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NATIONAL INDICATORS AND APPROACHES TO MONITOR PROGRESS TOWARDS THE AICHI BIODIVERSITY TARGETS

Note by the Executive Secretary

I. INTRODUCTION

1. In paragraph 20 (b) of decision XII/1, the Conference of the Parties to the Convention on Biological Diversity requested the Executive Secretary to convene a meeting of the Ad Hoc Technical Expert Group (AHTEG) on Indicators for the Strategic Plan for Biodiversity 2011-2020. In the terms of reference for the meeting, the Conference of the Parties requested the AHTEG to, among other things, prepare guidance on the different types of indicators and approaches used to monitor progress in the implementation of the Strategic Plan for Biodiversity 2011-2020 at the regional, national and subnational levels, reflecting, as appropriate, different perspectives among Parties for achieving conservation and sustainable use of biodiversity, drawing on a review of national reports and other relevant submissions to the Convention as well as reports prepared in compliance with other relevant processes.

2. In SBSTTA recommendation XIX/4, the Executive Secretary was requested to develop guidance on the use of national indicators and approaches to monitor progress towards the Aichi Biodiversity Targets, in collaboration with the Biodiversity Indicators Partnership, drawing upon, as appropriate, the report of the Ad Hoc Technical Expert Group and the documentation prepared for it, and to make this information available through the clearing house-mechanism.

3. This document has been prepared in response to the above requests. It draws on the outcomes of the meeting of the Ad Hoc Technical Expert Group (AHTEG) on Indicators for the Strategic Plan for Biodiversity 2011-2020 and documents prepared for it. It also considers the information contained in 156 fifth national reports to the Convention on Biological Diversity. A draft of this document was made available for peer review on 19 November. By 16 February review comments were received from IUCN and UNEP-WCMC.

4. The second section of the document examines the use of indicators in the fifth national reports to assess progress towards the Aichi Biodiversity Targets. The third section of the report provides information on different approaches to assessing progress in the implementation of the Strategic Plan. The final section provides overarching conclusions on the use of national indicators and assessment approaches.

II. NATIONAL INDICATOR USE¹

General Observations

5. While most Parties make use of at least a few indicators in their national reports, how they are used is highly variable. The indicators in the national reports tend to be a mixture of both outcome or impact indicators (those that measure a change in the status of biodiversity) and process indicators (those that measure actions taken). Some reports have referred to and made use of comprehensive sets of indicators, however most have used them in a less systematic way. Further even those reports that have made extensive use of indicators, often have gaps where certain targets or elements of targets do not have indicators.

6. Many of the indicators used in the fifth national reports are not necessarily specific to biodiversity or solely related to monitoring the implementation of the Strategic Plan for Biodiversity 2011-2020. For example many reports contain information related to changes in forest cover or fish stocks which are

* UNEP/CBD/SBSTTA/20/1/Rev.1.

¹ Further information on national indicator use is available in document UNEP/CBD/ID/AHTEG/2015/1/INF/3 - <https://www.cbd.int/doc/meetings/ind/id-ahteg-2015-01/information/id-ahteg-2015-01-inf-03-en.pdf>

relevant to other sectors and have likely been developed for purposes other than biodiversity monitoring. Given this, it is clear that monitoring the implementation of the Strategic Plan for Biodiversity 2011-2020 or associated national targets does not need to solely make use of indicators specifically developed for biodiversity and that indicators developed for other purposes can provide valuable information. Further, given the breadth of issues addressed by the Strategic Plan, using indicators developed for other processes offers a cost effective means of making use of ongoing monitoring initiatives and can also help to mainstream biodiversity across different domains.

7. While some of the indicators used in the fifth national reports are noted in the annex to decision XI/3 (Indicative list of indicators for the strategic plan for biodiversity 2011-2020) many are not. In some cases the reports use indicators which are nationally specific. Some countries have developed their own national indexes to monitor changes on certain subjects. Further, many of the reports make use of indicators related to regional processes. This is particularly the case for members of the European Union.

8. The indicators used by Parties to assess progress towards the Aichi Biodiversity Targets are often similar. For example many Parties have indicators related to habitat loss, species extinction or protected areas. These indicators may have different names and methodologies but often measure similar things. Similarly many Parties have used similar indicators but which focus on different geographic levels such as ecosystems, region, state/provincial or subnational levels. These differences in methodologies, baselines and definitions make drawing comparisons between countries or directly aggregating national information difficult if not impossible. However there are some examples where this has been done by different regional initiatives, such as those undertaken by the members of the European Union, regional processes on criteria and indicators for sustainable forest management, or regional programmes such as the ASEAN Centre for Biodiversity, the South Pacific Regional Environment Programme, or the work of the Conservation of Arctic Fauna and Flora working group of the Arctic Council to name a few.

9. In many fifth national reports the same indicator was used multiple times within the report, but with different interpretations or disaggregations to assess progress towards several targets. For example indicators related to protected areas were used to assess progress towards both targets 5 and 11. Similarly indicators used for target 8 were often disaggregated to look at specific chemicals or pollutant inputs to different environments.

10. The fifth national reports tend to contain both outcome/impact indicators (those that measure a change in the status of biodiversity) and process indicators (those that measure actions taken). The process based indicators used by Parties often had more up-to-date information, likely owing to the fact that such indicators are generally easier and less costly to prepare. The relationship between the information generated by the process based indicators and outcome/impact indicators was not generally explored in the national reports.

11. Many of the indicators used in the national reports had data for several time periods allowing for the development of a trend line. The most common types of indicators with multiple data points tended to be related to biophysical factors (such as the area of a given habitat type), indicators related to resource extraction (such as the areas deforested) and to government processes (such as amounts of funding for specific programmes or the number of actions taken).

12. The indicators used in the national reports tended to have time lags. Few reports contained indicators with information post 2013 and several reports noted that this was an issue. In addition, only in a few cases were any sources of uncertainty associated with the indicators acknowledged. Similarly, while most national reports have undergone some form of review process, few reports indicate how the indicators they have used in their report have been reviewed.

13. In the national reports there are many instances where information is included that implies the existence of either a data series or an indicator (for example when a description of change is given for a certain time period) however the indicator or data series itself is not specified.

14. Many of the national reports refer to proposed indicators or processes to develop indicators in the future. This is most often raised in relation to the implementation and monitoring of updated national biodiversity strategies and action plans. However, from the information in the national reports, it is rarely clear what is being done to develop these indicators or what processes were in place to collect the necessary data to make them usable.

III. INDICATOR USE FOR SPECIFIC AICHI BIODIVERSITY TARGETS

15. The use of indicators varies across the Aichi Biodiversity Targets. Indicators are most often used for targets 5, 11, and 12 while relatively few Parties have used indicators to assess progress towards targets 2, 3, 13, 16, 17, 18 and 19. This is likely because the indicators that are used in the national reports have tended to be what would generally be considered as traditional biodiversity indicators. Further, the more socioeconomic related issues covered by the Strategic Plan for Biodiversity tend to be less well served by indicators. Indicator use in the national reports for each Aichi Biodiversity Target is as follows:

(a) *Aichi Target 1. Awareness of biodiversity increased* - A number of biodiversity indicators have been used by Parties to assess progress towards this target. These can be grouped into two general categories. Those that directly assess people's awareness of biodiversity and those which provide information on the number of relevant activities carried out or people's participation in certain events. The most common indicator used for directly assessing people's awareness of biodiversity was surveys. These

surveys tended to ask respondents question to determine how familiar they were with biodiversity, their perceptions of its status or importance or their degree of agreement with various statements. In some cases the surveys referred to in the national reports looked at issues related to the environment generally rather than to biodiversity specifically. Further, based on the information in the national reports it would appear that different types of survey methodologies were used and that the number and type of people responding varied as well. The second category of indicators in the reports captured information related to participation in events, the number of communication and awareness raising actions taken, or the extent to which biodiversity was integrated into educational curriculum. In some cases these indicators looked at government activities but some also looked at issues associated with other segments of society, such as membership in certain NGOs.

(b) *Aichi Target 2. Biodiversity values integrated* - Very few reports made use of indicators to assess progress towards this target. Many countries refer to different valuation studies associated with specific ecosystem services or habitats but these largely appear to be one off studies as opposed to indicators

(c) *Aichi Target 3. Incentives reformed* -There are few indicators used in the fifth national reports to assess progress towards this target. Progress is generally assessed through other means including case studies, expert opinion and examples of the types of actions taken.

(d) *Aichi Target 4. Sustainable production and consumption* - The indicators used by Parties in their national reports to assess progress towards this target tend to focus on issues associated with consumption rather than production. Some of the indicators used focused on specific resources, such as water, while others looked at consumption more generally. The most commonly used indicator was the ecological footprint.

(e) *Aichi Target 5. Habitat loss halved or reduced* - The most prevalent indicators used in the national reports to assess progress towards this target were related to changes in the areal extent of certain ecosystems, most commonly forests. Further the indicators tended to be primarily terrestrial in nature with few indicators for inland waters or the marine environment. Further in some cases the indicators that were used were highly specific and focus on certain key habitats of national importance. In almost all cases the reports did not contain information on all habitat types that are in a country. Many national reports also contained information which implies to existence of indicators but did not actually refer to them. Some reports contained information on habitat quality or status, however these were relatively few. Similarly only a few reports used indicators related to land degradation and fragmentation. Some reports contained indicators related to the magnitude of certain pressures, such as fire or pollution, on certain types of habitats. These types of indicators are also relevant to those targets which fall under Strategic Goal B. Several of the national reports also referred to actions taken to conserve habitats. These included activities such as the creation of protected areas or restoration and are therefore also relevant to Target 11 and 15. Overall the types and number of indicators used to assess progress towards this target in the national reports was generally greater than those for other Aichi Biodiversity Target.

(f) *Aichi Target 6. Sustainable management of aquatic living resources* - The most common type of indicator used to assess progress towards this target related to the size of fish catches/landings. Some Parties used indicators that reported on fish catches generally while others used indicators which looked at specific species, such as tuna. These types of indicators generally address issues related to the first part of the target, namely that fish stocks are managed and harvested sustainably. There were relatively few reports which contained indicators related to the other elements of the targets.

(g) *Aichi Target 7. Sustainable agriculture, aquaculture and forestry* - Parties have used a variety of indicators in their national reports to assess progress towards this target. The indicators used have tended to focus on issues related to agriculture and forestry. By comparison there were relatively few indicators related to aquaculture. While a number of parties used indicators related to certified forestry and aquaculture or the size of farmland under organic agriculture, few indicators addressed sustainable management directly.

(h) *Aichi Target 8. Pollution reduced* - The most commonly used indicators in the fifth national reports to assess progress towards this target are those related to nitrogen and phosphorus concentrations. However Parties have used a variety of indicators related to these nutrients. Some reports use indicators related to their concentrations in the environment, others have used indicators related to the levels of nutrients leaving terrestrial systems, or to the number of areas which exceed critical thresholds. Further, a number of Parties used indicators that relate to specific ecosystems, such as specific freshwater bodies, or indicators which relate to certain phenomena associated with nutrients, such as eutrophication or acidification. Some Parties have used indicators in their national reports which are relatively broad, such as the import or use of fertilizers, pesticides and insecticides, the amount of untreated waste water or the amount of waste material generated. However, while these indicators are relevant to this target, they do not necessarily indicate if levels of nutrients or other pollutants are at or above levels which are detrimental to biodiversity.

(i) *Aichi Target 9. Invasive alien species prevented and controlled* - The most commonly used indicators to assess progress towards this target were those related to the number of invasive alien species in a country. Other types of indicators used provided information on issues associated with the impact of invasive alien species and the areas they affect. Some reports also contained indicators related to the population trends of specific invasive alien species or on the effect of invasive alien species on

other species. There were few indicators related to the management of pathways or control and eradication efforts.

(j) *Aichi Target 10. Ecosystems vulnerable to climate change* - The indicators in the national reports related to this target focused almost entirely on issues associated with the extant and health of coral reefs. There were few indicators related to the multiple anthropogenic pressures on coral reefs or other ecosystems vulnerable to climate change.

(k) *Aichi Target 11. Protected areas* - In general, the indicators used in the national reports to assess progress towards this target focused on changes in either the number of protected areas in a country or the overall proportion of national territory protected. Some Parties used indicators which related to forms of protection other than protected areas, such as reserves. By comparison relative few Parties included indicators related to the size of areas particularly important for biodiversity and ecosystem services protected, protected areas connectedness, the integration of protected areas into the wider landscapes and seascapes and the management effectiveness of protected areas.

(l) *Aichi Target 12. Reducing risk of extinction* - Compared to other targets, a large number of indicators were used to assess progress towards this target. However though the indicators used had different names or focuses, they generally addressed issues related to the conservation status or population size of species. In some cases Parties used indicators, such as red list indexes, which looked at the risk of extinction of groups of different species, while in other cases they used indicators which assessed the extinction risk of one or a few specific species of national importance. The indicators used in the national reports tended to focus on terrestrial species and in particular mammals and birds. By comparison there were relatively few indicators related to amphibians, reptiles, invertebrates or aquatic species. Further some indicators provided information on the conservation status of species at specific locations, such as in protected areas or certain key ecosystems, while others related to the whole country.

(m) *Aichi Target 13. Safeguarding genetic diversity* - The national reports contain few indicators related to this target. Those in the national reports generally covered issues related to the condition of livestock breeds or to the number of gene bank/seed bank accessions. There are few indicators, in the national reports related to socio-economical or culturally valuable species or issues related to genetic erosion.

(n) *Aichi Target 14. Ecosystem services* - Very few Parties included indicators directly related to this target in their national report. However many reports included indicators that were relevant to a certain extent. These included indicators related to the trends in pollination insects, the designation of key habitats, the restoration of degraded habitats or the conservation of critical habitats. Many of these indicators were relevant to other Aichi Biodiversity Targets.

(o) *Aichi Target 15. Ecosystem restoration and resilience* - The use of indicators to assess progress towards this target in the national reports is limited. The indicators used generally fell into two categories, those related to the area restored and those related to carbon stocks.

(p) *Aichi Target 16. Access to and sharing benefits from genetic resources* - Very few Parties used indicators to assess progress towards this target in their national reports. Most Parties assessed progress towards this target by reporting on the steps that had been taken to either ratify the Nagoya Protocol or to start making it operational.

(q) *Aichi Target 17. Biodiversity strategies and action plans* - Few Parties used indicators to directly assess progress towards this target. The most common indicators were those examining the number of completed or initiated activities.

(r) *Aichi Target 18. Traditional knowledge* - Very few Parties assessed progress towards this target with indicators. Those indicators that were used tended to focus on issues related to the traditional use of resources, the maintenance of traditional customs and the participation of indigenous peoples and local communities in certain processes. While these indicators measure issues which are relevant to the target, they do not provide information on progress towards the target specifically.

(s) *Aichi Target 19. Sharing information and knowledge* - The indicators used to assess progress towards this target generally focused on the status of certain processes or activities related to information collection and largely provided information on the improvement of the knowledge and science base related to biodiversity. By comparison, there were few indicators related to the sharing of information, its transfer or its application. It is important to note however that many of the indicators related to other Aichi Biodiversity Targets, in the sense they represent an improvement in the understanding of the status and trends of biodiversity, provide a further indication of progress towards this target.

(t) *Aichi Target 20. Mobilizing resources from all sources* - The indicators used by Parties in their national report to assess progress towards this target tended to focus on government expenditures in relation to things such as funding from central budgets for environmental issues, trends in funding available for certain ministries or for protected areas as well as expenditures related to official development assistance. Some Parties also used indicators related to the number of employees working in environmental sectors. Few reports reported on resources spent by the private sector or non-governmental organizations. Further, a number of countries noted that they will be reporting on progress towards this target through the reporting framework for the resource mobilization strategy.

IV. NATIONAL APPROACHES²

16. Assessing national progress towards the Aichi Biodiversity Targets is key to monitoring the implementation of the Strategic Plan for Biodiversity 2011-2020. There are multiple approaches that can be used to monitor and assess progress in the implementation of the Strategic Plan. From the information contained in the fifth national reports, the results of a survey distributed to Parties on this issue and follow up interviews, as well as national case studies, it is evident that a variety of approaches are used by countries to assess national progress towards the Aichi Biodiversity Targets. These approaches can be divided into four general categories: quantitative indicators, expert opinion, stakeholder consultation, and case studies.

(a) *Quantitative indicators* - Measures or metrics based on verifiable data and providing a scientifically-robust and objective evidence base. These may be used or developed by government agencies, non-governmental organizations, research institutions or academia. They may also be institutionalized within a government to varying degrees.

(b) *Expert opinion:*

- (i) Expert advice - Convening relevant experts to offer their opinion and use their expert judgement to assess progress towards the Aichi Biodiversity Targets. The experts involved may be experts in very precise subject areas, such as individual species or habitats, or more generally in the country and its context. Expert opinion can be a valuable means of incorporating local, contextual knowledge, including from different sectors, and can also help clarify the often complex relationships between actions taken and biodiversity and the relationships between different the ecosystems (or parts therefore);
- (ii) Author opinion - The author(s) of the national report gather primary evidence on the status and trends of biodiversity, synthesise knowledge and information, and draw overall conclusions on progress. Author opinion can be useful to bring together and synthesize complex information from various sources. In some cases the authors may be experts and authors can often enlist the help of experts.

(c) *Stakeholder consultation:*

- (i) Stakeholder input - Stakeholders with an interest in the national report and biodiversity more generally are directly solicited to provide relevant information and input. Stakeholder contributions and assessment of progress towards the Aichi Biodiversity Targets may be gathered through consultations, interviews, face-to-face or online workshops or stakeholder review of documents;
- (ii) Public and community consultations - Such consultations may take place through individual interviews, questionnaires, online reviews, workshops or awareness raising events. The general public may be consulted as a whole, or specific communities may be identified for targeted consultation.

(d) *Case studies* - For some specific complex subjects, obtaining a clear picture of the status and trends of biodiversity, reasons for any change or the impact of any measures taken may be difficult due to various confounding factors. Case studies can therefore be used to provide a detailed analysis and demonstration of progress at a local level towards a national or global target. Case studies can draw on various types of information, including indicators, but ultimately require expert judgement to situate them within specific contexts.

17. These different approaches are not exclusive of one another. Using one approach does not preclude the use of another. In fact most Parties, in their fifth national reports, have used combinations of these different approaches to assess progress towards the Aichi Biodiversity Targets and their national biodiversity targets.

18. Each approach has inherent strengths and limitations. These strengths and limitations depend on the national context and priorities, and the most appropriate approach or combination of approaches will vary between countries. Therefore what is useful for one Party may not be effective for others. Further the approaches used vary not only between Parties but also within assessments carried by a Party for different Aichi Biodiversity Targets.

19. Almost all of the assessments of progress towards the Aichi Biodiversity Targets in the fifth national reports that made use of indicators drew on various additional sources of information to arrive at their conclusions. This includes such things as literature reviews of government reports, scientific articles and grey literature, as well as expert opinion and stakeholder consultations. The information from the national reports suggests that most Parties are making pragmatic use of information by drawing on multiple sources of information and making the best use of these in reaching a conclusion regarding progress towards the Aichi Biodiversity Targets.

² Further information on this issue is contained in document UNEP/CBD/ID/AHTEG/2015/1/INF/2 - <https://www.cbd.int/doc/meetings/ind/id-ahteg-2015-01/information/id-ahteg-2015-01-inf-02-en.pdf>

20. More than 40% of reporting Parties have included an explicit assessment of progress towards the Aichi Biodiversity Targets in their national reports. These assessments generally use a scale or rating system which classifies progress towards each target into a category (for example, no progress, some progress, on track to reach target). The methodology used to undertake these assessments is usually not clear from the national reports. However it is apparent that most Parties have considered different sources of information, including indicators, the types of actions taken, expert opinion and published literature among other things. Further those national reports which do not contain an explicit assessment of progress towards the Aichi Biodiversity Targets often contain narrative descriptions of progress towards the Aichi Targets. These do not assign a specific metric to indicate progress towards the target but rather list the types of activities taken, planned actions or refer to changes in biodiversity trends. It is important to note, that in these cases, even with the limited information that is available, most Parties have included information in their national reports which enables assessments of progress, at least towards some Aichi Biodiversity Targets, to be made, though sometimes with low levels of confidence.

V. CONCLUSION

21. There are multiple approaches to assessing progress towards national implementation of the Strategic Plan for Biodiversity 2011-2020. These approaches include quantitative indicators, expert opinion, stakeholder consultation and case studies. These different approaches are not exclusive of one another. Using one approach does not preclude the use of another. In the assessment process the strengths and limitations of the approaches used should be taken into account and limitations should be clearly acknowledged

22. The most effective and efficient assessment approach for monitoring the implementation of the Strategic Plan for Biodiversity 2011-2020 at the national level will vary with national circumstances. Parties will need to consider available information and data, and the time and resources required for different approaches in their national context in order to determine the most appropriate approach or combination of approaches to use.

23. Given the limitation of each assessment approach, using multiple approaches and drawing on multiple lines of evidence is the most feasible means of comprehensively assessing progress towards the Aichi Biodiversity Targets.

24. Efforts should be made to ensure the approach or combination of approaches taken is clearly documented and repeatable for subsequent assessments of progress, while also aiming to improve the assessment of progress where possible (e.g. based on new data available).

25. Indicators used to report to organisations such as the FAO or multilateral environment agreements, can provide biodiversity relevant information even though it may have been generated for other processes. Making use of existing indicators represents a cost effective means of generating information which can be used for assessments.

26. In situations where outcome (status or trend) indicators are unavailable, process indicators can offer a relatively straightforward and effective way of generating information which can be used to assess progress.

27. There is a wide range of guidance already available on the development and use of national indicators and monitoring systems. For example the Biodiversity Indicators Partnership has developed a national indicator development toolkit³.

³ See - <http://www.bipindicators.net/nationalindicatordevelopment>