

MRV under the UN climate regime: paper tiger or catalyst for continual improvement?

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One of the most contentious issues at the 2009 UN Climate Summit in Copenhagen, and one which has persisted in the successive rounds of negotiation since then, is, in diplomatic lingo, 'MRV' (monitoring, reporting and verification). Expanding the MRV regime to include mitigation actions is an opportunity to support, rather than burden, developing countries in their efforts to improve their climate performance over time, consistent with sustainable development – if done in a sensible way. The article reviews the essence of this debate and suggests one pragmatic approach to ensure that national actions are indeed measurable, reportable and verifiable, namely adopting a certification scheme for national climate management systems (NCMS, which would require countries to establish a climate policy, set national goals and timetables, secure resources to implement related national actions and track their progress over time). Based on the high level of agreement among Parties to the United Nations Framework Convention on Climate Change (UNFCCC) on the need for comprehensive frameworks to facilitate forestry and energy sector mitigation by developing countries, supported by financial resources, technology and capacity building, an NCMS certification scheme is well suited to add value to the existing MRV regime both for developed and developing countries.

Keywords: certification; continual improvement; low-carbon development; management system; mitigation; MRV; UNFCCC

1. Introduction

Agreement on 'monitoring, reporting and verification' (MRV) provisions for developing countries, as called for in the 2008 Bali Action Plan (UNFCCC, 2008a), has proven to be one of the most intractable issues in reaching a global climate deal. This debate is not taking place in a vacuum; the existing climate regime already includes various monitoring, reporting, validation and verification activities, including reporting via National Communications, compilation of national greenhouse gas inventories and procedures to quantify and account for emission reductions under carbon offset schemes (Table 1).

The Copenhagen Accord (UNFCCC, 2010b), with which 138 countries have expressed their agreement to date,¹ clearly frames MRV provisions for developed countries as a means of ensuring compliance with commitments: 'Delivery of reductions and financing by developed countries will be measured, reported and verified in accordance with existing and any

further guidelines adopted by the conference of the parties (COP), and will ensure that accounting of such targets and finance is rigorous, robust and transparent'. And there is widespread agreement that national greenhouse gas emissions inventories, prepared in accordance with the reporting requirements adopted under the UN Climate Convention and Kyoto Protocol,² are an appropriate means of assessing developed country compliance with quantified economy-wide emissions targets for 2020.

But agreement on provisions for both MRV of support and MRV provisions for developing country mitigation actions (the primary subject of this article) have proven elusive – both in Copenhagen and in subsequent negotiations. This should come as no surprise, given that a common understanding of the purpose and functions of the MRV regime remains to be

¹The current list of Parties that have expressed their agreement with the Copenhagen Accord can be found at: <http://unfccc.int/home/items/5262.php>.

²An overview of existing requirements for reporting and review for developed country (Annex I) Parties under the Convention and the Kyoto Protocol is available from the UNFCCC: http://unfccc.int/national_reports/reporting_and_review_for_annex_i_parties/items/5689.php.

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articulated and that there is no precedent under the Climate Convention or Kyoto Protocol for 'verification' and only limited guidance on reporting on developing country mitigation actions.³ The Copenhagen Accord merely stipulates that mitigation actions taken by developing countries will be subject to either domestic or international MRV, depending on whether they have received international support.

In the negotiations since Copenhagen, several areas of convergence have emerged. One is that financial and technical support offered by developed countries is a prerequisite for the MRV activities of developing countries – although there is no agreement on operational modalities for such support.

The main point of contention surrounds whether national reporting by developing countries should be subject to international scrutiny. Members of the Group of 77 and China initially opposed the concept of an international review process, or any procedure that might imply scrutiny of national reporting, on grounds that this would not respect their national sovereignty. This position is in response to the elaborate modalities for verification of developing country actions proposed by the United States and supported by the Umbrella Group, including the requirement that developing countries undertake domestic MRV of actions and providing for international consultations and analysis of related reports by means of expert analysis, Party consultations under the United Nations Framework Convention on Climate Change (UNFCCC) Subsidiary Body for Implementation and a summary report. Many developing countries have adopted the position that the existing requirements for National Communications under the Climate Convention are sufficient (South Centre, 2008), whereas others are willing to accept additional MRV requirements for national mitigation actions that have been implemented with support provided by developed countries.⁴

Unless the Parties to the UNFCCC take the time to clearly define MRV concepts, consider the policy logic behind the MRV regime (compliance? facilitation? analysis?) and acknowledge that there is no 'one-size-fits-all' indicator for climate performance across national mitigation actions (Cheng, 2010), the UNFCCC MRV regime risks becoming a paper tiger that is more of a hindrance than a tool to stimulate continual improvement in the climate performance of developing countries. Although useful for other purposes (as outlined in Table 1), national greenhouse gas inventories are poorly suited as a means of identifying the most promising opportunities, mobilizing the required resources and tracking the effectiveness of individual national or sub-national mitigation actions.

³Refer to the 'Guidelines for NAI National Communications' and the related 'User Manual', available at: http://unfccc.int/national_reports/non-annex_i_natcom/items/2819.php.

⁴The World Resources Institute provides regularly updated summaries of the positions of Parties on several critical topics of negotiation, including MRV: www.wri.org/publication/summary-of-unfccc-submissions.

2. Need for a management system approach

There is increasing recognition that the global transformation towards low-carbon development pathways will not be a step function, but rather an iterative process, beginning today with available technologies, capabilities and resources, and evolving over time as new technologies and best practices emerge and societies, institutions and individuals adapt to the imperatives of low-carbon development ('decision making under uncertainty' and 'adaptive management' are buzzwords in the academic literature). This implies a need for countries (and other economic actors) to actively manage their transition towards low-carbon development pathways – and a commitment at the highest level in both government policy making and enterprise decision making to continual improvement in climate performance.

One proven tool to stimulate such organizational culture shifts is the adoption of management systems targeting performance improvements on a range of dimensions, including quality, environment and, most recently, energy. China, for example, recently adopted a voluntary national energy management system standard (EnMS) and is actively contributing to the development of a corresponding international EnMS (ISO 50001).⁵ Existing management system standards have been designed to be applicable to all types of organizations – and hundreds of government management systems at various levels have been third-party certified to comply with them. In a more general sense, the principles underlying existing management system standards can be readily adapted as a basis for consideration of nationally appropriate mitigation action (NAMA) MRV provisions by Parties to the UNFCCC,⁶ namely they should:

- result in better climate management;
- be applicable in all nations, notwithstanding any decisions taken under the principle of 'common, but differentiated responsibility';
- promote the broad interests of the public and the users of the standards;
- be cost-effective, non-prescriptive and flexible, to allow them to meet the differing needs of organizations of any size worldwide;
- be suitable for internal or external verification;
- be scientifically based;
- be practical, useful and usable.

Based on the transformational nature of the climate challenge and these past experiences, a growing array of actors is investigating how the management system approach might be applied in the context of the UN climate regime. Some

⁵The Chinese national standard is GB/T 23331-2009. See Piñero (2009) for an overview of the ISO EnMS, the current version of which can be purchased at: www.iso.org/iso/pressrelease.htm?refid=Ref1337.

⁶These principles have been adapted from those underlying the ISO 14000 series of environmental management standards: www.tc207.org/faq.asp?Question=3.

Table 1 Key components of the overall UNFCCC MRV system

Component	Agreement	Primary functions of MRV	Scope
MRV of Party emissions (national inventories/national communications)	<ul style="list-style-type: none"> • UNFCCC • Kyoto Protocol 	<ul style="list-style-type: none"> • Track Party emissions levels over time • Verification of compliance with QELROs • Information on implementation of other commitments 	<ul style="list-style-type: none"> • Aggregated across all sectors • Countrywide, based on territorial principle
MRV of carbon offsets	<ul style="list-style-type: none"> • Kyoto Protocol 	<ul style="list-style-type: none"> • Quantify emission reductions from individual projects/programmes for crediting/offsetting purposes • Ensure environmental integrity of offsetting 	<ul style="list-style-type: none"> • Participation in CDM or JI (voluntary) • Project-based to programmatic • Consideration to expand to individual sectors or policies
MRV related to nationally appropriate mitigation actions (NAMAs)	<ul style="list-style-type: none"> • Copenhagen Accord • Ongoing negotiations under Ad Hoc Working Group on Long-term Cooperative Action under the Convention 	<p>Under negotiation, but some convergence around the need for MRV to:</p> <ul style="list-style-type: none"> • Facilitate and recognize mitigation actions by developing country Parties • Ensure developed country compliance with provisions to provide support to developing countries • Build trust that all Parties will take action consistent with the principle of common but differentiated responsibility 	<ul style="list-style-type: none"> • Selected national mitigation actions within the context of national climate or low-carbon development strategies • Support of NAMAs by developed countries

are doing this by design; others, based on pragmatic work with governments or industry to facilitate climate mitigation.

3. National climate management system concept

In consultation with a wide array of actors in the run-up to the Copenhagen climate conference, the United Nations Foundation has outlined how a national climate management system (NCMS) standard could be used to meet the MRV needs of the emerging climate change regime with respect to national actions (Figure 1).⁷

The term 'standard' has proven confusing to some, since what typically comes to mind are product standards, such as mandatory minimum energy performance standards for a refrigerator or a car. A management system standard, in contrast, codifies the framework of processes and procedures

used to ensure that an organization can fulfil all tasks required to achieve its objectives. Having an effective climate management system in place should enable a Party to improve its climate performance over time. The key elements of the MRV system according to the UN Foundation (UNF) proposal are:

- Standard guidelines for NCMSs, adopted by the COP. The basic elements of climate management system standard guidelines might include their: (i) scope, (ii) terms and definitions and (iii) the climate management system requirements themselves, including:
 - *strategic planning* requirements, such as establishing performance benchmarks;
 - defining *performance indicators* to track progress towards objectives and targets;
 - adopting *measurable climate objectives, targets and timetables* for achievement, which essentially constitute a 'low-carbon development strategy';
 - establishing *internal procedures to monitor, audit and report progress, take corrective action and ensure regular management review* of climate performance and climate policy.

⁷The UNF proposal was outlined in a submission to the UNFCCC in 2009 entitled 'Ensuring "MRVable" national actions: An mRV model with a focus on continual improvement in climate performance': <http://unfccc.int/resource/docs/2009/smsn/ngo/165.pdf>.

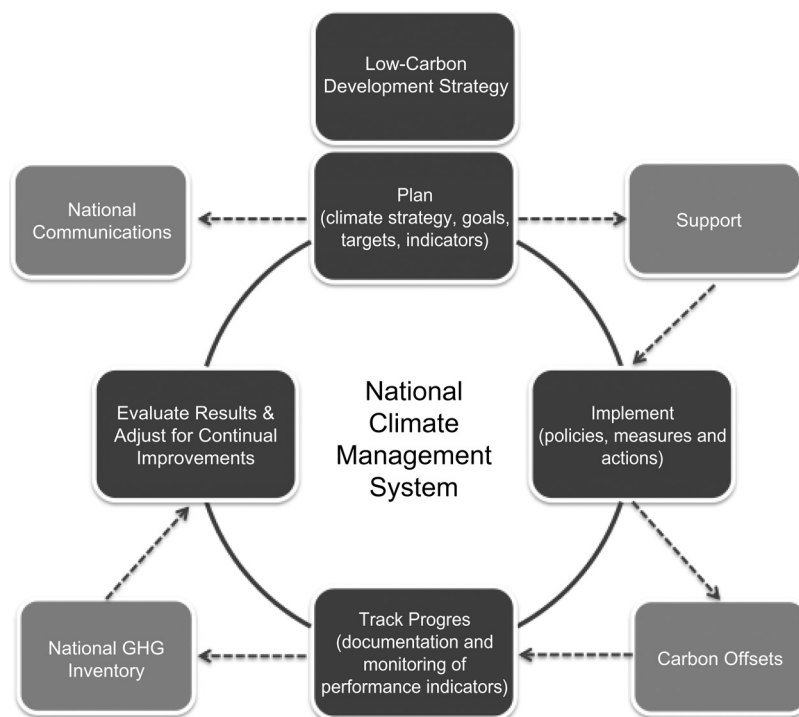


Figure 1 NCMS model

- Implementation of nationally appropriate mitigation actions and provision of financing, technology and capacity building by Parties in the context of climate management systems consistent with the COP guidelines.
- Certification by independent third parties accredited by the COP (but selected by the Parties themselves) of compliance of NCMSs with the standard guidelines established by the COP.
- COP acknowledgement of the certified actions in some form (subject to the outcome of negotiations).

A concept paper along similar lines to the UNF proposal has been prepared by the International Organization for Standardization (ISO).⁸ This document offers detailed and concrete thoughts on the scope, structure and content of a climate management system standard that could meet the MRV needs in the context of NAMAs.

4. Rationale and advantages

The advantages of adopting a voluntary certification scheme for NCMSs are summarized in Table 2.

⁸See 'Summary note on work carried out by an ISO/TC207 SC1 study group on the use of a management system standard approach to managing monitoring, reporting and verification needs under NAMAs': <http://isotc.iso.org/livelink/livelink?func=ll&objId=9683077&objAction=browse&viewType=1>.

The Parties to the UNFCCC seem to be converging on a negotiated agreement that the NAMA MRV regime should be 'a facilitative and confidence building process', but they still disagree on the establishment of the 'international consultation and analysis' procedure contained in the current version of the negotiating text (UNFCCC, 2010a, paragraphs 41–43). The NCMS approach offers another option that may better address the concerns of developing countries, while codifying transparency requirements to satisfy developed country needs. According to the UN Foundation proposal, certification of an NCMS by any and all Parties would be voluntary; however, any developing country Party that opted to undergo certification of its NCMS would not be subject to the contentious international consultation and analysis procedure. By adopting a management system approach, the sovereignty of countries to adopt suitable low-carbon strategies consistent with development priorities and to implement appropriate mitigation actions and track their own progress towards low-carbon development can be strengthened – while ensuring through third-party certification against an international standard that Parties are indeed making continual progress towards achieving their low-carbon performance objectives.

The NCMS is essentially a tool that countries may choose to adopt to support the effective implementation of their national climate policies. The scope of each NCMS will

Table 2 Advantages of NCMS certification scheme

Advantage	Explanation
Respecting of national sovereignty	<ul style="list-style-type: none"> • Does not prescribe which policies, targets, actions and indicators countries select • UNFCCC sets international NCMS standard and any related certification requirements; certification scheme operates at the national level
Consistent	<ul style="list-style-type: none"> • Provides a common international framework and guidance for maintaining certifiable climate management systems • Compatible with National Communications, adaptation and mitigation planning and support processes under the UNFCCC • Suitable for internal and external verification
Flexible	<ul style="list-style-type: none"> • Even countries with limited resources can start small and fast, and develop strategies most suited to their national emissions profiles and development priorities, adapting these over time • Further guidance can be developed over time, as needed, and draw on available protocols
Facilitative	<ul style="list-style-type: none"> • Promotes rational decision making through applying and rewarding good management practices • Systematic assessment of resource needs (people, services, equipment, infrastructure, materials, finance, etc.) to achieve low-carbon policy objectives
Outcome oriented and cost-effective	<ul style="list-style-type: none"> • Provides assurance that national actions are indeed resulting in continual improvement in climate performance • No new UNFCCC reporting requirements or international review procedures

therefore reflect the emissions profile of the country (taking into account the information contained in national greenhouse gas emissions inventories), its low-carbon development policy and the resources it has at its disposal (both internal or provided by other sources) and is likely to evolve over time. Should a country choose to focus initially on renewable energy, for example, it might adopt a target of increasing

the generation capacity from renewable sources by a certain time, and appropriate indicators⁹ might be the installed capacity or the share of renewable energy in total generation, rather than absolute carbon dioxide emissions reductions.

Figure 1 illustrates how a dynamic, country-owned NCMS would seamlessly interface with the existing elements of the UNFCCC regime (shaded in light grey). Periodic national inventories provide important information needed to identify significant sources of greenhouse gas emissions, which should be targeted by each Party in formulating specific objectives, targets and timetables. Conversely, the monitoring and documentation of progress on specific performance indicators can help improve the quality of national inventories and their interpretation. Inventories provide a static snapshot of territorial emissions, and changes from year to year can be attributed to many factors besides NAMAs, such as demographic changes, fossil fuel prices or economic cycles.

There is also an important interface between tracking progress on NAMA performance and the Clean Development Mechanism (CDM) regime. National inventories of developing countries currently reflect net changes in all sources and sinks of greenhouse gas emissions, including mitigation achieved under the CDM, yet without quantitative mitigation commitments, there is no possibility for double counting under the existing provisions of the UNFCCC. However, once an NCMS is established and domestic targets on specific performance indicators are established, it will be necessary to be transparent about the contribution of CDM. The current negotiating text does not elaborate on how this issue is to be addressed in the absence of such a tracking system.

Finally, countries that choose to adopt an NCMS will be well positioned to meet the information requirements of the current and future UNFCCC regime, as a result of the monitoring, tracking, documentation and internal auditing systems that they will establish domestically to meet NCMS requirements. Typical management system standards, for example, require top management to provide the resources needed to establish, implement, maintain and improve the management system, as well as to identify related training needs, provide training and maintain associated records. Such a systematic approach can lend clarity and credibility to requests by developing country Parties for support under the UNFCCC. Similarly, the management system covers many topics to be included in national communications, and so will ensure that the necessary documentation is available for checking progress and to meet internal and external communication needs.

⁹A great deal of work has already been done on appropriate, disaggregated indicators (e.g. IEA (2009) for energy indicators, or industry-specific key performance indicators) – and the UNFCCC Parties could choose to adopt more detailed sectoral guidance over time.

5. Towards a facilitative MRV scheme

The suggested NCMS standard approach to MRV of national actions parallels closely the current version of the negotiated provisions related to forestry sector mitigation actions (UNFCCC, 2010b), which requests Parties to develop:

- a national strategy or action plan;
- forest reference levels; and
- a robust and transparent forest monitoring system.

The negotiating text would mandate the Subsidiary Body for Scientific and Technological Advice to develop related modalities for adoption by the COP, and the SBSTA may draw on work being done by the expert community, such as the development by the Governance of Forests Initiative of a set of measurable, reportable and verifiable indicators of good governance of forests.¹⁰ This comprehensive approach to the forest sector has gained broad support across developed and developing countries, but the connection between these facilitative provisions designed to stimulate forestry sector management, mitigation actions and monitoring, and the separate discussions of MRV related to other types of mitigation actions is yet to be recognized.

Similarly, at the world's first Clean Energy Ministerial, which was held in Washington, DC, in July 2010, government and corporate leaders announced a new public-private partnership, the Global Superior Energy Performance (GSEP) partnership, which has three major components:¹¹

- A harmonized implementation and certification process to encourage continuous energy efficiency improvements in commercial buildings (e.g. offices, hospitals, stores) and industrial manufacturing facilities (inclusive of industrial processes and manufacturing operations). The certification process will rely on facilities implementing an energy management system, such as the forthcoming ISO 50001 energy management standard, and achieving energy performance improvements validated by a third party.
- Sectoral task groups to accelerate the adoption of efficiency-enhancing and emission-reducing best practices and technologies within specific sectors (e.g. power, steel and hotel chains) through public-private partnerships.
- Cross-sectoral technology task groups to facilitate the adoption of specific energy-saving solutions.

¹⁰See 'The Governance of Forests Toolkit (Version 1) – A draft framework of indicators for assessing governance of the forest sector': http://pdf.wri.org/working_papers/gfi_tenure_indicators_sep09.pdf.

¹¹Refer to fact sheet at: <http://energy.gov/news/documents/GSEP-fact-sheet.pdf>. GSEP builds on the Superior Energy Performance programme in the US (www.superiorenergyperformance.net), which is outlined in the 4 March 2010 webcast 'ITP Webcast on Superior Energy Performance Plant Certification Programme' available on the US Department of Energy website: www1.eere.energy.gov/industry/resources/thursday_webcasts.html.

It is envisioned by GSEP that once established, national certification schemes will become self-sustaining. There is no reason why this approach, adopted by energy experts and capable of covering 60% of energy demand (McKane et al., 2009; Piñero, 2009), could not inform the design of the UNFCCC MRV regime.

Initial work has been done by the ISO to prepare a concept outline for a climate management system (see Note 8), and some guidance relevant to creating a UNFCCC standard for the certification of NCMSs is already contained in the mitigation module of the resource guide prepared by the UNFCCC secretariat to assist developing countries with preparing their National Communications (UNFCCC, 2008b). In its work, ISO highlighted the need to begin by defining the scope of such an NCMS standard and identified other fundamental issues that would need to be agreed by Parties in the process of drafting an NCMS standard (e.g. technical requirements for reporting, quantification and assurance, taking into account the extent of validity needed in information and the level of uncertainty). As in the case of guidance on national greenhouse gas inventories, the UNFCCC Parties could choose to adopt more detailed technical guidance over time, as needed to meet their needs.

In general, the management system approach is a natural fit with the full range of domestic and cooperative efforts to stimulate actions by industry and cities. Taking China as an example, the US-China partnership for Climate Action recently trained local leaders from 18 cities in the industrial core of China – Guangdong and Jiangsu Provinces – to help them create low-carbon action plans,¹² which the Chinese government is likely to require of all cities under its 12th Five Year Plan from 2011, and numerous Chinese cities are embarking on such efforts with their own resources or in cooperation with various partners. China already has extensive planning, monitoring and reporting requirements (WRI, 2009), and these are being rapidly strengthened and elaborated to support domestic mitigation programmes. In addition to the Chinese Energy Management System standard mentioned above, a complementary national standard to provide guidance on its application is under elaboration – and China is actively exploring application of EnMS in pursuit of low-carbon cities, most recently in the context of the international workshop it hosted on 'Implementation and Utilization for Energy Management System'.

Other countries are following suit: as part of implementing its Energy Conservation Act of 2001, India is requiring many of its energy-intensive commercial buildings and industrial facilities to institutionalize energy management, and, together with the governments of Canada, the European Commission, France, Japan, Korea, Mexico, Russia, South Africa, Sweden,

¹²A report on the two Climate Leadership Academies on 'Low Carbon City Planning and Development in China', hosted in July 2010 by the Institute for Sustainable Communities, is available at: www.iscvt.org/news/press_releases/article/?id=87.

and the United States, India is participating in the GSEP partnership mentioned above.

Due to the highly politicized nature of the UNFCCC negotiation process leading up to the Climate Summit in Copenhagen in 2009, as well as for institutional reasons, there was very little technical or policy research done on the function, design principles and implementation of MRV of mitigation actions going forward under the UNFCCC. Now that the subject has become one of the key unresolved issues in brokering a global deal, it is essential that the expertise of the professional MRV community be tapped to support the policy-making process. Some areas that require immediate attention from the expert community include:

- Recommendations on definitions and systematic application of key terms. The UNFCCC negotiations on MRV of mitigation actions have adopted the term 'verification', without providing a clear definition, and the debate often confuses the conceptual distinction between verification and the equally important quality concept of 'validation' as laid out in the IPCC Good Practice Guidance (see e.g. Pulles and Heslinga, 2010). In the case of developed country mitigation commitments framed in terms of economy-wide greenhouse gas targets, *validation* implies that the national greenhouse gas inventory is based on correct application of the IPCC Guidelines and that the emissions reporting can therefore be accepted for compliance purposes. If subsequent *verification* were to suggest that the reported emissions do not accurately reflect true emissions, then the inventory guidance would need to be improved. In other words, verification is not applicable in the context of compliance. The unsystematic use of terms creates confusion in the negotiations, and the expert community can help sort this out.
- Documenting the application of management system standards to improve climate performance in key sectors, such as energy supply/end-use and forests, as well as assessing their utility for MRV purposes under the UNFCCC. Climate negotiators may be unaware of the potential role that such management system certification schemes might play in the context of MRV of national actions – and what the advantages for all Parties would be relative to the proposals for international consultation and analysis currently on the table.
- Developing good practice guidance to support COP decision-making on mechanisms to confirm that countries

are adopting and implementing low-carbon development plans, obtaining the necessary finance and technical support and demonstrating continual improvement. This might include the development of a climate management system standard, the elaboration of certification procedures and suggested institutional arrangements, and standardizing sectoral protocols for measuring and monitoring energy use, many of which have been developed outside of the UNFCCC.

6. Conclusion

The transition to low-carbon development pathways will challenge governments and other economic actors for decades to come. Whereas national greenhouse gas inventories are required to understand aggregate greenhouse gas emissions levels and are therefore already required under the UNFCCC, establishing additional MRV requirements for mitigation actions is an opportunity to support, rather than burden, developing countries in their efforts to improve their climate performance over time, consistent with sustainable development. To do so, however, requires that thought be given to principles, definitions and objectives of the NAMA MRV regime. Based on the high level of agreement among Parties to the UNFCCC on the need for comprehensive frameworks to facilitate forestry and energy sector mitigation by developing countries, supported by financial resources, technology and capacity building, a NCMS certification scheme is well suited to add value to the existing MRV regime for both developed and developing countries. Fortunately, there is a growing body of experience with management system certification and the development of low-carbon development plans from which the UNFCCC process could draw upon in establishing the requisite international guidance.

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