

NRDC WHITE PAPER

Improving Reporting of National Communications and GHG Inventories by Non-Annex I Parties under the Climate Convention

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Chapter 1. Introduction

The Bali Action Plan calls for developing countries to implement nationally appropriate mitigation actions (NAMAs) in a measurable, reportable, and verifiable manner. How Parties should measure, report, and verify (MRV) mitigation actions was agreed in the Cancun Agreements, which largely base the any new procedures and requirements related to MRV in the national communication processes established under the United Nations Framework Convention on Climate Change (UNFCCC). This understanding was reinforced by the Cancun Agreements, which explicitly provided that mitigation actions and national greenhouse gas (GHG) inventories of developing countries will be reported in “update reports” every two years with full national communications every four years, in accordance with guidelines to be developed by the Conference of Parties.¹ These national communications will be subject to international consultation and analysis (ICA) of these biennial reports. The Cancun Agreements also provide that *autonomous mitigation actions* (those undertaken without international support) will be subject to domestic measurement, reporting, and verification “in accordance with general guidelines” to be developed by Conference of the Parties and the results will be one of the aspects considered in the international consultation and analysis. Development of revised guidelines for reporting of mitigation actions and GHG inventories, and processes to facilitate this reporting, are thus central to efforts to implement the agreements reached in Cancun (See feature box 1 below, *Developing Country MRV and ICA Provisions of the Cancun Agreements*).

Feature Box 1. Developing Country MRV and ICA Provisions of the Cancun Agreements

MRV The Cancun Agreements require that developing countries complete their full National Communication every four years their full National Communication and a biennial “update report.” The biennial update report is to contain “updates of national greenhouse gas inventories including a national inventory report and information on mitigation actions, needs and support received.” Emissions reduction actions that receive international support would be subject to international MRV, while actions that are only supported domestically would be subject to domestic MRV “in accordance with general guidelines to be developed under the Convention.”

ICA The agreement would create a new process of “international consultation and analysis” which would entail: (1) technical analysis of the country’s report; and (2) formal dialogue on the reported information. The formal dialogue will include a consideration of the technical analysis, a “facilitative sharing of views”, and the country’s own report. The information to be considered is to include all the key contents of those reports, such as the emissions inventories, data and assumptions, and information on the countries domestic verification system.

Reporting through national communications is the Convention’s primary source of information on Parties’ implementation of commitments and collective progress toward meeting its ultimate objective. The Convention itself in Article 10 recognizes the importance of this information for assessing “the aggregated effect of the steps taken by the Parties in the light of the latest scientific assessments concerning climate change.” After all, providing information on the environmental performance of the overall program and the actions of countries is central to assessing whether or not the world is effectively reducing emissions to minimize the threats of climate change. But there are other reasons why reporting of regular and reliable information on implementation is important. Preparation of a national communications can help focus coordination and planning at the national level. In this way, a regular reporting obligation can facilitate the development of permanent institutional capacity and processes related to climate change activities. Second, communication of information on implementation provides a vehicle for exchange of experiences and learning across countries.

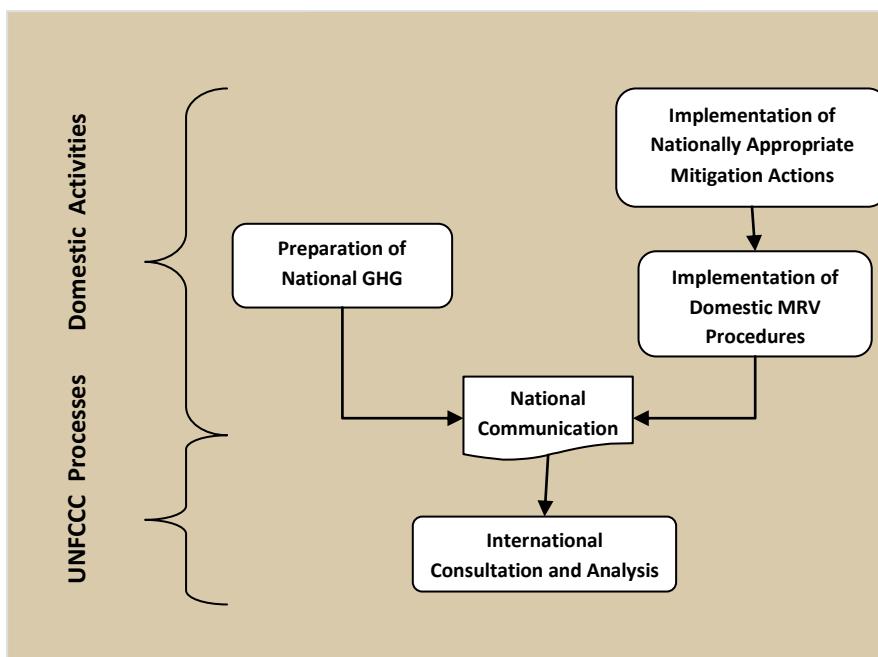
Finally, and perhaps most importantly in terms of the Bali Action Plan, reporting is key to building confidence among Parties collectively that individual Parties are implementing their commitments. To facilitate this confidence-building, revised guidelines and related processes for national communications should promote the provision of information on mitigation actions and inventories that meet the following criteria:

- *Transparent*: Definitions of transparency typically reflect concepts of openness, understandability and accessibility. Reporting requirements should promote the presentation of information in a manner that is clear, organized, reader-friendly, and with sufficient detail and supporting information.
- *Comparable*: National communications should facilitate comparison of similar information across Parties. Practically, this implies standardized reporting formats, and to the extent possible, standardized requirements for the type of information reported.
- *Reliable*: The guidelines should promote presentation of accurate information that has been collected and processed using objective, technically sound, and consistent methods.
- *Useful*: Reporting guidelines should focus on information that is of most interest and value to the Conference of Parties.

- *Timely*: The frequency of reporting should be sufficient to ensure that the information available to the Conference of Parties is current, and that significant changes in implementation efforts or effects are captured.

This paper evaluates current reporting requirements for Non-Annex I Parties, and identifies ways these requirements and related processes could be improved to meet the standards outlined above.² In line with the Cancun Agreements, the focus of this paper is on three specific elements (See figure 1): GHG inventories, nationally appropriate mitigation actions (NAMAs), and domestic measurement, reporting, and verification. It is anticipated that additional provisions for MRV will be developed for NAMAs that receive international support, are credited through a market-based mechanism, and in the forestry sector (so-called “REDD plus” activities). MRV provisions for these *supported actions* are generally expected to require a greater level of detail and international verification.

Figure 1. MRV of NAMAs and Inventories



While this paper recommends that all types of NAMAs be reported in the national communication, it focuses in particular on the reporting of autonomous mitigation actions—i.e., those actions that are funded by the developing country without external support. For autonomous mitigation actions, reporting through national communications will be the only vehicle for demonstrating that these actions are reliably measured, reported, and verified.

While improved national communications could serve as a starting point for an ICA process, as envisaged by the Cancun Agreements, this paper does not address that process. Other elements of national communications, such as national circumstances, vulnerability, and adaptation, are also not considered in this paper. Finally, this paper does not address improvements to the reporting by Annex I countries, nor MRV of financial support, both of which would be important in a new climate agreement.³

Chapter 2. Current National Communication Requirements and Reporting by Non-Annex I Parties

The requirement to submit national communications is set out in Articles 4 and 12 of the Convention. Article 4.1 (a) requires that all Parties prepare, periodically update, and submit national inventories of GHG emissions and sinks. Article 12, which pertains to the “Communication of Information related to implementation,” requires each Party to report a national GHG inventory—a general description of steps that the Party has taken or envisages to implement the Convention and any other information that the Party considers relevant to the achievement of the objective of the Convention. The Convention itself does not establish a frequency for submission of national communications, but leaves this to decisions of the Conference of Parties.

The requirements for national communications of non-Annex I Parties were elaborated through the adoption of guidelines. The most recent of these was adopted in 2002 for the preparation of second national communications.⁴ The reporting guidelines cover all aspects of Convention implementation: national circumstances, the national GHG inventory, mitigation, adaptation, research and systematic observation, education and public awareness, technology transfer and capacity building, as well as financial and technical needs and constraints. To date, 137 countries have submitted initial national communications, and 26 have submitted 2nd national communications. Mexico alone has submitted a third and fourth national communication.⁵

The reporting requirements for non-Annex I Parties are generally considered to be weaker than those for Annex I Parties (See table 1). This is partially because the capacity of many non-Annex I Parties for reporting is much lower than that of developed countries and the guidelines were designed with this lower capacity in mind. However, another factor is the contentious nature of negotiations surrounding non-Annex I reporting guidelines. The debate between Annex I and non-Annex I Parties regarding mitigation commitments of non-Annex I Parties has spilled over into the discussions of reporting: some non-Annex I Parties have resisted improvements to reporting of inventories and mitigation actions because they see these as linked to mitigation commitments. Unfortunately, this conflation of issues has undermined the ability of Parties to agree on improvements that would improve the quality, transparency, and comparability of these reports.

Table 1. Current Reporting Requirements for National Communications under the UNFCCC

	Annex I Parties ^a	Non-Annex I Parties ^b
<i>Greenhouse Gas Inventory</i>		
Frequency	Submitted annually; summary included with national communication.	Submitted only with national communication (and no set frequency for national communication required; see below).
Format	Electronic	Hard copy
Years covered	1990 (or other basyear) to most recent year available.	1990 or 1994 (1 st NC); 2000 (2 nd NC).
Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ required.	CO ₂ , CH ₄ , N ₂ O required; HFCs, PFCs, SF ₆ encouraged.
Sectoral Disaggregation	Summary tables and sectoral background data tables required.	Only summary tables are required.
Version of the IPCC Guidelines	Use of 1996 Guidelines ^c and Good Practice Guidance ^d required.	1996 Guidelines required, Good Practice Guidance is encouraged.
Documentation	Extensive documentation of methods and data sources required in a “national inventory report.”	Encouraged to provide information on methods used.
<i>Mitigation Actions</i>		
Frequency	Approximately every five years; Five national communications submitted to date.	No set frequency for national communications. Most countries have submitted only one national communication.
Reporting Structure	Separate chapter on mitigation ‘policies and measures’, organized by sector and gas.	Included under “General Description of Steps taken or envisaged to implement the Convention”; no format provided.
Information reported	Description, policy objective, status of implementation, implementing entity required; Estimate of GHG impacts encouraged.	Information on planned or implemented measures encouraged

^aGuidelines adopted in 2005 applied for third, fourth, and fifth national communications; separate guidelines for annual inventories updated in 2005.

^bGuidelines adopted in 2002 applied for second national communications.

^c“Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories” at:

<http://www.ipcc-nccc.iges.or.jp/public/gl/invs1.html>

^d“Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories” at:

<http://www.ipcc-nccc.iges.or.jp/public/gp/english/> and “Good Practice Guidance for Land Use, Land-Use Change and Forestry” at: <http://www.ipcc-nccc.iges.or.jp/public/gplulucf/gplulucf.html>

B. Inventories

The reporting guidelines require that non-Annex I Parties provide a GHG inventory in conjunction with the national communication. The inventory for the first national communications was to cover the year 1994 or 1990; the second the year 2000. As a result, most non-Annex I countries have provided only one inventory to date and for only one year (1994 for most countries). In contrast, since 1999, Annex I Parties have been required to submit annual GHG inventories, covering a full time-series from 1990 up to the most recent year.⁶

The national communication guidelines require non-Annex I Parties to report on only three greenhouse gases in the inventory: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Reporting on the other greenhouse gases, namely hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆) is encouraged, but not required. According to the UNFCCC secretariat, only 18 non-Annex I Parties included estimates of these gases.⁷ While these gases are not produced in many developing countries, they are growing in several.

The guidelines direct non-Annex I Parties to report GHG inventories by the sectors and major sub-sectors identified by the Intergovernmental Panel on Climate Change (IPCC), but only at an aggregate *summary* level. Reporting of sectoral background data tables (e.g. activity data and emission factors) used to compile the inventory are encouraged but not required. As a result, the inventory guidelines only require submission of two tables. To date, only 33 non-Annex I Parties (less than 30 percent of those reporting) have submitted the IPCC background data tables, despite the fact that all non-Annex I Parties would have used these background tables (or similar ones) in the preparation of the inventory. In comparison, the inventory guidelines for Annex I countries require submission of 43 different tables. As an example, see table 2, which compares the inventory reporting requirements for the energy sector, which comprises the majority of emissions in both Annex I and non-Annex I countries.

Table 2. Energy Sector Inventory Reporting Requirements

<i><u>Annex I Countries</u></i>	<i><u>Non-Annex I Countries</u></i>
<ul style="list-style-type: none">• In Summary Report• Sectoral background tables, including activity data, implied emission factors and other inventory-related information :<ul style="list-style-type: none">◦ Fuel combustion◦ Feedstock and non-energy use of fuels◦ Fugitive emissions from solid fuels◦ Fugitive emissions from oil and natural gas◦ Bunker fuels• Fuel Combustion reference approach• Comparison of fuel emissions	<ul style="list-style-type: none">• In Summary Report only

Feature Box 2. IPCC Guidelines

The IPCC Greenhouse Gas Guidelines provide detailed methods for estimation of greenhouse gas emissions. The guidelines have been updated over time to include more emission source and removal categories and to improve methods. The Good Practice Guidance adopted by the IPCC in 2000 also provided guidance on the identification of the most important inventory categories ('key category analysis'), inventory management and planning, such as selection and collection of data, and quality assurance and control. The most recent edition of the IPCC Guidelines—from 2006—has not yet been adopted by the UNFCCC for reporting.

Because the IPCC Guidelines are intended to be used by all countries, regardless of their capacities, they provide different tiers of methods for each category of emission source or removal category. The higher tier methods (Tier 3 is normally the highest) are typically more detailed, data intensive, and rely on country-specific parameters to estimate emissions. In contrast, Tier 1 methods utilize more aggregated data and default emission factors.

Non-Annex I Parties are required to prepare their inventory using methodologies from the *Revised 1996 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories*. Use of the *2000 Good Practice Guidance and Uncertainty Management*, which updated and improved the 1996 Guidelines, is only encouraged (See feature box 2, *IPCC Guidelines*). Documentation of methodologies used to prepare the inventory and data sources is also encouraged but not required. As a result, very few non-Annex I Parties have provided this information.

According to the UNFCCC secretariat, most non-Annex I Parties have followed only the minimal requirements of the UNFCCC reporting guidelines for the GHG inventory portion of the national communication. While some Parties have gone beyond these minimal requirements to provide high-quality inventories, on balance the deficiencies have impaired submission of high-quality inventories. Specifically, the lack of detailed sectoral information and documentation of methods and data sources undermines the transparency of the reported inventories, and prevents assessment of the reliability of the emission and removal estimate. The omission of gases other than CO₂, CH₄ and N₂O means that total emissions are underestimated in some countries. Finally, the fact that inventories are only required for 1994 and 2000 means that estimates of emissions for most countries are seriously outdated, and it is not possible to gauge emission trends of developing countries.

C. Mitigation

The requirements for reporting of mitigation by non-Annex I Parties in the national communication guidelines are also very general. The only mandatory element is a "general description of steps taken or envisaged toward formulating; implementing, publishing and regularly updating national and, where appropriate, regional programmes containing measures to mitigate climate change...and any other information they consider to be relevant to the achievement of the objective of the Convention and suitable for inclusion in their communications."⁸ Parties are encouraged to include information on methodologies used to assess mitigation options, mitigation scenarios, results, specific measures, and institutional arrangements,

but reporting of this information is not mandatory. Nor is a format provided for the presentation of this information if a Party does choose to include it.

As a result of the lack of specific guidance or format for reporting on mitigation information in national communication, the level of detail provided on mitigation activities varies widely across non-Annex I Parties. According to the most recent compilation and synthesis report, most, but not all, Parties included a separate chapter on mitigation, but the type of information provided was mixed. Some non-Annex I Parties provided descriptions of mitigation measures, but the status of implementation of these measures was not clear. Similarly, while some Parties identified specific performance goals for their measures, few provided clear assessments of progress in achieving those goals. Other Parties provide very limited information, often burying reference to mitigation in other chapters, such as national circumstances, rather than in a separate mitigation chapter. While there are some notable exceptions, in general the information provided by most non-Annex I Parties does not provide a clear picture on mitigation efforts and their effects, and the variation in reporting impairs comparisons across Parties.

D. Financing for Preparation of National Communications

The Convention requires developed countries to provide financial assistance for the preparation of national communications by non-Annex I Parties. Article 12.3 states that developed countries shall provide “new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1.” Although many developed countries provide financial and technical assistance for reporting through bilateral programs, financing is primarily provided by the Global Environment Facility (GEF). Through its *Enabling Activities* project type, the GEF provides financing for capacity building and specific activities related to the preparation of national communications. Provision of this financing is tied to submission of national communications, and has ranged from US\$100,000 to US\$3.5 million per country. Additionally, in recent years, a limited amount of financing, capped at US\$100,000 per country, has been available to maintain domestic capacity between submissions of national communications.

Many countries lack the institutional arrangements, staff, and expertise to prepare inventories and national communications on an ongoing and regular basis. So while this financing has been instrumental in helping many non-Annex I Parties prepare their first national communications, for these countries it is too sporadic to maintain domestic data collection and reporting capacity. A country that hires staff or contracts experts for preparation of one national communication using GEF support may not have resources to maintain these staff following completion of the report. Such a country would not have the ability to collect information regularly and essentially must rebuild capacity for every report instead of being able to improve the reporting system over time.

The lack of rigorous reporting guidelines may also limit the financing provided for reporting. Although the GEF has provided funding for national communications that go beyond the minimum requirements of the non-Annex I reporting guidelines (for instance Mexico’s national communications), many countries seek only to meet the minimum requirements of the guidelines. The low-bar set by the guidelines may actually discourage non-Annex I Parties from seeking funding to improve reporting. More rigorous guidelines might encourage more non-Annex I countries to seek additional assistance for improved monitoring and reporting.

Chapter 3. Recommended Revisions for Reporting

Guidelines and levels of financial and technical support for reporting of national communications of non-Annex I Parties must be enhanced to give confidence that a country's emissions reduction efforts are measurable, reportable, and verifiable. Improved reporting requirements must balance the interests of countries collectively in having information on emissions and mitigation actions that is transparent, comparable, reliable, useful, and timely, with the resource burdens on individual Parties and the UNFCCC of managing and processing the reports. A particular challenge will be how to ensure that improved guidelines do not lead simply to more information, but that reported information is more transparent and useful.

Reporting requirements must also continue to accommodate the different national circumstances and capacities of developing countries, particularly the least developed countries. In the current reporting guidelines, differences in national capacities have essentially been addressed by setting a low bar for reporting. This approach provides little incentive for high-quality reporting and improvements over time, and neglects the fact that many countries could provide higher quality reports with support. Instead, revised guidelines should set a high standard for reporting for all countries and ensure that sufficient financial support is available to assist countries in meeting that standard. Countries that have difficulty adhering to reporting requirements should receive additional technical and financial support. As with the current requirements, least developed countries should maintain the right to submit their reports at their discretion.

In the case of national inventories, due to the decades of work by the IPCC, there is broad international consensus regarding what constitutes a transparent, methodologically-sound inventory. The issue for the Convention is how to move from the current, minimal reporting requirements for non-Annex I countries toward more rigorous reporting, and how to ensure that countries have the national capacity to prepare high-quality inventories on an ongoing basis. It is also important to think of inventory reporting as an iterative system that must be able to improve over time. For example, a country may have difficulties addressing some emission sources in the early years of preparing GHG inventories, but with enhanced experience and resources should be able to develop and improve estimates from these sources in later years.

Reporting on mitigation actions is more challenging, because of the wide range of possible NAMAs. Neither the Bali Action Plan nor the Cancun Agreements defined NAMAs, but leave these up to the discretion of individual countries. NAMAs may range from national policy goals, such as renewable energy or emission reduction goals, to specific mitigation measures, to other activities that indirectly contribute to mitigation, such as education and public-awareness raising. This diversity will make it challenging to develop reporting guidelines that are both detailed and standardized—reporting requirements must provide flexibility to accommodate the wide range of possible mitigation actions.

The Cancun Agreements envisages that mitigation actions undertaken without international support will be subject to domestic measurement, reporting, and verification in accordance with general guidelines that are to be developed. Reporting on and evaluation of these domestic procedures will be important to show that they are rigorous and technically sound, and, more importantly, that a country's assessment of the performance of the mitigation action can be trusted. Revisions to the guidelines for national communications should therefore also address reporting of domestic MRV procedures. Transparency of domestic MRV will be essential to build confidence in a country's implementation and performance of the NAMAs themselves.

A. Inventories

The IPCC Inventory Guidelines are a product of over a decade of work by inventory experts from both developed and developing countries. While IPCC methods continue to evolve, particularly with respect to methods and emission factors that are specific to developing country conditions, they are explicitly intended to be usable by all countries, and provide flexibility to take into account national circumstances and capacities. As such, the most up-to-date guidance on methodologies provided by the IPCC should be the basis for the UNFCCC reporting guidelines on GHG inventories. The improvement recommended below would bring non-Annex I inventories in line with current IPCC standards.

1. Use of the 2006 IPCC guidelines

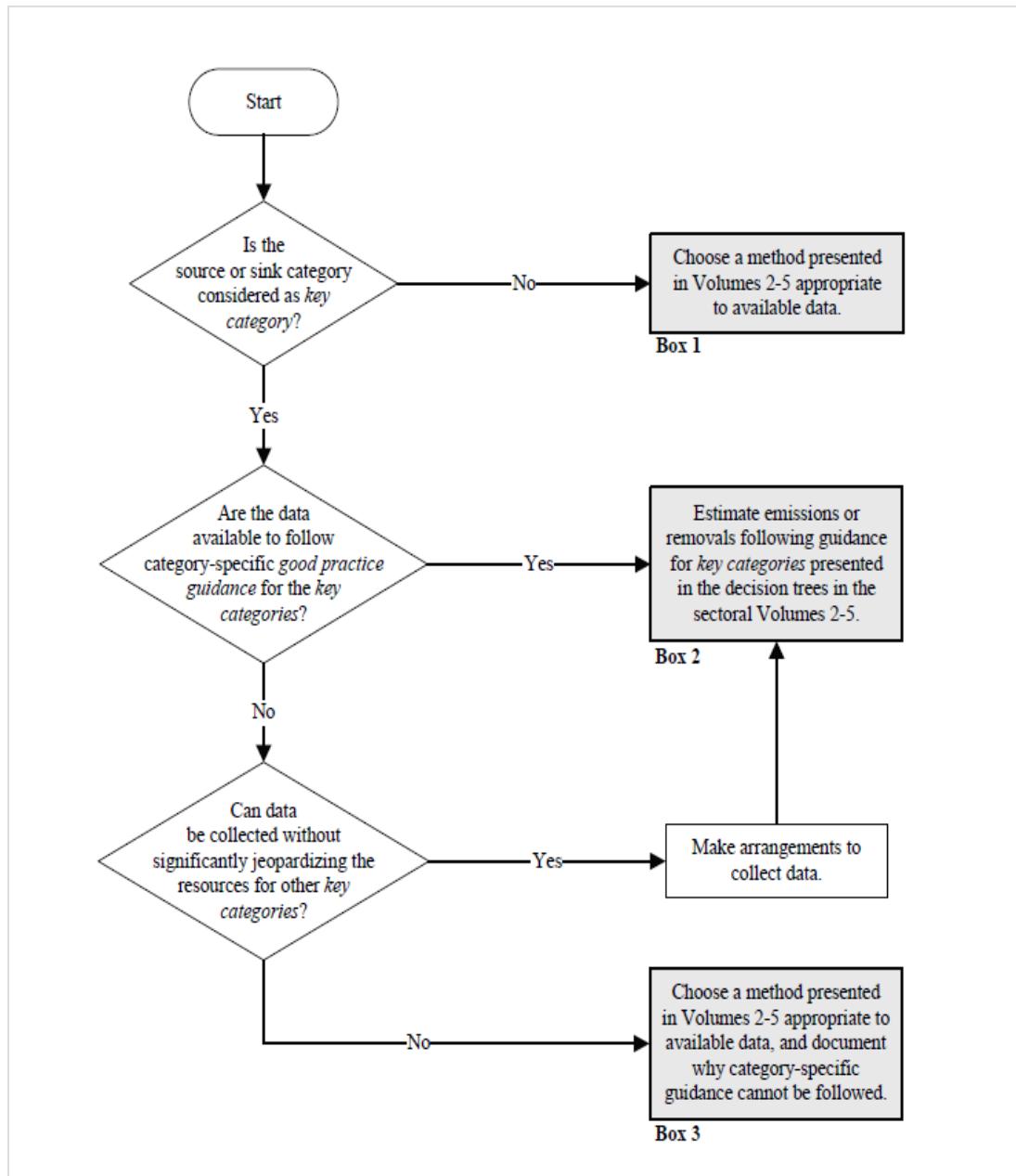
The 2006 IPCC guidelines update and synthesize the *Revised 1996 Guidelines, Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. While there are some structural changes in the 2006 guidelines, most notably the combination of the previously separate Agriculture and LULUCF sectors into one sector,⁹ for the most part the inventory methods in the 2006 Guidelines are simply updates of those from previous editions (e.g. additional sources, new default emission factors).

In addition to guidance on appropriate estimation methods for individual inventory categories, the 2006 Guidelines also include cross-sectoral *good practice* guidance for inventory preparation. This covers topics such as collection of activity data, key category analysis to identify the most important inventory categories, quality assurance and control, and inventory planning and documentation.

Like previous editions of the IPCC inventory guidelines, the 2006 Guidelines provide significant flexibility in the choice of method, so that they can be used by countries with different capacities. In selecting the appropriate method to be used by a country for each category, the 2006 Guidelines take into account both the importance of the category, as well as the resources available to the country (See figure 2 on next page).

It is anticipated that the 2006 IPCC Guidelines will be adopted for use by Annex I countries in 2011, as part of revised UNFCCC guidelines for inventory reporting by those countries. Because the 2006 IPCC guidelines represent the state-of-the-art on inventory methodologies and best practice, they should also be adopted for use by non-Annex I Countries in the preparation of their national inventories.

Figure 2. Decision Tree to Choose Inventory Methods



Source: Chapter 4 (Methodological Choice) of the 2006 Guidelines

2. Frequency

Non-Annex I Parties should report national greenhouse gas inventories on a more frequent basis than they do currently. A requirement for biennial reporting, as envisaged by the Cancun Agreements, is an important step, but non-Annex I Parties should be encouraged to submit inventories on an annual basis or to move to annual reporting over time.

Annual reporting would provide an impetus for maintaining permanent institutional capacity for inventory preparation in country, rather than a reliance on temporary, ad hoc teams. Creation of a permanent team will enable long-term inventory planning, and ensure that technical expertise and experience is retained "in-house." It would also facilitate the formalization of roles and

responsibilities for inventory data collection and preparation between organizations involved in the inventory preparation.

While annual reporting means that emissions are estimated annually, it does not necessarily mean that data used to estimate emissions is collected annually. In cases where reliable annual data is not available or not complete, the 2006 IPCC Guidelines provides statistical methods, such as averaging, interpolation or extrapolation, to address data gaps.

Non-Annex I Parties should submit inventories electronically in a standard format to facilitate processing of the data by the UNFCCC secretariat, compilation and comparison of inventory data across Parties and, publication of inventory information on the UNFCCC website.

3. Time-series

Reporting of a time-series of annual emissions and removal estimates from a historic reference year to the most recent available year is important to demonstrate consistency in the use of inventory methods and data sources over time. For developing countries, the appropriate reference year need not be 1990, as it is for developed countries, but could be a more recent year, such as 2000. Collection of activity data for early years of the time-series would be easier for a later reference year than for an earlier reference year.

Each inventory submission should, to the extent possible, cover a full time-series of emissions. When changes in the way inventory estimates are made (e.g. use of new methods, or data sets) then those changes should also be applied for all previous years in the time series as well. Recalculation of the entire time series in this way will ensure that estimates made in one year are comparable to those made in another. When such a recalculation is made the country should detail the reasons for the changes and provide a comparison so that others can independently assess the validity of the recalculation.

4. Sectoral Disaggregation

The level of disaggregation in the national inventory should also be increased to provide information on emissions by major source and removal categories within each sector. This could be achieved by making submission of the sectoral tables and sectoral background tables recommended by the IPCC (See feature box 3, *IPCC Reporting Tables*) mandatory. These tables cover emissions and activity data for important sub-categories within each sector, and can be automatically generated by reporting software based on the inventory worksheet tables that developing countries already use to prepare the inventory. Submitting them would improve the transparency and comparability of inventories.

5. Documentation of Methods and Data Sources

Documentation of methods and data sources is essential for demonstrating that inventory estimates have been prepared correctly (i.e. using methods that are consistent with the IPCC guidelines), and

Feature Box 3. IPCC Reporting Tables

Table A Summary table

Table B Short summary table

Table 1 Energy Sectoral Table

Table 1.1 – 1.5 Energy Background Tables

Table 2 IPPU Sectoral Table

Table 2.1 – 2.12 IPPU Background Tables

Table 3 AFOLU Sectoral Table

Table 3.1 – 3.10 AFOLU Background Tables

Table 4 Waste Sectoral Table

Table 4.1 – 4.3 Waste Background Tables

can be considered reliable. Non-Annex I countries should be required to describe the methods and data sources in an inventory report or make them publicly available via a website.

B. Nationally Appropriate Mitigation Actions

Because there are no definitions or specific requirements for NAMAs, the type of possible actions is unlimited. NAMAs may cover any GHG emission sector, and define specific actions or cross-cutting goals. To date most pledges have taken the form of emission growth targets at a national or sectoral level. However, many countries have also indicated that achievement of these emission goals will be through implementation of a diverse set of mitigation policies and actions. Examples of the range of potential NAMAs are shown in the table 3.

Table 3. Examples of Pledged NAMAs

Goal-based	Action-oriented
Cross-cutting/Multi-sector	
<ul style="list-style-type: none"> • Reduce emissions relative to GDP • Reduce emission relative to historic reference year • Reduce emissions relative to business as usual 	
Energy and Transportation	
<ul style="list-style-type: none"> • Increase share of non-fossil fuels in primary energy consumption • Energy efficiency improvements • Increase natural gas use for transportation 	<ul style="list-style-type: none"> • Energy efficiency programs • Appliance standards • Building standards • Modernization of power plants • Public education for energy conservation
Industrial Production	
<ul style="list-style-type: none"> • Promote zero fugitive emissions from aluminum 	<ul style="list-style-type: none"> • Introducing dry-processing in cement industry
Agriculture/Forestry	
<ul style="list-style-type: none"> • Increase forest coverage and stock volume • Reduction in deforestation • Restoration of grazing land 	<ul style="list-style-type: none"> • No till farming • Rehabilitate degraded wetlands • Education
Waste	
<ul style="list-style-type: none"> • Minimize waste generation 	<ul style="list-style-type: none"> • Methane capture from landfills

Because of the wide diversity in types of NAMAs, it would be extremely difficult to develop detailed and standardized reporting guidelines. This is due to the fact that relevant implementation information, particularly performance indicators, will be dependent on the specific type of NAMA. Experience with the reporting of Annex I Party national communications demonstrates the inherent challenge of reporting on diverse mitigation actions. Each iteration of the guidelines for Annex I Parties has sought to improve the reporting of information on the mitigation policies and measures of these Parties. This effort has undoubtedly increased the quantity of information reported, but it is not clear that it has improved the transparency and comparability of

information.¹⁰ This is not due to incomplete or flawed reporting by Annex I Parties, but rather the difficulty of summarizing and synthesizing a diverse range of actions, many of which do not have direct emission reductions, into a relatively short national communication.

It is therefore recommended that the guidelines for non-Annex I Parties do not attempt to standardize the exact information reported (particularly performance indicators), but rather promote reporting of transparent and useful information with an appropriate amount of detail in a structured manner.

1. Reporting Structure

Reporting on implementation of NAMAs should be mandatory for non-Annex I Parties in a separate chapter on mitigation in the national communication. The focus of the chapter should be on mitigation actions that are *being implemented*. Actions that are under consideration but not yet implemented, or for which a Party is seeking funding, may be included in the mitigation chapter, but should be reported under a separate section and clearly distinguished from NAMAs that are underway.

NAMAs should be organized by inventory sector (e.g. energy, agriculture, land-use) and by sub-sector (e.g. transportation, reforestation), with the most important actions in each sector reported first. Actions that cut across more than one emission/economic sector, such as national emission goals, should be reported separately. To facilitate a similar structure by all non-Annex I Parties, the guidelines could include a template for reporting of information on individual NAMAs. Parties should be encouraged to organize the NAMAs within each sector according to their importance in terms of expected emission reductions or contributions to the national climate strategies.

The guidelines should also require provision of a NAMA summary table. The summary table should indicate for each NAMA, the GHG sector(s) to which it applies the type of action, status of implementation, and the appropriate performance indicator. These elements are discussed further below.

2. Implementation information

For each NAMA, non-Annex I Parties should report the type of action and status of implementation. For goal-based NAMAs, additional information on implementing measures should be reported.

a. Type of Action:

A standard classification of NAMAs types should be developed for use in reporting. The Organisation for Economic Co-operation and Development (OECD) suggests that NAMAs could be categorized as regulatory actions (emission targets, renewable or energy efficiency targets or mandates), fiscal/economic instruments (taxes, subsidies, or other types of financial incentives), or research and development activities, such as technology demonstration projects.¹¹ Similarly, the Guidelines for National Communications of Annex I Parties classify policies and measures as: “economic, fiscal, voluntary/negotiated agreements, regulatory, information, education, research, other.” While the exact classifications are not critical, it is important is that the type of actions be clearly defined in the reporting guidelines and distinguishable. Parties should use these classifications in describing their NAMAs.

b. Status of Action:

The guidelines should also require that reporting Parties clearly indicate the status of each NAMA. Given the recommended focus on NAMAs that are being implemented, Parties should only include NAMAs that are already in place, or which it expects to have in place prior to its next report. Actions that are being evaluated or considered, but which are not planned for implementation prior to the next report, could be presented elsewhere. For each NAMA identified, the Party should indicate whether the action is planned, has been initiated or is underway. For NAMAs that are in the planned or initiated stage, Parties should describe the steps taken toward implementation, such as establishment of a program, request for resources, etc.

c. Specific Actions to Achieve Goal-based NAMAs:

Special consideration should be given in the reporting guidelines to NAMAs that are characterized as targets or goals (e.g. emission reduction or emission intensity goals), national renewable energy targets, and sectoral energy efficiency targets. While progress in achieving some of these types of NAMAs, such as a national emission reduction objective, may be apparent through changes in national emissions or other indicators, these changes may not be evident for many years.

Information on specific actions that a Party undertakes in pursuit of a goal-based NAMA may be a better indicator of a Party's progress than information on the goal-based NAMA itself. For instance, a country might implement a suite of policies and actions to meet a national energy intensity goal. These could include sectoral energy efficiency targets or directives, pricing policies, demand side management programs, education, and raising public-awareness. Reporting of these actions would be as important to understanding the Party's efforts and progress toward the overarching goal.

For this reason, Parties should identify the specific measures that they are taking toward achievement of goal-based NAMAs. These key measures should themselves be considered NAMAs and reported as such in the national communication.

3. Information on Performance of NAMAs

Reliable information on performance of NAMAs is the fundamental purpose of NAMA reporting. The selection and reporting of appropriate performance indicators should therefore be a key element of the reporting guidelines.

Given the wide range of possible NAMAs, it would not be practical for reporting guidelines to define specific performance indicators for each type of NAMA. It may be feasible to develop a list of standard indicators for some common NAMAs that are adopted by a large number of Parties, but for the most part selection of performance indicators will be up to the discretion of the Party. For this reason, it is recommended that the reporting guidelines provide guidance on how performance indicators should be selected, rather than define the indicators themselves.

In some cases, the choice of performance indicators follows directly from the NAMA itself (e.g. a reduction in energy intensity of GDP). This would be the case with NAMAs that are characterized as specific, quantified policy goals. Other examples include NAMAs characterized as a reduction from business-as-usual (BAU) emissions in a specific year, sectoral energy-efficiency targets defined per unit of output, renewable energy production targets, etc. For specific, goal-based indicators, there may be other factors to be addressed to ensure transparency, such as establishment of a BAU emission projection or reporting of reference year data, (discussed below), but the choice of the performance indicator itself is straightforward.

Conversely, where a NAMA is characterized as an imprecise policy goal—(e.g. to improve energy efficiency), action (e.g. adopting energy efficiency standards for buildings) or category of actions (e.g. utility demand side management programs)—there may be multiple options for defining performance indicators. Performance indicators could be defined to measure Parties’ implementation *efforts* (e.g. resources allocated for implementation of a program, number of participants in a voluntary industry program, number of standards promulgated) or to measure implementation *effects* (e.g., installed renewable generation capacity, sectoral energy efficiency, changes in GHG emissions.)

To the extent possible, the guidelines should encourage the selection of indicators that measure the effects of NAMAs, rather than efforts, as these will be more illustrative of the actual performance of the NAMA. For example, for a NAMA to promote renewable energy, it would be preferable to use indicators that measure the percentage share of renewable in the energy supply, rather than resources invested. However, other considerations, such as data reliability and availability, may make measurement of efforts more appropriate.

Performance indicators should be clear, specific, and reasonably expected to be directly affected by the NAMA in question. Performance indicators must also be conducive to being monitored—that is, the Party must be able to collect reliable indicator data on a regular and timely basis, and the performance indicators must be on a scale (level of granularity) capable of reflecting changes within reporting timeframes. Performance indicators should be reported using consistent definitions, data sets, collection procedures, and technically appropriate methods.

Parties should also select performance indicators that are quantifiable; however, this quantification need not be in terms of emission reductions.¹² According to the UNFCCC secretariat, few Annex I Parties quantify the emission reductions of implemented policies and measures in their national communications, and where they do, this information is rarely transparent or comparable.¹³ The difficulty in quantifying emission effects of an action may be due to the need to rely on assumptions to estimate emission reductions, such as changes in household energy consumption in response to a national energy conservation campaign; the fact that the emission effect of the action is small in relation to the overall level of emissions-causing activity in that sector; or the inability to measure the affected emission-producing activity at the level that the mitigation action occurs.

Without detailed information on assumptions and methods used, estimation of the emission reductions impacts of a mitigation action will not be transparent, and even with detailed information, will not necessarily be comparable with estimates of other Parties who may have implemented similar actions, but used different assumptions or methods. Given these challenges, the reporting guidelines should not require quantification of emission reductions. However, if a Party does choose to quantify emission reductions associated with a NAMA, it should also describe the assumptions and methods used.

For goal-based NAMAs, additional information may be necessary to ensure transparency and comparability across Parties with similar NAMAs.

- For goal-based NAMAs, the Party should indicate the gases and/or sectors included in the goal.
- If a goal-based NAMA is set relative to a historic or current reference year (e.g., to reduce emission by x percent in 2020, relative to 2005), then the appropriate performance indicator should be reported for both the reference year and all subsequent reporting years.

- Likewise, if a goal-based NAMA is set relative to normal emissions growth (e.g., to reduce emissions by x percent in 2020, relative to business-as-usual), than the Party should also report a business-as-usual emission projection as well as assumptions used in the projection.
- For goal-based NAMAs that are indexed (e.g., to reduce emissions per unit of gross domestic product by x percent or sectoral energy-intensity targets), both components of the index should be measured and reported separately, in addition to the indexed value. For instance, for a NAMA characterized as the emission intensity of gross domestic product (GDP), it would not be sufficient to simply report a single figure for emissions per unit GDP for a given year; the Party should also report absolute emissions and total GDP.
- Finally, where a Party has identified specific implementing actions for a goal-based NAMA, performance indicators should be reported for both the overarching NAMA, as well as the individual implementing measures. For instance, if a Party sets a renewable energy goal, and identifies subsidies for renewable investment as a key action to achieve the goal, the Party could identify renewable capacity as a percentage of total generation as an indicator of the overall goal, and total funding for a grant program for renewable investment.

Summary of recommendations for the selection and reporting of NAMA Performance Indicators

1. Each Party should select one or more appropriate indicators of performance for each NAMA, and measure and report the latest value(s) for that indicator(s) in each national communication.
2. Performance indicators should be clear, specific, reasonably expected to be affected by the NAMA in question and quantifiable.
3. Parties should select performance indicators for which reliable data can be collected on a regular and ongoing basis at reasonable cost.
4. For NAMAs for which the performance is quantified as a change in emissions, Parties should describe the assumptions and methods used to estimate the changes in emission.
5. Performance indicators should be reported using rigorous and consistent definitions, data sets, collection procedures, and methods.
6. For goal-based NAMAs that are set relative to a historic reference year, Parties should report relevant performance indicators starting from the reference year, up to the most recent year available.
7. For goal-based NAMAs that are indexed, Parties should measure and separately report both components of the index.

C. Domestic MRV

The Cancun Agreements envisages that autonomous mitigation actions will be measured, reported, and verified at the national level in accordance with general international guidelines. Confidence in the reliability of domestic MRV will be essential to building confidence in the implementation of the NAMAs themselves. Reporting of domestic MRV procedures for autonomous NAMAs should therefore be a mandatory component of national communications.

Domestic MRV procedures may be as diverse as NAMAs. For NAMAs that are characterized as national goals, such as emission or energy efficiency goals, MRV might be highly centralized and coordinated across various government entities. An example of this would be monitoring of a national emissions goal through preparation of the national GHG inventory. MRV of NAMAs that are characterized as a specific measure is likely to be the responsibility of a single entity in charge of implementing that measure, but specific tasks may be delegated to other entities. For instance, a national energy ministry may be responsible for implementing and overseeing a national energy efficiency program for new buildings, but verification that these standards are being met may be conducted by local government agencies.

The specific procedures and elements for MRV of any individual NAMA will be dependent on the nature of the NAMA, and will ideally be developed in conjunction with the design and planning of that NAMA. For example, in setting forth a NAMA a country should simultaneously think about and design a tracking system for performance of the NAMA. Because of the interrelationship between implementation and MRV of a NAMA, information on MRV procedures for each autonomous NAMA should be reported in conjunction with that NAMA in the national communications, as opposed to a separate MRV section. In this way there is a direct connection between each NAMA and how its performance is tracked.

1. Institutional Arrangements

Parties should describe the entity or entities responsible for implementing and monitoring the NAMA, and whether there are formal arrangements for establishing these responsibilities (e.g. whether there is a law or memorandum of understanding laying out the responsibilities of entities involved). For NAMAs that are characterized as some form of emission goal, a description of the institutional arrangements should cover the roles and responsibilities for preparing the national GHG inventory.

2. Source and Procedures for Collection of Performance Indicators

Parties should report the source of relevant performance indicator data (e.g., national statistical bureau or environment agency) for the NAMA and describe how it is reported or collected (e.g. surveys, reporting by sub-national governments or private sector entities) and with what frequency. Parties should also describe any quality control and quality assurance procedures in place for the collection, processing, and maintenance of performance indicator data.

3. Methods

Parties should also describe any methods used to process ‘raw data’, such as extrapolation, use of models, or comparison to proxy data.

4. Quality Assurance and Control

Parties should describe how they ensure the reliability of performance indicators (e.g. third party review, audit, statistical analysis). Parties should also indicate whether they have any procedures in place for peer or technical review of data, and any provisions for public input and review.

D. Reporting Frequency

The Cancun Agreements calls for mitigation actions of developing countries to be communicated through national communication every two years. While it is certainly desirable to have more frequent reporting on mitigation actions than currently, the preparation of full national communications is a time- and resource-intensive exercise. National communications of both Annex I and non-Annex I Parties frequently exceed 150 pages. A requirement for biennial reporting of full national communications would greatly increase the reporting burden on non-Annex I Parties, as well as the UNFCCC secretariat for processing the communications. Further, it is not clear that complete information on implementation of NAMAs (as described above) is necessary on a two-year basis, since national policies and programs do not tend to change that frequently. Further, other information contained in a full national communication—such as impacts of climate change—is not likely to dramatically change over a two-year reporting timeline.

In view of this concern, some have suggested that biennial reports be much shorter than the national communications and only cover GHG inventories and NAMAs; full national communications (with information on national circumstances, vulnerability, and adaptation) would continue to be submitted on a longer schedule. Yet even such a streamlined national communication has the potential to be burdensome, unless it focuses only on information that has changed since the last submission. It is therefore important that these interim communications include only elements that are both critical for assessing the progress of a country's implementation and that would be expected to change over a shorter reporting period.

The two-year national communications should provide the national GHG inventory and an update of NAMA implementation. For NAMAs that were reported in a previous communication, the NAMA need only cover the relevant performance indicator(s) and any changes to the program.¹⁴ This could be achieved by requiring Parties to submit a summary table, with updated values for performance indicators, on a biannual basis. The summary table would be organized like that in the full national communications, by sector and by NAMA. The update should not provide detailed descriptions of the NAMAs implementation or MRV procedures, as would be required in a full national communication.

For new NAMAs, i.e. those that were not previously reported in a full national communication, Parties should provide a full, detailed description, as described above. The reporting guidelines could also encourage Parties to make complete information on NAMAs publicly available on a national website.

Chapter 4. Recommended Changes to Support Reporting

Increased financing from developed countries, including through the GEF, will be essential for improved reporting of inventories and NAMAs from developing countries. In addition, the UNFCCC processes for consideration of national communications should be enhanced to make the information more accessible to Parties, and to support building of domestic capacity in non-Annex I countries for reporting on implementation and domestic MRV of NAMAs.

A. Financial support

Developed countries pledged in the Copenhagen Accord, and reaffirmed in Cancun, to provide up to US\$30 billion in the 2010 to 2012 period, and to mobilize US\$100 billion per year by 2020 to support developing countries. Some portion of these resources should be dedicated towards helping developing countries report more frequently and in a more detailed manner. An important first step will be to enhance funding of GEF support of enabling activities, and to expand the type of activities supported. Resources should be made available to support development of institutions and capacity-building for domestic MRV of autonomous mitigation actions and GHG inventories on an ongoing basis.

Bilateral and multilateral support programs for national communications should also continue, but need to be updated to build capacity for domestic MRV of mitigation. To date, most programs have focused on training and tools for assessment of mitigation actions and reporting on such assessments, rather than implementation of actions and monitoring of performance. The United Nations Development Programme's (UNDP) National Communications Support Program, which was active in supporting the preparation of initial national communications, could play a useful role in this regard.

B. UNFCCC processes

The UNFCCC processes themselves are also important to promoting the transparency of national communications and facilitating the recognition of NAMAs by the international community. Changes to the UNFCCC procedures and documents would facilitate reporting, and make more useful information available to the Conference of Parties.

To facilitate consideration by the Conference of Parties and the Subsidiary Body on Implementation of the information provided in national communications, the UNFCCC secretariat prepares a Compilation and Synthesis of National Communications of Non-Annex I Parties. These documents provide a summary of national communications at an aggregated and superficial level. For instance, the documents indicate the number of submitted national communications that provide information on mitigation measures, and an overview of the different types of mitigation measures indicated. The documents do not provide, however, information on which Parties have conformed to the reporting guidelines, nor the specific actions undertaken by individual Parties. This information can only be accessed by reading through the individual national communications.

The usefulness of the compilation and synthesis report would be greatly improved by the provision of information on individual non-Annex I Parties. Specifically, the compilation and synthesis should contain a summary table that shows which elements of the national communications were reported by each Party. This would provide an at-a-glance overview of reporting for all countries. Similarly, the addendums which address specific elements of the national communications could be expanded with tables that compare types of mitigation actions across Parties. Additionally, the secretariat should ensure that the full texts of national communications (not just summaries) are posted on the UNFCCC website.

Like the GEF, the training materials and tools developed by the UNFCCC are geared toward meeting the reporting guidelines. For mitigation, the user manual and workshops focus on reporting on a country's assessment of mitigation options, rather than reporting of mitigation actions that are underway. The materials are also dated—many are at least seven years old—and do not go beyond the letter of the guidelines in terms of encouraging better reporting.

The UNFCCC training materials and tools should be updated to emphasize reporting on implementation, rather than assessment of NAMAs. New materials are also needed to assist Parties in MRV of NAMAs and the selection of performance indicators at the national level. To this end, the Conference of Parties could request the secretariat to conduct workshops on domestic MRV, with the participation of experts with relevant experience. The purpose of these workshops would be to facilitate an exchange of experiences with MRV and to develop good practices in MRV.

The Consultative Group of Experts (CGE) should also evolve to support reporting of NAMA implementation. To date the CGE's work on mitigation has been limited to facilitating the exchange of experiences in mitigation assessment through regional workshops. Although part of the CGE mandate is to examine national communications of non-Annex I Parties for technical problems and constraints, this exercise has looked at non-Annex I communications collectively, and resulted in conclusions and recognition of difficulties and challenges faced by non-Annex I Parties as a group.¹⁵ The CGE does not provide technical feedback directly to individual Parties.

The mandate for the CGE (which is in place until COP17) should be changed and expanded in three ways:

- First, the CGE's activities related to mitigation should shift to implementation and reporting of implementation in the national communication, rather than assessment of mitigation options.
- Second, training and exchange of experiences for domestic MRV should be added to the CGE's mandate.
- Finally, the CGE should be tasked to provide a process for technical feedback on national communications to individual non-Annex I Parties, upon request of that Party. A technical feedback process could be particularly important for improving the quality of GHG inventories, due to their complexity.

Chapter 5. Conclusion

Having a strong, credible, and transparent system for tracking greenhouse gas emissions and the mitigation actions of a country is an essential building block of the international system to address global warming. Reporting through national communications is the Convention's primary source of information on Parties' implementation of commitments and collective progress toward meeting its ultimate objective. Current guidelines for national communications of developing countries are weak and do not result in reporting of transparent, comparable, reliable, useful, or timely information on GHG inventories and implementation of mitigation efforts.

The guidelines for national communications of non-Annex I Parties should be revised to require more frequent, detailed, and documented GHG inventories, in line with the most current IPCC methodologies. Reporting on implementation of mitigation actions should be mandatory in a separate chapter of the national communications and organized by sector. While this chapter should cover all mitigation actions, including those that are implemented with international support or eligible for crediting via the market-mechanisms, a particular emphasis should be given to autonomous mitigation actions. Given the variety of mitigation actions, the reporting guidelines should not define specific indicators of performance for mitigation actions, but provide general guidance to assist countries in the selection and reporting of appropriate performance indicators. Developing countries should also be required to report on their domestic procedures for measuring, reporting, and verifying autonomous mitigation actions.

Finally, the guidelines for reporting of national communications must continue to accommodate the different national capacities and circumstances of developing countries. Funding for national communications and related technical assistance must be significantly enhanced to support developing countries' capacity to prepare GHG inventories on an ongoing basis and to implement domestic measurement, reporting, and verification procedures.

¹ The Cancun Agreement for the Ad Hoc Working Group on long-term Cooperative Action under the Convention (AWG-LCA) is available at: http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf.

² Developed country Parties that were members of the Organization of Economic Cooperation and Development at the time Convention was negotiated are listed in Annex I of the agreement. All other countries are commonly called non-Annex I Parties.

³ The Cancun Agreements recognizes the need for the accounting of Annex I targets and the provision of finance by developed countries to be "rigorous, robust, and transparent" and establishes a commitment to improve that reporting.

⁴ <http://unfccc.int/resource/docs/cop8/07a02.pdf#page=2>.

⁵ UNFCCC website: http://unfccc.int/national_reports/non-annex_i_natcom/submitted_natcom/items/653.php.

⁶ Decision 11/CP.4 (<http://unfccc.int/resource/docs/cop4/16a01.pdf#page=47>).

⁷ All statistics in this section are derived from the most recent Compilation and Synthesis Report of national communications of non-Annex I Parties, at: <http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf>.

⁸ <http://unfccc.int/resource/docs/cop8/07a02.pdf#page=4>.

⁹ The Industrial processes, product use and solvents have also been merged.

¹⁰ A 2003 report by the UNFCCC secretariat found that while information provided by Annex I Parties in national communication has improved over time, it is often still not very transparent with regard to the status of implementation or the effects of the mitigation actions, particularly on emissions. <http://unfccc.int/resource/docs/2003/sbi/07a02.pdf>.

¹¹ OECD 2009.

¹² Emission impacts of NAMAs that are characterized as national-level emission goals will be apparent over time in national inventories.

¹³ <http://unfccc.int/resource/docs/2007/sbi/eng/inf06a01.pdf>.

¹⁴ If any aspect of the NAMA has changed, the country should report the changes (e.g., if the sector or gases covered changed).

¹⁵ <http://unfccc.int/resource/docs/cop8/07a01.pdf#page=8>.