THE CLIMATE FOOTPRINT PROJECT

TRACKING EMISSIONS / RAISING AMBITION

UNDER2°
Secretariat
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Resources required for GHG emissions and mitigation actions tracking for states and regions

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About the Climate Footprint Project

The Climate Footprint Project supports state and regional governments to improve their greenhouse gas emissions tracking and reduction efforts. In the first phase of the project, the project worked with states and regions in developing and newly industrialising countries including Pernambuco (Brazil), Chhattisgarh and West Bengal (India), Baja California, Jalisco and Yucatán (Mexico), and KwaZulu-Natal (South Africa).

Overview

This document is a reference piece for state and regional governments on the resources needed for inventory compilation, greenhouse gas (GHG) emissions tracking and mitigation actions tracking. It can be used on its own to help with planning processes, or as an accompanying piece to our brief on resource constraints.

More guidance on GHG inventory compilation and mitigation tracking can be found in this toolbox which supports state and regional governments with improving their GHG emissions tracking and reduction efforts.

GHG inventory compilation stages

GHG inventories provide an overview of greenhouse gas trends over time. Understanding how the emissions of the various gases (e.g. CO_2, CH_4, N_2O) are caused by different activities within a state or region (e.g. transport, power and heat generation, fertiliser use, solid waste management) helps with identifying, prioritising and updating effective mitigation policies. For the purpose of the Climate Footprint Project, inventories were developed by states and regions using the IPCC 2006 Guidelines for National GHG Inventories.

Figure 1 details the six-stage cyclic approach to compiling a GHG inventory. More information on this approach can be found in the "Workbook for national greenhouse gas inventory development: for small island developing states and least developed countries"[1] by the US Environmental Protection Agency. Additionally, this approach was adapted for state and regional governments during the Climate Footprint Project, which is available as part of the toolbox referenced at the start.

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[1] UNFCCC (2019) – Workbook for national greenhouse gas inventory development; for small islands developing states and least developed countries, available at https://www.un-gsp.org/sites/default/files/documentos/workbookfinal.2019.pdf, accessed on 18/8/2020

Figure 1: The six-stage approach to compiling a GHG emissions inventory
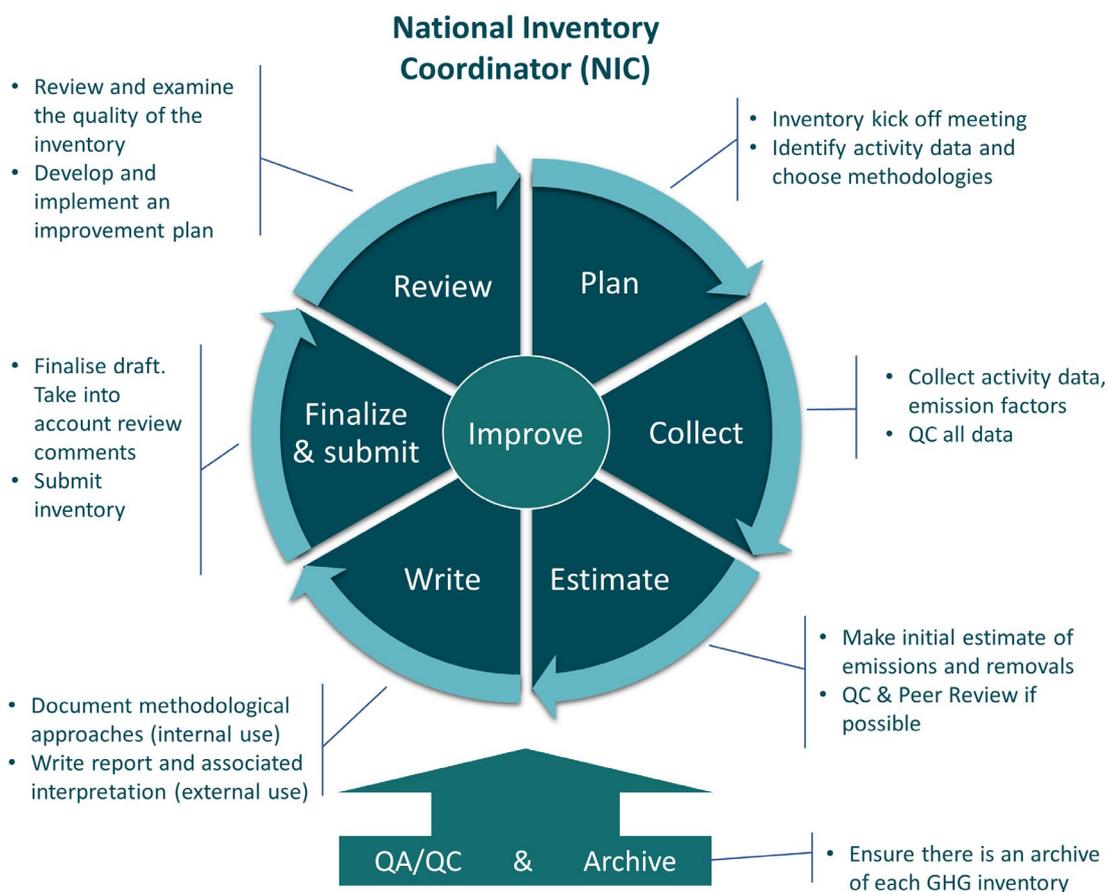
*Source: 'Workbook for national greenhouse gas inventory development: for small island developing states and least developed countries' (2019)[2] | **QA/QC – Q**uality **a**ssurance / **Q**uality **c**ontrol*

As the figure shows, activities such as data collection, the estimation of GHG emissions according to set methodologies, drafting an inventory report and quality control play a large role in compiling a GHG inventory. The data required (e.g. fuel consumption, production amount of glass, heads of cattle) is often not readily available and the application of methodologies and quality control require expert insights, often specific to a sector. Not only do these tasks require expert knowledge, but they are also time intensive. Currently, developed countries, which have been compiling national (economy-wide)

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[2] UNFCCC (2019) – Workbook for national greenhouse gas inventory development; for small islands developing states and least developed countries, available at https://www.un-gsp.org/sites/default/files/documentos/workbookfinal.2019.pdf, accessed on 18/8/2020

GHG inventories for around 20 years at least, need 6-9 months to compile a GHG inventory[3]. In these countries, GHG inventory compilation can be conducted efficiently, as relevant data is collected using established structures and agreements, staff hold the necessary expertise, and processes and tools supporting the implementation of the six steps have been developed.

Inventory compilation roles

The compilation of a GHG inventory requires a number of different staff roles. Figure 2 provides the overview of a GHG inventory structure showing the relevant roles.

Figure 2: Overview of a standard GHG emissions inventory structure
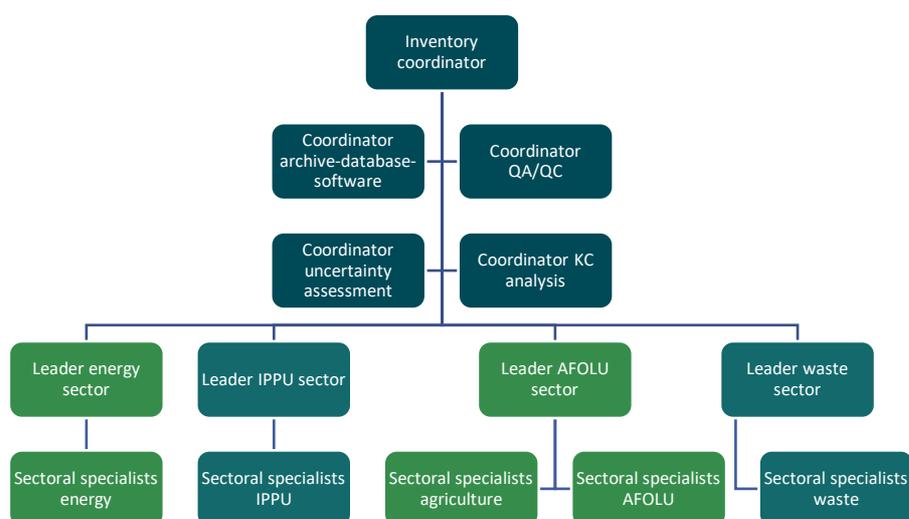
Source: Figure provided by the UNFCCC (2019)
IPPU – Industrial Processes and Product Use | AFOLU – Agriculture, Forestry and Other Land Use
QA/QC – Quality Assurance / Quality Control | KC – Key category analysis[4]

The figure should be seen in two parts: roles related to the core team (dark blue boxes on top) and sectoral staff roles. An overall coordinating role is required, as well as other cross-cutting roles, e.g. for software/archiving and for QA/QC. At the sectoral level, staff collect the relevant data, calculate GHG emissions, and document findings and approaches as part of the report. Each role will need to be filled by those with sufficient technical expertise to maintain the integrity of the inventory. While this gives

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[3] The time series covered by these inventories start in 1990 and end two years before the GHG inventory is submitted to the UNFCCC. So GHG inventories submitted in 2020 cover the years 1990-2018. The inventories are compiled using the IPCC 2006 Guidelines for national GHG inventories.
[4] For a definition of key category analysis see https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_4_Ch4_MethodChoice.pdf, section 4.1.1.

the impression that a large team is required, depending on the available resources, these roles can also be held by a smaller team of 2-3 staff members, as long as roles for each member are clearly delineated.
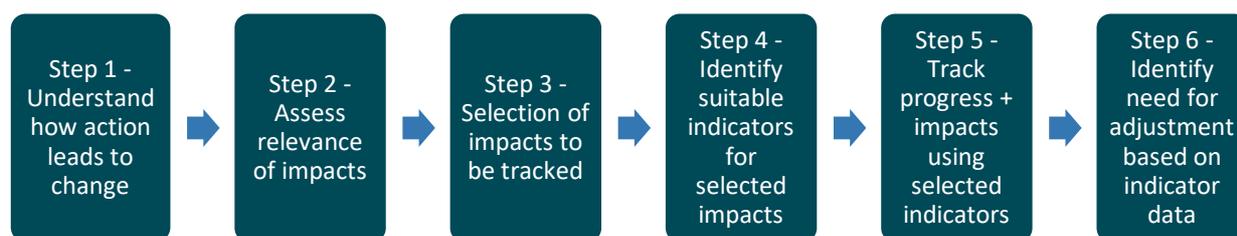
Tracking mitigation actions

Tracking mitigation actions is important for two reasons. Firstly, to monitor whether they are on track and being implemented as planned. Secondly, to monitor whether they achieve their anticipated impact or effects, within the expected timeframe and to the projected cost.

Tracking these actions consists of setting indicators. Examples of indicators that track the progress of implementation of an action include for instance the number of energy audits carried out as part of an energy efficiency policy, or similarly the number of old boilers replaced by ones that are more energy-efficient. Example indicators that track impact however might include the tonnes of GHG emissions reduced as a result of a home insulation policy, or reductions in home user electricity costs or number of jobs generated by the policy. Figure 3 details the typical steps involved in mitigation actions tracking. The World Resources Institute's (WRI) Policy and Action Standard[5] provides more information on indicator setting. An indicators manual and mitigation actions tracking table (Excel) are included in the previously mentioned toolbox.

Developing indicators again requires a certain level of expertise. While this depends on the mitigation action in question, it often relates to the specific (sub)sectors targeted by the action, the technologies to be applied, and the specific type of action that it is (e.g. regulatory, economic incentive, information campaign, etc.). Indicators also often require data which is not readily available.

The assessment of these indicators – i.e. whether what has happened in reality is in line with expectations – might indicate a need for adjustment. Adjustment could be in regards to the action's implementation, or could mean finetuning the action itself. Such decisions should not be taken lightly, but should be discussed with relevant sectoral stakeholders, meaning these assessments and decisions will require time.
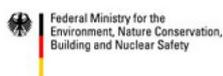
Figure 3 Steps in tracking mitigation actions

Step 1 - Understand how action leads to change	Step 2 - Assess relevance of impacts	Step 3 - Selection of impacts to be tracked	Step 4 - Identify suitable indicators for selected impacts	Step 5 - Track progress + impacts using selected indicators	Step 6 - Identify need for adjustment based on indicator data