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Reporting and review pursuant to Article 13 of the Paris Agreement: provision of financial and technical support to developing country Parties for reporting and capacity-building

Experience and challenges related to implementing Article 13 of the Paris Agreement

Synthesis report by the secretariat

Summary

This report synthesizes views submitted by Parties on experience and challenges related to implementing Article 13 of the Paris Agreement, including on preparing biennial transparency reports, as well as information reported in developing country Parties' biennial transparency reports, as at 5 June 2026. The report will serve as an input to a workshop to be held in world café format at the sixty-fourth session of the Subsidiary Body for Implementation.



Abbreviations and acronyms

BTR	biennial transparency report
CGE	Consultative Group of Experts
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
CRT	common reporting table
CTF	common tabular format
ETF	enhanced transparency framework under the Paris Agreement
GEF	Global Environment Facility
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
MPGs	modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement
NDC	nationally determined contribution
QA/QC	quality assurance/quality control
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)
SBI	Subsidiary Body for Implementation

I. Introduction

A. Background and mandate

1. Article 13 of the Paris Agreement established an enhanced transparency framework for action and support, building on and enhancing the existing measurement, reporting and verification arrangements under the Convention.¹ The implementation of Article 13 is a cornerstone of global efforts to build mutual trust and confidence among Parties and promote effective implementation of action and support. As developing country Parties continue preparing and submitting their BTRs, it is important to understand their experience and challenges in implementing Article 13 and the ETF.

2. CMA 1 decided that Parties shall submit their BTR1 and national inventory report, if submitted as a stand-alone report, in accordance with the MPGs, at the latest by 31 December 2024, and that the least developed countries and small island developing States may submit the information referred to in Article 13, paragraphs 7–10, of the Paris Agreement at their discretion.²

3. According to Article 13, paragraph 14, of the Paris Agreement, support shall be provided to developing country Parties for implementing Article 13 of the Paris Agreement, and according to Article 13, paragraph 15, support shall also be provided for building the transparency-related capacity of developing country Parties on a continuous basis.

4. CMA 7 invited Parties to submit views on experience and challenges related to implementing Article 13 of the Paris Agreement, including on preparing BTRs, establishing institutional arrangements, making projections of GHGs, using data management tools and project management tools for preparing BTRs, enhancing stakeholder engagement, tracking support needed and received, navigating the MPGs, including the flexibility provisions therein, and managing human resources; and requested the secretariat to prepare a synthesis report, to be made available no later than three weeks prior to SBI 64, reflecting information contained in those submissions, as well as information reported in developing country Parties' BTRs, and to organize a workshop in world café format to be held at SBI 64, to reflect on the synthesis report and consider other matters.³

B. Scope

5. This report builds on the synthesis report prepared for SBI 62,⁴ and synthesizes information from 10 submissions⁵ and developing country Parties' BTRs.⁶ As at 5 June 2026, 91 developing country Parties, including 27 least developed countries and small island developing States, had submitted their BTRs.

6. This report does not capture the full scope or nuance of each submission or BTR1 referred to in paragraph 5 above. For a more comprehensive overview of the information synthesized in this report, the report should be read in conjunction with those submissions and BTRs.

¹ Decision [18/CMA.1](#), annex.

² Decision [18/CMA.1](#), paras. 3–4.

³ Decision [15/CMA.7](#), paras. 8–9.

⁴ [FCCC/SBI/2025/10](#).

⁵ From: Alliance of Small Island States; Arab Group; Brazil; European Union; Japan; least developed countries; Like-minded Developing Countries; Mexico; South Africa; and United Kingdom of Great Britain and Northern Ireland. The submissions are available at <https://www4.unfccc.int/sites/submissionsstaging/Pages/Home.aspx> (in the search field, type “Article 13”).

⁶ Available at <https://unfccc.int/first-biennial-transparency-reports>.

II. Synthesis of views and information related to implementing Article 13 of the Paris Agreement

A. Progress, experience and best practices

1. General views

7. One Party noted that preparing the BTR1s was the first experience of reporting under the ETF for all Parties to the Paris Agreement and that Parties faced a range of challenges in relation to this.

8. Another Party noted that the submission of the BTR1s, together with the completion of a number of technical expert review and facilitative, multilateral consideration of progress processes to date, marks an important milestone in the implementation of the Paris Agreement. It expressed appreciation to the secretariat for its efforts in supporting the implementation of the ETF, including through the organization of those processes, noting the logistical challenges associated therewith.

9. A group of developed country Parties noted significant progress by developing country Parties in building reporting capacity in order to prepare BTRs, acknowledging that reporting under the Paris Agreement entails a higher level of complexity for Parties compared with reporting under the Convention and that developing country Parties have different starting points, capacities and challenges related to the reporting.

10. One Party noted that, while transparency-related reporting under Article 13 of the Paris Agreement has improved, implementation of the ETF still involves several operational and systemic challenges for developing country Parties, including in areas such as institutional arrangements, data availability and management systems, technical capacity constraints related to the collection and management of data and information to inform the preparation of BTRs, and stakeholder coordination.

11. Many⁷ Parties reported that the preparation of BTR1s required significant time, coordination and financial, human and technical resources, reflecting the scope and complexity of reporting under the MPGs. The process of undergoing training and thereafter populating CRTs and CTF tables, coordinating across multiple institutions and applying MPGs requires substantial effort and iterative review for BTRs. This experience led some Parties to emphasize the importance of initiating BTR preparation early, setting clear timelines and gaining access to more predictable financial, technical and capacity-building support for future BTR cycles, and particularly to ensure continuity in reporting and avoid reliance on ad hoc arrangements. Many developing country Parties also noted that the process of preparing a BTR led to enhanced technical understanding of reporting requirements and the ETF reporting tools.

12. Many Parties reported that experience gained from preparing national communications and biennial update reports facilitated the transition to reporting under the ETF. Existing systems and processes were adapted, particularly institutional and technical arrangements.

13. Many developing country Parties emphasized the importance of adequate, predictable and sustainable international support, including financial, technical and capacity-building support, in enabling the preparation of BTR1s and strengthening institutional and technical capacities to implement the ETF. The role of international support and partnerships was widely recognized as critical to preparing BTR1s. Many developing country Parties reported that financial, technical and capacity-building support received through various channels, including the secretariat, the Capacity-building Initiative for Transparency, the CGE, the GEF and GEF implementing agencies such as the United Nations Development Programme and the United Nations Environment Programme, was essential for implementing Article 13 of the Paris Agreement and preparing BTRs and noted their appreciation for the support provided. Such support enabled access to technical expertise, peer-to-peer learning, training

⁷ The following qualifiers are used in this report: “a few” if referring to 2–5 Parties, “some” if 6–20 and “many” if more than 20.

on MPGs and reporting tools, stakeholder coordination and, in some cases, development of data management and modelling tools.

14. Many Parties highlighted the value of peer-to-peer learning, regional exchanges and outputs from the technical expert review process in navigating the MPGs, identifying capacity gaps and supporting continuous improvement in reporting.

15. Some Parties also noted that preparing their BTR1 deepened their understanding of how ETF reporting contributes to the global assessment of progress under the Paris Agreement, including the global stocktake, tracking progress in implementing and achieving NDCs and supporting national monitoring of NDC implementation.

16. Many Parties noted that the implementation of the ETF contributed to strengthening national climate governance, including through improved inter-institutional coordination, enhanced tracking of NDCs and increased integration of climate considerations into national planning processes. One group of Parties underscored the importance of strengthening support for the documentation of national experience and processes in relation to preparing BTRs with a view to promoting knowledge-sharing, peer-to-peer learning and continuous improvement in reporting under the ETF.

17. Many Parties reported that the BTR preparation process enabled them to clearly identify capacity-building and support needs such as the need for long-term modelling processes, address data gaps and methodological limitations, and address high staff turnover and the need to institutionalize transparency functions, including the establishment or enhancement of their national reporting systems.

18. Many developing country Parties underlined a lack of support received for preparing for participation in the technical expert review of BTRs and the facilitative, multilateral consideration of progress.

19. One Party reported that it intends to use the outcomes of the technical expert review to strengthen its mitigation tracking systems, improve the quality of GHG emission projections and progressively reduce reliance on the flexibility provisions set out in the MPGs.

20. Some Parties reported that progress in implementing Article 13 of the Paris Agreement can be assessed on a continuous basis using inputs such as the BTR synthesis report and technical expert review reports. This assessment can help identify challenges and evaluate support needs for developing country Parties to improve their reporting over time. Support and capacity-building activities can promote the development of robust institutional arrangements and improve data systems to help developing country Parties address many of the challenges they face.

2. Views regarding specific thematic areas

(a) Establishing or enhancing institutional arrangements for implementing the enhanced transparency framework

21. Many Parties reported progress in establishing or enhancing institutional arrangements, including coordination mechanisms across ministries and stakeholders for GHG inventories, mitigation information and reporting on support needed and received.

22. Many Parties also emphasized that effective implementation of the ETF requires formalized institutional frameworks, clearly defined roles and responsibilities, and sustained institutional capacity, including legal and procedural arrangements.

23. Some Parties reported developing structured approaches to preparing BTRs, including road maps, timelines and coordination mechanisms, which contributed to improved clarity, coordination and timeliness.

24. Best practices reported by many Parties included formalizing roles and responsibilities; establishing interministerial coordination bodies, working groups and platforms for coordination; strengthening institutional mandates; and enhancing stakeholder collaboration.

(b) Preparing national inventory reports

25. Many Parties reported progress in improving GHG inventory systems, including data collection processes, methodologies and QA/QC practices.

26. Some Parties highlighted the development or use of centralized databases, standardized methodologies and improved coordination with data providers to enhance data consistency and comparability.

27. A few Parties reported using digital tools and automated systems to support data collection, processing and reporting.

(c) Reporting on progress in achieving nationally determined contributions

28. Many Parties noted improvements in tracking progress towards implementing and achieving their NDCs, including through enhanced use of inventory data, development of monitoring frameworks and integration of NDC tracking into national systems.

29. Some Parties reported establishing centralized systems or databases to support the monitoring and reporting of NDC implementation.

30. A few Parties noted that, in defining indicators to track progress towards achieving NDC targets or policies, consideration must be given to the costs associated with collecting the data needed for the indicators to decide whether they can be used.

(d) Reporting on climate change impacts and adaptation

31. Some Parties reported progress in strengthening adaptation reporting, including the development of national adaptation plans, monitoring frameworks and systems for tracking adaptation actions.

32. Many Parties also highlighted capacity-building efforts for technical teams and the improved understanding of adaptation-related provisions of the MPGs.

(e) Reporting on financial, technology development and transfer, and capacity-building support

33. Many Parties reported progress in strengthening systems for tracking and reporting on support needed and received, including through improvements in data collection and alignment with existing reporting frameworks.

34. Some Parties highlighted efforts to integrate climate finance tracking into national systems and to improve coordination across institutions.

35. A few Parties identified best practices for reporting on support needed and received, including integrating climate finance tracking into national financial systems to improve data reliability and sustainability; implementing climate budget tagging to identify climate-relevant expenditures; and establishing national systems to track financial, technology and capacity-building support, thereby enhancing the assessment of needs, tracking of support received and overall transparency.

B. Challenges experienced by developing country Parties in implementing Article 13 of the Paris Agreement**1. General views**

36. Many Parties reported that implementing the ETF remains a learning-by-doing process, with challenges related to coordination, technical capacity and resource availability. These challenges were reported to be particularly acute in the least developed countries and small island developing States given their special circumstances and limited national capacities.

37. Many developing country Parties noted that they have not yet undergone the technical expert review and facilitative, multilateral consideration of progress processes and that

additional challenges, capacity needs and lessons learned in relation to implementing Article 13 of the Paris Agreement are likely to emerge as these processes are undertaken.

38. With respect to navigating the MPGs, many Parties consistently reported a learning curve. Challenges were noted in interpreting mandatory and non-mandatory reporting elements, overcoming English-language barriers, populating CRTs and CTF tables with data, and using the ETF reporting tools while recognizing the limitations in language accessibility of these tools.

39. One group of Parties noted that existing reporting systems, including the ETF reporting tools, are not always well suited to the circumstances of small island developing States, having been designed primarily for larger or higher-emitting countries. The group highlighted that adapting data from low-emission and small-scale national contexts to these reporting systems can create significant inefficiencies, such as increasing the administrative burden on national teams that are already experiencing capacity constraints.

40. One Party indicated that applying the flexibility provisions requires clear guidance and sustained technical support to ensure that they facilitate, rather than hinder, reporting efforts.

41. Another Party suggested that the CGE and the secretariat prepare guidance to promote a common understanding by technical expert review teams of the application of the flexibility provisions in order to ensure the consistent application of the provisions by Parties, and a guidance manual for technical expert review teams to use to ensure the consistent application of the flexibility provisions during the technical expert review process.

42. Managing human resources was reported by many Parties as a cross-cutting challenge affecting all aspects of BTR preparation. Many Parties indicated they relied on a small number of trained national experts and a small team in a central climate change coordination unit familiar with the MPGs, creating vulnerabilities related to staff turnover and loss of institutional memory.

43. Heavy reliance on international consultants was reported by many Parties, particularly for technical tasks such as compiling national inventories, modelling GHG emission projections and addressing difficulties in preparing information for tracking progress in implementing and achieving NDCs owing to the absence of standardized indicators, weak linkages between NDCs and national development frameworks, and limited data availability. Some Parties highlighted the limited availability of permanent and dedicated staff involved in national transparency processes within government institutions, which raises concerns regarding the continuity and sustainability of ETF implementation.

44. Many Parties emphasized concerns regarding the adequacy, predictability and sustainability of support for reporting and capacity-building, noting that existing support is often project-based and fragmented.

45. One group of Parties emphasized the need for sustainable, predictable and multi-year support for developing country Parties to enable them to move beyond project-based approaches towards the long-term institutionalization of transparency-related functions. The group highlighted the need to support the retention and continuous development of qualified technical staff for implementing the ETF and to strengthen the financial resources of the CGE to enable it to deliver in-person subregional capacity-building activities on a regular basis across BTR reporting cycles.

46. One Party noted that previous mandated activities referred to in decisions [18/CMA.5](#) and [21/CMA.6](#), as well as the work of the CGE, have brought to light the experience and challenges encountered by developing country Parties in preparing the BTR1s. It suggested that greater emphasis be placed on the discussion of practical and actionable solutions for addressing these challenges, noting that the sharing of examples of successful approaches in this regard could support the effective implementation of the ETF by developing country Parties. The Party also highlighted the need to assess the outcomes and effectiveness of existing support initiatives aimed at reporting under the ETF in order to inform discussions on future support needs.

47. Many Parties highlighted challenges related to support provided for reporting and capacity-building by the GEF and its implementing agencies, noting that:

- (a) With respect to funding received:
 - (i) A need exists to supplement GEF funds with resources from other donors or national budgets to cover the full scope of reporting under the MPGs;
 - (ii) The resources available under the GEF and its implementing agencies are insufficient to meet the transparency-related needs of developing country Parties in a stable manner, noting that the ability of the GEF to provide timely, adequate and predictable support depends on sufficient and consistent replenishment of its funding;
 - (iii) A need exists for increased donor funding for the second phase of the Capacity-building Initiative for Transparency and for future enabling activity projects under the GEF. This funding can also be used to develop data management and archiving systems, including for the development of subnational systems that link to national systems, in order to implement the ETF;
 - (iv) A need exists for dedicated funding for reporting on activities that are not mandatory under the MPGs. For example, REDD+ activities are not mandatory to report on in BTRs under the MPGs, meaning there is no corresponding increase in financial support under the GEF for reporting thereon, so Parties that wish to include these activities in their BTRs must do so under the existing resource allocation;
 - (v) To achieve the scale and ambition with which transparency of action and support is reflected in Article 13 of the Paris Agreement, financing models need to extend beyond project-based approaches to preparing BTRs and address long-term institutional needs;
- (b) With respect to access to or disbursement of funding:
 - (i) The complexity and length of the processes for accessing GEF funding has led to significant delays in the process from proposal submission to disbursement of funds, which affects the planning and preparation of BTRs and delays the implementation of plans to improve the reporting of information in subsequent BTRs;
 - (ii) The fact that each of the GEF implementing and executing agencies has different modalities and procedures often leads to confusion, delays and perceptions of unequal treatment among developing country Parties;
- (c) With respect to procedures and modalities:
 - (i) A need exists for greater involvement by Governments in communications between the GEF and its implementing agencies to ensure that country-specific perspectives with respect to support and capacity-building for climate reporting are considered and administrative obstacles are resolved more swiftly;
 - (ii) GEF modalities and procedures could be more flexible and adapted to the national context to enable developing country Parties to access the funds through a continuous, simplified and streamlined process, helping, for example, to prevent funding gaps between reporting cycles to ensure continuity of staff in national technical teams;
 - (iii) A need exists to strengthen the global climate finance architecture in the area of climate reporting;
 - (iv) Closer cooperation among the GEF, the CGE and relevant United Nations entities and partners on addressing remaining gaps in financial and technical support could help to ensure that developing country Parties have the expertise and capacity they need to implement the ETF.

48. Some Parties also highlighted challenges in navigating multiple channels of support, each with their own modalities and access procedures, which can result in misalignment between the timing of the support received and the need for that support.

49. Some Parties indicated the need for support to strengthen gender mainstreaming in climate policies and programmes, ensuring women's active participation in decision-making and climate action implementation, as well as to collect gender-disaggregated data and establish indicators for monitoring the gender dimensions of climate impacts and interventions.

2. Views regarding specific thematic areas

(a) Establishing or enhancing institutional arrangements for implementing the enhanced transparency framework

50. Many Parties reported challenges in establishing and sustaining institutional arrangements for implementing Article 13 of the Paris Agreement during the preparation of their BTR1s. These challenges were noted as affecting coordination, data-sharing and the long-term sustainability of reporting systems.

51. Many Parties highlighted fragmented institutional mandates across ministries and agencies, which complicated coordination for data collection, validation and consolidation. Some Parties noted that transparency arrangements were often project-based or ad hoc, rather than embedded in permanent, legally mandated national systems, raising concerns regarding sustainability beyond the first BTR cycle. In addition, some Parties reported limited clarity regarding institutional roles and responsibilities for ETF-related reporting, particularly for support needed and received and adaptation information, as well as weak or absent legal requirements for sector institutions to provide data on a regular basis.

52. Challenges related to stakeholder engagement were reported by many Parties during the preparation of their BTR1s. Engagement was often concentrated among core national environment or climate institutions, with limited participation from other line ministries. Parties also noted difficulties engaging private sector entities, particularly where GHG emission data were commercially sensitive. Resource constraints were reported to limit engagement with subnational authorities and local stakeholders, while project-based reporting arrangements contributed to inconsistent stakeholder participation across reporting cycles.

53. With regard to using project management tools for preparing BTRs, Parties reported that the preparation of BTR1s was often undertaken without dedicated project management frameworks or tools. One Party reported that, in preparing its BTR1, BTR coordination was not undertaken through dedicated project management tools; instead, the process was facilitated through the use of briefing documents outlining instructions for relevant teams, complemented by templates for compiling the required information, with overall coordination of BTR preparation overseen by a central climate reporting manager. Further, some Parties indicated that the time and coordination requirements associated with compiling CRTs and CTF tables were underestimated, resulting in compressed timelines and increased reliance on external support. Challenges were also noted in aligning reporting schedules across multiple institutions and consultants. Many Parties reported relying on implementing agencies to help manage the BTR preparation process, as nationally institutionalized project management systems were not available.

54. One Party reported that its data are stored across multiple platforms and institutional SharePoint systems and highlighted the need for a more centralized approach to managing data for BTRs that is integrated across platforms and can support consistency, efficiency and improved decision-making across reporting cycles.

(b) Preparing national inventory reports

55. Many Parties highlighted challenges in preparing national inventory reports, such as those relating to consistency in how data are collected across subnational and municipal authorities; timeliness of data submission by stakeholders; standardization of data-collection and data-management methodologies; and integration of sector-specific data into a cohesive national reporting framework.

56. Many Parties underlined significant gaps in data for some sectors, particularly agriculture, forestry and other land-use, energy and waste sectors, resulting in ongoing

challenges in ensuring completeness of data and using data from other sources to fill data gaps pertaining to a certain sector in national inventory reports. A few Parties reported that disaggregated data did not align with the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*,⁸ which demonstrates the need to revise data-collection methods.

57. Many Parties reported having limited access to and capacity to use digital technologies for enhancing national reporting systems, including digital measurement, reporting and verification systems, geographic information systems and artificial intelligence, noting that such technologies are crucial for efficient data collection, processing, management and archiving.

58. With regard to developing GHG emission projections, many Parties reported having a limited national modelling capacity, particularly beyond the energy sector. Challenges were frequently noted for the agriculture, forestry and other land use, waste, land use and land-use change, and industrial processes and product use sectors, where insufficient historical data, a lack of country-specific emission factors and limited technical expertise constrained the robustness and scope of projections. Some Parties indicated that projections were limited to short time horizons or selected sectors owing to these constraints.

59. One group of Parties highlighted that developing GHG emission projections presents challenges for small island developing States. The group noted that these challenges stem not only from data limitations and technical capacity constraints, but also from the inherent uncertainty associated with small and highly exposed economies that are particularly vulnerable to climate change impacts and external economic shocks.

60. One Party noted that it drew on institutional arrangements and methodologies that it had previously developed for its reporting under the Convention in preparing GHG emission projections for reporting in its BTR1.

61. A few Parties mentioned that their limited capacity to consistently collect, process and manage activity data remains a significant challenge, and others mentioned their need to strengthen national capacities for conducting QA/QC activities and completing the CRTs.

62. Challenges in using the IPCC inventory software and ETF reporting tools were reported by many Parties, including lack of consistency in emission and removal category names between the software and the tools, insufficient technical expertise in and limited human resources allocated to applying the software and tools for inventory preparation, difficulties in the interoperability between the software and the tools, frequent software updates to the ETF reporting tools, and lack of capability to connect the ETF GHG inventory reporting tool to national systems.

63. Many Parties noted other challenges in preparing national inventory reports, such as lack of technical capacity for applying higher-tier methodologies for estimating emissions for key categories, improving systems for categories currently reported as not estimated, improving uncertainty analyses and QA/QC processes, and developing GHG emission projections, and in further strengthening institutional arrangements for data collection and processing across all sectors.

64. One Party mentioned its need for more donor-funded grants to fully implement and expand its national GHG inventory improvement programme, including strengthening the process of collecting activity data, developing country-specific emission factors and improving methodologies across key sectors such as industrial processes and product use, waste, and land use, land-use change and forestry.

(c) Reporting on progress in achieving nationally determined contributions

65. Many Parties described challenges pertaining to setting appropriate NDC targets, especially in the context of uncertainty surrounding economic growth and shifts in sectoral activity, which might affect their ability to meet those targets; projecting long-term trends in

⁸ IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds). Hayama, Japan: Institute for Global Environmental Strategies. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl>.

emission reductions; and developing mitigation scenarios, particularly given the volatility in sectoral emissions.

66. Many Parties highlighted that tracking progress in implementing their NDCs has been difficult owing to a lack of standardized metrics and indicators and insufficient data being available. A few others reported that the lack of linkages between their NDC and national development policy framework makes it difficult to assess implementation of the NDC; as such, they have prioritized the development of robust information systems to track NDC implementation and the integration of NDCs into national and subnational development planning.

67. One group of Parties highlighted inconsistencies between NDC targets and GHG inventory data resulting from differences in the methodologies and baseline data used in the preparation of NDCs and GHG inventories. The group noted that additional time and support would be needed to address these issues and strengthen reporting on progress towards the achievement of their NDCs.

68. Some Parties highlighted their concerns about funding being insufficient to enable them to enhance their reporting on progress towards achieving NDCs, in particular funding for developing relevant indicators for monitoring such progress.

69. Some Parties also shared other challenges, including in relation to enhancing technical capacity and developing standardized methodologies for assessing and quantifying the co-benefits of implementing NDCs, such as improved public health, reduced air pollution and enhanced economic development; obtaining the data and developing the tools and methodologies necessary for accurately estimating the impacts of mitigation policies and measures on GHG removal and emission projections under various scenarios; and establishing a system for monitoring progress towards achieving NDC targets, involving conducting regular reviews of climate change strategies and making adjustments to them on the basis of the results of those reviews.

70. Constraints related to institutional and technical capacity for modelling and assessing policies and measures, and for developing systems to monitor mitigation impacts, were also highlighted. One Party noted the need to establish and adequately resource a dedicated institutional unit for tracking progress towards achieving NDCs, assessing mitigation policies and measures, and developing GHG emission projections, as well as to strengthen capacity through in-person training on tracking progress towards achieving NDCs, including on GHG emission projections, particularly for the land use, land-use change and forestry sector, the use of the ETF progress reporting tool for generating CTF tables, and future reporting requirements, including on internationally transferred mitigation outcomes under Article 6 of the Paris Agreement.

(d) Reporting on climate change impacts and adaptation

71. Many Parties indicated that the lack of systematic frameworks, data and institutional arrangements to assess, monitor and report on climate change adaptation made it difficult to provide the necessary information in BTRs.

72. Many Parties noted that gaps in data, a lack of high-quality data and resource constraints prevented them from reporting the necessary information in the BTR1 in more detail. The most common challenge faced in reporting on climate change impacts and adaptation was collecting the data necessary for analysing the impacts of climate change on specific sectors and the vulnerability of specific sectors to climate change. In addition, data on averting, minimizing, and addressing loss and damage associated with climate change impacts were gathered from diverse data sources, making data collation and analysis a complicated task.

73. Lack of knowledge, tools and models for systematically and periodically assessing climate risks at appropriate scales and for using climate change scenarios from common global models was reported by many Parties. Other challenges expressed included gaining an understanding of and the ability to record the impacts of climate change on vulnerable groups; identifying, improving and using indicators for measuring progress in the implementation of adaptation actions; conducting relevant capacity-building activities,

including for assessing the impacts of observed climate change on natural ecosystems, socioeconomic systems and vulnerable regions; conducting climate change impact and risk assessments for key sectors and regions; developing methodologies for monitoring and evaluating the implementation and impacts of adaptation policies and actions; conducting research on nature-based solutions; and assessing the progress of implementing adaptation action at the international level.

74. Many Parties highlighted that enhancing their adaptation reporting in areas such as biodiversity and water resources remains a challenge owing to regional disparities in capacity, resources and data availability, which complicate data collection and measurement of the effectiveness of adaptation actions; that a need exists to ensure that data-sharing processes are coordinated across sectors to prevent delays in adaptation reporting; and that challenges exist in measuring the effectiveness of adaptation measures at the national level, particularly owing to a lack of adaptation indicators that can be monitored and the often-inadequate reflection of local-level adaptation actions in national reports.

75. Many Parties underlined challenges in assessing and reporting information on averting, minimizing and addressing loss and damage associated with climate change impacts and in establishing institutional arrangements to enable such assessment and reporting. These challenges were cited as being attributable to the absence of systematic frameworks for monitoring the implementation and effectiveness of activities related to averting, minimizing and addressing loss and damage associated with climate change impacts, making it difficult to integrate loss and damage reporting into BTRs.

76. It was emphasized by one group of Parties that, given the acute vulnerability of the least developed countries and small island developing States to the impacts of climate change, reporting on adaptation and assessing and reporting information related to averting, minimizing and addressing loss and damage in BTRs is of particular relevance to them. This group highlighted the need for substantial and targeted financial and technical support to strengthen the institutional arrangements and data management systems required for such reporting.

77. Many Parties explained that they faced difficulties in creating standardized adaptation and loss and damage metrics and in quantifying climate resilience in order to meet the transparency-related reporting requirements, with lack of tools and standardized methodologies for assessing climate risks systematically also highlighted as a major challenge. A few Parties mentioned the need to develop appropriate national monitoring indicators, metrics and data systems to track the risk-driving factors and the effectiveness of adaptation measures, as well as the need to strengthen monitoring and evaluation processes, including by developing reliable indicators for vulnerability and adaptation assessments.

78. One Party mentioned that, in order to address the challenges it faces in reporting on climate change impacts and adaptation, including on averting, minimizing and addressing loss and damage associated with climate change impacts, it would need to provide focused training and capacity-building for technical teams involved in the preparation of the adaptation section of the BTR. It would also need training on the methodologies used to quantify economic and non-economic losses and damage from slow onset and sudden events, and the establishment of national systems to do this. The Party noted it would need donor-funded grants to develop tools and standardized methodologies to assess climate risks systematically, as well as to develop appropriate metrics and data to track both the impact of risk-driving variables and the effectiveness of adaptation measures.

(e) Reporting on financial, technology development and transfer, and capacity-building support

79. Many Parties reported difficulties in tracking financial, technology development and transfer, and capacity-building support owing, for example, to a lack of capacity to coordinate the reporting of that support, which is often directed via multiple channels, across stakeholders. Some others highlighted that tracking the effectiveness of capacity-building programmes continues to be challenging, because there are few systems in place for doing so.

80. Many Parties reported a lack of centralized data management systems for tracking climate finance flows, which makes it difficult to collect data from across ministries and stakeholders in order to facilitate the easy input of these data into CTF tables for reporting on support needed and received. Some Parties reported limited financial and technical capacity for establishing and maintaining support-tracking tools, which constrains the ability to verify the completeness and consistency of reported information.

81. Many Parties highlighted challenges in effectively tracking private sector contributions to climate finance and including private sector finance flows in national communications and BTRs; ensuring that all finance flows are properly categorized; and aligning domestic financing mechanisms with international climate finance reporting standards, particularly in relation to private sector financing and non-governmental flows, because there are few systems in place for doing so.

82. In addition, many Parties highlighted the lack of a clear definition of climate finance for reporting on financial support needed and received, as well as the limited statistics and accounting and reporting methodologies for reporting on financial, technology development and transfer, and capacity-building support needed and received.

83. A few Parties noted other challenges pertaining to reporting on financial, technology development and transfer, and capacity-building support, such as lack of capacity to formulate project proposals for climate action that are likely to attract the interest of donors or potential partners; lack of capacity to assess the alignment of climate projects with national climate strategies and to monitor the implementation and analyse the impacts of those projects; and difficulties in strengthening the technical capacities of national experts to apply methodologies and tools for identifying financial, technology development and transfer, and capacity-building support needs, and estimating and reporting on support needed and received.

84. One Party mentioned that, in order to address the challenges in this area, it would need to develop and implement an improved framework for tracking climate finance flows and donor funding in order to update its national technology needs assessment, move from ad hoc data collection to a more coordinated and centralized reporting system and provide in-person training to staff involved in this area of work.
