

‘Numbers, People, Papers’

Components and linkages of MRV at different levels

Background Paper for the Regional Workshop on MRV of NAMAs in Latin America and the Caribbean

6-8 March 2014

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-0- Introduction: Objective and Scope of this Paper

Monitoring, reporting and verification (MRV)¹ is a primary and necessary component of all types of policies and programs aimed at reducing GHG emissions. The overall concept of MRV comprises greenhouse gas (GHG) emissions and trends, emission reductions from public and private mitigation policies and actions, non-GHG-related development impacts of mitigation actions, and, in the case of NAMAs, finance, capacity, and technology support. Ultimately, it is needed in order to track progress toward meeting global mitigation goals.

Depending on the policy objective, the scope of MRV can be determined geographically (e.g., national, subnational, local level) or apply to specific sectors, facilities, and supply chains, among other options. Furthermore, MRV is used to determine “gross” emissions production (such as national or individual facility emissions inventories) and “net” emissions reductions, which apply to GHG mitigation projects, programs, and policies. Given the broad scope of MRV, data needs and availability, as well as institutional arrangements and capacities, may significantly vary among different MRV systems.

Governments that establish multiple MRV systems to address specifically defined purposes run the risk of ending up with processes and procedures that span multiple levels of operation, potentially functioning independent of one another and serving their own single policy objectives. This may result in an inefficient use of available information, and human and financial resources. It could also increase the risk of generating complex systems that are difficult, cumbersome, and costly to maintain.

The objective of this paper is to provide an overview of key elements of MRV of GHG emissions and emission reductions at different levels, and explore similarities and differences. The goal is to identify opportunities to coordinate and integrate components of MRV systems that serve different purposes. Establishing integrated MRV systems has the potential to facilitate a country’s effort to make the impacts of mitigation policies tangible and visible in GHG emission inventories in a consistent, harmonized and efficient manner, contributing to their goal to achieve national emissions reduction targets.

This paper focuses on data management processes and institutional and legal/regulatory arrangements related to MRV of GHG emissions and emission reductions at the

- 1. National level,**
- 2. NAMA level and**
- 3. Facility level.**

It has been produced to support the Latin American Regional Workshop on ‘MRV of NAMAs as a key element of National MRV Systems’ (6-8 March 2014, Mexico City). During the workshop, topics it

¹ The “M” of MRV can stand for Measurement or for Monitoring. While the word “measurable” was originally used in the Bali Action Plan, it has since been replaced in some circles by the term “monitoring” since in a strict sense the aim is often to monitor, rather than to measure. In this paper, the term “monitoring” will be used.

covers will be analyzed more in depth, based on lessons learned from practical experiences within and from outside the region. After the workshop, this paper will be enhanced to a systematized knowledge product, compiling the workshop's main outputs and will be published jointly by the Partnership for Market Readiness (PMR) and the International Partnership on Mitigation and MRV.

-1- Background, Definition and Purpose of MRV

MRV is a pivotal topic in discussions within the United Nations Framework Convention on Climate Change (UNFCCC) and at the country-level. No single, commonly accepted definition of it exists. Instead, MRV is often expressed in terms of quality indicators/principles, which, when fulfilled, support sound policy development and implementation. The key principles frequently associated with MRV are: Transparency, Accuracy, Completeness, Consistency, and Comparability.

As the features of a particular MRV system will reflect a corresponding policy objective, the MRV processes and procedures will satisfy the principles by defining institutional arrangements, formulating technical specifications and emissions quantification methodologies, developing data management resources, applying quality assurance and quality control mechanisms, and engaging stakeholders.

However, MRV is not a new concept and is present in existing policies and frameworks regarding climate change mitigation. MRV experience comes from developing national GHG inventories for emissions reporting in National Communications to the UNFCCC compiling corporate and facility emissions inventories for mandatory and voluntary GHG reporting programs, and creating Monitoring & Evaluation procedures for projects in the context of the Clean Development Mechanism (CDM). Along with evolving objectives and needs to MRV, come new challenges for raising national-level, sub-national-level and sector-

Box 2: The Purpose of MRV

National Drivers for MRV

- Identify mitigation potential, as well as challenges and opportunities;
- Make available reliable information for policy planning, prioritization of actions and allocation of resources
- Improve policy coherence and coordination of actions
- Keep track of lessons learnt from NAMA implementation to develop better policies in the future (continuous improvement of MRV systems and NAMAs);
- Keep a record of NAMAs in place, tracking progress of their effectiveness (e.g. emission reductions and progress to achieving individual objectives); as well as of their contribution to achieving national mitigation goals
- Ensure and underpin data quality: important to access climate finance and participate in market mechanisms (e.g. domestic emission trading system; GHG crediting instruments).
- Manage risk for companies and businesses and facilitate new business development opportunities

International Drivers for MRV

- Address national reporting obligations to the UNFCCC mechanisms and progress national engagement in the UNFCCC process;
- Provide and receive international recognition for national performance
- Provide lessons learned and improve trust among Parties.
- Enhance transparency about individual contributions to achieving the global 2°C objective, strengthening mutual confidence in countries' actions and in the regime, thereby enabling a stronger collective effort

level capacities for improving information and coordination processes. Hence, it is important to build on existing MRV practices and structures when designing adequate MRV systems to address multiple needs at various levels.

MRV is commonly applied to the following three categories:

- *MRV of emissions*: estimation of GHG emissions at national, regional, sector levels;
- *MRV of actions*: impacts of mitigation policies and actions, incl. NAMAs;
- *MRV of support*: encompasses (international) financial flows, technology transfer, capacity building and their impacts.²

-2- Overview of MRV at Different Levels

A country's entire suite of MRV systems includes all MRV activities related to climate change at different "levels," including the coordination of these activities. It should be as robust and comprehensive as feasible in order to be most useful for domestic purposes of MRV and to address international requirements at the same time.

MRV systems are created to support particular policy objectives, such that the systems tend to function on different "levels":

- a) At the **national level**, MRV systems produce nation-wide GHG inventories which quantify the total amount of annual GHG emissions directly resulting from human activities by sectors.

National-level inventories are a key component of National Communications to the UNFCCC. Established guidelines exist for calculating national emissions and as well as good practice manuals for designing institutional arrangements and processes for supporting inventory development³.

On a regular basis, countries are supposed to provide an update to their National Communications on developments with regard to emissions inventories, as well as information on mitigation activities and their effects, gaps and constraints. At UNFCCC COP 17 in Durban, Biennial Update Reporting

Box 2: Analyzing Biennial Update Reports from non-Annex I Countries

At its last meeting in Warsaw, Poland, the UNFCCC decided to create a process for analyzing Biennial Update Reports (BUR) from non-Annex I countries*. The decision establishes, for the first time an analysis of developing country communications through international consultation and analysis (ICA), which will complement the review process for Annex I country communications to the UNFCCC. Aiming to increase transparency of mitigation actions and the corresponding effects and to help improving domestic reporting systems over time, the technical analysis under ICA will identify the completeness of the BUR relative to UNFCCC guidelines decided in 2012, undertake a technical evaluation of the information contained in the BUR, and identify capacity-building needs in order to facilitate enhanced reporting. The report on the analysis of the BUR will be publicly available, but it will not address the appropriateness of domestic policies and measures.

*unfccc.int/files/meetings/warsaw_nov_2013/decisions/application/pdf/cop19_tte_ica.pdf

² This paper addresses MRV of emissions and its intersection with MRV of actions; it does not cover MRV of finance and support (see introduction).

³ IPCC inventory guidelines and modules; UNDP resources

(BUR) guidelines were defined in order to assist countries in compiling and presenting information in a consistent, transparent, accurate, complete and timely manner, considering national circumstances. The first BURs shall be submitted to the UNFCCC by December 2014 and will be subject to the process of International Consultation and Analysis (ICA) – see Box 3.

- b) At the level of **mitigation actions, policies and programs, like NAMAs**, MRV quantifies the emissions reduction from specific policies or activities compared to a certain baseline or projected reference scenario. As mentioned above, MRV of NAMAs also address non-GHG sustainability metrics, such as improvement of air quality, job creation, reduced resource use, etc. NAMAs were first introduced at UNFCCC COP 13 in 2007 in the Bali Action Plan: *“nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technologies, financing and capacity building, in a measurable, reportable and verifiable manner.”*

Within the context of the UNFCCC, it is generally understood that there are two types of NAMAs⁴:

1. Unilateral NAMAs – autonomous actions taken by developing countries to reduce domestic GHGs (domestically funded and unilaterally implemented)
2. Supported NAMAs – actions undertaken with financial, technological and/or capacity building support from developed countries

UNFCCC decisions have provided limited guidance on MRV for NAMAs.⁵ Therefore the international MRV community is in the process of developing guidelines and procedures and piloting them to provide technical orientation for the design and implementation of NAMAs.

NAMAs involve a variety of different types of policies and actions, therefore the corresponding MRV should be sufficiently flexible to include a variety of options and tiers for monitoring impacts. The MRV system should be developed during the design phase of mitigation actions and suit the parties involved –NAMA developers and national or international supporters, for example.

A key issue for NAMAs will involve attributing the emissions reduction impact of the policy to the specific activity. Establishing consistent, identifiable causal chains are a core challenge for MRV of NAMAs. Therefore, keeping in mind that NAMAs can operate on a scale broader than discrete emission reduction projects and programs of activities (PoA), MRV systems for NAMAs can build on existing CDM experiences with design, validation, monitoring and verification.

- c) At the **facility/installation level**, MRV systems facilitate compliance with regulatory programs, such as emissions trading schemes (ETS), and enable corporate sustainability reporting for voluntary initiatives.

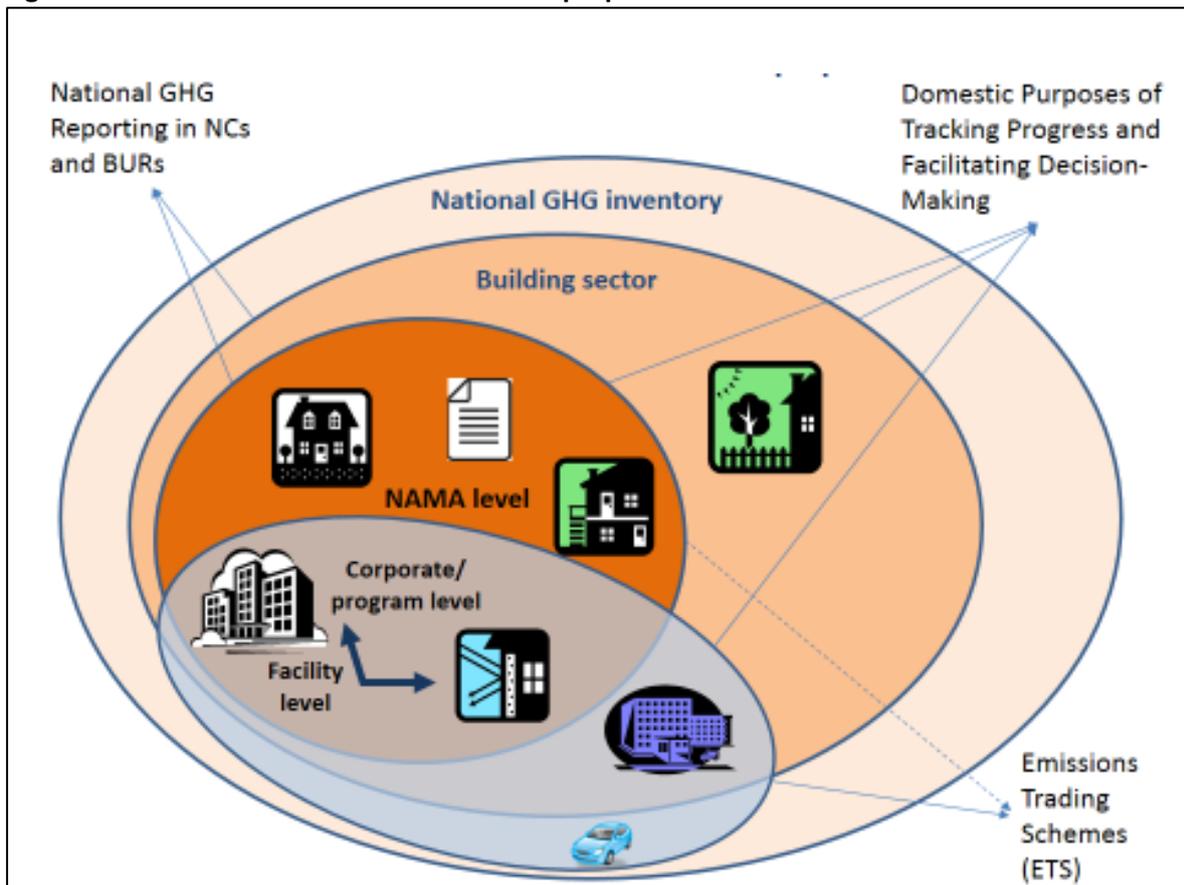
⁴ UNEP Risoe: Primer on MRV for NAMAs
Credit-Generating NAMAs (or new mechanism) – actions that produce credits for sale in the global carbon market. This category is currently not part of official negotiations.

⁵ COP19 decision in Warsaw

Facility-level MRV covers GHG emissions from sources within an individual facility or installation, such as a power plant or a cement plant. It typically has a narrow focus and only collects information for the purposes of calculating gross emissions production and information about the facility itself. The MRV process and procedures usually apply to direct emissions sources, including stationary combustion (e.g., fossil fuel-burning generators), process (e.g., from cement manufacturing), and fugitive (e.g., natural gas production and processing). Direct emissions sources generally refer to those owned and operated by the facility owner. In some cases, facility-level reporting programs will also include indirect emissions sources, which are associated with purchased electricity, steam, and heat. Indirect emissions originate from sources not owned by the electricity user, for example, but are caused by the consumption of electricity.

The following illustration gives a general overview of MRV at different levels and interrelating purposes within a national MRV system.

Figure 1: MRV at different levels for different purposes



Source: Own elaboration

Among the different levels where MRV processes take place, data management as well as institutional and regulatory arrangements are key elements to make MRV systems operational. Those issues will be treated more in detail in the following sections.

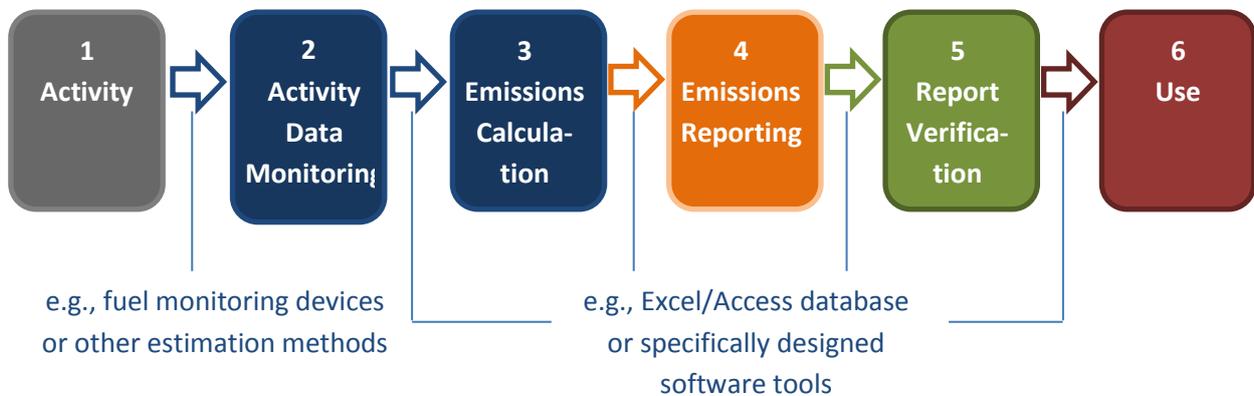
-3- Data Management for National GHG Inventories, NAMAs and Facility Level Emissions Reporting

Data management is a key component of any MRV system. It involves identifying and recording data on GHG emissions and related information within a certain boundary (installation / program scope / sector / geographical scope) in a manner that allows a system or program authority to make use of the data.

Just as the design and operation of an overall MRV system is developed to meet certain policy objectives, data management is a function of the rules and procedures established by the institution(s) coordinating the system. Robust data management processes are essential to satisfying the quality criteria/principles related to MRV: Transparency, Accuracy, Completeness, Consistency, and Comparability.

Figure 2 illustrates the components of a GHG data management system, from GHG data production through use, comprising six key steps (in boxes) and five links between them. The arrows show the connections between these steps, in the form of technologies and processes. The parts of a data management system apply to reporting programs for national GHG inventories, installation-level GHG reporting programs, and NAMAs.

Figure 2: Key steps and links in the GHG data management



Source: PMR Technical Note 4

- **Box 1:** Activities giving rise to GHG production: either direct (such as combustion of fossil carbon) or indirect (such as from purchases of electricity).
→ **Link:** Instruments or estimation techniques used to monitor GHG production activity.
- **Box 2:** Monitoring of activities giving rise to direct and indirect GHG emissions.
→ **Link:** How monitored data are passed for calculation, which could be automated through an online portal or may be sent in a spreadsheet by email.
- **Box 3:** Calculation of GHG emissions by applying GHG emissions factors and methodologies to monitored activity data. Analysis of the results.
→ **Link:** How the results of GHG data calculation and analysis are passed for reporting. This may be through an online portal or through emailing of spreadsheets to a central body managing a GHG database.

- **Box 4:** Reporting of GHG data by Government or private operators. This might be in quarterly/semiannual/annual reports or on online databases. This step usually comprises further analysis and interpretation of the reported data.
 - ➔ **Link:** How data are passed to verifiers, perhaps through spreadsheets or through verifiers having controlled access to an online portal.
- **Box 5:** Verification of the GHG data reported to provide assurance to those using it.
 - ➔ **Link:** How verified GHG data are passed for reporting (e.g., online portal/database/spreadsheets).
- **Box 6:** Final use of GHG data, such as for national inventories and/or reports a national NAMA registry, or facility-level emissions registry.

There are two basic approaches for collecting data:

1. The guidelines from the Intergovernmental Panel on Climate Change (IPCC)⁶ provide calculation methods for producing national GHG inventories. They represent a “**top down**” approach, in which aggregated statistics on sectoral activities (referred to as activity data, e.g. energy statistics) are multiplied by estimates of the rate of emissions per unit of activity – i.e., emission factors – to achieve an estimation of national emissions.
2. In contrast to national inventories, installation/facility-level GHG reporting programs collect emissions data and other information in a “**bottom-up**” fashion, directly from facilities that emit GHGs as a result of combustion of fuel or processes. This information often includes details of the staff responsible for compliance, site location, type of CO₂ emitting equipment and fuels used on site, how CO₂ emissions will be measured and the total CO₂ emissions of the site. Details about individual facilities’ emissions production and fuel use can be used to enhance national level inventories, if the data systems are designed and operated in a manner that allows for the exchange of information.

Combining elements from both “top-down” and “bottom-up” approaches, countries have started to establish data management systems applicable to designing and implementing low emissions development policies and strategies –i.e., MRV at the level of mitigation policies or measures, like NAMAs. In this case, the processes and procedures to collect and organize data (as well as report activities and impacts, and establish review/analysis mechanisms and institutions) can involve features from data systems that support national-level inventories and facility-level reporting. The MRV systems and data management will also include experience from tracking emissions reduction projects. As countries develop GHG mitigation policies and programs, MRV of these activities – including data management – shall draw from existing practices and structures.

⁶ IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds).

Data management considerations for MRV of emissions and NAMAs

Data collection procedures and processes will depend on several factors, including:

- **Specific purpose**
 - 1) Unilateral NAMAs in which the implementing country has control over the data management needs and purposes; 2) Supported NAMAs, in which the implementing country and supporting country will decide on MRV; domestic needs might differ from international/donor requirements, which can be relevant in case of supported NAMAs.
- **Type of sector**

For sectors comprising easily identifiable, finite, high-emitting point sources (e.g., power generation, cement, iron and steel) data collection procedures that resemble existing facility-level reporting programs and established methods and procedures that track emissions at the source could apply. For sectors consisting of small, diffuse, hard to track sources (e.g., transport, urban) aggregated data and proxy indicators that are similar to IPCC methods used to calculate national GHG inventories may be more applicable.
- **Capacity of the implementing country**

Prioritizing the development of certain NAMA could be influenced by whether or not an existing fit-for-purpose methodology exists that not only includes data collection and emissions calculation methods but can also be carried out within existing institutional arrangements and/or comprises program management features, i.e. from CDM experiences.

As mentioned above, attributing emission reduction impacts to a certain mitigation activity or policy, in practice, is challenge for most countries. Different sets of indicators and data must be considered and the elaboration of robust causal chains is a requirement. One example for a methodological approach to track the impacts of mitigation policies and actions beyond project/program level is the WRI/WBCSD Greenhouse Protocol Policy and Action Accounting and Reporting Standard.⁷

Although methodologies and procedures for gathering data inevitably differ, the establishment of aligned monitoring systems for different NAMA types and sectors is recommended to facilitate an effective low-emission development planning process. Moreover, if data measuring/collecting is not performed by one central body within the defined boundary, the use of consistent methodologies by the different involved organizations is an essential requirement for establishing integrated data management systems.

At the time of setting-up an MRV system for a NAMA, existing related data management processes at national level and facility/program level should be analyzed for potential synergies and entry points in each individual step of their processes.

Opportunities and challenges to integrate data management systems:

Substantial experience exists for developing national GHG inventories, as submissions to the UNFCCC have occurred for over a decade. Furthermore, many countries also have experience in designing and implementing mandatory facility-level GHG reporting programs, including members to the EU as well

⁷ www.ghgprotocol.org/mitigation-accounting

as Australia, Canada, the United States, and the United Kingdom; others countries have set up similar voluntary initiatives.

With regards to NAMAs, when considering how to capitalize on the linkage between data management systems and establish opportunities for integration, several “lessons learned” are relevant, based on the relationship between national emissions inventories and facility-level GHG reporting.

NAMAs and their impacts will be reported in BURs. Therefore, at some early point in developing an MRV system for NAMAs, an assessment of existing procedures for the establishment of national and/or sectoral GHG inventories should occur. This activity will help identify potential linkages and entry/connection points between the systems. Moreover, depending on the type of the NAMA, bottom-up MRV approaches are more or less applicable. For those types of NAMAs where facility-level MRV is possible and useful, existing data management processes, e.g. from footprinting programs and/or other corporate reporting procedures could provide useful information and need to be assessed before setting-up new procedures.

In cases where MRV systems define sectors in the same way, facility-level reporting results can inform the national inventory, for example, as they would provide verified and reliable data. Additionally, “top down” MRV systems sometimes cover industry sectors in which relevant aggregated statistics are based on data with significant gaps. In this case, the emissions estimates often include broad assumptions. A “bottom up”, facility level program could inform and improve the “top down” inventory by providing more granular, specific data. Examples include applying site-specific or fuel-specific emissions factors, or improved estimates of activity data based on real-world numbers.⁸ In Europe, for example, the EUETS data was available to validate and enhance national inventories and address gaps.

However, in many cases GHG emission calculations in national inventories and/or NAMAs will come to different results when compared to cumulative facility-level emissions reports for specific industries. Some reasons are the following:

- Different source category definitions
- Reporting threshold
- Lack of disaggregated data to represent certain industries
- Use of continuous emissions monitoring technologies
- Differences in use of international default factors from facility-specific methods⁹

-4- Institutional, Legal and Regulatory Arrangements for MRV for National GHG Inventories, NAMAs and Facility Level Emissions Reporting

As discussed in the previous chapters, the different steps in an MRV process, as well as its different levels of operation usually comprise a variety of institutions and organizations involved. Hence, an appropriate institutional framework that encompasses the relevant entities as well as the necessary staff and procedures, is essential for establishing an effective integrated national MRV system.

⁸ Communication with Kong Chui, US EPA.

⁹ Sean Hogan, US EPA presentation to PMR MRV workshop, Mexico City, Mexico, March 6-8, 2014.

Cooperation agreements, as well as incentives (for voluntary reporting) and regulations (for obligatory reporting) that facilitate the delivery of information in an appropriate rhythm and format are considered as elements that contribute to the functionality of such a framework.

While some institutional mechanisms for monitoring and evaluation may often exist in countries (in the form of policy tracking, national GHG inventories and air quality measurement systems) these systems might not cover newly emerging MRV responsibilities. As such, countries are faced with whether to adapt and expand existing institutional systems and mandates, and/or to create a new set of arrangements exclusively for MRV. Depending on the scope, an adjustment of the current legal and/or regulatory framework might also be necessary in this context.

Approaches that countries have taken vary widely, ranging from top-down integrated MRV systems that cover multiple reporting needs to bottom up systems that focus on a specific policy, action, or region.

There is no one-size fits all set of institutional arrangements. However there are some common principles for improving institutional capacity for MRV that have been emphasized by country experiences. This includes the need for institutional mandates and clear division of roles, improved institutional coordination mechanisms and sustainable human resource arrangements. See overview of some first success factors in Table 1.¹⁰

Table 1: Common Institutional Arrangement Needs for National GHG Inventories and NAMAs

<p>Institutional Mandates and Clarity of Roles</p> <ul style="list-style-type: none"> • Establish legal frameworks as MRV system develops. • Designated lead agency/institution or inter-agency committee/ coordinating unit. • Define roles and responsibilities for lead agency and other institutions, including mandates. Without mandates the government will encounter difficulties in allocating resources, including financial and personnel. A clear definition of roles furthermore helps teams assess and document the strengths and weaknesses of existing institutional arrangements, ensures the continuity and integrity of MRV systems, promotes the institutionalization of MRV processes, and facilitate prioritization of future improvements.¹¹
<p>Institutional Coordination Mechanisms</p> <ul style="list-style-type: none"> • Identify central data management institution to compile data and information and coordinate across relevant ministries. • Develop clear and efficient mechanisms for sharing data and information across institutions and governance levels. • Establish a systematic procedure for integrating MRV into national policy tracking systems. • Incorporate intergovernmental bodies to improve efficiency and information sharing.

¹⁰ International Partnership on Mitigation and MRV (2013): Knowledge Product on Institutional Arrangements for MRV

¹¹ U.S. EPA, Developing a National Greenhouse Gas Inventory Systems, Template Workbook; December 2011; EPA-430-K-11-005

Human Resource Capacity

- Ensure staffing levels sufficient to fulfill MRV needs.
- Train staff at national, sub-national and sectoral levels. Staff capacity building can include training on:
 - The design, implementation, and operation of MRV systems.
 - Data collection and management.
 - Accounting methodologies.
- Sustained training and support (as opposed to one-off activities).

Source: Adapted from International Partnership on Mitigation and MRV, Knowledge Product, Institutional Arrangements for MRV

While there is no single set of institutional arrangements that can be considered “best practice” as of now, there are a number of commonalities as well as differences in how countries have chosen to approach institutional arrangements as highlighted in the comparison of institutional arrangements for three African countries.¹² Broadly speaking, some of these elements include:

- a. Coordinating body/ Lead institution:** In most cases countries have designated a lead institution, often the Ministry of Environment or unit under the President’s office to coordinate the MRV system and direct the activities of other actors in this area.
- b. Inter-ministerial body/ Steering Committee:** This body promotes coordination across key stakeholders and also ensures input into other national processes and plans.
- c. Technical Coordinator(s):** The technical coordinator, which may take the form of a team or individual, often sits within the lead institution and is responsible for the technical outputs of the MRV system. Technical coordinators may also be designated for each of the sectoral working groups. Often (and ideally), they can contribute to the MRV processes in their original capacity and expertise and do not need to be mandated separately.
- d. Sectoral Working Groups:** Countries also often designate separate working groups to conduct MRV activities within a specific sector. These teams comprise a combination of governmental institutes, research organizations and other public and private sector bodies.

¹² International Partnership on Mitigation and MRV (2013): Knowledge Product on Institutional Arrangements for MRV

-5- 'Food for Thought': Reasons, Options & Challenges for Establishing Integrated MRV Systems

- Countries' MRV systems, in practice, usually consist of multiple levels and processes. An integrated system aims at satisfying a range of MRV needs associated with different reporting purposes.
- MRV processes used for establishing national GHG inventories and for monitoring the progress of NAMAs might share overlapping needs, but might also comprise different methodological procedures and take place in different institutional structures.
 - Coordinating the different components of a country's MRV systems to address multiple policy objectives and "levels" is yet a big challenge, both in developing and in developed countries.
 - No "best approach" to setting up data management systems or arranging the roles and responsibilities of institutions that design and operate MRV systems exists.
- While MRV systems will continue to serve specific policy needs and objectives, identifying opportunities to coordinate and integrate certain MRV procedures across platforms has the potential to increase the efficiency and effectiveness of all types of GHG mitigation policies and programs – whether they address national targets, regional development goals, or facility-specific emissions management.
 - For example, countries building internal capacities to produce national GHG inventories on a regular basis may find the institutional arrangements that support this MRV system will (or should) have synergies with a NAMA-level MRV system.
 - Likewise, information from an MRV system that supports facility-level GHG reporting can improve the accuracy of national-level GHG inventories by updating emission factors used in quantification methods to correspond with actual, country specific conditions.
- A sensitive assessment of already ongoing processes of data gathering and reporting with regard to the potential of aligning or linking them at determined stages – e.g., in an early stage of developing the MRV system for a NAMA - can result very useful in order to make the best use of existing structures and arrangements, limited resources, capacity and manpower. That might involve the reorganization of roles and responsibilities within or among existing institutions.

-6- Literature

- UNEP Risoe Centre (2012): Primer on MRV of NAMAs
- International Partnership on Mitigation and MRV (2013): Knowledge Product on Institutional Arrangements for MRV
- International Partnership on Mitigation and MRV (2013): Knowledge Product on Elements and Options for National MRV Systems
- GIZ (2013): MRV Tool - 'How to Set-up National MRV Systems'
- Partnership for Market Readiness (2013): PMR Technical Note 4 – 'Supporting GHG Mitigation Actions With Effective Data Management Systems'

Find these documents and further readings at:

www.mitigationpartnership.net/resources

www.thepmr.org/content/mrv-data-management-and-registries