-sector impacted, and the primary entity responsible for implementation. Again, it is proposed to directly input climate actions into the Mapping Matrix tool. An alternative is to use a flip chart, whiteboard, or coloured post-its again to write down the titles of the climate actions. This information can later be inputted into the provided Mapping Matrix tool.

Tip: Programmes may be defined in the Nationally Determined Contribution (NDC), National Adaptation Plan (NAP), and/or national development plans. They are often found in a ministry's corporate or strategic work plans. Other references include the latest Biennial Update Report (BUR) of Biennial Transparency Report (BTR).

Step 4: List Projects and Activities

After the climate actions and programmes are listed, it is proposed that the projects and the activities under each project be listed directly in the provided Mapping Matrix tool. This work does not necessarily need to happen directly in the face-to-face meeting of the working group. The working group members may take the filled-out Mapping Matrix (with actions and programmes) back to their workplace to complete the project and activities, as this can be time-consuming. It is essential to list the type of project and activities, the sector and sub-sector impacted, and the primary entity responsible.

Tip: Projects and Activities are what government staff and other national stakeholders work with daily. Information on these is often found in national project budget proposals, development partner project proposals or documents, and different project monitoring reports.

Step 5: Fill in descriptive information

Once (or even while) Steps 2 through 4 are completed, working group members should fill in further descriptive information. The working group members may take the filled-out Mapping Matrix (with actions and programmes) back to their workplace to complete the project and activities, as this can be time-consuming. It is essential to list the type of project and activities, the sector and sub-sector

impacted, the primary entity responsible for implementation, a short description, objectives, and implementation status.

It is essential that before starting Step 5, and maybe Step 4, the working group agree on how to split up this step with the members and set deadlines for sharing the information (e.g. spreadsheet) between the group members.

Tip: This step can be time-consuming for individuals, but it usually does not take more than one or two hours. Information on these is often found in national project budget proposals, development partner project proposals or documents, and different project monitoring reports.

Step 6: Quality Check (validation)

It is proposed that one person from the working group (or two) be nominated to perform a quality check of the information inputted into the provided Mapping Matrix tool. This person(s) will hold the combined draft and final mapping versions of the tool.

Tip: The person(s) doing the quality check may or may not know all the sectoral information, but they can at least pinpoint missing information and ask the appropriate other working member to input that information if it is available.

4 Climate Change Transparency Information Flows

Two categories of information apply to and are input into the NCTP, and these are shown and described below. These categories of information often have different information flows and levels of effort needed to collect and use the information. The mapping of each is essential to understanding what information should be collected and imputed by whom into the NCTP.

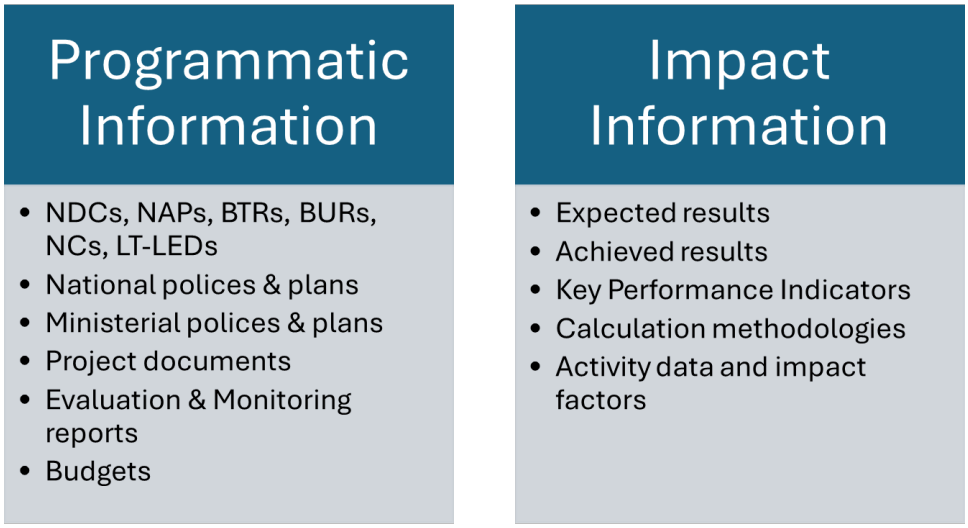

Figure 4: categories of information for Climate Change Transparency Information Flows

Programmatic Information

Programmatic information is often already developed and available in different sources, and this type of information describes the What, How, When, Who, and Where of what is planned or is already happening in terms of climate actions in the country. It is often found in the sources shown in Figure 3.

Impact Information

Impact Information is much more detailed than programmatic information and may sometimes not be currently available. Impact information tells the amount of GHG mitigation and adaptation results taking place with specific climate actions and programmes and is shown in Figure 3. It can include a calculation methodology and needs several types of activity data and impact/emissions factors from different sources.

4.1 Mapping programmatic information

Programmatic information is often already developed and available from different sources, so mapping for this information is much easier and less time-consuming than impact information. The mapping of programmatic information does not necessarily need to address the exact report or data source. Still, it should map the entity (e.g. government department and ministry) responsible for developing and/or holding that information. To help with the process, UNDP has developed a Mapping Matrix tool that allows stakeholders to record the mapping results (see Annex B).

There are six proposed steps for mapping programmatic information needed for the NCTP, which are as follows.

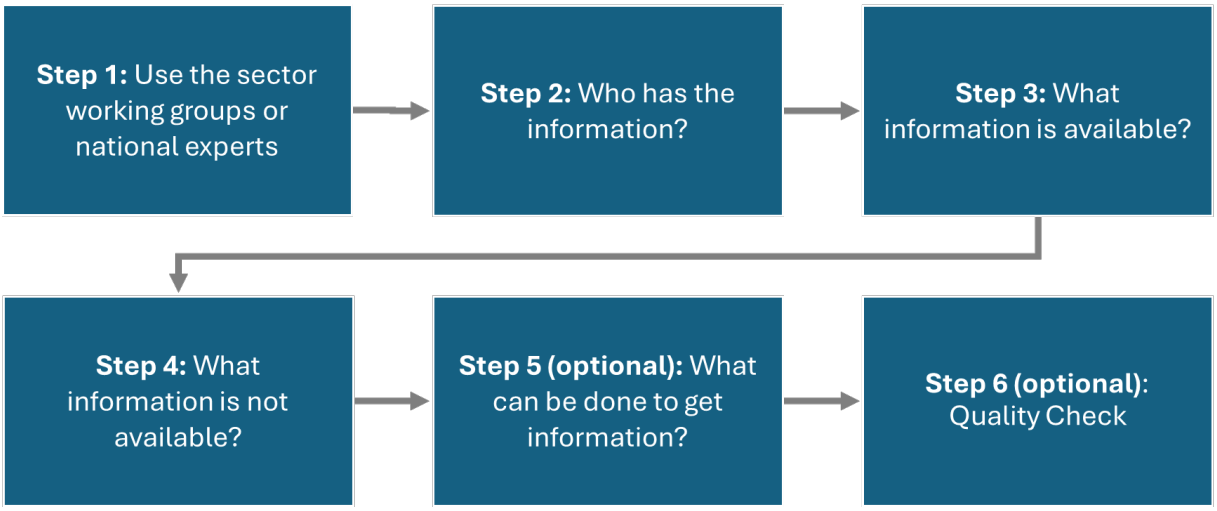

Figure 5: Steps for mapping programmatic information

Step 1: Use the sector working groups or experts

Identify the working groups or national experts that will be able to map the programmatic information for each sector.

Tip: It is proposed that the same people be used as the previous working groups and augment them with national academics and/or sectoral experts.

Step 2: Who has the information?

Identify the entities with programmatic information for the listed actions, programmes, and projects from the Mapping Matrix tool. Then, record that entity for each action, programme, and project in the Mapping Matrix tool. If there is information that no entity has or is not available, then identify the entity most likely to develop or obtain that information.

Tip: Usually, this requires discussion with the sector working group, but most information is available from the ministry or division responsible for the sector.

Step 3: What information is available?

Identify what programmatic information is available (and sources) for the listed actions, programmes, and projects from the Mapping Matrix tool. The Mapping Matrix tool provides a list of the data parameters for the NCTP. Then, record that for each action, programme, and project in the Mapping Matrix tool.

Tip: Usually, this requires discussion with the sector working group, and information is likely electronically available during the sector working group meeting. In many cases, programmatic information is also available online through a search.

Step 4: What information is not available?

Identify what programmatic information is unavailable for the listed actions, programmes, and projects from the Mapping Matrix tool. The Mapping Matrix tool provides a list of the data parameters for the NCTP. Then, record that for each action, programme, and project in the Mapping Matrix tool.

Tip: The tool will help identify what is missing.

Step 5 (optional): What can be done to get information?

As an option for programmatic information that is not available, propose activities that can be taken to develop and/or secure that information, as well as the potential entity that can perform that activity.

Tip: Usually, this requires discussion with government officers and/or division directors and, in some cases, development partners.

Step 6: Quality Check (optional validation)

It is proposed that one person from the working group (or two) be nominated to perform a quality check of the information inputted into the provided Mapping Matrix tool. This person(s) will hold the combined draft and final mapping versions.

Tip: The person(s) doing the quality check may or may not know all the sectoral information, but they can at least pinpoint missing information and ask the appropriate other working member to input that information if it is available.

4.2 Mapping impact information

Impact information may not already be developed or available, but a streamlined mapping process can start the efforts needed to go deeper into determining the impact and information needed. To help with the process, UNDP has developed a Mapping Matrix tool that allows stakeholders to record the mapping results (see Annex C).

There are seven proposed steps for mapping impact information that are needed for the NCTP, and they are divided into basic and advanced steps and are as follows.

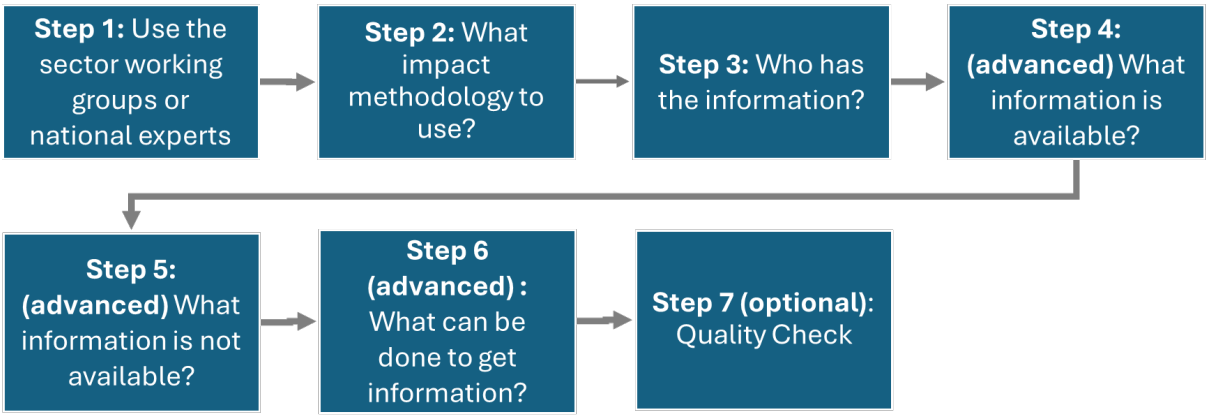

Figure 6: Steps for mapping impact information

Step 1: Use the sector working groups or experts

Identify the working groups or national experts that will be able to map the impact information for each sector.

Tip: It is proposed to use the same persons as with working groups and may be augmented with national academics and/or sectoral experts.

Step 2: What impact methodology to use?

Identify the impact methodology for calculating (quantitative impact) or determining (qualitative impact), as well as the expected and actual results of actions, programmes, and projects from the Mapping Matrix tool. Then, record this in the Mapping Matrix tool. If the methodology is not known, uncertain, or needs to be switched/updated to enhance quality, then indicate this in the Mapping Matrix tool.

Then also identify the different parameters, activity data, and impact factors needed to use the methodology or if not known.

Tip: There are many sources of impact methodologies. The most common sources for mitigation methodologies are IPCC 2006 and UNFCCC Clean Development Mechanism (and soon Article 6.4) methodologies. There are many sources for adaptation, but these are not well consolidated, and further research may be needed. LCDs and SIDS have the opportunity to propose their simplified methodologies.

Step 3: Who has the information?

Identify entities with the impact information (parameters, activity data, and impact factors) for the listed actions, programmes, and projects from the Mapping Matrix tool. There likely will be more than one entity or source of information for each. Then, record those entities for each action, programme, and project in the Mapping Matrix tool. If there is information that no entity has or is not available, then identify the entity most likely to develop or obtain that information.

Tip: The entities with the information usually regulate or operate in the sector. The alternative is that information is also found in a national statistics office.

Step 4 (advanced): What information is available?

Identify what impact information is available (and sources) for the listed actions, programmes, and projects from the Mapping Matrix tool. There are often 3 to 15 parameters, activity data, and impact factors needed for each as defined by the methodology. Then, record these for each action, programme, and project in the Mapping Matrix tool.

Tip: This is a very challenging task and usually requires one or more government staff who directly operate with the sector's actions, programmes, and projects. This may require several one-on-one meetings with different government staff to determine if information is available and if it is in the form needed.

Step 5 (advanced): What information is not available?

Identify what impact information is unavailable for the listed actions, programmes, and projects from the Mapping Matrix tool. There are often 3 to 15 parameters, activity data, and impact factors needed for each as defined by the methodology. Then, record that for each action, programme, and project in the Mapping Matrix tool.

Tip: It is often good to not only list the parameters, activity data, and impact factors but also the units of the data (e.g. MWh, MJ, tonnes…).

Step 6 (advanced): What can be done to get information?

As an option for impact information that is not available, propose activities that can be taken to develop and/or secure that information, as well as the potential entity who can perform that activity.

Tip: Sectoral experts will know what can be done to gain information or be able to help determine an activity (support needed) that will develop the required information in the future.

Step 7 (optional): Quality Check

It is proposed that one person from the working group (or two) be nominated to perform a quality check of the information inputted into the provided Mapping Matrix tool. This person(s) will hold the combined draft and final mapping versions.

Tip: The person(s) doing the quality check may or may not know all the sectoral information, but they can at least pinpoint missing information and ask the appropriate other working member to input that information if it is available.

4.3 Advanced Impact Information Screening

If a methodology is determined for measuring impact (e.g. GHG mitigation) and data sources are known or not, then an Advanced Impact Information Screening can be done. To help with the process, UNDP has developed an Advanced Impact Sheet tool that allows stakeholders to record the screening results (see Annex D). This screening helps communicate methodology, data parameters, and sources for determining impact and reporting under the ETF to different parties.

There are six proposed steps for Advanced Impact Information Screening that are needed for the NCTP and are as follows.

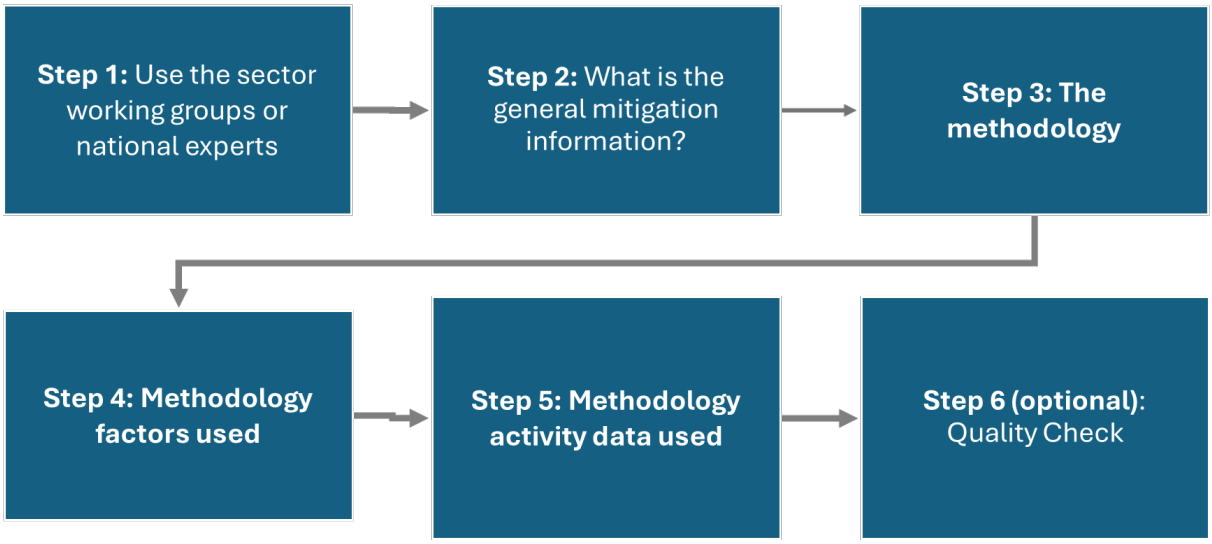

Figure 7: Steps for mapping impact information

Step 1: Use the sector working groups or experts

Identify the working groups or national experts that will be able to map the impact information for each sector.

Tip: It is proposed to use the same persons as with the working groups and may be augmented with national academics and/or sectoral experts.

Step 2: What is the general mitigation information?

The impact methodology may already be determined in the previous processes. If it is or is not determined, then the general information for the methodology can be included in the Advanced Impact Sheet tool. The related action, programme, or project information should be included.

Tip: All the general mitigation information from the previous processes should be available.

Step 3: The Methodology

Sectoral experts should help determine the exact methodology, which may already be done in the previous process, for the impact methodology to use for calculating (quantitative impact) or determining (qualitative impact) impact. The methodology should have a well-documented approach, mathematics, and indicated data needs.

Tip: There are many sources of impact methodologies. The most common sources for mitigation are IPCC 2006 and UNFCCC Clean Development Mechanism (and soon Article 6.4) methodologies. There are many sources for adaptation, but these are not well consolidated, and further research may be needed. LCDs and SIDS have the opportunity to propose their own simplified methodologies.

Step 4: Methodology factors used?

Standard or country-specific methodology factors will be used if the methodology measures quantitative impact. These are typically emissions factors and/or activity factors that are fixed within the methodology. The names of the factors, units, and sources of factors should be recorded. If these are unavailable, the actions to make them available should be noted.

Tip: There are many sources of methodology factors. The most common sources for mitigation are IPCC 2006 and UNFCCC Clean Development Mechanism (and soon Article 6.4) methodologies. There are many sources for adaptation, but these are not well consolidated and further research may be needed.

Step 5: Methodology activity data used

If the methodology measures quantitative impact, country-specific activity data will be collected. This relates directly to the action, programme, or project and are the scalable parameters used to measure progress. The name of the activity data parameter, units, and source of factors should be recorded. If these are unavailable, the actions to make them available should be noted.

Tip: Every methodology has activity data. Mitigation activity data may include electricity generation or fuel use (e.g. MWh, MJ, tonnes…), waste generation (tonnes/day, population..), or livestock (number of heads)… amongst others. Adaptation activity data may include the population affected, length or number of roads or coastline, and GIS inputs… amongst others.

Step 6 (optional): Quality Check

It is proposed that one person from the working group (or two) be nominated to perform a quality check of the information inputted into the provided Advanced Impact Information tool. This person(s) will hold the combined draft and final mapping versions.

Tip: The person(s) doing the quality check may or may not know all the sectoral information, but they can at least pinpoint missing information and ask the appropriate other working member to input that information if it is available.

Annex A: Mapping National Climate Change Information

Mappir

Action No.	Programme No.	Project No.	Activti No.	Title of Action	Title of Programme	Title of Project	Title of Activity
1				Increase use of renewable energy for power generation across the nation			
1	1				Increase rural electrification access and the use of renewable energy by rural communities		
1	1	1				Solar Home Systems (SHS) Programme Phases 1 and 2	
1	1	1	1				Technical and financial feasability study in the southern disctirct for Solar Home Systems (SHS)
1	1	1	2				Communication and infomration desimioniation to suport households in implimenting Solar Home Systems (SHS)

ng Chart

Type	Sector affected	Sub-Sector affected	Main entity responsbile	Short Description	Objectives	Status
Mitigation	Energy		Ministry of Mines Energy and Rural Electrification	National efforts to increase the level of renewable energy used for power generation through the use of solar, wind, and biofuels	Increase the level of renewable energy used for power generation up to 80% by 2035	On-going
Mitigation	Energy	Off-Grid / Rural Generation (Power)	Ministry of Rural Development	National efforts to increase the level of renewable energy used for power generation in rural communities	Rural communities will use 100% renewable electricy by 2035	On-going
Mitigation	Energy	Off-Grid / Rural Generation (Power)	Ministry of Rural Development	Establishing solar home systems in rural households	Establishing and maintainign 2,500 solar home systems in rural households	Completed
Mitigation	Energy	Off-Grid / Rural Generation (Power)	Ministry of Rural Development	To deterimine the demand for Solar Home Systems (SHS) in the southern disctirct and the financial insturments needed to support households in investing in and	Reaching at least 2,500 households	Completed
Mitigation	Energy	Off-Grid / Rural Generation (Power)	Ministry of Rural Development	To prepare an impliment a programme for information local communities of the benefits and needs for installing and operating SHS	Reaching at least 2,500 households	Completed

Annex B: Mapping Programmatic Information

Programmatic Information			
Informtion is Available	**Entity responsbile**	**Describe the information available for needed**	**If missing what can be done to get the information**
Yes	Ministry of Mines Energy and Rural Electrification	xxxxxxxxx	xxxxxxx
Yes	Ministry of Rural Development	xxxxxxxxx	xxxxxxxxx
Yes	Ministry of Rural Development	xxxxxxxxx	xxxxxxxxx
Yes	Ministry of Rural Development	xxxxxxxxx	xxxxxxxxx
Yes	Ministry of Rural Development	xxxxxxxxx	xxxxxxxxx

Annex C: Mapping Impact information

Basic Impact Information

Informtion is Available	Entity responsbile	Impact methogolgy	Specific parameters, activity data, and impact factors needed	Describe the information available for needed	If missing what can be done to get the information
Yes	Ministry of Mines Energy and Rural Electrification	xxxxxxxx	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet
Yes	Ministry of Rural Development	xxxxxxxx	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet
Yes	Ministry of Rural Development	xxxxxxxx	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet
Yes	Ministry of Rural Development	xxxxxxxx	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet
Yes	Ministry of Rural Development	xxxxxxxx	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet	See the Advanced Impact Information Screening Sheet

Annex D: Advanced Impact Information Screening Sheet

General Information on Mitigation Actions

Mitigation Action/Programme/Project Name	fill in text
Mitigation Action/Programme/Project Short Description	fill in text
Mitigation Action Objective	fill in text
Type	
Sector Affected	Energy
Sub-Sector Affected	Grid-Connected Generation (Power)
GHGs Affected	CO2
Status	Completed
Main entity responsbile	

GHG Calculations and Methodology

Methodology is Available	No
Methology Title	
Methodology Short Description	

ID.	Methodology Factors	Units	Source (Entity) of Factors	Actions to take	Available
					No
					No
					No
					No
					No
					No
					No

ID.	Methodology Activity Data Paramters	Units	Source (Entity) of Activity Data	Actions to take	Available
					No
					No
					No
					No
					No
					No
					No
					No
					No
					No
					No
					No
					No
					No
					No

Annex E: Insights for Renewable Energy

Considerations

Top-down methodologies for determining GHG mitigation usually link to the primary energy data (e.g. fuel use) in a country or over all capacity installed of renewable energy (by type). They are often not directly linked to the results of specific projects and financing, but can be effective in tracking the broad sectoral results for actions and programmes, also when linked to sectoral strategic targets (KPIs).

Bottom-up methodologies for determining GHG mitigation from renewable energy are proven the lead to less uncertainty then top-down methods. They also provide verifiable results of specific projects and activities on the ground and fit to specific site & use conditions.

On- and off-gid electricity generation follows similar concepts in methodologies but require different types of data. It is common practice to use different methods for each on- and off-gid electricity generation, as well as for different renewable technologies.

Where to look for information

The most common sources of information for renewable energy impact are the ministries responsible for energy, customs, economy, rural communities, and statistics. Also information can be found at the national electricity authority and companies to generate/supply electricity.

Common basic information needs

- Fuel types and fuel consumption data (national, companies, installations)
- Fuel emissions factors and other conversion factors (for energy, mass and volumes)
- Electricity generation amounts (national, companies, installations)
- Generation capacities (by type of renewable technology)
- Plant load factors / energy potentials (by type of renewable technology and location)
- Grid-emissions factors (national and regional)
- Off-grid-emissions factors (situation specific)

Available simple methodologies

- Custom-made national methodologies
- IPCC 2006: 1A1ai , Worksheets
- CDM: AMS-I.A , AMS-I.D , AMS-I.F , AMS-I.L ,

Available advanced methodologies & tools

- Software: LEAP , GAMCO ,
- CDM: Tool to calculate the emission factor for an electricity system
- CDM: ACM0002

Annex F: Insights for Transport

Considerations

Top-down methodologies for determining GHG mitigation is usually link to the primary energy data (e.g. fuel use) in a country but for the transport sector this is often challenging because few countries have accurate data on fuels that go specifically to transport, especially the different transport types (e.g. land, maritime and aviation – split also between national and international use). They are not directly linked to the results of specific projects and financing.

Bottom-up methodologies for determining GHG mitigation from different types of transport projects are proven the lead to less uncertainty then top-down methods. They also provide verifiable results of specific projects and activities on the ground and fit to specific site & use conditions.

Modes of transport have very different concepts in methodologies and require different types of data. It is common practice to use different methods for each mode of transport and even sub-modes.

Where to look for information

The most common sources of information for transport impact are the ministries responsible for energy, transport, maritime & aviation authorise, customs, traffic & registrations, economy, and statistics.

Common basic information needs

- Fuel types and fuel consumption data (national, suppliers and companies)
- Electricity consumption (national, suppliers and companies)
- Fuel emissions factors and other conversion factors (for energy, mass and volumes)
- Registered numbers of vehicles, vessels, or aircraft by type & model
- Imported numbers of vehicles, vessels, or aircraft by type & model
- Standard emissions factors of vehicles, vessels, or aircraft by type & model
- Age of vehicles, vessels, or aircraft
- Vehicle emissions limits or labels by type & model
- Average annual distances travelled by vehicles, vessels, or aircraft by type & route
- Electricy methodologies may be needed

Available simple methodologies

- IPCC 2006: 1A3a , 1A3b , 1A3d , 1A3c , Worksheets
- CDM: ASM-I.M , ASM-III.T , ASM-III.AK , ASM-III.C , ASM-III.S , ASM-III.BC , ASM-III.BM ASM-III.BN

Available advanced methodologies & tools

- Custom-made national methodologies
- Software: LEAP , GAMCO ,
- CDM: ACM0016 , AM0031 , AM0110 , AM0116
- Electricy methodologies may be needed from Annex E

Annex G: Insights for Solid Waste

Considerations

Top-down methodologies for determining GHG mitigation is usually link to national or regional level solid wate data for generation and composition, even though accurate information can be really challenging for some countries. Though they are the most commonly used methods and are linked to actions and programmes.

Bottom-up methodologies for determining GHG mitigation from solid waste activities are data intensive and often require direct monitoring that many countries do not have outside of major landfills. These methods typically only used for verifiable results of specific projects and activities on the ground and fit to specific site & use conditions (e.g. selected landfills or composting plants).

Modes of waste treatment there are three primary modes of solid waste treatment/disposal, and they are landfilling, composting, and biogas/composting each have different methodologies.

Where to look for information

The most common sources of information for solid waste impact are the ministries responsible for environment and statistics. As well as authorities and companies operating waste management.

Common basic information needs

- Waste generation by person (urban or rural) and/or measured at management facilities
- Waste disposal by type (composting, landfilling, burning/incineration…)
- Landfill conditions
- Waste composition (especially organics)
- Waste water content
- Waste energy content
- Waste carbon content
- Landfill gas amounts recovered, flares or utilised for energy

Available simple methodologies

- IPCC 2006: 4A , 4B , 4C , Solid Waste Tool , Worksheets
- CDM: AMS-III.AJ , AMS-III.G , AMS-III.X , ASM-III.E , ASM-III.F , ASM.III-AO

Available advanced methodologies & tools

- Custom-made national methodologies
- CDM: ACM0001 , ACM0022 , AM0083 , AM0093

Annex H: Insights for Agriculture

Considerations

Top-down methodologies for determining GHG mitigation in agriculture are split between livestock (manure) and fertiliser use, and IPCC 2006 offers the easiest methods to apply, even though accurate information can be really challenging for some countries.

Bottom-up methodologies for determining GHG mitigation from livestock (manure) and fertiliser use do require general direct monitoring of several data parameters, so there is a lot of 'fieldwork' when applying bottom-up methodologies. This means that bottom-up methods are mainly used for specific projects.

Generally, for data, many governments do not have active macro-level monitoring of key data on an annual basis, so there are a lot of projections used, and this leads to uncertainty.

Where to look for information

The most common sources of information on agriculture's impacts are the ministries responsible for agriculture, statistics, customs, industry, and rural communities. As well as companies operating in the agriculture space (especially SOEs).

Common basic information needs

- Numbers of livestock by type
- Days livestock is alive
- Various CH_4 emissions factors by livestock type – Tier 1
- Type of manure management
- Energy intake of livestock by type (specific equations)
- Volatile solids of livestock by type (specific equations)
- Average animal mass
- Measured biogas generation and/or combustion
- Emissions factors for N_2O from manage soils
- Amounts of fertilisers applied by type (organic and inorganic/synthetic)
- Crop yields by type
- Various CH_4 emissions factors by per type of crop (rice)
- Land under cultivation by type of drop

Available simple methodologies

- IPCC 2006: 3A1 , 3A2 , 3C1 to 3C8 , Worksheets
- CDM: AMS-III.D , AMS-III.R , AMS-III.A , AMS-III.AU , AMS-III.BE , AMS-III.BF

Available advanced methodologies & tools

- Custom-made national methodologies
- CDM: ACM0010 , AM0073

Annex I: Insights for Forestry

Top-down methodologies for forestry determined based on estimated change in carbon stocks across a country or region, where IPCC 2006 offers the easiest method (Teir 1) to apply, even though accurate information can be really challenging for nearly all countries. Critical will be that countries have an up to date National Forest Reference (NFR) level, quality GIS mapping, and understanding or forests losses.

Bottom-up methodologies for forestry are data intensive and focused on areas with clearly defined boundaries at a project level. These types of methodologies are commonly used in countries with a lot of forests and logging operations, especially for carbon credit projects. However, even when these methodologies monitoring is usually not done on an annual basis, but more in the range of every 3 to 5 years.

Where to look for information

The most common sources of information on agriculture's impacts are the ministries responsible for forestry, agriculture, statistics, customs, industry, and rural communities. As well as companies operating in the agriculture and forestry space (especially SOEs).

Common basic information needs

- Area with forests/trees
- Growing stock volumes per ha by species of trees and climatic zones
- Carbon fraction of above ground mass of biomass by species of trees and climatic zones
- Ratio of below ground mass of biomass by species of trees and climatic zones
- Removal, harvested, and insect disturbance of stock volumes by species of trees and climatic zones
- Above-ground biomass factors by region and ecological zone in forests and plantations
- Above-ground biomass growth by region and ecological zone in forests and plantations
- Wodd density by species

Available simple methodologies

- IPCC 2006: 3B1a , 3B1b , Worksheets
- CDM: AR-AMS0003 , AR-AMS0007

Available advanced methodologies & tools

- Custom-made national methodologies
- CDM: AR-AM0014 , AR-ACM0003

Annex J: Other useful resources

National Climate Transparency Platform (NCTP):

GitHub resources (software)

Software demo website

Enhanced Transparency Framework:

UNFCCC Transparency Website

UNFCCC ETF Reporting Tools

ETF Modalities Procedures and Guidelines 18/CMA1

ETF Reporting Tables 5/CMA3

Methodologies sources:

2006 IPCC Guidelines for National Greenhouse Gas Inventories

CDM Methodology Booklet (simple catalogue of methodologies)

CDM Methodologies Website

CDM Sustainable Development Tool v1.1

VCS Program Methodologies

Sustainable Development Verified Impact Standard

Forestry

UNFCCC REDD+ platform

Paris Agreement Crediting Mechanism

Information on the Paris Agreement Crediting Mechanism Article 6.4

Paris Agreement Cooperative Approaches

Information on the Paris Agreement Cooperative Approaches Article 6.2

Paris Agreement Non-market Approaches

Paris Agreement Non-market Approaches Article 6.8