



Problems, constraints, lessons learned and capacity-building needs in preparing national communications, biennial update reports and biennial transparency reports

Updated technical paper by the Consultative Group of Experts

Summary

This updated technical paper compiles and synthesizes information on problems, constraints, lessons learned and capacity-building needs identified by developing country Parties during the preparation of national communications, biennial update reports and biennial transparency reports. The paper will continue to 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.



Abbreviations and acronyms

BTR	biennial transparency report
BUR	biennial update report
CGE	Consultative Group of Experts
ETF	enhanced transparency framework under the Paris Agreement
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
LDC	least developed country
MRV	measurement, reporting and verification
NC	national communication
NDC	nationally determined contribution
QA/QC	quality assurance/quality control
SIDS	small island developing State(s)
TASR*	summary report on the technical analysis of a biennial update report

* Used exclusively in figure 1.

I. Introduction

A. Mandate

1. The Conference of the Parties, at its twenty-sixth session, adopted the revised terms of reference of the CGE¹ and reaffirmed that, in fulfilling its mandate to support implementation of the ETF, the CGE shall:²

(a) Facilitate the provision of technical advice and support to developing country Parties, as applicable, including for the preparation and submission of their BTRs, and facilitate improved reporting over time in accordance with the modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement;³

(b) Provide technical advice to the secretariat on implementing the training for technical expert review teams referred to in paragraph 12(c) of decision 18/CMA.1.

2. As per the revised terms of reference, the CGE, in providing technical advice and support, should, to the extent possible, identify and take into account, as appropriate, lessons learned and best practices, and the challenges, constraints and needs of developing country Parties in preparing, as appropriate, NCs, BURs, BTRs and national GHG inventories, including in relation to financial and other support available, as well as the areas for improvement and capacity-building needs identified in the technical analyses of BURs and the technical expert reviews of BTRs.⁴

B. Scope of the paper

3. In response to the mandate and as part of its workplan for 2024,⁵ the CGE agreed to continue conducting an assessment of the existing and emerging problems, constraints, challenges, lessons learned and capacity-building needs of developing country Parties in implementing the existing MRV arrangements under the Convention and the ETF, and to update the technical paper prepared in 2023.⁶

4. This updated technical paper takes into account the following sources of information in addition to those consulted previously:

(a) The 16 NCs, 22 BURs and 2 BTRs submitted between 1 July 2023 and 31 May 2024;

(b) The 18 summary reports on the technical analysis of BURs published between 1 July 2023 and 31 May 2024.

5. This paper draws on the most recent 152 NCs, 100 BURs and 2 BTRs that had been submitted by 152 developing country Parties as at 31 May 2024 and the 65 summary reports on the technical analysis of BURs that had been published as at the same date. In effect, the challenges and needs reported in previous NCs and BURs have been superseded with information from a more recent report, if available. The reporting cycles of the reports compiled and synthesized range from NC1 to NC6, from first to fifth BUR and from first to fourth summary report on the technical analysis of BURs. BTR1s are also included in the compilation and synthesis. Figure 1 provides an overview of the reports compiled and synthesized for this paper, by reporting cycle and region.

¹ Decision [14/CP.26](#), para. 1. The revised terms of reference are contained in the annex to the decision.

² Decision [14/CP.26](#), annex, para. 3.

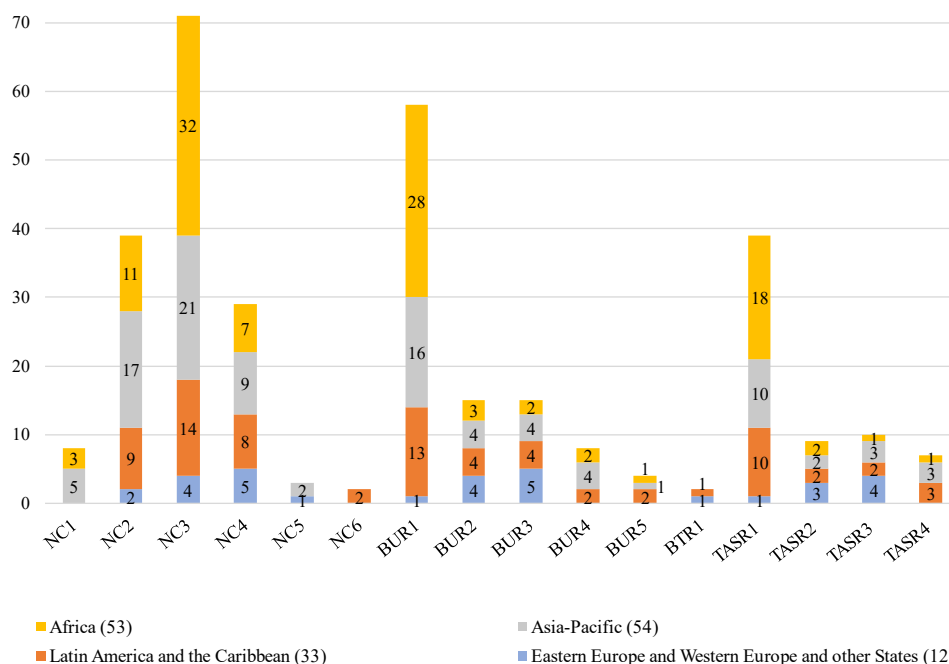
³ Decision [18/CMA.1](#), annex.

⁴ Decision [14/CP.26](#), annex, para. 4(b).

⁵ Available at <https://unfccc.int/documents/637079>.

⁶ [FCCC/TP/2023/5](#).

Figure 1
Number of most recent reports compiled and synthesized, by reporting cycle and region



Note: The figures in parentheses specify the number of developing country Parties whose reports were compiled and synthesized for each region.

C. Possible action by the Subsidiary Body for Implementation

6. 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

7. Between 1 July 2023 and 31 May 2024, the CGE compiled and synthesized information on the problems and constraints faced and lessons learned by developing country Parties in preparing NCs, BURs and BTRs, including the challenges and needs they reported in their most recent reports and the capacity-building needs identified in the summary reports on the technical analysis of BURs.

8. Developing country Parties reported their challenges and needs in various ways, using terms such as “problem”, “constraint”, “gap”, “barrier”, “opportunity for improvement” and “lack of” something. Incorporating information reported in a wide variety of ways into a specific data structure requires a strong analytical framework. The compilation and synthesis was therefore undertaken taking into account the following aspects of the challenges and needs reported:

- (a) Theme: as per the mandatory information to be reported in NCs, BURs and BTRs, challenges and needs were compiled and synthesized under the following themes:
 - (i) Preparing national GHG inventories;
 - (ii) Reporting on mitigation actions;
 - (iii) Reporting on climate change impacts and adaptation;
 - (iv) Reporting on support needed and received;
 - (v) Cross-cutting issues relating to transparency at the national level, such as raising awareness of, or gaining political buy-in to addressing, transparency issues

and developing or strengthening corresponding national systems. In particular, issues that were not classified by a Party under any of the themes listed in paragraph 8(a)(i–iv) above were categorized under this theme;

(b) Area: a developing country Party may identify and report a need when there is a gap between the current state and the optimal state, namely the minimum conditions needed to sufficiently meet the reporting requirements. Barriers to addressing such a gap may exist in different areas and can be addressed by adopting different approaches. For the purpose of the compilation and synthesis, these approaches were categorized under the following areas:

(i) Institutional arrangements, which refers to national systems, arrangements and processes to support implementation of the MRV arrangements and the ETF, such as the engagement of stakeholders. Issues categorized under this area include establishing and formalizing a process or working mechanism for defining roles and responsibilities and coordinating action across stakeholders, creating a designated agency or focal point to lead transparency activities, creating and strengthening stakeholder awareness of transparency, creating enabling environments such as by putting in place policy or legal arrangements that mandate the preparation of national reports and strengthening institutional capacity to sustain and improve the transparency process over time;

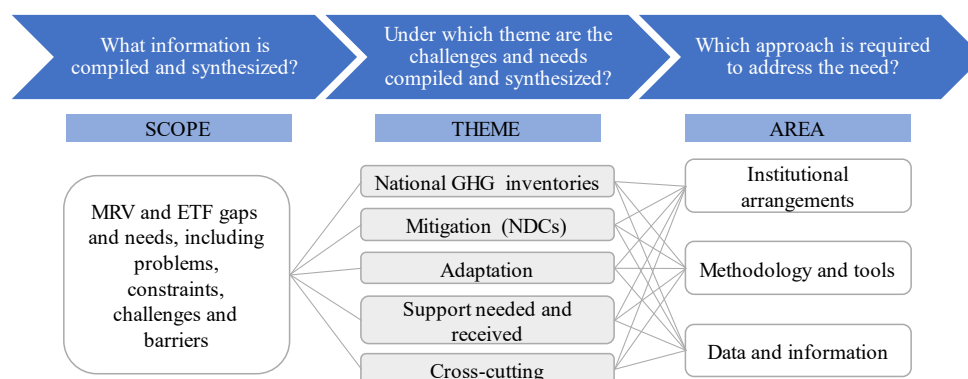
(ii) Methodology and tools, which refers to the means used to enhance the technical and knowledge capacity required to prepare and report information relating to the themes. Such means include developing practical and easy-to-apply guidance, tools and methods; training relevant national experts to apply existing guidelines, guidance, tools and methods; and interpreting and analysing information gathered using tools and methods and translating it into information that meets the requirements of the relevant reporting guidelines. This area also covers technological infrastructure such as networks, stations and equipment for monitoring, observation and data generation; technical backstopping; and scientific research, including studies aimed at developing practical country-specific tools and methods for generating data;

(iii) Data and information, which addresses various issues relating to data, including availability of quality data, accessibility of data (which might be restricted owing to confidentiality issues), and data-collection and data management processes. Issues pertaining to data collection relate to establishing or enhancing databases and data-sharing platforms and systems, while issues relating to data management are associated with documenting and archiving data, developing and improving QA/QC procedures and managing uncertainty.

9. Figure 2 provides an overview of the approach to the compilation and synthesis, including the scope and aspects of the information examined.

Figure 2

Analytical framework for compiling and synthesizing the challenges and needs reported by developing country Parties



10. To examine the aspects of the challenges and needs reported, as outlined in paragraph 8 above, developing country Parties were considered as follows:

- (a) As a group (referred to as “Global” in figures 3–5 and 7–11);
- (b) By geographical region: Africa, Asia-Pacific, Eastern Europe and Western Europe and other States, and Latin America and the Caribbean;
- (c) By taking into account the special circumstances of the LDCs and SIDS: one group consisting of the LDCs and SIDS, and one group consisting of developing country Parties that are not LDCs or SIDS.

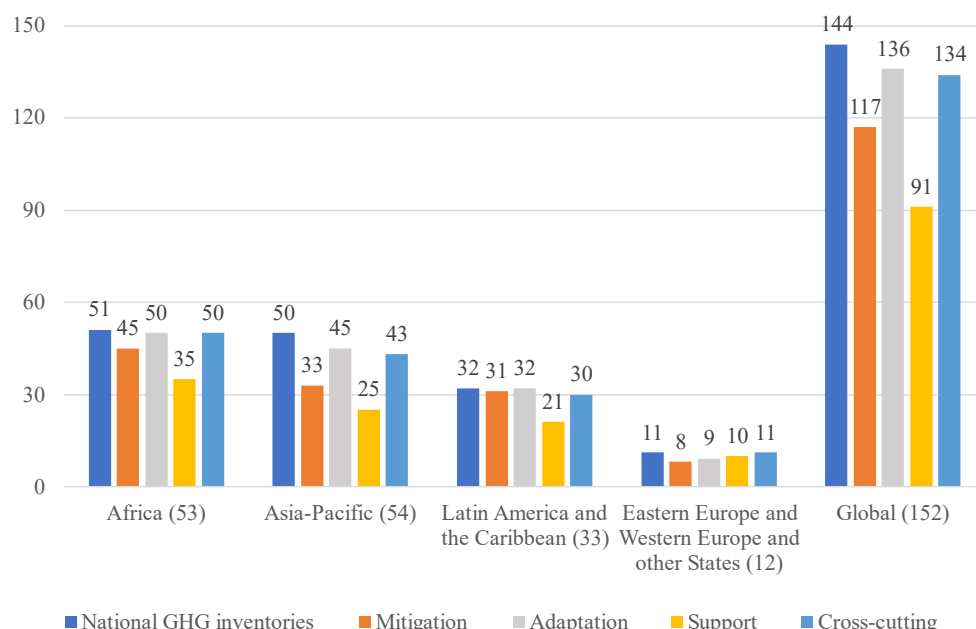
III. Results of the compilation and synthesis

A. Overview of challenges and needs reported by developing country Parties

11. This subchapter provides an overview of the challenges and needs reported by developing country Parties, broken down by theme and area with reference to the regions and developing country Party groups referred to in paragraph 10 above.

12. Figure 3 shows the number of developing country Parties, by region and globally, that reported one or more challenges and needs under each theme. At the global level, challenges and needs related to preparing national GHG inventories were reported by the largest number of Parties (144, or 95 per cent of the Parties whose reports were compiled), followed by challenges and needs related to reporting on climate change impacts and adaptation (136 Parties, or 89 per cent) and to cross-cutting issues (134 Parties, or 88 per cent). At the regional level, challenges and needs associated with preparing national GHG inventories, reporting on climate change impacts and adaptation, and cross-cutting issues featured more strongly than reporting on mitigation actions or on support needed and received.

Figure 3
Number of developing country Parties that reported one or more challenges and needs under each theme, by region and globally

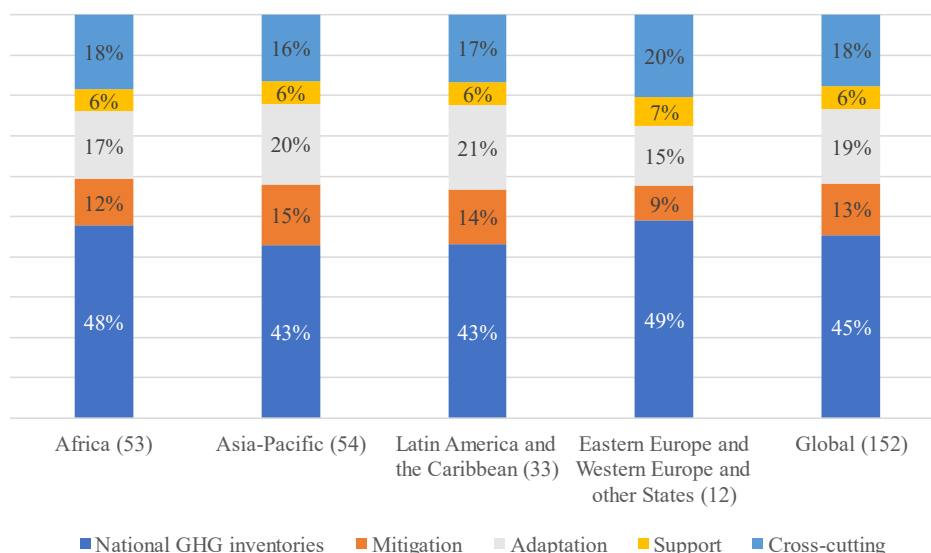


Note: The figures in parentheses specify the number of developing country Parties whose reports were compiled and synthesized.

13. Figure 4 shows the thematic breakdown of the challenges and needs reported by developing country Parties, by region and globally. Although there were similar patterns in the order by frequency of the challenges and needs reported under the different themes, the share of each theme varied across the regions. Across all regions, the largest percentage of reported challenges related to preparing national GHG inventories. The next highest

percentage of reported challenges for Asia and the Pacific and for Latin America and the Caribbean pertained to reporting on climate change impacts and adaptation, while for Africa and for Eastern Europe and Western Europe and other States it pertained to cross-cutting issues.

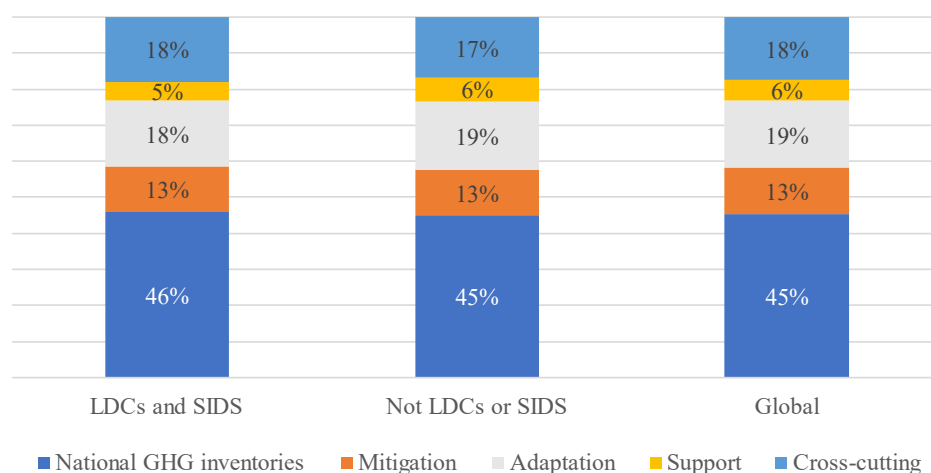
Figure 4
Thematic breakdown of challenges and needs reported by developing country Parties, by region and globally



Note: The total percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded thematic-level percentages provided in the figure.

14. Figure 5 shows the thematic breakdown of the challenges and needs reported by developing country Party group and globally. The thematic breakdown of challenges and needs reported between the LDCs and SIDS and developing country Parties that are not LDCs or SIDS is similar.

Figure 5
Thematic breakdown of challenges and needs reported, by developing country Party group and globally

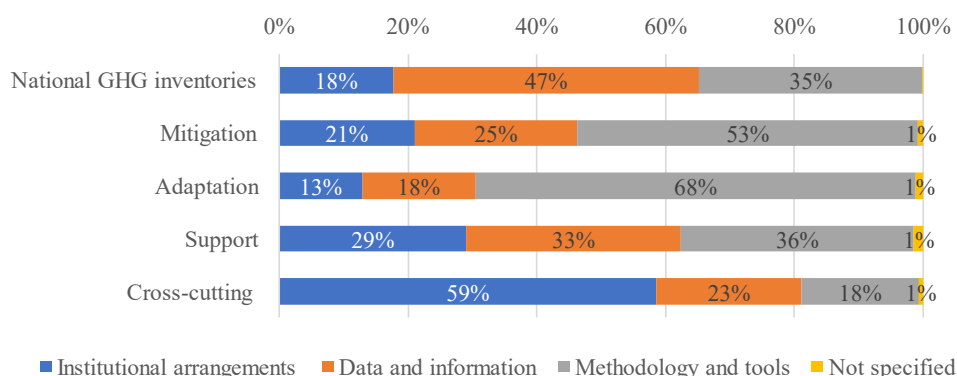


Note: The total percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded thematic-level percentages provided in the figure.

15. The breakdown of areas in which challenges and needs were identified also differed by theme, as shown in figure 6. For the challenges and needs associated with preparing

national GHG inventories, a significant portion (47 per cent) were in the area data and information. For the challenges and needs associated with reporting on mitigation actions and on climate change impacts and adaptation, most (53 and 68 per cent respectively) were in the area methodology and tools. For cross-cutting challenges and needs, the majority (59 per cent) were in the area institutional arrangements. The challenges and needs pertaining to reporting on support needed and received were evenly spread across the different areas, with a slightly higher focus on methodology and tools.

Figure 6
Breakdown of areas in which challenges and needs were identified by developing country Parties, by theme



Note: The total percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded area-level percentages provided in the figure.

B. Preparing national greenhouse gas inventories

16. With regard to preparing national GHG inventories, most of the challenges and needs reported related to the area data and information (47 per cent), followed by the areas methodology and tools (35 per cent) and institutional arrangements (18 per cent). The three most frequently reported categories of issues were availability of quality data (22 per cent), data-collection process (16 per cent) and technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training (14 per cent). Table 1 summarizes by category the identified issues in preparing national GHG inventories.

Table 1
Categories of identified issues in preparing national greenhouse gas inventories

<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Data and information	47
Availability of quality data	22
Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)	16
Data management process (including documentation, archiving, QA/QC protocols and uncertainty management procedures)	7
Accessibility of data (owing to confidentiality issues)	1
Methodology and tools	35
Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training	14
Technical backstopping	12
Practical guidance, tools and methods	6
Technical capacity (and knowledge) to interpret, analyse and translate data and information gathered using tools and methods, etc., including training	2
Technological infrastructure	1

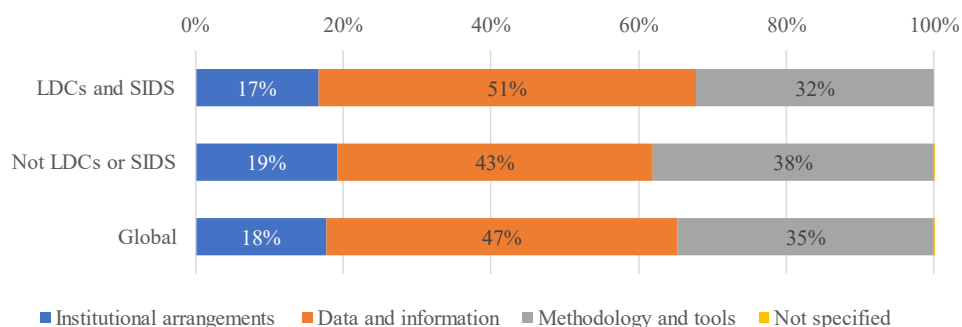
<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Institutional arrangements	18
Institutional capacity to sustain and improve the MRV and transparency process over time	6
Coordination across sectors and institutions to collect and share data	5
Policy or legal arrangements that mandate the preparation of national reports	3
Definition of roles and responsibilities across the institutions involved	1
Stakeholder awareness, especially in the private sector	1
Leadership (e.g. an entity appointed to undertake and coordinate data collection and data-sharing)	1
Total	100

^a The total and area-level percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded category-level percentages provided in the table.

17. The percentage breakdown by area of reported challenges and needs related to preparing national GHG inventories differed by developing country Party group, although there were similar patterns in the order by frequency of the reported challenges and needs in those areas. Notably, the LDCs and SIDS reported an 8 per cent higher share of challenges and needs in the area data and information than developing country Parties that are not LDCs or SIDS. Figure 7 provides a breakdown of the areas in which challenges and needs relating to preparing national GHG inventories were identified by the different groups of developing country Parties and globally. Box 1 provides examples from the categories with the three highest shares of the identified issues associated with preparing national GHG inventories.

Figure 7

Breakdown of areas in which challenges and needs relating to preparing national greenhouse gas inventories were identified, by developing country Party group and globally



Box 1

Examples from categories of issues associated with preparing national greenhouse gas inventories

Availability of quality data: Many developing country Parties identified as a challenge the lack of quality data (including historical data, activity data, disaggregated data, data for the complete time series, data consistent with IPCC guidelines and data from satellite imagery), resulting in difficulties in inventory preparation and high uncertainties in the reported estimates. Parties underscored that enhanced availability and quality of data would substantially improve their inventories by allowing them to conduct uncertainty analyses (including QA/QC procedures), develop country-specific correction and emission factors, and use higher-tier IPCC methodologies for estimating emissions.

Data-collection process: Many developing country Parties reported challenges in collecting data for the preparation of national GHG inventories and the need for improvements such as conducting targeted surveys of and consultations with data

providers to gather sector- and country-specific data. The need to develop and standardize templates and mechanisms for collecting data was identified as pressing and the need to establish or enhance systems for gathering data and sharing information as crucial. Building or strengthening the capacity of stakeholders to collect and provide to inventory teams accurate data was also identified as a need.

Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training: Many developing country Parties reported the need to strengthen national and sectoral experts’ understanding of and capacity to apply IPCC guidelines, methodologies, tools and software, as well as UNFCCC reporting guidelines. Parties expressed the need to enhance their capacity to use higher-tier IPCC methodologies for estimating emissions; conduct uncertainty assessments; implement QA/QC procedures; and apply best practices, new methodologies and the latest technologies for GHG inventory preparation. They also shared capacity-building needs for specific sectors and relating to particular areas, such as remote sensing for monitoring land-use change. Furthermore, they emphasized the necessity of improving their capacity to use common reporting tables and the ETF reporting tools.

C. Reporting on mitigation actions

18. With regard to reporting on mitigation actions, about half of the challenges and needs reported related to the area methodology and tools (53 per cent), followed by the areas data and information (25 per cent) and institutional arrangements (21 per cent). Challenges related to technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training, accounted for the largest share (21 per cent) of the total reported issues under this theme, followed by challenges arising from lack of practical guidance, tools and methods (19 per cent) and challenges with the data-collection process (11 per cent). Table 2 summarizes by category the identified issues in reporting on mitigation actions.

Table 2

Categories of identified issues in reporting on mitigation actions

<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Methodology and tools	53
Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training	21
Practical guidance, tools and methods	19
Technical backstopping	7
Technical capacity (and knowledge) to interpret, analyse and translate data and information gathered using tools and methods, etc., including training	6
Technological infrastructure	0.3
Data and information	25
Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)	11
Availability of quality data	9
Data management process (including documentation, archiving, QA/QC protocols and uncertainty management procedures)	4
Accessibility of data (owing to confidentiality issues)	0.5
Institutional arrangements	21
Institutional capacity to sustain and improve the MRV and transparency process over time	10
Coordination across sectors and institutions to collect and share data	4
Policy or legal arrangements that mandate the preparation of national reports	2
Stakeholder awareness, especially in the private sector	2

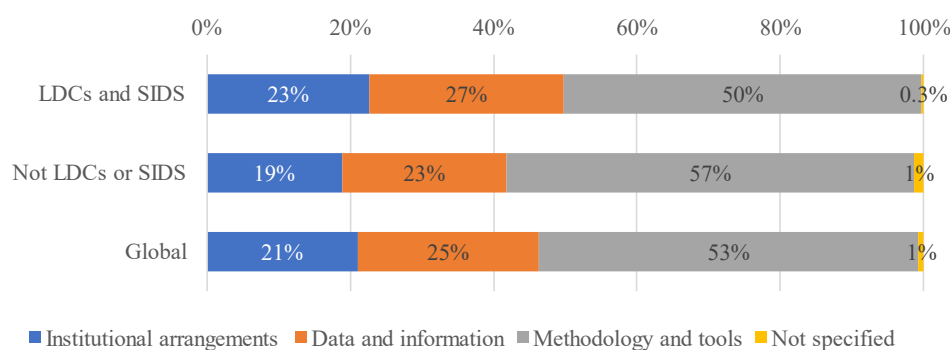
<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Definition of roles and responsibilities across the institutions involved	2
Leadership (e.g. an entity appointed to undertake and coordinate data collection and data-sharing)	1
Not specified	1
Total	100

^a The total and area-level percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded category-level percentages provided in the table.

19. The percentage breakdown by area of reported challenges and needs related to reporting on mitigation actions differed by developing country Party group, although there were similar patterns in the order by frequency of the reported challenges and needs in those areas. The LDCs and SIDS reported a 4 per cent higher share of challenges and needs in both the area institutional arrangements and the area data and information than developing country Parties that are not LDCs or SIDS. Challenges and needs associated with the area methodology and tools constituted the largest share of challenges and needs reported for both groups of developing country Parties. Figure 8 provides a breakdown of the areas in which challenges and needs relating to reporting on mitigation actions were identified by the different groups of developing country Parties and globally. Box 2 provides examples from the categories with the three highest shares of the identified issues associated with reporting on mitigation actions.

Figure 8

Breakdown of areas in which challenges and needs relating to reporting on mitigation actions were identified, by developing country Party group and globally



Note: The total percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded area-level percentages provided in the figure.

Box 2

Examples from categories of issues associated with reporting on mitigation actions

Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training: Many developing country Parties face challenges in reporting on mitigation actions, primarily relating to their limited understanding of and technical capacity to use methodologies and tools for estimating and analysing the impacts of mitigation measures. These challenges encompass identifying, assessing and prioritizing (including by conducting cost–benefit analyses) mitigation measures, by sector and by gas; establishing baseline emission levels and quantifying the impacts of measures against them; and tracking the progress (including by using indicators) and assessing the outcomes (both ex post and ex ante) of mitigation policies and measures, including those that are NDC targets. Parties also reported the need for capacity-building in the electronic reporting of information in common tabular formats to track the progress of NDC

implementation and in the reporting of international market mechanisms and related actions.

Practical guidance, tools and methods: Many developing country Parties reported the need to identify, develop and apply guidance, tools and methods for tracking the implementation of mitigation policies and actions, as well as for estimating and reporting the associated emission reductions. Specific needs identified in this area include formulating or improving baselines; developing mitigation scenarios on the basis of the policies and measures planned or in place; conducting emission reduction and co-benefit studies and analysing their results; assessing the socioeconomic and environmental impacts of mitigation actions; establishing indicators to facilitate the monitoring and reporting of progress, including progress in achieving the mitigation components of NDCs; and developing appropriate frameworks for tracking projects related to international market mechanisms.

Data-collection process: Many developing country Parties reported a need to enhance their capacity to collect quality data for assessing mitigation impacts, develop baselines, and conduct cost-benefit studies and other analyses. Some Parties noted their lack of a centralized system for collecting mitigation-related data, leading to their need to establish and maintain mitigation databases that could be used for collating information on implementing sector-specific mitigation actions and tracking progress in implementing and achieving NDC targets. Also identified were Parties' need to strengthen their existing systems for monitoring progress in implementing mitigation measures, which could be done by implementing improvements such as expanding the domestic MRV system to include all mitigation actions; enhancing national capacity to collect and report requested information in accordance with the modalities, procedures and guidelines; developing or refining data-collection templates to aid subsequent data processing and analysis; conducting regular surveys for data collection; and addressing challenges such as high licensing and maintenance costs associated with data systems.

D. Reporting on climate change impacts and adaptation

20. With regard to reporting on climate change impacts and adaptation, most challenges and needs reported related to the area methodology and tools (68 per cent), followed by the areas data and information (18 per cent) and institutional arrangements (13 per cent). The need for technical backstopping accounted for the largest share (25 per cent) of total reported issues under the theme, followed by the needs for practical guidance, tools and methods (17 per cent) and technological infrastructure (13 per cent). Notably, the top three categories of issues for this theme all fall under the area methodology and tools. Table 3 summarizes by category the identified issues in reporting on climate change impacts and adaptation.

Table 3

Categories of identified issues in reporting on climate change impacts and adaptation

<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Methodology and tools	68
Technical backstopping	25
Practical guidance, tools and methods	17
Technological infrastructure	13
Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training	9
Technical capacity (and knowledge) to interpret, analyse and translate data and information gathered using tools and methods, etc., including training	3
Data and information	18
Availability of quality data	8

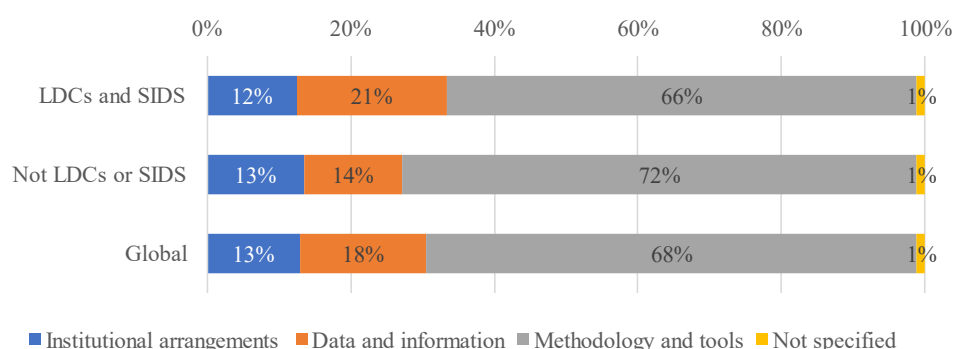
<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)	7
Data management process (including documentation, archiving, QA/QC protocols and uncertainty management procedures)	3
Institutional arrangements	13
Coordination across sectors and institutions to collect and share data	4
Institutional capacity to sustain and improve the MRV and transparency process over time	4
Stakeholder awareness, especially in the private sector	2
Leadership (e.g. an entity appointed to undertake and coordinate data collection and data-sharing)	1
Policy or legal arrangements that mandate the preparation of national reports	1
Definition of roles and responsibilities across the institutions involved	1
Not specified	1
Total	100

^a The total and area-level percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded category-level percentages provided in the table.

21. The percentage breakdown by area of reported challenges and needs related to reporting on climate change impacts and adaptation differed by developing country Party group, although there were similar patterns in the order by frequency of the reported challenges and needs in those areas. The LDCs and SIDS reported a 7 per cent higher share of challenges and needs in the area data and information than developing country Parties that are not LDCs or SIDS. Challenges and needs associated with the area methodology and tools constituted the largest share of challenges and needs reported for both groups of developing country Parties. Figure 9 provides a breakdown of the areas in which challenges and needs relating to reporting on climate change impacts and adaptation were identified by the different groups of developing country Parties and globally. Box 3 provides examples from the categories with the three highest shares of the identified issues associated with reporting on climate change impacts and adaptation.

Figure 9

Breakdown of areas in which challenges and needs relating to reporting on climate change impacts and adaptation were identified, by developing country Party group and globally



Box 3

Examples from categories of issues associated with reporting on climate change impacts and adaptation

Technical backstopping: Many developing country Parties emphasized the need to enhance climate research that enables tailored, scaled-down climate modelling specific to national and local contexts and improves understanding of the multifaceted impacts of climate change, including its socioeconomic consequences for various sectors (e.g. agriculture, food security, biodiversity, energy, fisheries, infrastructure, public health, human settlements, coastal areas and zones, and water). Improvement in vulnerability and risk assessment and management was also considered an essential need. Some Parties pointed out the inadequacy of national funding and human resources allocated to research on climate change impacts and adaptation strategies. They noted it was crucial not only to enhance the research capacity of key stakeholders, such as governments and research institutions, but also to ensure that research findings are used effectively. Moreover, the need to foster cooperation among stakeholder groups and between stakeholders at the regional and international level was also mentioned.

Practical guidance, tools and methods: Many developing country Parties reported a lack of appropriate tools and methodologies for monitoring climate change impacts, evaluating the effectiveness of adaptation measures and conducting vulnerability assessments. They highlighted a notable deficiency in analysing the impacts of climate change in an integrated manner against socioeconomic vulnerabilities – a deficiency evident in both national and local contexts and across sectors such as agriculture, coastal management, energy, forestry, infrastructure, public health, tourism, and urban and rural settlements. Some Parties emphasized the need to standardize methods (for, among other purposes, performing vulnerability assessments and defining tracking indicators) employed by national and/or sectoral institutions to enhance the consistency of reporting. Various other needs were also identified by Parties: tools for consistently collecting, managing and monitoring data in order to update data sets and databases; modelling techniques for forecasting and assessing climate risks; technology transfer relating to the development of localized climate scenarios; increased funding to support climate research programmes that build capacity for climate modelling; the development of criteria for assessing the co-benefits of mitigation and adaptation; and capacity-building in the area of methodologies for conducting vulnerability and adaptation studies.

Technological infrastructure: Many developing country Parties expressed the need to establish, maintain or upgrade technological infrastructure for collecting climate-related data and monitoring meteorological, atmospheric, oceanographic and terrestrial variables related to climate change. Such infrastructure includes weather forecasting centres, hydrological stations, meteorological stations and climate observation networks. Parties reported insufficient capacity to adequately characterize temporal and spatial variability related to climate change at the national level. Some Parties mentioned as a challenge the low density and uneven spatial distribution of climate observation stations across the country, while others mentioned outdated meteorological service instruments in need of calibration or renewal. Parties also reported the lack of qualified staff to operate observation networks and share information effectively with other stakeholders, as well as the lack of financial and material resources to maintain those networks, as challenges. Further, some Parties pointed to the need for automated recording equipment and other instruments to generate consistent, reliable and real-time climate data.

E. Reporting on support needed and received

22. With regard to reporting on support needed and received, the challenges and needs identified were evenly spread across the different areas. The distribution was as follows: methodology and tools (36 per cent), data and information (33 per cent) and institutional arrangements (29 per cent). Under these areas, the need for practical guidance, tools and

methods accounted for the largest share (24 per cent) of total reported issues under the theme, followed by challenges with the data-collection process (21 per cent) and the necessity to maintain institutional capacity to sustain and improve the MRV and transparency process over time (16 per cent). Table 4 summarizes by category the issues identified in reporting on support needed and received.

Table 4

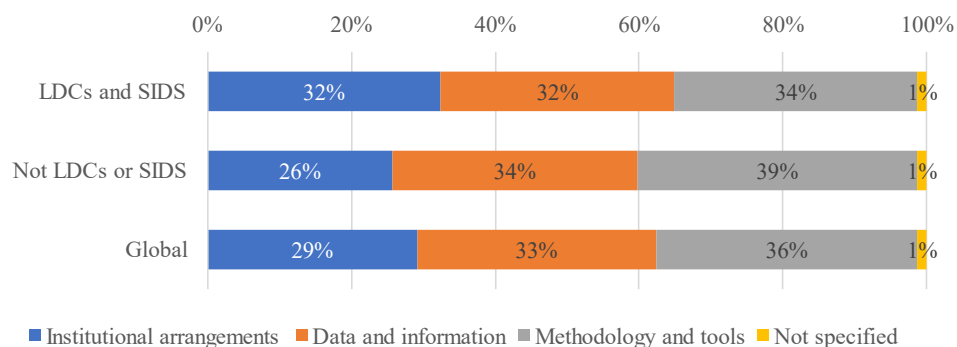
Categories of identified issues in reporting on support needed and received

<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Methodology and tools	36
Practical guidance, tools and methods	24
Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training	8
Technical backstopping	4
Technical capacity (and knowledge) to interpret, analyse and translate data and information gathered using tools and methods, etc., including training	1
Data and information	33
Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)	21
Availability of quality data	7
Data management process (including documentation, archiving, QA/QC protocols and uncertainty management procedures)	5
Accessibility of data (owing to confidentiality issues)	0.3
Institutional arrangements	29
Institutional capacity to sustain and improve the MRV and transparency process over time	16
Coordination across sectors and institutions to collect and share data	6
Leadership (e.g. an entity appointed to undertake and coordinate data collection and data-sharing)	3
Policy or legal arrangements that mandate the preparation of national reports	2
Stakeholder awareness, especially in the private sector	2
Not specified	1
Total	100

^a The total and area-level percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded category-level percentages provided in the table.

23. The percentage breakdown by area of reported challenges and needs related to reporting on support needed and received differed by developing country Party group, although there were similar patterns in the order by frequency of the reported challenges and needs in those areas. The LDCs and SIDS reported a 6 per cent higher share of challenges and needs in the area institutional arrangements than developing country Parties that are not LDCs or SIDS. Figure 10 provides a breakdown of the areas in which challenges and needs relating to reporting on support needed and received were identified by the different groups of developing country Parties and globally. Box 4 provides examples from the categories with the three highest shares of the identified issues associated with reporting on support needed and received.

Figure 10
Breakdown of areas in which challenges and needs relating to reporting on support needed and received were identified, by developing country Party group and globally



Note: The total percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded area-level percentages provided in the figure.

Box 4

Examples from categories of issues associated with reporting on support needed and received

Practical guidance, tools and methods: Many developing country Parties mentioned the need for guidelines, tools and efficient processes and systems for defining, identifying, tracking and reporting on capacity-building, technical and financial support needed and received. Some Parties noted that challenges in tracking climate finance arose from the lack of a common definition of climate finance, indicating the corresponding need for adoption of a definition in the national and international context; and from the lack of a common approach to classifying, monitoring and reporting on climate finance – one that ensures stakeholders collect data on support needed and received consistently. Parties expressed the need to establish and operationalize MRV systems for support and to enhance the capacity of staff and national experts to identify gaps and constraints relating to reporting on support needed and received, as well as implement the most appropriate means for overcoming them.

Data-collection process: Many developing country Parties reported encountering challenges in collecting data and information on support needed and received owing to insufficient national technical capacity of data collection, the absence of a standardized data-collection process, and the relevant data being dispersed across ministries, private sector organizations, research and academic institutions, civil society organizations and other entities. They noted that a lack of streamlined information-sharing mechanisms among government departments, donors and other stakeholders can lead to duplicated project efforts and difficulties in estimating and reporting on support needed and received. One Party, which had received support through bilateral cooperation with other Parties and from multilateral climate funds, identified as a challenge the tracking and clear identification of all interventions relating to this support.

Institutional capacity to sustain and improve the MRV and transparency process over time: Many developing country Parties reported the need to strengthen national capacity to define, identify, classify and report on support needed and received. Enhancing human and financial resources to ensure continuous, accurate reporting on support needed and received – categorized by sector, theme (mitigation, adaptation, reporting or cross-cutting) and support type (finance, technology transfer or capacity-building), with detailed disaggregation – was identified as a specific need.

F. Cross-cutting issues

24. With respect to cross-cutting issues, most challenges and needs reported related to the area institutional arrangements (59 per cent), followed by the areas data and information (23 per cent) and methodology and tools (18 per cent). Challenges and needs pertaining to enhancing institutional capacity to sustain and improve the MRV and transparency process over time were most frequently reported (22 per cent), followed by those pertaining to enhancing the data-collection process (13 per cent) and enhancing coordination across sectors and institutions to collect and share data (11 per cent). Table 5 summarizes the identified cross-cutting issues by category.

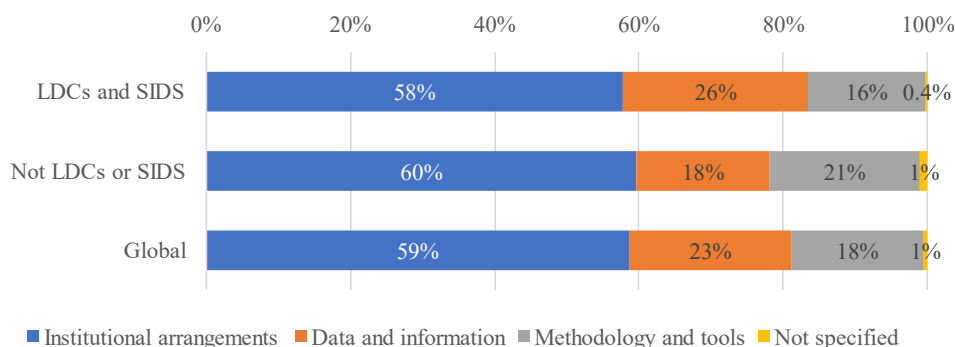
Table 5
Categories of identified cross-cutting issues

<i>Categories of issues (lack thereof or insufficient), by area</i>	<i>Percentage of total reported issues under theme^a</i>
Institutional arrangements	59
Institutional capacity to sustain and improve the MRV and transparency process over time	22
Coordination across sectors and institutions to collect and share data	11
Policy or legal arrangements that mandate the preparation of national reports	9
Leadership (e.g. an entity appointed to undertake and coordinate data collection and data-sharing)	7
Stakeholder awareness, especially in the private sector	6
Definition of roles and responsibilities across the institutions involved	4
Data and information	23
Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)	13
Data management process (including documentation, archiving, QA/QC protocols and uncertainty management procedures)	6
Availability of quality data	3
Accessibility of data (owing to confidentiality issues)	1
Methodology and tools	18
Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training	5
Practical guidance, tools and methods	5
Technical backstopping	5
Technical capacity (and knowledge) to interpret, analyse and translate data and information gathered using tools and methods, including training	3
Technological infrastructure	1
Not specified	1
Total	100

^a The total and area-level percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded category-level percentages provided in the table.

25. The percentage breakdown by area of cross-cutting challenges and needs differed by developing country Party group, although there were similar patterns in the order by frequency of the reported challenges and needs in those areas. The LDCs and SIDS reported an 8 per cent higher share of challenges and needs in the area data and information than developing country Parties that are not LDCs or SIDS. Figure 11 provides a breakdown of the areas in which challenges and needs relating to cross-cutting issues were identified by the different groups of developing country Parties and globally. Box 5 provides examples from the categories with the three highest shares of the identified cross-cutting issues.

Figure 11
Breakdown of areas in which challenges and needs relating to cross-cutting issues were identified, by developing country Party group and globally



Note: The total percentages were calculated using exact (not rounded) values and may therefore differ from the total percentages calculated with the rounded area-level percentages provided in the figure.

Box 5

Examples from categories of cross-cutting issues

Institutional capacity to sustain and improve the MRV and transparency process over time: Many developing country Parties reported challenges in meeting reporting commitments arising from the absence of an MRV system, limited technical capacity and insufficient financial resources. Some Parties indicated that they prepared national reports on an ad hoc basis, underscoring their need for a permanent MRV system under the Convention, which would not only enable timely reporting in the short term but also improve reporting over time, leading to compliance with the enhanced reporting requirements under the ETF. Some Parties emphasized the need to establish and maintain expert teams. A high turnover of experts and government officers was noted as posing significant challenges to sustaining technical capacity, emphasizing the need for institutionalizing knowledge and providing ongoing capacity-building, training and learning support to experts and institutions involved in the MRV and transparency process.

Data-collection process: Many developing country Parties expressed the need to strengthen national capacity and enhance data collection and management in the area of transparency reporting. Parties identified the need to produce templates, standards and rules for data collection; digitize information records; address inadequacies in monitoring systems; and develop mechanisms allowing regular data collection and sharing by data providers, including government departments and private sector organizations. The need for institutions responsible for data collection to understand the data they are collecting and to develop formats that streamline the collection process was identified, as was the need to enhance the technical capacity of other stakeholders.

Coordination across sectors and institutions to collect and share data: Many developing country Parties identified the need for coordination mechanisms for data collection and sharing among stakeholders at different levels involved in preparing national GHG inventories and reporting on mitigation, adaptation and support needed and received, including organizations that lead those processes, government departments, private sector organizations and sectoral data providers. Some Parties also indicated the need to strengthen coordination and collaboration among research institutions, governments and other actors involved in climate-related research in order to enhance its effectiveness.

G. Emerging needs in relation to the enhanced transparency framework

26. In addition to the problems, constraints, lessons learned and capacity-building needs related to preparing NCs, BURs and BTRs presented in subchapters III.B–III.F above, some emerging needs relating to effective implementation of the ETF were identified, including the need to:

- (a) Enhance existing MRV systems and national capacity to meet the new reporting requirements outlined in the modalities, procedures and guidelines under the ETF;
- (b) Strengthen national capacity to use common reporting tables, common tabular formats and ETF reporting tools;
- (c) Address the incompatibility between IPCC software versions and the absence of automation and information import mechanisms in the test version of ETF reporting tools (for BTRs prepared or submitted before the official launch of ETF reporting tools);
- (d) Build capacity relevant to the themes listed in paragraph 8(a)(i–v) above, such as the capacity to enhance the process for collecting GHG inventory data; apply higher-tier IPCC methodologies for estimating emissions; adhere to IPCC methodologies and guidelines for inventory preparation; improve the reporting of sectoral mitigation and adaptation actions, including the assessment of impacts and monitoring of progress of implementation; track progress towards implementing and achieving NDCs; identify and track support needed and received; and establish and maintain a domestic transparency system.

H. Summary

27. Table 6 summarizes the two most frequently reported categories of issues identified in each area under each theme, as shown in tables 1–5. Areas and categories within each theme are listed in decreasing order of percentage.

Table 6

Two most frequently reported categories of issues identified by developing country Parties in each area under each theme

<i>Theme</i>	<i>Categories of issues (lack thereof or insufficient), by area</i>
Preparing national GHG inventories	Data and information
	Availability of quality data
	Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)
	Methodology and tools
	Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training
	Technical backstopping
	Institutional arrangements
	Institutional capacity to sustain and improve the MRV and transparency process over time
	Coordination across sectors and institutions to collect and share data
Reporting on mitigation actions	Methodology and tools
	Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training
	Practical guidance, tools and methods
	Data and information
	Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)

<i>Theme</i>	<i>Categories of issues (lack thereof or insufficient), by area</i>
	<p>Availability of quality data</p> <p>Institutional arrangements</p> <p>Institutional capacity to sustain and improve the MRV and transparency process over time</p> <p>Coordination across sectors and institutions to collect and share data</p>
Reporting on climate change impacts and adaptation	<p>Methodology and tools</p> <p>Technical backstopping</p> <p>Practical guidance, tools and methods</p> <p>Data and information</p> <p>Availability of quality data</p> <p>Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)</p> <p>Institutional arrangements</p> <p>Coordination across sectors and institutions to collect and share data</p> <p>Institutional capacity to sustain and improve the MRV and transparency process over time</p>
Reporting on support needed and received	<p>Methodology and tools</p> <p>Practical guidance, tools and methods</p> <p>Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training</p> <p>Data and information</p> <p>Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)</p> <p>Availability of quality data</p> <p>Institutional arrangements</p> <p>Institutional capacity to sustain and improve the MRV and transparency process over time</p> <p>Coordination across sectors and institutions to collect and share data</p>
Cross-cutting issues	<p>Institutional arrangements</p> <p>Institutional capacity to sustain and improve the MRV and transparency process over time</p> <p>Coordination across sectors and institutions to collect and share data</p> <p>Data and information</p> <p>Data-collection process (including establishment of a database, data-sharing system and web-based knowledge management platform)</p> <p>Data management process (including documentation, archiving, QA/QC protocols and uncertainty management procedures)</p> <p>Methodology and tools</p> <p>Technical capacity (and knowledge) to apply guidelines, guidance, tools and methods, including training</p> <p>Practical guidance, tools and methods</p>