“MRV IN PRACTICE” – CONNECTING BOTTOM-UP AND TOP-DOWN APPROACHES FOR DEVELOPING NATIONAL MRV SYSTEMS FOR NDCS

Abstract

This Knowledge Product (KP) will provide practical advice for stakeholders involved in designing and implementing robust and integrated national MRV systems for NDCs in developing countries. The differences between developing NDC related MRV systems bottom-up (e.g. for mitigation actions) and top-down (e.g. national MRV system) will be described. The main discussion is about what to consider for linking both approaches and develop a “linked MRV system”.

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Contents

1. Background and Objectives

Most developing countries are currently in the process of designing and developing or implementing or enhancing their systems to measuring and reporting impacts of climate change actions (both mitigation and adaptation). Measuring the progress and the impacts of National Determined Contributions (NDCs) is one of the key pillars under the Paris Agreement. However, international standards and procedures that countries can follow to comply with the so called 'Enhanced Transparency Framework' (ETF) are not available and are still under negotiation. An iterative approach may be required to enhance national Measurement, Reporting and Verification (MRV) systems over time. Since countries are already in the process of setting up MRV systems, it is important to raise awareness about different approaches applied and potential pitfalls to develop such national MRV systems. This holds true for all countries, but is especially important for Least Developed Countries and Small Island Development States (SIDS), where previous experience with MRV is often limited and resources to set up and enhance comprehensive MRV systems are scarce.

While many countries already have gained initial experience with implementing MRV systems for individual mitigation actions (e.g. NAMAs)[1], and experience exist with reporting e.g. Greenhouse Gas (GHG) Inventories to the United Nations Framework Convention on Climate Change (UNFCCC), practical knowledge with the development and implementation of full-scale national MRV systems is limited.

This Knowledge Product (KP) will provide practical advice for stakeholders involved in designing and implementing robust and integrated national MRV systems for NDCs in developing countries. The differences between developing NDC related MRV systems bottom-up (e.g. for mitigation actions) and top-down (e.g. national MRV system) will be described, and strengths and weaknesses will be highlighted. The primary objective of this KP is to sensitize the different actors for the necessary coordination and alignment of different MRV systems (national and mitigation action specific MRV systems) in the country. This should help to better harmonize already existing MRV systems and new systems under development (e.g. for NDCs) and to consider possible synergy effects and cross-cutting aspects between different approaches and different MRV systems. Some practical examples will be provided throughout the document in text boxes.

The target group for this KP are stakeholders involved in designing national MRV systems for NDCs. This includes national and sub-national policy makers on climate actions (e.g. NDCs, NAMAs), development organizations and climate funds providing support for MRV system development, research institutes, governmental and non-governmental organizations, and consultants involved in MRV development and implementation.

[1] NAMA = Nationally Appropriate Mitigation Action

2. Overview of MRV requirements for NDCs and mitigation actions

The MRV requirements described here, primarily relate to international requirements of the UNFCCC (UNFCCC, Handbook on Measurement, Reporting and Verification for Developing Country Parties, 2014). However, it should not go unmentioned that there are often additional nationally specific requirements including measurability and reporting of policy measures to be implemented and review of budgets and compliance reports. Furthermore, there may be specific MRV requirements from donors supporting or funding mitigation actions. Aligning both international and domestic MRV requirements, to the extent possible, is highly recommended.

For the UNFCCC relevant MRV requirements, there are differences between developed and developing countries in terms of reporting frequency and necessary detail of reporting. This discussion paper focuses on developing countries, which is why the following remarks on international MRV requirements are related to developing countries.

A distinction must be made between the already existing "MRV framework" under UNFCCC and new requirements resulting from the so called "Enhanced Transparency Framework" (ETF) - one of the outcomes of the Paris Agreement.

2.1 General requirements for national MRV systems

Most developing countries have experience and are somewhat familiar with measuring certain climate change related data (e.g. on GHG inventories) and conduct regular international reporting (to UNFCCC). Under the current international MRV Framework, all countries should submit their National Communications (NCs) every 4 years (including the GHG inventory[2]) and submit Biennial Update Reports (BURs) every 2 years. [3]

NCs are mainly to report on measures and policies undertaken to address climate change in the country. Besides information on GHG inventories, NCs are to provide information on national circumstances, a general description of what steps and actions the country is taking or planning to mitigate and adapt to climate change, describing gaps and constraints and to state any needs for technical, financial or capacity building support.

For BURs, the main purpose is to further increase the transparency of actions taken by the country and to update information of the latest NC. Most of the information in the BUR is similar to the information in the NC, with the difference that the BUR should have a stronger focus on mitigation actions and should update any information/changes compared to the previous NC.

As an additional voluntary action (not a requirement under the existing UNFCCC MRV Framework), developing countries have the option to submit National Adaptation Plans (NAPs) and Technical Needs Assessment Reports (TNAs). Both NAPs and TNAs are voluntary

[2] GHG Inventories are often developed based on IPCC Guidelines (see https://www.ipcc-nggip.iges.or.jp/public/2006gl/).
[3] Least Developed Countries have more flexibility, due to their limited capacities.

reporting and planning means to improve the information basis in a country on adaptation planning and actions (NAPs) and on technical, financial and capacity needs required to implement climate change actions (TNAs). This is being done by many countries, as it helps to assess further specific information and to gain international support for such actions.

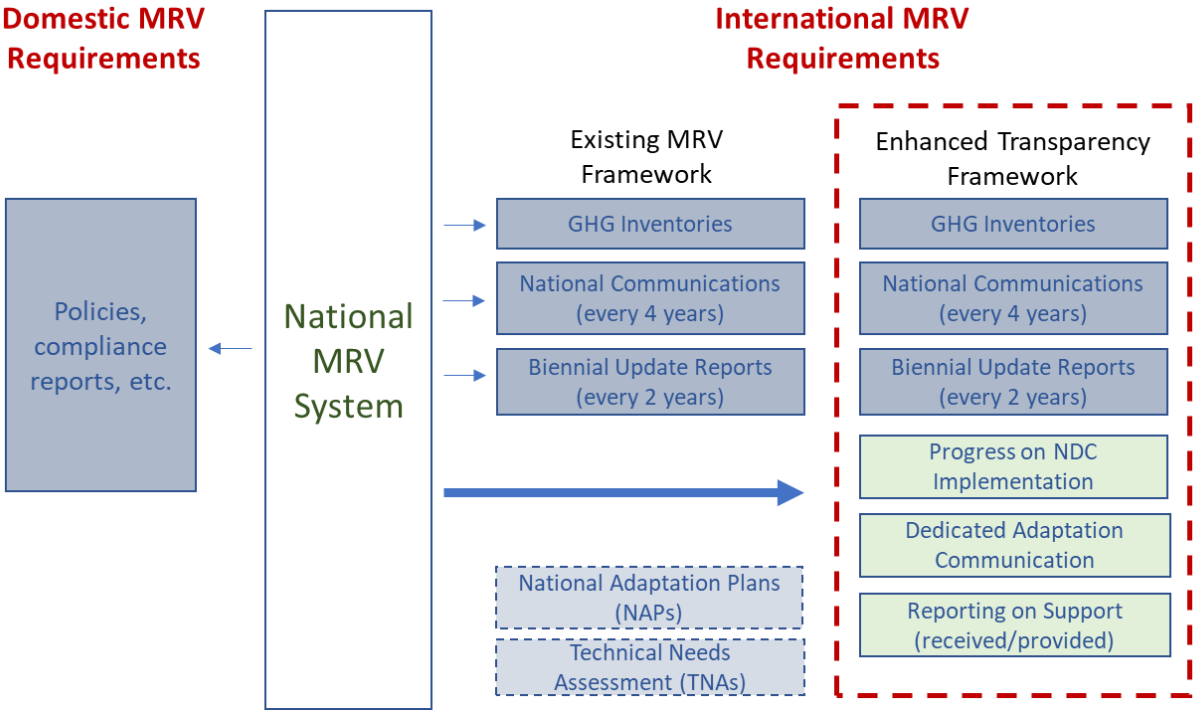

Figure 1 – General Requirements (International and domestic) for national MRV systems

The existing MRV Framework is about to be replaced by the ETF that was agreed upon at the Paris Agreement (PA) (United Nations, 2015). The ETF will inform the global stock-take, which will be used to assess global progress against the goals of limiting global warming to 2°C or, more ambitiously, 1.5°C, and the state of adaptation efforts (United Nations, 2015). Even though the requirements for the ETF are still under negotiation and clear guidance has still to be provided, it can be expected that most reporting mechanisms and processes will build on the existing MRV Framework (e.g. NCs, BURs). However, it is very likely that a more balanced focus of mitigation and adaptation will be included in the ETF (IIED, 2017). Besides measuring and reporting on mitigation and adaptation, the ETF clearly requires to include the transparent measurement and reporting of progress on NDCs. In addition, a dedicated communication on adaptation as well as an increasing transparency on support (technical, financial, capacity building) provided, received and needed for climate change actions in the countries are supposed to be part of the ETF.

According to the ETF requirements, the main purpose of the NDC MRV system is to transparently demonstrate progress made towards the targets defined in the NDC (e.g., GHG

emissions and GHG impacts), tracking the progress made in the implementation of mitigation and adaptation actions, and tracking the use and results of means of implementation and support (e.g., capacity building and technical assistance, technology transfer, and finance). In addition, non-GHG impacts (e.g. environmental, social and economic) of the NDC actions that would lead to transformational change in the country should be captured by the MRV system.

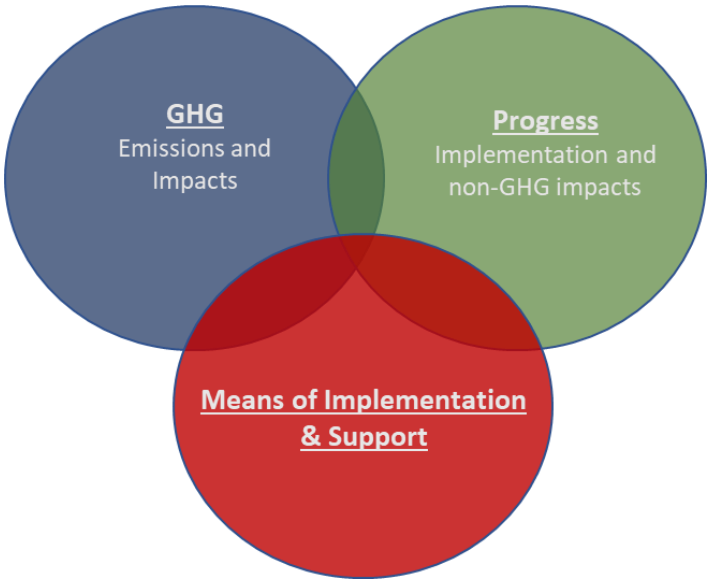

Figure 2 - Dimensions of MRV

It is important to note that the three MRV dimensions can be overlapping in their effect. Thus, e.g. the resources provided (support) have a direct impact on the degree of implementation (progress) of a given measure, which in turn would lead to a possible greenhouse gas reduction (GHG impact) and/or increased resilience (adaptation impact). Therefore, the NDC MRV system tracks the three dimensions, as a means to show progress and use of support, but also as a means to identify gaps and bottlenecks to allow for improved implementation. It is up to each country to decide to what extent the three dimensions are integrated in a national MRV System. However, considering the national and international requirements, it is highly recommended to ensure the coverage and linkage of the three MRV dimensions in any national MRV system.

2.2 Common MRV Requirements for Mitigation Actions

The development of MRV systems for individual mitigation actions has often taken place independently of international and national standards. Through initial project-related monitoring and reporting (under the CDM), where only emission reductions had to be measured, the requirements have evolved through the development and implementation of NAMAs. Today, NAMAs can be considered as one key instrument for developing and implementing mitigation actions under a countries' NDC. The requirements for MRV systems for mitigation actions will be therefore described below, using the example of NAMAs.

A robust NAMA MRV system should not only capture GHG emissions, but also other impacts in terms of sustainable development, transformative change, and how implementation is progressing and what resources have been spent in implementing the NAMA. A mitigation action specific MRV system can be understood as a tool to quantify and illustrate impacts and manage its progress over time. A NAMA MRV system needs to consider both, the requirements for domestic and international reporting. Additional MRV requirements are determined by donors supporting the action and by sectoral or sub-sectoral needs and requirements.

A NAMA MRV system can directly contribute to the national MRV system by strengthening and underpinning national and sectoral GHG data on the sector level, assess social and environmental co-benefits and potential negative or reverse effects caused, track progress and effectiveness of the actions, help identifying downstream national and sectoral priorities, and strengthen policy planning and prioritisation of actions in the future.

3. Top-down versus Bottom-up

As of June 2018, 172 countries have submitted their first NDC, and many will revise or enhance them with a new submission in 2020 (UNFCCC, NDC Registry (interim), 2018). Furthermore, due to the requirements of the ETF, many countries are currently in the process of developing or strengthening their national MRV systems. The starting point is often the already used processes and structures from existing MRV system, as well as experience from MRV systems that have been developed for mitigation actions and/or sectors (e.g. NAMAs, CDM, ETS… etc.).

MRV systems for mitigation actions are often developed for specific sectors or sub-sectors, based on defined activities.

> In Uganda, there exist already sub-sector specific MRV systems developed under the CDM or as NAMAs e.g. for renewable energy, energy efficiency appliances (e.g. improved cook stoves) and in the waste sector (e.g. composting).

In addition, different stakeholders may be involved in developing the different mitigation action specific MRV systems, without coordinating these efforts. This bottom-up approach can lead to completely different MRV designs and procedures for different mitigation actions, even within the same sector, and especially between different sectors. However, the bottom-up approach offers the advantage of direct linking the MRV system to specific actions and activities at the consumer or facility level. This may offer greater accuracy in tracking specific impacts, which is often a requirement when climate finance is involved to fund mitigation actions.

A top-down approach to an MRV system design has the advantage of direct linkage to the goals and targets defined in an NDC, and other national level planning. This approach allows for a broader and well-defined overview of MRV responsibility / governance, and for the flow of MRV information within and between government entities, line ministries and other sector stakeholders. However, this approach requires a well-established institutional set-up and

coordination of different stakeholder groups involved at the various levels for MRV. Only then, cross-boundary influences of mitigation actions on sectors/sub-sectors can be determined and captured.

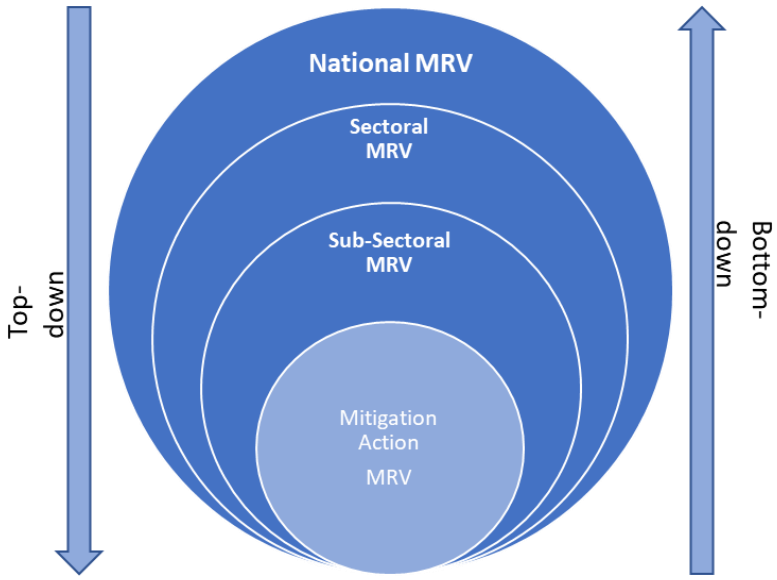

Figure 3 - Top-down and Bottom-up approaches for MRV Systems

Both, top-down and bottom-up approaches to MRV system design have a risk of information being misaligned with national targets, or other elements of the national level MRV system. Risks arise in the process of defining parameters, which requires that stakeholders must deliver accurate and verifiable data. Risks exists though, when a top-down approach defines parameters which sector stakeholders cannot deliver, or when sector stakeholders deliver information under a bottom-up which cannot be used within the national level MRV system.

There are certainly many different methods and ways to develop MRV systems. In the following two chapters, it will be shown, which steps are commonly used to develop national MRV system focussing on NDCs (top-down) as well as for MRV system for mitigation actions (bottom-up).

4. Common steps for developing national MRV Systems (Top-Down)

It seems logical that a full national MRV system should include all relevant sectors (e.g., energy, waste, transportation) that are relevant to achieving the NDC goals. In addition, the national MRV system should meet the current and future requirements for reporting (national and international), as much as possible build on existing structures and processes and be practicable and feasible to be implemented and operational.

It is up to each country to decide how its MRV system is designed and there are certainly many different approaches. In the following, we would like to highlight the steps we consider important for the development of a national MRV system. The figure below shows the main

steps to develop and implement a national MRV system for NDCs (starting from top to bottom).

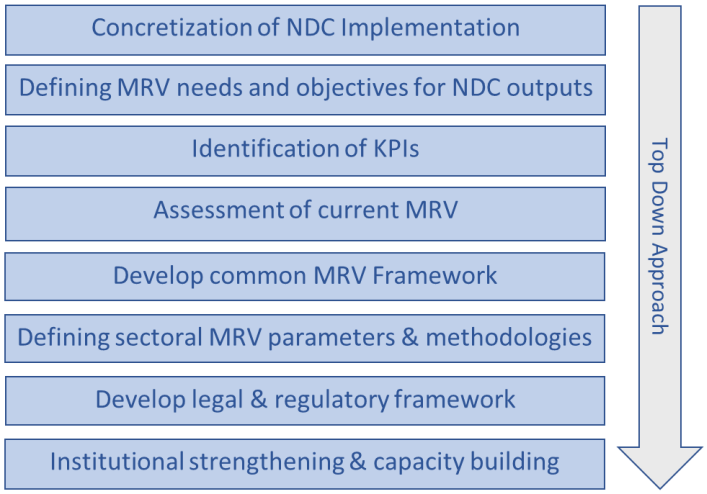

Figure 4 – Common steps for developing a National MRV system

Concretization of NDC implementation

The NDC must be broken down to define concrete implementation needs and actions and steps required for achieving the NDC goals. This should include an allocation of quantified targets and contributions across different sectors (and where necessary sub-sectors), the identification of concrete measures to achieve the goals and the development of NDC implementation plans for each (sub)sector with concrete actions, targets and timelines for implementation. This process should be done in close interaction with key stakeholders of the different sectors.

Defining MRV needs and objectives for NDC outputs

The specific objectives and needs of the MRV system should be defined. Ideally, this should be done for the national level, but also for each sector. This would include the definition of impacts that should be covered by the MRV. Typical impact categories are GHG related impacts (e.g. GHG emission reductions), non-GHG impacts (contribution to sustainable development goals, adaptation, gender aspects) and impacts in terms of progress towards achieving the NDC goals (e.g. means of implementation, support received).

Identification of KPIs

Key Performance Indicators (KPIs) should be defined for the NDC, per Sector and per impact category (e.g. GHG impacts, non-GHG impacts, means of implementation). KPIs are to measure the performance of the actions under the NDC. It will further help to define the key information needed to measure and report the NDC impacts and progress. The definition of KPIs helps to focus on the most essential information and to

> A KPI for GHG impacts could be GHG emissions per MWh electricity produced. Another KPI for non-GHG impacts and means of implementation could be number of new jobs created in the sector per USD invested in the action.

develop the most effective methods and processes to make this information available. As experience with the MRV system increase, more parameters and information can be added.

Assessment of current MRV

An analysis of the current situation regarding MRV on national and sectoral levels should take place. The readiness of current structures, processes, institutional capacities and capabilities and data availability and data quality should be assessed. This will help to build on existing structures, ensure alignment to other existing or planned MRV efforts (e.g. GHG Inventory) in the country and to identify gaps and needs for improvements.

Develop Common MRV Framework

This will include the establishment of institutional arrangements for implementing the national MRV system and for coordinating MRV related aspects. It further includes defining roles and responsibilities, providing guidance and standard procedures and templates for MRV, and providing a superior data management system.

Defining sectoral MRV parameters & methodologies

Following the requirements of the common MRV Framework, a list of sector specific parameters and MRV methodologies should be defined. This set of parameters would need to include the KPIs, but also more detailed and disaggregated data needs and parameters required at the various levels of the mitigation action. This should be done in close coordination with key stakeholders involved in the sector and at each level (e.g. national, sectoral, action level).

Develop legal & regulatory framework

The functioning of the national MRV system is a prerequisite for the country to fulfil the international and national reporting requirements. It is therefore recommended that the processes and obligations within the MRV system are based on a reasonable legal basis.

Institutional Strengthening and capacity building

Building up of necessary capacities in the institutions involved in the MRV system (e.g. line ministries, major associations, municipalities, industries, private companies, etc.) should be done on an ongoing basis. This is an important element to ensure a proper implementation and operation of the MRV system. In addition, awareness raising should be ongoing to inform stakeholders about the importance and benefits of an MRV system.

5. Common steps for developing mitigation action specific MRV systems (Bottom-up)

Until today, this is the common practice in most developing countries. This is mainly since international support for mitigation actions like CDM and NAMAs has been available for many years e.g. by development agencies, donors and public/private funds. Countries applying for funding of mitigation actions need to show e.g. to donors, how the measurement and reporting of progress and impacts of the mitigation action is ensured. The following graphic

shows common steps for developing MRV systems for mitigation action (starting from bottom to top).

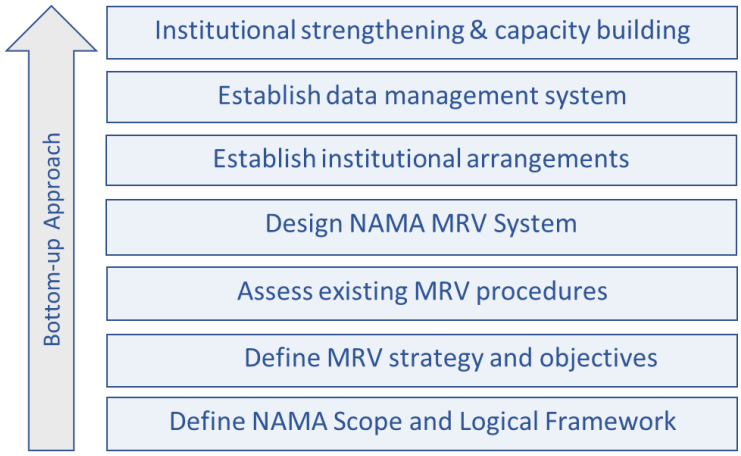

Figure 5 - General steps for developing a Mitigation Action (NAMA) MRV

Define NAMA Scope and Logical Framework

The common approach for defining a mitigation action is by using a logical framework which is a master plan for how mitigation actions are set-up and impacts to be achieved. The logical framework according to best practice distinguishes between Outcomes, Outputs and Activities (OOA).

To reach the Outcomes (main achievements) in a stepwise approach, the mitigation action is broken down into Outputs, where each Output consists of a set of Activities. The successful completion of all Activities leads to the completion of Outputs and hence the completion of the Outcomes. This structure allows to track and report on the progress of individual Activities and hence build a comprehensive and conclusive MRV system.

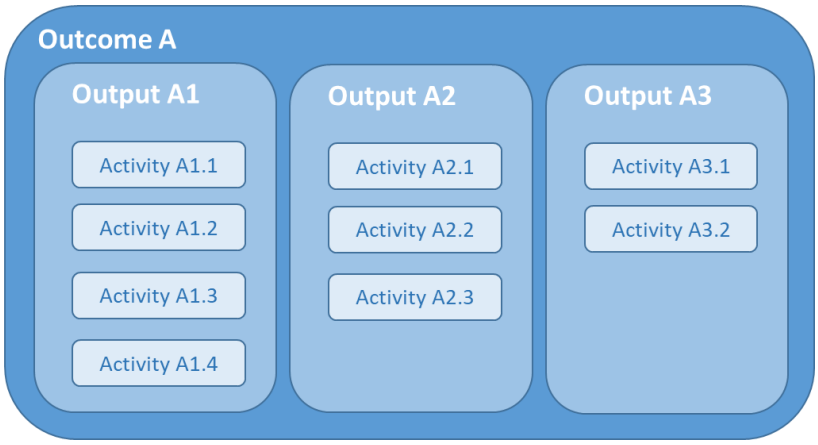

Figure 6 - General principle of Activities, Outputs and Outcomes

Activities can be either Interventions, which directly lead to emission reductions, or Measures, which help to achieve the Intervention, e.g. capacity building, supporting implementation of institutional arrangement, etc.

> Under a transport NAMA in Lebanon, one Outcome was that a car scrappage programme is being implemented. One of the Outputs was to implement a pilot programme to test the incentive scheme under real conditions. Activities included the building of capacities among car dealers, the establishment of an incentive scheme, etc.

Define MRV strategy and objectives

The purpose of defining the strategy and objectives is to ensure better control by the managing entities of the mitigation action over its implementation and performance, and to create a common understanding about the objectives among stakeholders and donors. This should be done in line with domestic, sectoral and international priorities and requirements and in close coordination with key stakeholders. Common aspects defined in the MRV strategy include the impact categories covered, scope of the MRV system and stakeholders involved.

Assess existing MRV procedures

An analysis of the existing monitoring and reporting framework is highly recommended prior to designing a new MRV system for a mitigation action. The stakeholders who are already measuring data and providing reports need to be identified and involved. These stakeholders can inform about existing procedures and hierarchy levels, which may provide valuable insight on which the MRV system can be designed.

> For a NAMA MRV system in the industrial sector (e.g. cement), the stakeholders may include responsible Ministries, the private sector operating and owning the cement plants and service providers supporting the industry (e.g. energy utilities, transport service provider, etc.).

Design NAMA MRV system

As a first step, the boundary of the MRV system should be defined. Based on the logical framework of the mitigation action, the set of MRV parameters can be determined and classified per impact category. It is important to define where each parameter needs to be measured, when the measurement needs to be done (frequency) and how to measure are key aspects. In addition, the reporting procedures (incl. standards, responsibilities, frequencies) and verification procedures need to be defined.

Establish institutional arrangements

The governance and management structure depends on the circumstances and available capabilities and capacities of the institutions/ stakeholders involved in the mitigation action. It should be defined which institution takes which role and which responsibility, including the responsibility for measuring and reporting the various parameters, managing the data management system, aggregating data and conducting verification.

Establish data management system

Once the design of the MRV system is clear, a data management system needs to be established. The system will help to record and store data safely, enable users to enter data in tailored user interfaces and be used for data aggregation, data quality control and reporting.

Institutional Strengthening and capacity building and training

The entities involved in the MRV system for the mitigation action may have limited capacity and lack resources to comply with the requirements defined by the MRV system. Therefore, the institutions involved may need to be strengthened and supported with capacity building activities and by technical and financial means.

6. Linking both Approaches (Synergies, benefits, and barriers)

The following themes highlight some aspects and examples that illustrate why good coordination of top-down and bottom-up approaches for developing linked MRV systems is important. These focus on positive synergies between the two approaches, benefits gained from combining them, and foreseen barriers and potential means to address the risks of barriers. What is presented are not all-inclusive themes, but are some of the more prevalent themes witnessed by the authors during work with NDCs and NAMAs.

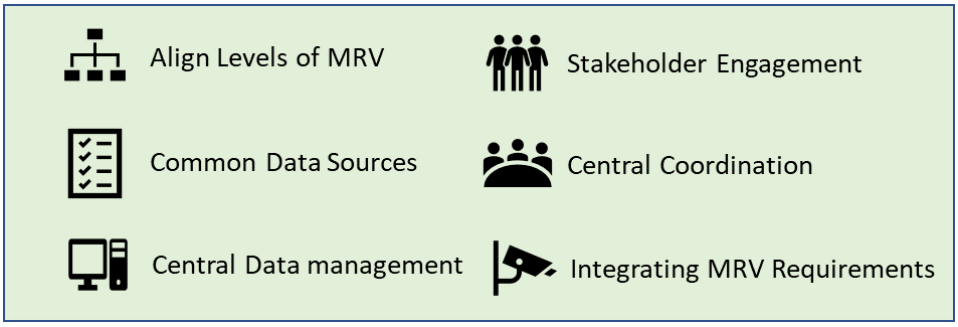

Figure 7 – Selected themes for linked MRV systems

6.1 Ensure inclusion and alignment of various levels of MRV

Both, for developing linked MRV systems and for linking existing bottom-up and top-down approaches in a country, it is essential to consider the requirements, needs and gaps on the various levels involved in MRV. The following figure shows an example of potential levels involved in a national MRV system. At the action level, this can include NAMAs or other individual mitigation or adaption actions, for which an MRV is required. It is also possible that one action encompasses or impacts several sub-sectors or sectors.

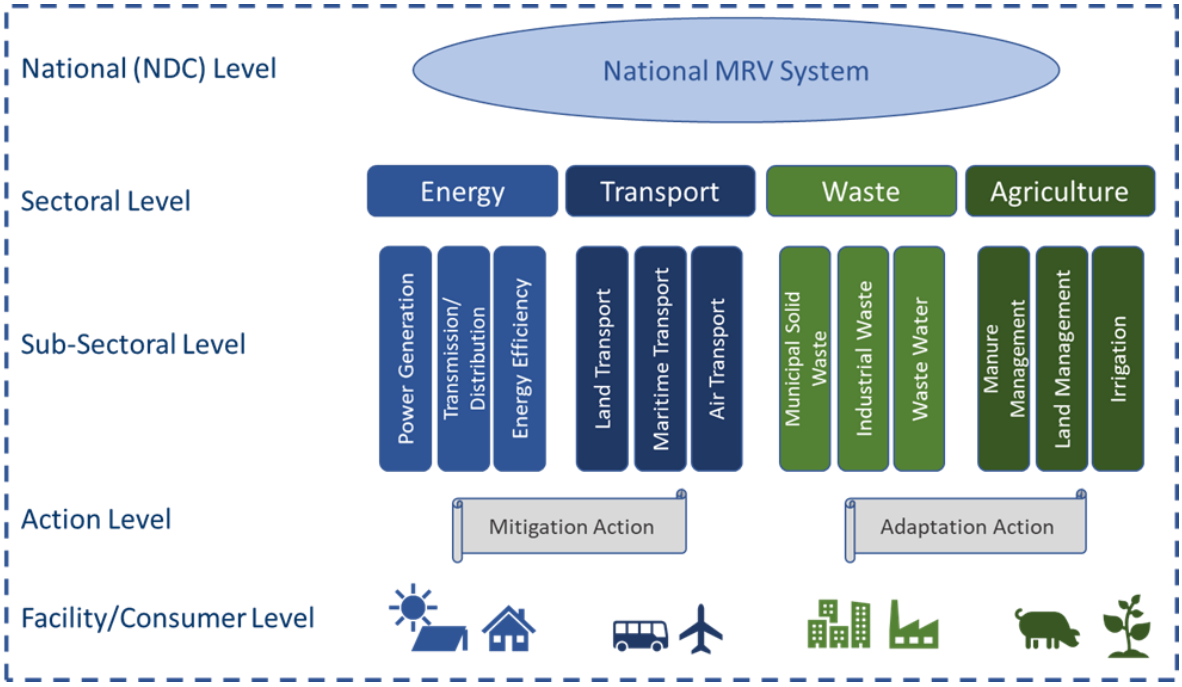

Figure 8: Example of levels of MRV in national MRV system

Action specific MRV systems are often developed on the action level and usually include the facility/consumer level (e.g. measurement at the level of the power plant, or bus fleet operator) and at least the sub-sectoral level (e.g. waste composition for industrial waste in one geographical area). However, national and sectoral requirements may not be considered and a coordination of various action specific MRV systems may not be done on the sectoral level. This may lead to different MRV systems and a lack of data accuracy at the sector level and national level. The different levels of MRV may be used for verifying results of top-down and bottom-up approaches. For example: Aggregated fuel consumption of a sub-sector (e.g. cement industry) top-down, versus measuring the actual fuel consumption per cement plant bottom-up.

At the same time, national MRV systems should ensure that guidelines and systems provided for the national system can be applied at the various levels. Different perspectives may exist and perceptions about MRV and its relevance at the different levels. Understanding the needs, requirements and barriers for conducting MRV on the various levels will help to build a comprehensive MRV system that is widely accepted and that can be applied.

The figure below gives an example how the mitigation action specific MRV system for one sub-sector (Municipal Solid Waste), is linked to a sector level MRV, and then a national level MRV.

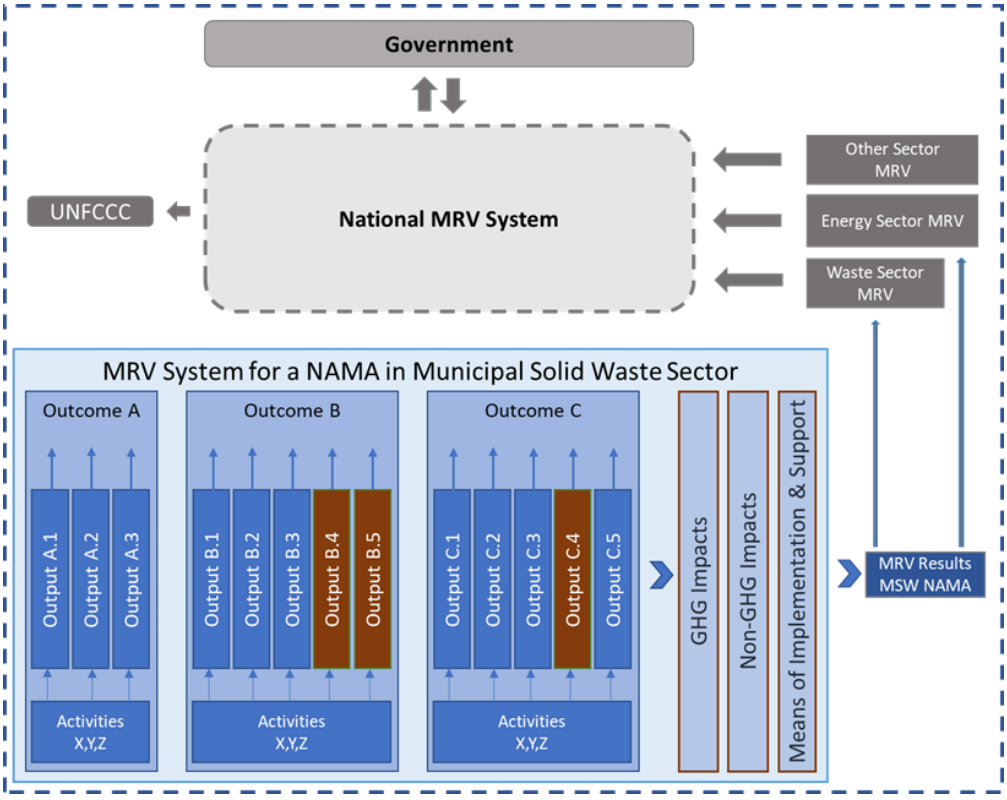

Figure 9: Example of a linked MRV System for the Waste Sector

6.2 Synergies of common data sources and methods & procedures

One of the common attributes to each of the top-down and bottom-up approaches, as well as linking the two approaches, is the use of common sources of data and methods to compile results. Assessing and defining most suitable (in terms of data accuracy/availability) and most feasible (in terms of cost effectiveness and available capacities) data sources is important for any MRV system to be effective. When defining KPIs and MRV parameters for the different impact categories, common data source needs are to be considered.

This is especially relevant when different MRV systems for mitigation actions are linked to the national MRV system and if cross-cutting effects from measuring and reporting between different MRV systems can be expected. One source of information used in one sector at one power plant, may be also relevant for MRV requirements in various other sectors.

> The power generation from landfill gas utilization may be relevant for a specific mitigation action in the municipal solid waste sector, but is also of relevance for the whole waste sector, the energy sector and for the NDC as a whole – in case increasing alternative power production is part of

At the same time, there may be data sources available on the national level that could be used and applied by various mitigation actions. This could include official national statistics used

for projecting the baselines for mitigation actions as well as aggregated data on national or sectoral level that can be used by all mitigation actions for which this parameter is of relevance (e.g. grid emission factor). This would lead to a better comparability of MRV results and provide certain standards and guidance for single mitigation actions. Often specific data for action specific MRV (e.g. waste composition, willingness to pay) is not available at the time of start of the action, which may lead to delays or even put certain actions at stake (as e.g. NAMA funding, GHG potential is difficult to obtain). At least the data for assessing the KPIs and sectoral MRV parameters, and data required for major NDC actions, should be measured as soon as possible.

Besides defining and using common data sources, it is recommended to create guidelines and common standards, formats and templates to be used for reporting MRV results. This should be done within each MRV system, but more importantly when top-down and bottom-up approaches are being linked.

The figure below illustrates the use of common sources of data. It shows the example of the electricity sector, and mitigation actions in renewable energy and energy efficiency. In this example, a bottom-up approach may require that data and compiled information come directly from the source of electricity production or consumers, whereas the top-down approach may focus on information gained from national or sectoral institutions (e.g. utility regulator, tax & customs authority, or Bureau of Statistics).

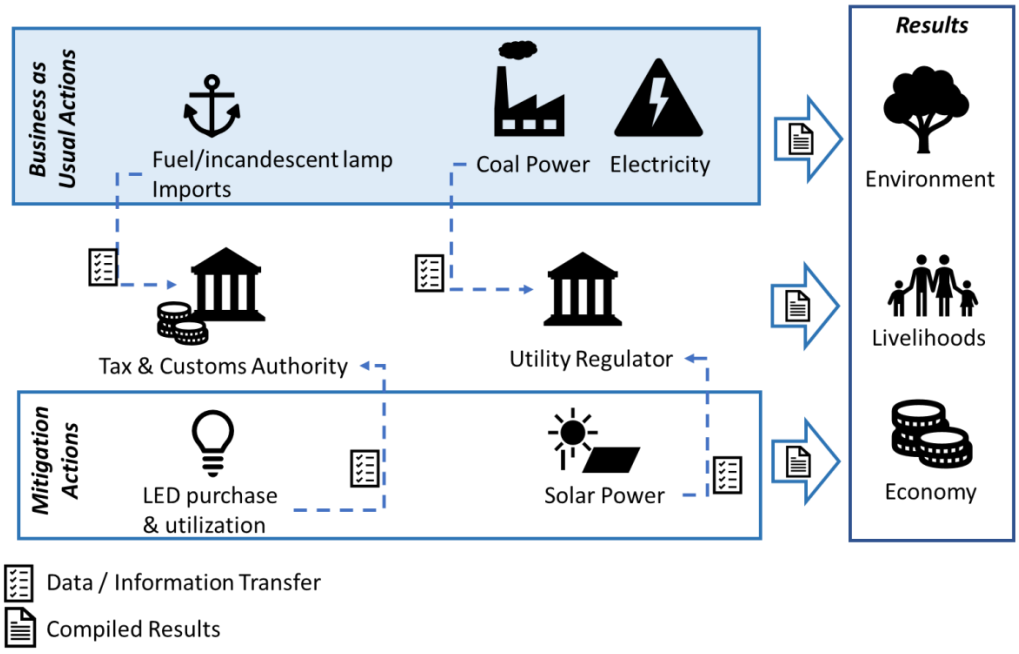

Figure 10 – Synergies of Common Data Sources and Results (Electricity Sector Example)

Each approach can in theory deliver information on results, however for a linked MRV system, focus should be on data sources offering most efficient, accurate and cost-effective

information pathways. This means making a conscious choice between what can be measured and what is necessary to track results in terms of progress, means of implementation & support, and mitigation & resilience.

6.3 Central data management system

One element which can benefit governments in data gathering, transparency, and verification is to create a national level centralized data and information reporting system which considers the linked MRV system. At present, there are often different data management systems used for different mitigation actions or on sub-sectoral and sectoral level.

Creating this linkage to a master system on national level will require standards and guidelines for data inputs and aggregation, especially when including applicable sector and sub-sector information, and individual mitigation/adaptation actions. This system can start with core national level input/output data, and gradually expand into sectors, sub-sectors, and individual mitigation/adaptation actions. At a later stage, this will often require different sector or actions specific standards, templates, formats (e.g. parameters, software, IT systems, financial calculations). Though some of that information will not be required at the national level, but may be required for finance specifically linked to an action.

6.4 Benefits of a comprehensive stakeholder engagement

The top-down and bottom-up approaches to MRV systems can be linked at many points, but one significant linkage can be through a comprehensive stakeholder engagement process. This stakeholder engagement process should be continual and allow for both the bottom level (e.g. consumers, households, companies) to communicate and voice both benefits and concerns with the top level (e.g. government entities, regulators), and vice versa.

This allows for the identification of practical and cost-effective information/data gathering, the qualitative & quantitative evaluation of impacts, the ability to identify and mitigate risks, and the ability to efficiently change both MRV practices and mitigation actions, if needed. A good example of a failure for comprehensive stakeholder engagement between top and bottom, are when NDC targets do not match the physical ability of the sector stakeholders to implement the mitigation actions, achieve the level of results, or even share data (due to confidently or cultural restrictions).

> A potential energy sector example of this failure is when a mitigation action MRV system is designed top-down for improved lamp appliances in rural areas, where surveys are supposed to gain data on utilization and technology applied. However, consumers may not allow access due to cultural concerns or other reservations.

6.5 Benefits of common or centralized coordination

Common or centralized coordination within a linked MRV system, and for the implementation of the underlying mitigation/adaptation actions, creates multiple returns in both economies of scale and by limiting waste in the use of resources. The authors have witnessed in many governments non-transparent processes and a lack of coordination between government entities. This is commonly an issue of a lack of mandated authority to obtain information, as well as limited guidance for the type of information to be gathered and shared. In this manner, the top-down approach has the potential to strengthen political will, and to appoint a central role under legislation or by executive appointment. This appointment of roles can mandate one authority to obtain MRV information from other government entities, and to coordinate efforts in the identification and use of means of implementation. It is advisable to establish a steering committee at national level, which consists of representatives from the relevant ministries. Additional institutions (e.g. Coordinating Entities) can be established in the respective sectors to coordinate actions in these sectors. The roles and responsibilities in terms of MRV should be clearly defined and centrally coordinated. Knowledge transfer and capacity building activities should also be coordinated well to effectively use scarce resources.

For the implementation and coordination of Fiji´s NDC in the energy sector, a central NDC Implementation Unit within the Ministry of Economy (Climate Change Unit) was proposed, that would i.e. coordinate the national MRV requirements and processes and overlook the NDC implementation. A close coordination with other Ministries through Coordination Committees would ensure the close engagement with other stakeholders (other Ministries, private sector, implementing entities).

Common or centralized coordination will create a push – pull mechanism for a linked MRV system, where there is a push at the government level for coordination and information sharing, and a pull at the sector & sub-sector level for helping to define and issue the information required of the linked MRV system. The figure below depicts some of the more important identified inputs and outputs related to this coordination in a linked MRV system. The inputs describe aspects that are required for a proper coordination, whereas the outputs describe the expected results achieved from the coordinated efforts.

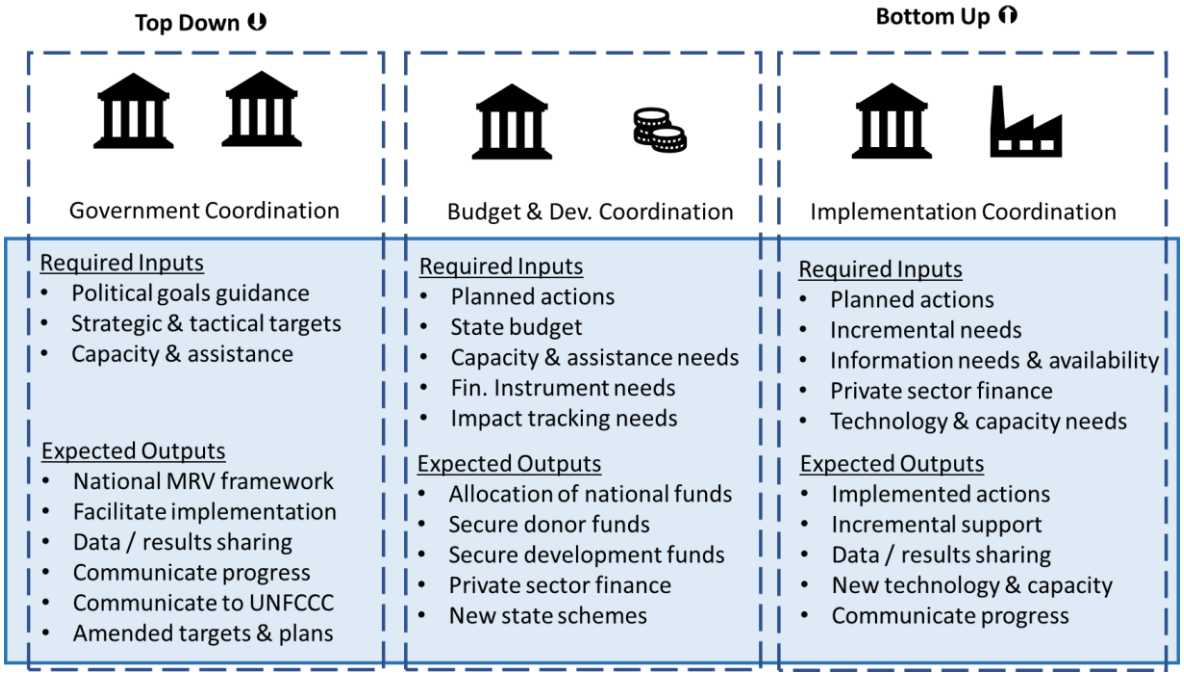

Figure 11 – Benefits of common or centralized coordination

Three types of coordination need for a linked MRV system are presented above; government coordination, budget & development coordination, and implementation coordination. Government coordination is central to the push of building a top-down MRV system, where government entities can jointly define the political, strategic, and tactical elements of the MRV system. Then provide an MRV framework, facilitate implementation, share information, and communication of results. Budget & development coordination requires an understanding of the planned mitigation & adaptation actions, and needs for capacity & assistance, finance, and results tracking. It can deliver the finance needs for the MRV system and the actions, along with helping build new state and incentive schemes such as subsidies or tax incentives. Implementation coordination is central to the pull of building a bottom-up MRV system, where government entities and the private sector together plan actions and define the needs for means of implementation and information. This coordination can deliver results from implementation, the data and information needed to show results through the MRV system, including communication of progress.

6.6 Barriers to integrating existing and future MRV requirements

Due to the lack of international, national, and sectoral guidelines, mitigation action specific MRV systems are mostly developed individually and on a case-by-case basis using a bottom-up approach. Therefore, these mitigation action specific MRV systems may or may not align with each other at the sectoral or national MRV levels, and do often not meet the future requirements of national MRV systems. At the same time, further potential requirements for national MRV systems have emerged, such as integrating MRV for Sustainable Development Goals (SDGs), Gender Action Plan and complying with the ETF.

It is therefore important that the different stakeholders involved in the development of either top-down or bottom-up MRV systems consider the different and changing requirements, of international, domestic as well as mitigation action specific MRV systems (e.g. required from donors). Only with this flexibility built in, is it possible to implement and operate a functioning, comprehensive and cost-efficient MRV system which can address the various levels.

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