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Problems, constraints and lessons learned as well as capacity-building needs for the preparation of national communications and biennial update reports

Technical paper by the Consultative Group of Experts

Summary

This technical paper compiles and synthesizes information on problems and constraints, lessons learned and capacity-building needs identified in respect of the process and preparation of national communications and biennial update reports of developing country Parties. It will inform the work of the Consultative Group of Experts in identifying and providing technical assistance to address the needs of developing country Parties in this regard and serve as a source of lessons learned for those Parties.

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Contents

Abbreviations and acronyms

BUR	biennial update report
CGE	Consultative Group of Experts
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
D&I	data and information
ETF	enhanced transparency framework
GHG	greenhouse gas
IA	institutional arrangements
IPCC	Intergovernmental Panel on Climate Change
QA/QC	quality assurance/quality control
MPGs	modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement
MRV	measurement, reporting and verification
M&T	methodology and tools
NC	national communication
NDC	nationally determined contribution

I. Introduction

A. Mandate

1. COP 24 extended the term of the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention for eight years, from 1 January 2019 to 31 December 2026, and renamed it the Consultative Group of Experts.[1]

2. CMA 1 decided that the CGE shall also serve the Paris Agreement, starting from 1 January 2019, to support the implementation of the ETF under Article 13 of the Paris Agreement by, inter alia:

(a) Facilitating the provision of technical advice and support to developing country Parties, as applicable, including for the preparation and submission of their biennial transparency reports and facilitating improved reporting over time;

(b) Providing technical advice to the secretariat on the implementation of the training of technical expert review teams.[2]

B. Scope of the paper

3. In response to the mandate above and as part of its workplan for 2019,[3] the CGE agreed to conduct an assessment of the existing and emerging constraints and challenges, lessons learned and capacity-building needs of developing country Parties in implementing the existing MRV arrangements under the Convention and preparing for the ETF under the Paris Agreement, and to prepare a technical paper presenting the results of the assessment.

4. This paper draws on the following sources, among others:

(a) A survey conducted by the CGE in 2019 on MRV and transparency gaps and needs in order to inform its provision of technical advice and support to developing country Parties;

(b) The 41 summary reports on the technical analyses of BURs that had been published by 31 August 2019;

(c) The most recent 150 NCs and 39 BURs that had been submitted by 150 developing country Parties by 31 January 2018.

C. Possible action by the Subsidiary Body for Implementation

5. The Subsidiary Body for Implementation will be invited to consider this paper and to provide guidance, as appropriate, to the CGE.

II. Approach to the compilation and synthesis

6. Between May and August 2019, the CGE compiled and synthesized the available information on problems and constraints faced and lessons learned by developing country Parties in the process and preparation of NCs and BURs, including the challenges and needs they reported in their most recent NCs and BURs and the capacity-building needs identified in the summary reports on the technical analyses of the BURs. The results are presented in chapter III below.

7. With a view to gathering more up-to-date feedback from developing country Parties on the status of implementation of the existing MRV arrangements under the Convention and

[1] Decision 11/CP.24, para. 1.
[2] Decision 18/CMA.1, para. 15.
[3] Available at https://unfccc.int/process/bodies/constituted-bodies/consultative-group-of-experts.

preparation for the ETF, including institutional arrangements in place at the national level, associated problems and constraints, lessons learned and capacity-building needs, the CGE conducted an online survey, which was open from 24 May to 19 July 2019 (hereinafter referred to as the survey).

8. A total of 117 respondents, comprising national focal points, NC and BUR project coordinators, national GHG inventory coordinators, and sectoral or thematic experts from 86 developing country Parties, participated in the survey. The 86 developing country Parties represented comprised 33 African States, 27 Asia-Pacific States, 20 Latin American and Caribbean States and 6 Eastern European and Western European and other States. The number of respondents from each Party ranged from one to four.

III. Results of the compilation and synthesis

A. National greenhouse gas inventories

1. Problems and constraints

9. Insufficient specific legislative and policy support for climate change initiatives usually results in an inadequate institutional basis to sustain the national reporting process. Consequently, the responsible institution is unable to justify the resource commitment for the preparation and submission of national reports. Furthermore, lack of mandate renders data collection from the private sector extremely challenging, especially where data collection and storage involves costs.

10. In most cases, custodians of relevant data do not engage in data collection for the primary purpose of the national GHG inventory. Consequently, the format of the data might not be suitable for the national GHG inventory, which renders the data compilation and processing for the inventory challenging and increases uncertainty. The data might also be incomplete or inconsistent. Furthermore, the data generated by different agencies might be highly aggregated and therefore unsuitable for use in the preparation of a national GHG inventory that is consistent with IPCC guidelines.

11. In most developing country Parties, a process and arrangements for data collection across agencies are either not in place or not formalized. The lack of formal arrangements and inadequate coordination often result in a delay in collecting data and feedback from stakeholders.

12. Data management systems for national GHG inventories are inadequate, making the archiving and use of data difficult. In most cases, data are archived in different formats and across multiple locations in different agencies, which means obtaining and using the data is challenging and which often leads to a failure to retain institutional memory.

13. Some developing country Parties have found that the default and other emission factors contained in the IPCC emission factor database are not applicable to their national circumstances. While the use of country-specific emission factors would reduce uncertainty and increase the accuracy of the national GHG inventories, most developing country Parties lack the expertise and resources needed to develop them.

14. Some developing country Parties are faced with constraints in preparing their national GHG inventories due to their lack of technical capacity to, for example, understand and apply IPCC guidelines; estimate emissions using proxy activity data; carry out uncertainty assessment; undertake key category analysis; or conduct QA/QC.

15. The survey presented a list of categories of issues that have been recurrently reported by developing country Parties in relation to their preparation of national GHG inventories, and the survey participants were asked to select all categories relevant to their respective country and to rate the significance thereof on a scale of one to three, with one being low, two medium and three representing high significance. Table 1 shows the reported recurrent

categories of issues in preparing national GHG inventories in their order of rated significance[4] from highest to lowest: lack of or inadequate data collection process was identified as the most significant category of issues from the 16 presented, followed by inadequate coordination across sectors or institutions to collect and share data, and lack of availability of data that are consistent with reporting guidelines.

Table 1
Reported recurrent categories of issues in preparing national greenhouse gas inventories, by order of rated significance

Area and category of issues (lack thereof/insufficient)	*Significance rating*
(D&I) Data collection process (including establishment of a database, data-sharing system, web-based knowledge management platform)	2.45
(IA) Coordination across sectors/institutions to collect and share data	2.43
(D&I) Availability of data that are consistent with reporting guidelines	2.43
(IA) Institutional capacity to retain skills/knowledge gained from training	2.41
(D&I) Quality data (consistency, completeness, accuracy, etc.)	2.41
(M&T) Technical capacity to understand and apply IPCC guidelines	2.33
(M&T) Technical capacity to perform uncertainty assessment	2.30
(D&I) Data management process (including documentation, archiving, QA/QC protocols, uncertainty management)	2.29
(IA) Definition of roles and responsibilities across the involved institutions	2.29
(IA) Policy or legal arrangements that mandate the preparation of national reports	2.28
(Other) Improvement planning	2.28
(M&T) Technical capacity to perform key category analysis	2.23
(IA) Awareness of stakeholders, especially in the private sector	2.20
(D&I) Accessibility of data for confidentiality reasons	2.18
(M&T) Technical capacity to use IPCC software	2.18
(IA) Leadership (e.g. an entity appointed to undertake/coordinate data collection and -sharing)	2.11

2. Lessons learned

16. Developing country Parties are devising various ways of dealing with data-related issues, including:

(a) Ensuring the continuous flow of data from the relevant institutions to the designated entity for the preparation of the national GHG inventory by establishing a national GHG inventory data management system where all relevant background data and information, procedures and steps undertaken, assumptions made and functions performed by key stakeholders are archived and accessible to the relevant stakeholders;

(b) Documenting the steps in the data collection process and annotating collected data in order to help maintain institutional memory and create a basis for a larger data depository;

(c) Advocating for the creation of a legal instrument (e.g. a by-law or regulation) that mandates the preparation of the national GHG inventory and the continuous disclosure of activity data by major GHG emitters to the designated entity responsible for the national GHG inventory;

[4] The formula used to measure the significance was {∑ (number of respondents per level of significance multiplied by scale (one to three)} / (number of respondents who selected the issue category as relevant).

(d) Formalizing institutional arrangements by establishing data-sharing protocols or memorandums of understanding with the relevant institutions to facilitate data-sharing.

17. Some developing country Parties have found that creating a coordination mechanism, such as a working group comprising key ministries (e.g. for environment, energy and agriculture), is key to improving the quality of the national GHG inventory and the efficiency of the data collection process. Furthermore, it is important to ensure that data custodians and key stakeholders are well informed about the purpose, process and strategic results of data-sharing, including what is expected from them and how the data and information provided will be used. This helps to ensure that stakeholders are more actively engaged in the process.

18. Maintaining a team of national experts for generating and managing data and information is perceived by developing country Parties to be one of the key elements of sustaining the national GHG inventory process. To address the capacity gap resulting from the high turnover of staff working on climate issues and the loss of the knowledge and expertise of temporarily employed consultants, Parties are exploring ways of benefiting from the capacity-building associated with leading and undertaking the process of preparing their national GHG inventories: instead of contracting consultants to lead the national GHG inventory process, some Parties are planning to engage more national experts in the process and to limit the role of consultants to training the national experts.

19. A few developing country Parties have established a dedicated team or unit in key institutions to serve as the focal point for data-sharing and management. This has helped to improve data collection and address the issue of data loss resulting from staff turnover. Furthermore, efforts are being made to connect these teams or units through a server and by creating a web-based platform for accessing, sharing and archiving data.

20. Some developing country Parties have found it beneficial to involve national statistical agencies in the inventory preparation process, especially for generating data for the livestock sector.

3. Capacity-building needs

21. Key areas for capacity-building identified by developing country Parties in respect of the process and preparation of national GHG inventories include providing training and guidance to enhance the technical capacity of experts and institutions to:

(a) Understand and apply the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* and IPCC inventory software, and identify appropriate and consistent methods for estimating emissions to ensure a reliable and consistent time series;

(b) Conduct uncertainty assessment and key category analysis;

(c) Identify and use surrogate data to fill data gaps in order to generate a consistent time series;

(d) Develop a QA/QC plan and implement QA/QC procedures;

(e) Develop country-specific emission factors to reduce uncertainty and enable the use of higher tiers for key categories;

(f) Develop data management and archiving systems (i.e. technology infrastructure, such as a web-based platform or centralized database);

(g) Develop or strengthen the data collection process by establishing data-sharing protocols or developing standardized data-sharing formats to ensure systemic collection of data that are consistent with IPCC guidelines.

B. Reporting on mitigation actions

1. Problems and constraints

22. Parties are required to report information on mitigation actions, including the nature and coverage of the action, quantitative goals, progress indicators, associated methodologies and assumptions, progress of implementation, results achieved and estimated emission reductions.

23. Conducting mitigation assessment requires quality baseline information, which serves as the reference point for assessing progress since the implementation of the mitigation action and for scenario development. Existing data challenges and high data uncertainties associated with the national GHG inventory in some developing country Parties place constraints on conducting ex ante and ex post assessment of mitigation measures and on identifying and developing mitigation options.

24. Some Parties face technical constraints in using the available models, methods and tools and require practical and easy-to-apply guidelines or methods, particularly relating to setting baselines and target values, developing progress indicators (i.e. in relation to sources of data for monitoring progress and procedures to enable the future tracking of the indicators), scenario development, uncertainty management and abatement cost analysis.

25. Table 2 shows the reported recurrent categories of issues associated with reporting on mitigation actions by order of significance[5] from highest to lowest as rated by the survey respondents: lack of or insufficient institutional capacity to retain skills and knowledge gained from training, and lack of or inadequate methods for quantification of direct and indirect effects of mitigation actions were identified as the most significant categories of issues from the 17 presented.

Table 2
Reported recurrent categories of issues in reporting on mitigation actions, by order of rated significance

Area and category of issues (Lack thereof/insufficient)	*Significance rating*
(IA) Institutional capacity to retain skills/knowledge gained from training	2.40
(M&T) Methods for quantification of direct and indirect effects of mitigation actions	2.40
(IA) Coordination across sectors/institutions to collect and share data	2.39
(IA) Definition of roles and responsibilities across the involved institutions	2.39
(IA) Policy or legal arrangements that mandate the preparation of national reports	2.39
(M&T) Practical guidelines or methods for setting baselines, target values, indicators, etc.	2.37
(M&T) Practical tools for conducting mitigation assessment (e.g. sector-specific modelling)	2.37
(D&I) Availability of data that are consistent with reporting guidelines	2.36
(D&I) Data management process (including documentation, archiving, QA/QC protocols, uncertainty management)	2.35
(D&I) Quality data (consistency, completeness, accuracy, etc.)	2.33
(D&I) Data collection process (including establishment of a database, data-sharing system, web-based knowledge management platform)	2.31
(IA) Awareness of stakeholders, especially in the private sector	2.30
(M&T) Technical capacity to interpret/analyse/translate data and information gathered from modelling	2.30
(M&T) Technical capacity to use the available tools	2.29
(D&I) Accessibility of data for confidentiality reasons	2.18
(IA) Leadership (e.g. an entity appointed to undertake/coordinate data collection and -sharing)	2.13
(Other) Improvement planning	2.10

[5] As footnote 4 above.

2. Lessons learned

26. Some developing country Parties are strengthening their coordination with enforcement entities, including ministries and other stakeholders at different governance levels, to facilitate data collection and use of policy instruments. Clear communication on the purpose, process and strategic results of data-sharing has facilitated the participation of stakeholders and ensured that the relevant policies and measures of each ministry are incorporated into the national reporting process.

27. Some developing country Parties have found that the national planning process for new or updated mitigation measures provides a good basis for improving scenario development and more accurately calculating mitigation potential.

28. Some Parties have found that the preparation of information on mitigation actions to be included in national reports helps to improve the communication and dissemination of information on mitigation projects and programmes for the purpose of attracting investors.

29. In addition, some Parties have found the outcomes of mitigation assessments to be more comprehensive when they include information on other development benefits (i.e. economic, social and environmental) of mitigation measures, referred to as co-benefits. The politically sensitive nature of some mitigation measures necessitates innovative approaches, promising benefits beyond reducing GHG emissions, to make them more appealing to policymakers.

30. Furthermore, some developing country Parties are finding ways to build on the existing data collection process in key sectors. For example, some have revisited sectoral data collection vehicles, such as an energy survey conducted by the ministry of energy, to incorporate progress indicators for mitigation assessment, which has helped to streamline the data collection process and obtain more up-to-date and accurate data from key stakeholders.

3. Capacity-building needs

31. Key areas for capacity-building identified by developing country Parties in respect of reporting on mitigation actions include providing training and guidance to enhance the technical capacity of experts and institutions to:

(a) Identify and use appropriate methodologies and relevant assumptions to track the progress and quantify the effects of mitigation actions in key sectors, and assess mitigation co-benefits resulting from adaptation actions or economic diversification plans;

(b) Develop progress indicators;

(c) Maintain or strengthen the extensive analytical work conducted for developing scenarios and projections, and create a solid analytical base for revising mitigation measures in the future;

(d) Develop or strengthen a mechanism for tracking and verifying GHG emission reductions resulting from various mitigation actions across all sectors.

C. Reporting on climate change impacts and adaptation

1. Problems and constraints

32. In most cases, developing country Parties are faced with a lack of standardized methodologies and tools for developing baseline and climate change scenarios. Consequently, sectoral assessments are often incomplete or inconsistent and thus difficult to present in an integrated manner. Parties with incomplete data systems have found climate change scenario development challenging owing to inconsistencies between available data sources such as historical observational data, meteorological data, and global and regional climate model outputs. Furthermore, some Parties have found the downscaling of models challenging for certain geographical areas, such as coastal or mountain areas or small islands.

33. Some developing country Parties face the challenge of identifying socioeconomic indicators for assessing current and future vulnerability, adaptive capacity and impacts at

different levels (e.g. at the national, local and community level). In most cases, the challenge is associated with data constraints or the lack of technical capacity to interpret data and information gathered from modelling.

34. Some Parties have acknowledged not having sufficient funds for or national experts capable of applying climate science and carrying out technical studies to address all prioritized socioeconomic sectors.

35. Furthermore, some Parties have found it challenging to assess the potential costs and benefits of planned adaptation measures (at either project or programme level), especially in relation to addressing uncertainty about both the predicted impacts, owing to the changing dynamics that could eventually affect the results of measures, and their appropriate valuation in monetary terms.

36. Table 3 shows the reported recurrent categories of issues associated with reporting on climate change impacts and adaptation by order of significance[6] from highest to lowest as rated by the survey respondents: lack of practical guidelines on the development of baseline or socioeconomic scenarios for vulnerability and adaptation assessment was identified as the most significant category of issues from the 17 presented.

Table 3
Reported recurrent categories of issues in reporting on climate change impacts and adaptation, by order of rated significance

Area and category of issues (Lack thereof/insufficient)	*Significance rating*
(M&T) Practical guidelines on the development of baseline/socioeconomic scenarios for vulnerability and adaptation assessment	2.48
(M&T) Practical tools to conduct vulnerability and adaptation assessment (e.g. sector-specific modelling, regional/downscaling climate models)	2.47
(M&T) Technical capacity to interpret/analyse/translate data and information gathered from modelling	2.45
(IA) Coordination across sectors/institutions to collect and share data	2.42
(IA) Institutional capacity to retain skills/knowledge gained from training	2.41
(M&T) Technical infrastructure (e.g. weather stations, forecasting system, networks) serving as a basis for monitoring climate data	2.39
(D&I) Data collection process (including the establishment of a database, data-sharing system, web-based knowledge management platform)	2.39
(D&I) Quality data (consistency, completeness, accuracy, etc.)	2.38
(M&T) Technical capacity to use the available tools	2.38
(D&I) Availability of data that are consistent with reporting guidelines	2.36
(IA) Definition of roles and responsibilities across the involved institutions	2.34
(D&I) Data management process (including documentation, archiving, QA/QC protocols, uncertainty management)	2.32
(IA) Policy or legal arrangements that mandate the preparation of national reports	2.23
(IA) Awareness of stakeholders, especially in the private sector	2.16
(Other) Improvement planning	2.16
(IA) Leadership (e.g. an entity appointed to undertake/coordinate data collection and -sharing)	2.14
(D&I) Accessibility of data for confidentiality reasons	2.12

[6] As footnote 4 above.

2. Lessons learned

37. Some developing country Parties have acknowledged that vulnerability and adaptation assessment conducted during NC preparation has been beneficial to the development of national adaptation strategies. The integration of vulnerability and adaptation assessment for key sectors has proved useful in informing the development and implementation of relevant social and environmental policies and strategies. Some Parties have reportedly integrated vulnerability and adaptation assessments into their national adaptation planning process.

38. Some Parties are exploring ways of improving data availability, for example by strengthening the network of meteorological stations and observation systems, and through the digitization and retrieval of historical observational data.

39. Some Parties rely on models, estimates and analyses used in the preparation of previous NCs and simply supplement them to prepare subsequent NCs. Some have reported that their technical capacity to conduct vulnerability and adaptation assessment for key sectors has been enhanced by the continuous reporting process.

3. Capacity-building needs

40. Key areas for capacity-building identified by developing country Parties in respect of reporting on climate change impacts and adaptation include providing training and guidance to enhance the technical capacity of experts and institutions to:

(a) Identify appropriate and practical methodologies and tools for vulnerability and adaptation assessment, climate modelling and projections;

(b) Identify and prioritize adaptation options;

(c) Develop or upgrade technology infrastructure to enhance the quality of observational and meteorological data.

D. Reporting on support needed and received

1. Problems and constraints

41. In most cases, financial and technical assistance for climate action is channelled through various agencies: not only governments, but also the private sector and non-governmental organizations. The dispersion of information thereon can hinder a country's ability to track and measure the financial and technical support received for climate action.

42. Developing country Parties have addressed their lack of a clear understanding of what constitutes climate finance and the lack of a common mechanism for classifying financial support received as either climate finance or development assistance. Consequently, they are faced with the challenge of setting criteria, identifying key actors and institutions for generating data, and putting in place a process or strategy to coordinate data collection.

43. Table 4 shows the reported recurrent categories of issues associated with reporting on support needed and received by order of significance[7] from highest to lowest as rated by the survey participants: lack of or inadequate allocation of responsibilities for MRV of support was identified as the most significant category of issues from the 10 presented.

Table 4
Reported recurrent categories of issues in reporting on support needed and received, by order of significance

Area and category of issues (Lack thereof/insufficient)	*Significance rating*
(IA) Allocation of responsibilities for MRV of support	2.49
(D&I) Data collection process (including establishment of a database, data-sharing system, web-based knowledge management platform)	2.48

[7] As footnote 4 above.

Area and category of issues (Lack thereof/insufficient)	*Significance rating*
(IA) Process for the coordination of support received	2.46
(D&I) Availability of data	2.44
(M&T) Process or approach for integrating processes to report to various donors on support received	2.40
(D&I) Data management process (including documentation, archiving, QA/QC protocols)	2.34
(M&T) Guidelines or standards for identifying support needs and reporting on support received, including common definitions of relevant terminology and approaches	2.33
(Other) Improvement planning	2.33
(IA) Identification of all relevant stakeholders related to MRV of support	2.31
(D&I) Accessibility of data for confidentiality reasons	2.20

2. Lessons learned

44. Some developing country Parties are carrying out thematic studies and preparatory work for establishing a national climate finance tracking mechanism or climate finance tagging mechanism that includes a set of criteria for tracking climate finance (e.g. expenditure allocated to or spent on adaptation measures) in order to enhance data collection from various stakeholders, including from the private sector and non-governmental organizations.

45. For many Parties, a new process or system needs to be put in place for reporting on support received and needed. Clear mechanisms, technological platforms, methodologies and monitoring instruments for the funds received are required. Some Parties have highlighted the need to establish a donor coordination mechanism through which donors can report on their climate-related activities and projects.

46. Some Parties have found it useful to map the scope of mandates and projects of relevant institutions receiving financial, technological and capacity-building support related to climate change and to define their roles in the data gathering and reporting process. This has reportedly helped to reduce duplication of efforts and inconsistencies between institutions. The involvement of planning and finance ministries in this process was also found to be beneficial.

3. Capacity-building needs

47. Key capacity-building needs identified by developing country Parties in respect of reporting on support needed and received include:

(a) Training and guidance to enhance the technical capacity of experts and institutions to:

(i) Develop a methodology or systemic approach for identifying and classifying climate change related support needed and received;

(ii) Develop procedures and arrangements for collecting and managing information;

(b) A compilation and synthesis of information on methodologies for and experience in setting criteria for climate finance, tracking support received and assessing needs and gaps in a rigorous manner.

E. Enhanced transparency framework under the Paris Agreement

48. The survey included a section aimed at gauging the emerging needs of developing country Parties resulting from the ETF under the Paris Agreement. The participants were asked to indicate the following:

(a) Their level of knowledge of the MPGs: 55 per cent of the represented Parties indicated that they were familiar with the MPGs but would need more guidance and detailed information to identify their needs for the implementation of the ETF, while 24 per cent indicated that they were knowledgeable enough to identify their needs and start planning for its implementation. The remaining 21 per cent indicated that they had limited knowledge;

(b) The status of their planning for reporting under the ETF: 41 per cent of the represented Parties indicated that they had started planning for reporting under the ETF;

(c) Key capacity-building needs that their respective Parties identified for preparing and reporting information in the thematic areas of the biennial transparency report, namely the national GHG inventory; tracking progress of implementation and achievement of NDCs; climate change impacts and adaptation; and support needed and received. A summary of the key areas of needs identified under each theme, including examples, is contained in the annex;

(d) Key areas of capacity-building that their respective Parties could most benefit from in respect of the implementation of the ETF: the most frequently selected area was methods or practical guidelines for tracking progress of implementation and achievement of NDCs (identified as relevant to 42 per cent of the represented Parties), followed by understanding the relationship between MRV and transparency of climate action and support and the tracking or monitoring of Sustainable Development Goal indicators (19 per cent), and formalizing a data collection and management process (18 per cent). Furthermore, a few respondents commented that all areas are relevant to their respective Parties; while one respondent indicated an additional capacity-building need, namely the development of improvement plans.

Annex

Key capacity-building needs identified by developing country Parties for preparing and reporting information in the thematic areas of the biennial transparency report

Theme/area/category of needs[a]	*Frequency of identification as a percentage of the total thematic needs identified*
National GHG inventory	
Institutional arrangements	36
Establishment of an MRV system (process related)	8
Formalization of the MRV process, through laws and strengthened coordination procedures	14
Leadership	1
Retaining institutional capacity including in-house capacity-building and securing adequate financial resources	11
Stakeholder engagement (e.g. with the private sector)	1
Methodology and tools	32
Enhancing technical capacity (e.g. to use IPCC guidelines, shift to the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, conduct uncertainty analysis, projections, etc.)	25
Technical backstopping (i.e. development of country-specific emission factors)	4
Practical tools/guidelines (i.e. for completing common reporting tables)	3
Data and information	21
Enhancement of data collection process	6
Enhancement of data management	4
Enhanced data availability	3
Enhanced data quality	3
Establishment of technology infrastructure (i.e. web-based data management system/platform)	6
Needs on which insufficient information was provided for categorization	11
Capacity-building (areas/categories not specified by survey respondents)	11
Total	**100**
Tracking progress of implementation and achievement of NDCs	
Institutional arrangements	30
Establishment of an MRV system (process related)	9
Formalization of the MRV process, through laws and strengthened arrangements for coordination	11
Retaining institutional capacity including in-house capacity-building and securing adequate financial resources	9
Stakeholder engagement (e.g. with the private sector)	1
Methodology and tools	40
Enhancing technical capacity (e.g. to understand the MPGs and their implications, use tools for evaluating policies and measures, carry out projections, set indicators and baselines, refine previous estimates of emissions, conduct tracking by sector)	13
Technical backstopping (i.e. development of indicators for tracking NDCs)	4
Practical tools/guidelines (e.g. for completing common tabular format tables, modelling, analysing co-benefits, quantifying mitigation actions as part of NDCs)	23
Data and information	6
Enhancement of data collection process	4
Establishment of technology infrastructure (e.g. national emissions registry)	1

Theme/area/category of needs[a]	*Frequency of identification as a percentage of the total thematic needs identified*
Other	11
Implementation of NDCs/mitigation measures	10
Revision of NDCs	1
Needs on which insufficient information was provided for categorization	13
MRV system development (whether MRV system means the process or the technology infrastructure was not specified by survey respondents)	6
Capacity-building (areas/categories not specified by survey respondents)	7
Total	**100**
Reporting on climate change impacts and adaptation	
Institutional arrangements	19
Establishment of an MRV system (process related)	3
Strengthening institutional arrangements and coordination	10
Stakeholder engagement (e.g. awareness-raising, private sector involvement)	5
Methodology and tools	32
Enhancing technical capacity (e.g. to use tools, undertake modelling, conduct vulnerability and adaptation assessment, understand the MPGs and their implications)	15
Technical backstopping (i.e. development of indicators)	2
Practical tools/guidelines (e.g. for monitoring and evaluation; qualitative reporting on adaptation actions, impacts, risks and vulnerability; adaptation reporting requirements under the Paris Agreement)	15
Data and information	7
Enhancement of data collection process (i.e. at different governance levels)	3
Enhanced data availability	2
Establishment of technology infrastructure (e.g. climate monitoring system/shared platform)	2
Other	10
Implementation of national adaptation plan/adaptation measures	7
Preparation of national adaptation plan	3
Needs on which insufficient information was provided for categorization	32
MRV system development (whether MRV system means the process or the technology infrastructure was not specified by survey respondents)	2
Enhancement of vulnerability and adaptation assessment (whether lack of methods/tools or technical capacity to use available methods/tools, or lack of data was not specified by survey respondents)	14
Capacity-building (areas/categories not specified by survey respondents)	10
Other (e.g. support/strategic plan needed (areas/categories not specified by survey respondents))	7
Total	**100**
Reporting on support needed and received	
Institutional arrangements	22
Establishment of an MRV system (process related)	4
Formalization of the MRV process, through laws and strengthened arrangements for coordination	17
Stakeholder engagement (e.g. with the private sector)	2
Methodology and tools	25
Enhancing technical capacity (e.g. to use guidelines, understand the MPGs and their implications, identify needs)	6
Technical backstopping (i.e. development of criteria for climate finance)	4

Theme/area/category of needs[a]	*Frequency of identification as a percentage of the total thematic needs identified*
Practical tools/guidelines (e.g. for completing common tabular format tables; rigorous methodology for collecting/processing information)	15
Data and information	20
Enhancement of data collection process	7
Enhancement of data management	6
Establishment of technology infrastructure (e.g. web-based platform, central database)	7
Needs on which insufficient information was provided for categorization	33
MRV system development (whether MRV system means the process or the technology infrastructure was not specified by survey respondents)	7
Enhancement of tracking and reporting of support needed and received (whether lack of methods/tools or technical capacity to use available methods/tools, or lack of data was not specified by survey respondents)	11
Capacity-building (areas/categories not specified by survey respondents)	4
Other (e.g. support needed (areas/categories not specified by survey respondents))	11
Total	**100**

[a] Examples/further information provided in parentheses.