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**Subsidiary Body for Scientific and  
Technological Advice**

**Sixty-first session**

Baku, 11–16 November 2024

Item 5(a) of the provisional agenda

**Matters relating to adaptation**

**Matters relating to the global goal on adaptation**

**Subsidiary Body for Implementation**

**Sixty-first session**

Baku, 11–16 November 2024

Item 11(a) of the provisional agenda

**Matters relating to adaptation**

**Matters relating to the global goal on adaptation**

**Workshop under the United Arab Emirates–Belém work  
programme on indicators and refined mapping of indicators**

**Report by the secretariat**

*Summary*

This report provides a summary of the hybrid workshop for Parties and technical experts held from 8 to 9 October 2024 under the United Arab Emirates–Belém work programme on indicators for measuring progress achieved towards the targets referred to in paragraphs 9–10 of decision [2/CMA.5](#), which included presentations by experts involved in the technical work under the work programme and discussions on key topics such as cross-target synergies, technical considerations for refining the mapping of indicators, and identified gaps in and areas not covered by existing indicators.



## Abbreviations and acronyms

AC	Adaptation Committee
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
SB	sessions of the subsidiary bodies
SDG	Sustainable Development Goal

## I. Introduction

### A. Background

1. CMA 5 adopted the United Arab Emirates Framework for Global Climate Resilience, which includes seven thematic and four dimensional targets.<sup>1</sup> In addition, it launched the two-year United Arab Emirates–Belém work programme on indicators for measuring progress achieved towards the targets referred to in paragraphs 9–10 of decision [2/CMA.5](#),<sup>2</sup> the modalities of which were further elaborated at SB 60.<sup>3</sup>

2. Having invited Parties and non-Party stakeholders to submit information on existing indicators for measuring progress towards the targets referred to in paragraphs 9–10 of decision [2/CMA.5](#) in use at the local, national, regional and global level, SB 60 requested the Chairs of the subsidiary bodies to prepare, with the support of the secretariat, in collaboration with relevant United Nations organizations and specialized agencies, and with contributions from relevant UNFCCC constituted bodies, a compilation and mapping of such indicators,<sup>4</sup> including information on areas potentially not covered by them, taking into account the submissions received.<sup>56</sup>

3. SB 60 also requested the Chairs of the subsidiary bodies to convene technical experts to assist in the technical work under the United Arab Emirates–Belém work programme, including reviewing and refining the compilation and mapping of existing indicators.<sup>7</sup>

### B. Mandate

4. SB 60 requested the Chairs of the subsidiary bodies to organize, with the support of the secretariat, a hybrid workshop for Parties and the technical experts referred to in paragraph 3 above, following the completion of the mapping referred to in paragraph 2 above and prior to CMA 6, with the aim of:

- (a) Facilitating expert review and refinement of the mapping;
- (b) Enabling a dialogue between Parties and the technical experts on the mapping and providing an opportunity for the technical experts to clarify the methodologies and assumptions used in refining the mapping;
- (c) Providing Parties with the opportunity to reflect on the outcome of the mapping and on progress in the work on indicators in preparation for CMA 7.<sup>8</sup>

5. SB 60 also requested the secretariat to publish the refined mapping of indicators (see the annex) as part of a report on the workshop referred to in paragraph 4 above, prior to CMA 6.<sup>9</sup>

## II. Workshop

### A. Overview

6. The workshop referred to in paragraph 4 above was held in hybrid format from 8 to 9 October 2024 in Sharm el-Sheikh, Egypt. On the first day, opening remarks by the Chair of

<sup>1</sup> Decision [2/CMA.5](#), paras. 6, 9 and 10 respectively.

<sup>2</sup> Decision [2/CMA.5](#), para. 39.

<sup>3</sup> See documents [FCCC/SBSTA/2024/7](#), paras. 30–63, and [FCCC/SBI/2024/13](#), paras. 68–101.

<sup>4</sup> Available at <https://unfccc.int/documents/640965>. Additional information to be read in conjunction can be found in <https://unfccc.int/documents/640966>.

<sup>5</sup> [FCCC/SBSTA/2024/7](#), paras. 38–39, and [FCCC/SBI/2024/13](#), paras. 76–77.

<sup>6</sup> Submissions can be found via the [UNFCCC submission portal](#), searching ‘global goal on adaptation’

<sup>7</sup> [FCCC/SBSTA/2024/7](#), para. 43, and [FCCC/SBI/2024/13](#), para. 81.

<sup>8</sup> [FCCC/SBSTA/2024/7](#), para. 51, and [FCCC/SBI/2024/13](#), para. 89.

<sup>9</sup> [FCCC/SBSTA/2024/7](#), para. 53, and [FCCC/SBI/2024/13](#), para. 91.

the Subsidiary Body for Scientific and Technological Advice, Harry Vreuls, who moderated the workshop, were followed by presentations by the secretariat, technical experts and the AC and breakout group discussions on cross-target synergies. The second day of the workshop, which was co-moderated by Thinley Namgyel from the COP 28 Presidency and Farid Osmanov from the incoming COP 29 Presidency, included discussions on technical considerations for refining the mapping of indicators, and identified gaps in and areas not covered by existing indicators.

7. The presentation by the secretariat summarized the submissions referred to in paragraph 2 above and the compilation and mapping of submissions on existing indicators for measuring progress towards the targets referred to in paragraphs 9–10 of decision [2/CMA.5](#), which includes information on 5,304 indicators collected as at September 2024 covering a wide range of sectors and contexts, including global, national, region-specific and local indicators. Of the total submitted indicators, 2,115 were mapped to more than one target, while the remaining 3,189 are target-specific. A statistical overview of the indicators reveals linkages across all targets, for example:

(a) There are many linkages across targets, with each thematic target having at least one indicator that overlaps with the other targets, both thematic-thematic and thematic-dimensional;

(b) For all of the thematic targets, the dimensional target for which they have the greatest number of overlapping indicators is the implementation target. The most frequent overlap between indicators for two thematic targets were those pertaining to poverty and livelihoods, and infrastructure.

8. The submissions referred to in paragraph 2 above include information on methodologies, data readiness and gaps pertaining to gaps and areas for which the development of new indicators may be needed. While methodologies are available for a limited number of indicators, levels of data readiness vary, with many indicators being only moderately ready for use. Further, a number of areas were suggested for developing indicators, including for specific regions, such as mountainous and desert areas, and for capturing and tracking adaptation finance, capacity-building and technology transfer, climate education, public awareness initiatives, transboundary cooperation on climate-related risks, climate change impacts on vulnerable populations, integration of climate considerations across sectors, human mobility and displacement due to climate change, and climate resilience in relation to child nutrition and child poverty.

9. Throughout the workshop, opportunities for dialogue between Parties and the technical experts were provided through plenary discussions, question and answer sessions and breakout group discussions.

## **B. Summary of proceedings**

### **1. Expert presentations on the review and refinement of indicators**

10. The workshop served as a platform for the technical experts to update the participants on progress in reviewing and refining the indicators for the various targets. Their presentations covered the state of the mapping process, methodologies and assumptions used, challenges encountered and questions for broader discussion. The review and refinement of the indicators is ongoing, with the workshop serving as an important milestone in moving towards a refined set of indicators.

11. The technical experts began by providing an update on their progress and the approach they had taken in their initial review of the indicators. Although there were some slight differences in the approaches used by the experts depending on the targets for which they were reviewing indicators, their approaches were generally similar, with experts reviewing the indicators mapped to the relevant target and evaluating them on the basis of the agreed criteria for the mapping.<sup>10</sup>

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<sup>10</sup> [FCCC/SBSTA/2024/7](#), para. 41, and [FCCC/SBI/2024/13](#), para. 79.

12. The expert presentations highlighted a number of commonly raised observations, challenges faced and areas where further guidance is required, including the following:

(a) The vast majority (around 95 per cent) of identified indicators are existing, originating from a range of sources, including the SDGs, the Sendai Framework for Disaster Risk Reduction 2015–2030, the Kunming–Montreal Global Biodiversity Framework, and processes for national reporting through, for example, national adaptation plans, nationally determined contributions and adaptation communications. Though it may have been clear that the indicators are existing rather than proposals for new indicators, in many cases limited information was provided on an existing indicator’s use and whether it is being actively reported on. Also, it was noted that there are many duplicate indicators and therefore a process of cleaning the data set would be useful;

(b) There is a need for clarity on the criteria for assessing the indicators. While acknowledging the guidance to use the agreed criteria referred to in paragraph 11 above, the experts noted the practical challenges of doing so and highlighted the benefits of additional criteria such as global relevance and measurability. They also questioned whether some criteria should take precedence over others, such as relevance to adaptation compared with ease of interpretation, and whether indicators should be ‘deleted’ if they do not meet the criteria, especially in relation to their relevance to the target(s) and to adaptation;

(c) Although similar approaches to reviewing the indicators were used by the experts for the different targets, there is a need for a consistent approach while taking into account the nuances within the targets. This would be particularly beneficial when it comes to criteria for assessing an indicator’s relevance, as well as the practical process of data management. Enhanced coordination would enable the experts to learn from one another by sharing best practices and increase transparency. The question of the relationship between the thematic and dimensional targets was also raised, including whether there should be a matrix of dimensional indicators for each of the thematic target areas in the list of indicators to be adopted at CMA 7;

(d) Lack of metadata was a persistent challenge when assessing the indicators, and it was often unclear whether this was because the metadata for an indicator do not exist or were not included in the respective submission. In particular, information on existing reporting and availability of data for using an indicator was often missing, especially for indicators outside existing multilateral frameworks. Several experts explained that just because an indicator exists, this does not necessarily mean it is useful for this process under the work programme if there are limited data available, and noted that communicating directly with the respective submitter for more information where it is not already available would be beneficial in this respect;

(e) The mislabelling of indicators was a commonly raised challenge. For example, indicators submitted for one target were identified by the experts as more relevant to another target. The experts questioned whether such indicators could be mapped to the more appropriate target and discussed how best to coordinate this task among them;

(f) The challenge of many indicators being country-specific was raised by multiple experts, noting the lack of clarity on the structure of the final outcome of the United Arab Emirates–Belém work programme, including whether the aggregation of national indicators to the global level will be part of that outcome and, if so, how consideration thereof should be incorporated into the ongoing assessment of indicators. The experts noted that, for the many proposed country-specific indicators, data are available for an individual country only, and they questioned whether any minimum threshold for the level of ongoing reporting should be included as part of the indicator refinement process. Finally, several experts highlighted that some indicators measure outputs, whereas others measure outcomes, and questioned how Parties see these coming together in the assessment of progress towards the global goal on adaptation and the targets set out in decision [2/CMA.5](#).

13. In addition to the common observations across the presentations, the experts working on the different targets provided the following specific insights based on their work to date during their presentations.<sup>11</sup>

(a) The relevant experts considered 649 indicators for the **water** target, beginning by breaking down the target into its component parts. Among other statistics, they highlighted that 42 per cent of the indicators do not have an identified data source, and 61 per cent relate to the implementation of adaptation action. It was emphasized that there are many cross-cutting indicators for the target that could also be relevant to other targets, especially those for food, health and ecosystems, and that many indicators currently mapped to those targets are likely to be relevant to the water target, and thus it would be beneficial to conduct thorough cross-checking. Additionally, it was proposed that adaptation-specific indicators be prioritized and that mapping the indicators according to function (context, input, process, outcome) be considered as part of an indicator framework for the global goal on adaptation;

(b) The relevant experts working on the **food** target noted that the majority of the 1,116 indicators assigned to it are quantitative, with information on associated methodologies being available for 73 per cent, but there is a lack of information on the best available science and use of Indigenous Peoples' knowledge and wisdom. The experts highlighted that the different elements of the target are not equally covered by the indicators, and that there are challenges inherent to using indicators to capture the unique vulnerabilities of food to climate change. The experts used impact pathways when reviewing the indicators, including the vulnerability context, adaptation options being undertaken, and varying levels of adaptation results. They highlighted that this approach enables an entire unpacking of the adaptation process, while capturing the three elements of the global goal on adaptation outlined in Article 7, paragraph 1, of the Paris Agreement, as well as accounting for the components of the food target and reviewing the indicators in line with the criteria referred to in paragraph 11 above;

(c) The relevant experts evaluated over 500 indicators for the **health** target, of which they had pre-selected 41 possible indicators, understanding that further prioritization would take place as they continue their refinement. They raised the issue of maladaptation, noting that possible additional criteria could be used to ensure that an indicator does not incentivize maladaptation. Additionally, they proposed slightly modifying the indicators to make them more useful, highlighting that many indicators focus on changes to climate hazards rather than adapting to them, and questioned the extent to which climate vulnerability and underlying health risks should be assessed through indicators. Finally, the experts asked about areas where indicators are not yet available but are currently being developed, or where existing indicators could be modified, such as the work on the coverage of child-specific health by the Lancet Countdown;

(d) The experts reviewing the 722 **ecosystems and biodiversity** indicators discussed using additional criteria in refining the indicators, including those used in other multilateral processes such as under the Convention on Biological Diversity. The experts explained how they used machine learning to identify duplicate indicators and highlighted the major overlaps between the ecosystems and biodiversity indicators and those related to the water, food and implementation targets. The experts noted the importance of considering indicators' baselines as part of any final decision on indicators, as well as the need for balance between the comparability and complementarity of indicators in view of local specificities, while measuring global progress. Finally, the consideration of new data sources such as remote sensing was suggested, noting that new methods of data collection are continually being developed in relation to all targets;

(e) The relevant experts reviewed around 1,100 indicators for the **infrastructure** target. Although they trialled some artificial intelligence models, they concluded that a review process conducted by the experts themselves would be more thorough in assessing the quality of the indicators and their individual nuances. While the current focus of the indicator review is on hazard-based risks, they noted that it would be useful to also consider specific climate tipping points and the differentiation between current and future risks, as

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<sup>11</sup> See the event page for further information on the presentations, available at <https://unfccc.int/event/workshop-uae-belem-work-programme-indicators>.

well as the risks of adapting, which are currently not well reflected in the compilation and mapping of indicators. The experts suggested implementing specific processes for data management, exploration and visualization, which could be applied across the experts' work to enhance common approaches;

(f) The experts reviewing the 393 **poverty and livelihoods** indicators highlighted that many of them are existing, albeit at the local or national level; and that, from an initial review and on the basis of the criteria concerning relevance of the indicators to the target and to adaptation, 44 indicators could be classified as relevant to the target, with the relevance of others still under discussion. It was noted that cross-cutting issues are not well reflected across the mapped indicators under this target, and that many indicators are not adequately disaggregated by gender or age, and that doing so would increase the indicators' applicability and relevance. In addition, they raised the issue that some indicators are locally applicable, and it is uncertain how they would feed into a global review process. Regarding next steps, the experts suggested that many of the indicators could be merged and linkages with other targets considered;

(g) The experts reviewing the **cultural heritage** indicators began by breaking down the target into three subcomponents to use as a basis for the indicator review, with 205 being deemed relevant to the target. In addition, they were able to categorize the relevant indicators into five broad areas such as community participation in knowledge systems, or resilience of built heritage, noting that some of the indicators mapped to the target were in fact not related to cultural heritage and were very broad with little availability of data. They highlighted the many overlaps between the target for cultural heritage and the target for ecosystems and biodiversity, and that consideration of cross-cutting indicators and issues therefore needs to be among the next steps. They proposed using the availability of relevant data as a way of distinguishing between existing and proposed indicators, noting that using a more qualitative approach would be more appropriate when assessing the components of the target related to traditional, local and Indigenous Peoples' knowledge;

(h) The experts reviewing the indicators related to the **adaptation cycle** targets noted that there were 2,900 indicators to consider, entailing challenges of scale and coordination among the larger pool of experts involved. Since an initial semantic analysis identified a large number of possible duplicates, they began by sorting the indicators on the basis of their relevance to the specific wording of the four adaptation cycle targets (impact, vulnerability and risk assessment; planning; implementation; and monitoring, evaluation and learning), which would also assist in identifying gaps. In addition, the experts noted the challenge that, although some of the indicators are linked to the broader target topic (e.g. vulnerability assessment), a specific indicator is more closely related to an input variable (e.g. rainfall level) and thus does not specify whether a vulnerability and risk assessment has been carried out. Similar points were raised during the subsequent question and answer session, including on the health target. Other challenges identified by the experts include different interpretations of relevance among the experts and a lack of clarity on the ultimate goal of the indicator refinement process.

14. A question and answer session followed the expert presentations. Although Parties could not provide formal guidance to the experts within the scope of the workshop, they did have an opportunity to ask questions and make suggestions that the Chairs of the subsidiary bodies may wish to consider as they provide direction for the process moving forward.

15. Many participants thanked the Government of Egypt for hosting the workshop, and the Chairs of the subsidiary bodies and the secretariat for organizing it. Many also thanked the experts for their work, recognizing the complexities and highly technical nature of reviewing the indicators, as well as the short time frame between being convened to work on the review and the workshop taking place.

16. Several participants noted the need for greater coordination among the experts reviewing the indicators for the different targets, and for a common methodology and refining process across the entire list of indicators to ensure a technically robust outcome. Enhanced coordination would enable the experts to work across targets, ensuring that a range of perspectives are included in the discussions, while also addressing many of the cross-cutting elements of the targets highlighted by the experts in their presentations.



17. In response to the queries raised by the experts regarding the criteria to be used in refining the mapping of indicators, while it was recognized that further guidance and clarity in this regard would be beneficial, some participants suggested that for now the criteria referred to in paragraph 11 above should continue to be used alongside the language of Article 7, paragraph 1, of the Paris Agreement, rather than the experts proposing new criteria. It was also suggested that the experts should focus on the specific wording of the targets, as per paragraphs 9–10 of decision [2/CMA.5](#), when considering the indicators for them. Additionally, it was highlighted that other elements of decision [2/CMA.5](#) should also be considered as the indicators are refined, such as avoiding placing an additional reporting burden on Parties and ensuring that the indicators do not constitute a basis for comparison between Parties, as well as the importance of taking into account cross-cutting considerations such as gender-responsiveness, youth and children.<sup>12</sup>

18. The participants sought the experts' views on the need for existing or new indicators to track progress in the provision of means of implementation for adaptation, noting the mandate from [2/CMA.5](#) to increase ambition and enhance action and support, and the call for developed country Parties to double their collective provision of climate finance for adaptation to developing countries from the 2019 level by 2025,<sup>13</sup> and that achieving the targets will be impossible without means of implementation. Other participants highlighted that there was not yet any consensus on whether indicators for means of implementation should be included as part of the indicator refinement process, with some stressing that this would go beyond the mandate to develop indicators. Further, some participants sought clarity on what constitutes an existing indicator (e.g. existing in any national framework or part of a global process), with others noting that whether existing or not, if the indicator is quantitative, information on units of measurement also needs to be included in the compilation as a consideration.

19. It was highlighted by some participants that, while the work on indicators is inherently technical, it is still part of a political process, with decision-making taking place at CMA sessions. Participants sought clarity on expectations for SB 61 and CMA 6, and how to bridge the technical and political elements so that a coherent process is followed towards a robust outcome at CMA 7. Several participants asked the experts what they would consider as being a good outcome at CMA 7 and what they would suggest as an effective process for achieving it.

20. Several participants sought clarity on whether they could reach out to the experts on areas they consider a priority, noting that experts from certain geographical regions are not included in all expert groups. In addition, participants sought clarity on how experts from developing countries will be supported to attend possible future meetings and workshops under the United Arab Emirates–Belém work programme. The Chairs of the subsidiary bodies took note of these questions and reiterated their encouragement for the experts to continue collaborating beyond the specific thematic targets within their field of expertise, and to contribute to the review of indicators across the targets.

21. Participants suggested a number of areas in which new indicators could be needed, such as region-specific indicators for mountainous and desert areas, and indicators for transboundary adaptation efforts. It was highlighted that clarity is needed on the aggregation of local, national and global indicators, and how they feed into the final outcome of the United Arab Emirates–Belém work programme, with participants suggesting that attempting to capture all possible data points or variations across regions in the aggregation process is incredibly challenging, if not unfeasible, and may not even be useful, noting that, instead, tracking emerging global trends, such as overarching patterns and common challenges in adaptation efforts across countries, would be more beneficial. The experts took note of these discussions. Participants noted the value of leveraging information from the SDG process to enhance the discussions under and outputs of United Arab Emirates–Belém work programme, in particular indicator methodologies, use of a tiered approach structure, where indicators are categorized based on relevance, along with data-readiness assessments to evaluate indicator applicability across regions. and data-readiness assessments. In addition,

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<sup>12</sup> Decision [2/CMA.5](#), paras. 11 and 16.

<sup>13</sup> Decision [2/CMA.5](#), para. 31.



it was highlighted that future reporting on the indicators should be taken into consideration as they are developed, as this would also lead to a more robust and useful outcome in terms of assessing global progress of adaptation.

22. Participants sought clarity on how the experts were tackling the gaps and limitations, highlighted in the compilation and mapping referred to in paragraph 2 above. The experts responded that their work to date has focused on reviewing and refining the list of indicators, and that the discussion on gaps and how to fill them could take place in 2025. In addition, the importance of balancing the need to take a step back to gain further clarity on the aim and outcome of the exercise while moving ahead with pressing in-depth technical work was raised.

23. Several organizations highlighted specific considerations for the indicator development process, including the need to consider the impacts of climate change on human displacement and migration, how to enhance adaptive social protection, and the incorporation of possible inputs from ongoing work on indicators by multilateral development banks, including tracking finance within the realm of multilateral development bank activities and initiatives.

## **2. Presentation by the Adaptation Committee on its contribution to the compilation and mapping of indicators**

24. The AC provided an update on its contribution to the compilation and mapping process by identifying information on indicators reported by Parties in their national reports and communications, in the context of the work referred to in paragraph 45 of decision [2/CMA.5](#). This contribution was intended to provide additional insights into the indicators in use and highlight areas where further work may be needed.

25. The AC shared its approach to and data collected for preparing its contribution to the compilation and mapping process, which resulted in 4,639 indicators mapped to the targets. The indicators were extracted from national adaptation plans, nationally determined contributions, adaptation communications, long-term low-emission development strategies, biennial transparency reports and national communications. The contribution of the AC was shared with the Chairs of the subsidiary bodies and the experts before the workshop via email, with experts reviewing it in conjunction with the mapping and compilation referred to in paragraph 2 above.

26. A question and answer session followed the presentation. Several participants noted the need to merge the mapping by the AC and the mapping based on the submissions in order to ensure alignment between them and that any duplicate indicators should be removed as the refinement process continues. There were questions about how the AC would address information in national reports that is not specifically labelled as relating to indicators. Participants highlighted the importance of the contribution of the AC for identifying relevant indicators, with some suggesting that the contribution of the AC should be considered in the early stages of the indicator refinement process.

27. A critical aspect of the discussion revolved around identifying and reporting gaps in the compilation and mapping process. Some emphasized the importance of clearly identifying any gaps and ensuring that Parties provide the necessary support to fully operationalize the United Arab Emirates–Belém work programme. Some called on the AC to address any gaps and ensure transparency in geographical representation within the compilation and mapping of indicators.

## **3. Discussion on cross-target synergies**

28. The breakout group discussions on cross-target synergies for the indicator review and refinement process were moderated by three experts and explored how indicators linked to multiple targets should be refined in the process towards the final outcome of the United Arab Emirates–Belém work programme. The discussions also explored how to ensure the identification of indicators that help to maintain a focus on achieving collective resilience and avoid creating silos around the targets, taking into account the following guiding questions:

(a) There are several indicators with linkages between many or all targets; how will these be dealt with in refining the indicators and in the process towards the final outcome?

(b) How can we ensure that we have indicators that keep us on track towards achieving collective resilience and do not create silos around the targets?

29. Some participants underscored the need for a consistent, organized approach to refining indicators across the targets. Key proposals include organizing indicators by relevance and using the tier classifications on the basis of data availability. Cross-cutting indicators that apply to multiple targets were seen as crucial by some participants, noting the need for further analysis to address gaps in relation to cross-cutting issues. Participants acknowledged that the proposed organization of indicators into clusters or tiers to assess their relevance would require clear guidance from the subsidiary bodies and/or the CMA.

30. With regard to managing linkages between indicators across multiple targets, some participants proposed a structured approach to identifying synergies and interlinkages, with some advocating for conducting individual target assessments before addressing cross-cutting indicators.

31. Some participants recognized that collaboration between experts is crucial for addressing linkages between indicators across targets. Effective communication among the experts reviewing the indicators for the different targets was seen by several participants as vital to systematically identifying and analysing interlinkages of indicators between targets, thus avoiding silos and maintaining a coherent strategy.

32. While some participants acknowledged the challenges of completing a comprehensive analysis of gaps and areas for which development of new indicators before CMA 6, some emphasized its importance. Ensuring support for developing countries, consistency in the methodologies used by experts in reviewing the different targets, and the aggregation of national indicators for assessing global progress were deemed vital for success by some participants.

33. Participants identified challenges concerning vague indicators and data availability. Several participants stressed the need for clarity, coherence and alignment in refining the indicators to avoid duplicating efforts, ensuring that they remain consistent with existing mandates while being responsive to regional needs. Aligning the indicators with those under other global frameworks, such as the Sendai Framework for Disaster Risk Reduction 2015–2030 and the SDG indicators, was seen as crucial for minimizing the reporting burden on Parties.

34. In order to avoid silos, there were calls for designing indicators that reflect broader, systemic outcomes, with the three core components of the global goal on adaptation, as per Article 7, paragraph 1, of the Paris Agreement, serving as guiding principles. Suggestions include using metadata to highlight interlinkages among and aligning the indicators with those under existing frameworks to ensure consistency and avoid duplicating efforts.

35. Some participants expressed support for incorporating cross-cutting indicators across themes by leveraging existing indicators where data-collection methods are available. However, concerns were raised about managing duplication of work and indicators, especially regarding cross-cutting issues such as transparency, gender-responsiveness and Indigenous Peoples' knowledge. To address this, some participants called for a standardized framework that focuses on clear definitions, data-collection processes and reporting frequency.

36. Participants acknowledged the complexity of the indicator review and refinement process, highlighting the need for a standardized methodology and further guidance for the experts to clarify key aspects of the process. During the discussions, participants highlighted the role of national statistics offices in contributing to the refinement of indicators, with a number of participants advocating for the use of existing frameworks, such as the Global Set of Climate Change Statistics and Indicators established by the United Nations Statistical Commission, to facilitate the process. Some participants noted that data collection and reporting could draw from diverse sources, including national Governments, United Nations

agencies and regional organizations, while considering indicators' measurability and practical implementation.

#### 4. Discussion on technical considerations for refining the mapping of indicators

37. Breakout groups were established to facilitate detailed discussions on refining adaptation indicators, taking into account the following guiding questions:

(a) SB 60 agreed that the mapping may use the criteria outlined in paragraph 11 above. Were there any challenges in applying them when:

- (i) Preparing and compiling indicators for submissions?
- (ii) Reviewing and refining existing indicators?

(b) How can a consistent approach or methodology be ensured in the process of refining the indicators across both the thematic and dimensional targets?

(c) Given the ongoing discussions on the nature of the final outcome of the indicator process, what are suggestions on the optimal outcome that can take into account the review of the overall progress in achieving the global goal on adaptation for the second global stocktake, as well as different national contexts and circumstances?

38. Participants focused on the challenges and practicalities of applying the criteria outlined in paragraph 11 above. Several experts noted that some criteria, such as relevance to adaptation and the targets, were straightforward and crucial, but others, such as data availability and measurement consistency, presented difficulties owing to limited information and variation in national capacity. As a result, a two-step approach was proposed: first prioritizing the relevance of indicators, then considering other criteria in relation to the relevant indicators, such as data availability and associated methodologies, in order to ensure a balanced approach.

39. Participants discussed how to ensure a consistent approach or methodology in the process of refining the indicators across both the thematic and dimensional targets. Some participants proposed developing standardized methodologies that could be used by experts, allowing for both a coherent global framework and flexibility at the national and regional level. There was also a call for clearer guidance, particularly regarding the scope and purpose of the indicators, the interpretation of specific criteria, and the overall process for refining the indicators. Some suggested that an online platform or workshops following COP 29 could support these coordination efforts and enable the experts to share information on progress and methodologies.

40. Data availability emerged as a significant concern, especially for developing countries, where the capacity to collect, manage and report data on adaptation efforts remains limited. Several participants emphasized that the lack of relevant available data should not automatically exclude indicators from consideration. Instead, data gaps should be acknowledged, with provisions for future improvement as countries' capacities increase. The potential to leverage existing frameworks, such as those developed in relation to the SDGs, to support data collection and reporting was also discussed as a means of helping to minimize the reporting burden on countries and streamline processes across multilateral frameworks.

41. Participants discussed the desired final outcome with regard to agreed indicators for consideration at CMA 7. Discussions centred on balancing global applicability with flexibility for national contexts. Some participants suggested that any indicator framework would go beyond the mandate, instead envisioning a menu of indicators, while others proposed an outcome that includes at least some globally applicable indicators. With regard to reporting modalities, some participants emphasized that reporting should both enable tracking of global progress and ensure local relevance, noting potential gaps in Parties' voluntary reporting. This dual approach would ensure that adaptation efforts are adequately captured across various scales, and that countries are supported in aligning their national adaptation efforts with global goals.

42. Given the wide range of national circumstances, some participants suggested that a 'menu' of indicators could be developed, allowing countries to select those most relevant to their context. This flexibility would ensure that, while global indicators could be applied

universally, individual countries could tailor their reporting to their specific adaptation needs. At the same time, using a set of core global indicators was seen as a potential approach to monitoring collective progress towards the global goal on adaptation. Many participants highlighted the importance of linking adaptation indicators to the broader goals of the Paris Agreement, particularly in the context of the global temperature goal. The idea of core indicators, applicable across to thematic and dimensional targets, with supplementary indicators addressing more specific linkages or nuances, was also discussed as a means of ensuring a comprehensive assessment of resilience.

43. Concerns were raised about measuring adaptation finance targets, such as doubling climate finance by 2025, and integrating inputs from bodies such as the Standing Committee on Finance. Gaps in adaptive social protection and lack of clarity on the role of multilateral development banks in future adaptation finance flows were also noted. In addition, the need to ensure manageable reporting requirements, especially for developing countries, was emphasized.

## **5. Discussion on identified gaps and areas not covered by existing indicators**

44. The plenary discussion, moderated by one of the workshop co-moderators, focused on exploring gaps in existing indicators and the need for developing new indicators, guided by the following questions:

(a) How have these gaps been approached in the review and refinement of indicators? What patterns have been seen, and what are some of the most common themes?

(b) How does the indicator process provide opportunities to help address such gaps towards assessing achievement of the global goal on adaptation?

45. The experts noted that systematic identification of gaps is in progress, but highlighted the challenges arising from gaps in data, particularly on Indigenous knowledge, disaggregation by demographic and socioeconomic characteristics and the use of best available science. Some noted that many current indicators lack information on data readiness, especially in areas such as cultural heritage, the role of the private sector, and human displacement.

46. Several challenges and gaps in relation to existing indicators were noted. For instance, several experts mentioned that many indicators were structured as statements, limiting their evaluability. Several participants raised concerns about adapting indicators to diverse national contexts while maintaining global relevance. The lack of metadata for mapping indicators to targets and the lack of data disaggregation were also highlighted.

47. Technical considerations noted by participants include the need for continuous communication between stakeholders for refining the indicators. A suggestion was made to form a small working group to address data disaggregation challenges. Participants also discussed the complexity of integrating indicators across the global, regional and local level, and the potential for combining qualitative and quantitative measurements.

48. A number of participants stressed the importance of considering cross-cutting matters such as gender-responsiveness, the inclusion of youth and children, and marginalized communities, and transformational adaptation in the indicator process under the United Arab Emirates–Belém work programme. Some pointed out that the principles of justice and equity are inadequately reflected in existing indicators, with calls for including gender-responsive indicators and perspectives of marginalized groups in the refined mapping of indicators and the United Arab Emirates–Belém work programme more broadly.

49. Some participants called for further discussion on whether indicators should focus solely on assessing progress towards specific adaptation outcomes or also include broader considerations, such as capacity-building and the adequacy of adaptation support, for example by incorporating indicators on means of implementation, diverse data sources, and traditional and Indigenous knowledge. In response to these challenges, the need for robust, practical and globally applicable indicators was highlighted by some participants. Several key recommendations were suggested, including establishing a standardized approach to developing and evaluating indicators while considering regional contexts, leveraging existing data from national reports such as national adaptation plans and biennial transparency reports

to reduce reporting burden, enhancing data collection through technologies such as remote sensing, and selecting indicators that balance national circumstances with global consistency. Several participants stressed the need to address data gaps across sectors and populations, clarify the definition of gaps, and maintain continuous communication among experts.

50. The need for new indicators with adequate and available data, especially in areas where there are significant gaps, was raised by several participants. Experts noted the challenge of developing, testing and evaluating new indicators, which would be time-consuming and require broader expert engagement. While existing data can be leveraged, new processes and tools will be needed to ensure the consistency, quality and flexibility of the indicators.

51. Moving forward, many participants suggested that the experts should continue their technical work and prepare a refined list of indicators on the basis of the criteria referred to in paragraph 11 above.

## C. Closure

52. The workshop concluded with closing remarks from the Chair of the Subsidiary Body for Implementation, Nabeel Munir, acknowledging the rich exchanges and discussions over the two days of the workshop and highlighting the need for further guidance for the experts. He emphasized the need for the experts to collaborate to avoid working in silos and underscored the importance of inclusive participation, including by providing travel support for experts from developing countries and removing obstacles to ensure their participation. Lastly, he stated that the Chairs of the subsidiary bodies would have a full debrief session immediately after the workshop to provide further guidance to the experts, stressing the importance of maximizing efforts before CMA 6 owing to the tight timeline.

53. A co-chair of the workshop emphasized the urgent need to address the growing adaptation finance gap in the global climate response. Expressing gratitude to the Government of Egypt, participants and experts for their dedication and efforts, he highlighted the critical importance of adaptation in the global response to climate change and the need for swift and decisive action to accelerate global adaptation efforts. In closing, he recognized the workshop as a crucial step in developing high-quality adaptation indicators and encouraged building on the workshop discussions to refine the mapping of indicators before COP 29. He emphasized the commitment of the COP 29 Presidency to enhancing ambition and enabling action and expressed the hope that significant strides in relation to global adaptation efforts would be made at COP 29, urging continued collaboration and concrete action.

54. A representative of the Ministry of Foreign Affairs of Egypt praised the successful organization of the workshop and the collaborative efforts of all participants. He extended his gratitude to the Chairs of the subsidiary bodies, the co-chairs of the workshop, and the moderators, experts and participants, with special thanks to the secretariat, the United Nations Development Programme, and the technical and logistical support teams. He encouraged constructive participation at COP 29, building on the progress made during the workshop.

## Annex\*

### Refined compilation and mapping of indicators

1. This annex contains the refined compilation and mapping of indicators which is available on the UNFCCC website<sup>1</sup> and complementary information to the refined compilation and mapping of indicators provided by the experts.

#### I. Approach and progress to date

2. Following their convening, experts reviewed the initial compilation and mapping of indicators from Parties and observers' submissions and provided updates on progress and some challenges faced during the workshop in October. The criteria referred to in paragraph 11 above were used in the review and refinement, and the wording of targets in paragraphs 9 and 10 of decision 2/CMA.5 also served as a basis.

3. Following the workshop, the secretariat provided experts with a merged datasheet of indicators from submissions and those in the AC's mapping, and experts continued their review and refinement using the new datasheet. In order to make the best use of the short time between the workshop and CMA 6, the SB Chairs provided guidance to experts to focus on 12a and 12b of the criteria referred to in paragraph 11 above:

(a) The relevance of the indicators to measuring progress towards one or more of the targets referred to in paragraphs 9–10 of decision 2/CMA.5;

(b) The specific relevance of the indicators to adaptation, including enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change;

4. Experts working on the different targets met regularly and divided the refining work amongst themselves. Experts highlighted the constraints faced, and that it would be beneficial to have more time post-COP 29 and opportunities to engage with experts working on other target areas in order to continue the review and refinement in relation to the criteria referred to in paragraph 11 above.

5. As of 7 November, all experts working on the different targets have submitted their contributions to the refined mapping, with some target areas being more complete than others. Contributions were compiled into a master mapping, such that the views of all groups are reflected: where disagreement between experts occurred as to the relevance of an indicator to paragraphs 12a or 12b, all responses were captured (as yes, no, or maybe), and a column was added for each expert team to capture their comments on each indicator.

#### II. Key findings and observations

6. The numbers of indicators reviewed and categorized as relevant yes/no/maybe received for different target areas are as follows:

(a) **Water (9a):** 1,046 indicators were identified for target 9a, with 656 from previous submissions and 390 from the contribution of the Adaptation Committee. Of these 1,046 indicators, 446 were found to be duplicates. For Criteria 12a, 41% were "Yes", 30% "No", and 30% "Maybe". For 12b, 30% were "Yes", 29% "No", and 40% "Maybe".

(b) **Food and agriculture (9b):** 1,801 indicators were identified, with 380 duplicates and 781 similar indicators. Of the remaining 1,468 indicators, 781 were found to have close similarities. For Criteria 12a, 63% were "Yes", 20% "Maybe", and 17% "No". For 12b, 62% were "Yes", 24% "Maybe", and 15% "No".

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\* This annex has not been formally edited.

<sup>1</sup> <https://unfccc.int/documents/642669>.

(c) **Health (9c)**: 747 relevant indicators were identified, with 136 duplicates. 146 were "Yes" for 12a, 169 were "Yes" for 12b, and 136 were relevant to both.

(d) **Ecosystems and biodiversity (9d)**: 1,294 indicators were identified, with 65% evaluated as relevant for 12a and 12b.

(e) **Infrastructure and human settlements (9e)**: 842 relevant indicators were identified. Experts reviewed 527 indicators for relevance to 12a and 12b, with 205 (39%) deemed relevant, 92 (17%) as "Maybe" relevant, and almost half not considered relevant. Experts reviewed 501 indicators for relevance to adaptation, with 301 (60%) considered relevant, 128 (25%) as "Maybe" relevant, and 72 (14%) not considered suitable.

(f) **Poverty and livelihoods (9f)**: 391 non-duplicate indicators were identified. For 12a, 27 were "Yes", 14 "No", and 49 nearly "Maybe", with 149 not agreed upon. For 12b, 73 were "Yes", 1 "No", 2 "Maybe", and 315 not agreed upon, of which at least 60 nearly agreed.

(g) **Cultural heritage (9g)**: 234 indicators were identified after removing duplicates. For 12a, 97 were categorized as "Yes", 80 as "No", and 57 as "Maybe". For 12b, 76 were categorized as "Yes", 65 as "No", and 93 as "Maybe".

(h) **Adaptation cycle (10a-d)**: Experts rated about 95% (2,837) of the 3,000 indicators linked to targets 10a-d. For target relevance (12a), 1,098 (38.7%) were "Yes", 1,496 (52.7%) were "No", and 243 (9.6%) were "Maybe". For adaptation relevance (12b), 586 (32.8%) were "Yes", 1,077 (60.3%) were "No", and 124 (6.9%) were "Maybe".

7. Experts applied nuanced approaches to indicator analysis across targets. For example, experts working on 9a conducted a detailed quantitative review, categorizing over 1,000 indicators by type, reporting levels, and data readiness. Experts working on 9b took a thematic, qualitative approach. Experts working on 9e focused on methodological and organizational challenges, identifying broader issues in data management and expertise gaps rather than individual indicators.

8. In the initial compilation and mapping of indicators and when this was merged with the work of the adaptation committee, there were many duplicates. Following the work of the secretariat to remove these, experts still noted that many indicators are similar and if all were included, there would be significant overlaps. Experts working on the food, health, and poverty targets noted a high prevalence of duplicate or similar indicators, particularly for targets 9b and 9d, where large volumes of redundancies were flagged in the datasets.

9. Many indicators included in the original compilation mapping are not in fact indicators, but rather statements, and therefore to be considered if these would require much more information and clarity. Other entries are more akin to input variables for assessing vulnerability or impacts of climate change rather than being indicators.

10. Across target areas, indicators included are at different scales, with some local, some national, and some global, reflecting the complexity of measuring progress towards the 'global' goal on adaptation, but with many climate impacts and subsequent adaptation actions being local.

11. There is a mix of output and outcome indicators, as well as quantitative and qualitative indicators.

12. Many indicators submitted lack metadata. It is challenging for experts to assess their relevance when so little information is known about them. Indicators that are already used under existing frameworks e.g., SDGs are easier to make an informed evaluation about and are more likely to be defined as relevant due to having more information.

13. Despite numerous improvements, it would still be beneficial to have additional time for a full data cleaning process to be done as this work advances.



### III. Insights on cross-cutting issues

14. There are many linkages across target areas, both thematic-thematic and thematic-dimensional, as well as indicators mapped to one target that could be considered relevant to others. However, due to time constraints and limited opportunities for experts to substantively engage with those working on different targets, it is difficult to determine an exact number.

15. There are some thematic areas that have significantly more links to some targets compared to others. For example, the food target would have more links to the water target than it would the cultural heritage target. In addition, of the four dimensional targets, implementation had by far the most links and crossover with the thematic target areas.

16. Experts working on different targets identified nuances in the placement of indicators relevant to multiple thematic areas. For instance, experts on the poverty target (9f) noted the indirect relevance of many of their indicators to themes like food security and health. Those working on the food target (9b) emphasized the need for better alignment in the indicator selection process to address overlaps. Some indicators mapped to target 9a (water), a cross-cutting issue, was most frequently mapped to targets 9b (food and agriculture), 9d (ecosystems and biodiversity), and 9e (infrastructure and human settlement), and least frequently mapped to target 9g (cultural heritage). Experts working on cultural heritage (9g) highlighted instances where some proposed indicators were too broad and would be better suited to other thematic areas.

17. Experts reiterated that clarity on how to address and present these linkages will be very important moving forward, and they requested further opportunities to discuss such nuances with other experts in a modality that facilitates detailed conversations.

18. Experts highlighted that some of the cross-cutting considerations included in decision 2/CMA.5, are not well reflected in the indicator list, but could be analysed through disaggregation of indicators.

### IV. Common reasons for evaluating an indicator's relevance

19. When assessing targets' relevance to 12(a) and (b), experts often broke the targets down into their multiple component parts as per 2/CMA.5, and then for each indicator, an evaluation was made as to whether it was relevant for measuring progress towards it. There were common reasons as to why targets were labelled yes, no, or maybe, including:

20. Yes:

(a) The indicator closely aligns with the wording of the targets, as per paragraphs 9 and 10 of decision 2/CMA.5.

(b) The indicator closely aligns with the elements of the global goal on adaptation, as per Article 7.1 of the Paris Agreement

(c) The indicator is already used and reported on under other global frameworks.

21. For example, for target 10(b), SDG 13.2.1, Sendai Framework E-2: Number of countries with NDCs, long term strategies, national adaptation plans, and adaptation communications as reported to the secretariat of the UNFCCC would be considered relevant, and for target 10(c) as worded in 2/CMA.5, directly relevant indicators could measure whether a country has progressed in implementing such national adaptation plans, policies, and strategies.

22. No:

(a) The indicator lacks specific detail related to the target wording and is not clearly framed in relation to adaptation.

(b) The indicator has been miscategorized and is not relevant to the target experts are reviewing.

(c) Inclusion of the indicator may lead to or increase maladaptation.

23. For example, the experts working on target 9(a) noted that some indicators simply referred to ‘water management’ and do not therefore have any specific relevance to climate impacts or adaptation. Additionally, the ecosystem experts highlighted an example of a ‘reforested area’ as an example of a ‘no’ as it does not imply ecosystem conservation and could even have the opposite effect (e.g., monoculture of exotic species), and thus lead to maladaptation.

24. Maybe:

- (a) The direct link to climate adaptation is not clear.
- (b) More specific information and metadata on the indicator are needed.
- (c) To be considered relevant, the indicator would need some refinement or minor adjustments for clarity, or could benefit from disaggregation to make it more specific to the target(s).
- (d) The indicator focuses on measuring natural disasters, climate risks and damage, rather than specifically adaptation.
- (e) Experts had different interpretations as to whether an indicator met the criteria.

25. For example, the experts reviewing indicators for target 9b highlighted an indicator ‘Food price volatility’. This could be caused by climate impacts and reduction in it may be a result of good adaptation practices, however, this is not well defined in the indicator as it currently stands. Another example, from the experts reviewing 9(g) was the ‘Traditional knowledge and practices index’ which could be a proxy for the inclusivity of Indigenous knowledge in adaptation and specifically align with GGA’s increasing adaptive capacity component. Experts noted that this is likely a qualitative indicator or it could be quantified by e.g., the number of plans/strategies that mention traditional/indigenous knowledge, but this is currently unclear.

26. Experts raised numerous questions in relation to indicators categorized as ‘maybe relevant’ to the criteria, which will need to be addressed moving forward and where common approaches would be beneficial:

- (a) Evaluating examples where the indicator is considered useful and its inclusion would add value, but it does not meet the criteria of being specific to the wording of the target;
- (b) There are many indicators that are measuring very similar things, and whether most/all of these would be included or if streamlining should take place;
- (c) Evaluating whether to include cases where the indicator is only indirectly linked to the target it is mapped to, but where it may be more useful/relevant to other targets;
- (d) Indicators that could be considered relevant but there is currently insufficient metadata or where it is unclear exactly what the indicator is referring to, and whether experts can directly reach out to the submitter.

27. In general, assessments varied due to nuanced interpretations of relevance and clarity across the targets. Broad or generic indicators, like economic productivity, lacked sector-specific adaptation links, particularly for water and ecosystems. In health and food, reliance on forecast data and ambiguous terms like “climate-smart” hindered comparability.

## V. Suggestions for next steps

28. Experts made numerous suggestions for next steps and how this process could most effectively move forward:

- (a) Experts could adopt a systematic approach to cleaning the data to ensure coherence across the target areas, perhaps using online tools or a glossary of key terms and definitions;
- (b) Have a unified approach when it comes to duplicates, noting that some weight should be given to an indicator if it is submitted by numerous Parties or organizations;

(c) Agreement on a methodology to address cross-cutting indicators and those that are currently miscategorized. It would also be useful to have a process in place for this methodology to be implemented, facilitating substantive discussions amongst experts, with some experts (e.g., experts working on 9d - ecosystems) suggesting the need for a more integrated framework to address cross-cutting indicators rather than isolated thematic targets

(d) There may be a need for further refinement of the indicators list, especially to further consider those currently tagged as 'yes' and 'maybe'. This further refinement could also consider the criteria under paragraph 12 (c)-(l), and to include new/additional criteria where this would further enhance the process;

(e) Ensuring a common approach/understanding of how to deal with indicators at different levels (local, national, and global), and whether a tiered approach could be utilized. Experts did note that this links to the current lack of clarity on the structure of the final outcome of the work programme;

(f) Experts could begin to consider the gaps already identified and any further gaps that have arisen through the refinement, and a process for developing new indicators where relevant could be initiated.

(g) Clarifying how the indicators included in the refined mapping will link with those mandated to be developed in 2025.

## **VI. Specific considerations to enhance the experts' work following COP 29**

29. The need for clarity (beyond the wording of the SB 60 conclusions) on the criteria to be used when refining the indicators. For example, the criteria 'data availability for the indicators' is currently listed in paragraph 12 of the SB conclusions, but the question then arises of how available data needs to be for an indicator to be classed as relevant.

30. Based on the experts' review of the indicators, the benefit of using additional criteria to evaluate an indicator.

31. Having common approaches as to what experts should look for when eliminating or prioritizing an indicator.

32. The ability for experts to re-word or make slight modifications to indicators to improve them.

33. Clarity on what experts are aiming towards in the final outcome, including whether there is a number that experts should keep in mind, or if the process is moving towards a global indicator framework, a menu of options of national use, or a mix. Experts noted that knowing what they are aiming towards would enhance the specificity of their work.

34. Having a common understanding of how indicators that will be selected are intended to be used and how will reporting be undertaken.

35. The need for SB Chairs to provide a way forward in relation to how experts should approach gaps already identified and what will be the process to develop new indicators and fill such gaps.

36. In response to the calls from experts for more time and opportunity to coordinate across targets and to discuss linkages, experts inquired whether there will be mandates for any additional expert meetings to facilitate in-person work, aside from the mandated workshop to take place in conjunction with SB 62.