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FURTHER CONSIDERATION OF THE IMPLICATIONS OF THE FINDINGS OF THE FOURTH EDITION OF THE GLOBAL BIODIVERSITY OUTLOOK AND RELATED REPORTS, INCLUDING WITH RESPECT TO MAINSTREAMING AND THE INTEGRATION OF BIODIVERSITY ACROSS SECTORS

Note by the Executive Secretary

INTRODUCTION

1. The Conference of the Parties requested the Subsidiary Body on Scientific, Technical and Technological Advice, in decision XII/1, to review the main implications and findings of the fourth edition of the *Global Biodiversity Outlook* (GBO-4) and its underlying technical reports as well as additional information from fifth national reports and other submissions. The Subsidiary Body was requested to identify further opportunities and additional key actions, including, among others, the contributions of collective actions of indigenous and local communities, for the achievement of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets, and other actions for the targets where there has been the least progress at the global level, for consideration by the Conference of the Parties at its thirteenth meeting (decision XII/1, para. 18).

2. The Conference of the Parties also decided, in its multi-year programme of work up to 2020 (decision XII/31), to address at its thirteenth meeting, among other issues, strategic actions to enhance national implementation, in particular through mainstreaming and the integration of biodiversity across relevant sectors, including agriculture, forests and fisheries, and the implications of the post-2015 United Nations development agenda and the sustainable development goals and of other relevant international processes for the future work of the Convention.

3. With a view to avoiding duplication and streamlining work, preparations on these issues will also take into account work undertaken under related requests by the Conference of the Parties concerning food security and sustainable agriculture, ecosystem services for water security, the Global Strategy for Plant Conservation 2011-2020, and biodiversity and climate change and disaster risk reduction.[1]

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* UNEP/CBD/SBSTTA/19/1.

[1] Respectively: decision XII/6, para. 17; decision XI/23, para. 4; decision XII/15, para. 2; and decision XII/20, para. 7.

4. The present note (a) reviews the key messages of GBO-4 and considers the contents of related technical reports and the fifth national reports (section I); (b) reviews how mainstreaming has been addressed under the Convention and considers the implications of the sustainable development goals and of other relevant international processes as context for further work under the Convention (section II); and (c) in the light of the foregoing reviews on technical matters related to the integration of biodiversity across sectors, in particular the food and agricultural sector (section III), considers some challenges to mainstreaming (section V) and provides some general conclusions (section VI). Section VII contains draft recommendations. Supporting information is provided in information documents.[2]

5. The issues addressed in the present note focus on scientific and technical considerations with respect to the mainstreaming and the integration of biodiversity across sectors. As such, it supports a broader discussion to be undertaken by the Subsidiary Body on Implementation at its first meeting, particularly agenda item 5.2 (Strategic actions to enhance implementation of the Convention and the Strategic Plan and the achievement of the Aichi Biodiversity Targets including with respect to mainstreaming and the integration of biodiversity within and across sectors). As noted in the present document, it also contains information relevant to some other items addressed by the Subsidiary Body on Scientific, Technical and Technological Advice at its nineteenth and twentieth meetings.

I. REVIEW OF THE MAIN FINDINGS AND IMPLICATIONS OF GBO-4 AND RELATED REPORTS

Review of key messages of GBO-4

6. The fourth edition of the *Global Biodiversity Outlook* (GBO-4) provided a mid-term review of progress towards the goals of the Strategic Plan for Biodiversity 2011-2020, and the Aichi Biodiversity Targets. The key messages of GBO-4 (page 10 of the *Outlook*), in summary, state that:

(a) There has been significant progress towards the Aichi Biodiversity Targets, but in most cases this will not be sufficient to achieve the targets set for 2020. Key potential actions for accelerating progress towards each target are provided in the *Outlook*;

(b) Indicator-based extrapolations suggest that despite increases in society's responses to the loss of biodiversity, pressures on biodiversity will continue to increase this decade, and the status of biodiversity will continue to decline. This discrepancy may be due to time lags or because the responses are insufficient in scale;

(c) Each of the Aichi Biodiversity Targets cannot be tackled in isolation, as some targets are strongly dependent on other targets being achieved;

(d) Meeting the Aichi Biodiversity Targets would contribute significantly to broader global priorities addressed by the Sustainable Development Goals (SDGs). The SDGs provide an opportunity to bring biodiversity into the mainstream of decision-making;

(e) Plausible pathways exist for simultaneously achieving biodiversity goals, climate goals and human development goals. However, reaching these goals requires changes in society, including much more efficient use of land, water, energy and materials, and rethinking of consumption habits;

(f) Analysis of the major primary sectors indicates that drivers linked to agriculture account for some two-thirds of the projected loss of terrestrial biodiversity to 2050. Achieving sustainable farming and food systems is therefore crucial for biodiversity. Solutions include sustainable productivity increases

[2] UNEP/CBD/SBSTTA/19/INF/1 provides information on the integration of biodiversity in food systems and agriculture; UNEP/CBD/SBSTTA/19/INF/4 provides information on the contribution of FAO's five principles for sustainable agriculture; UNEP/CBD/SBSTTA/19/INF/6 provides information on the integration of biodiversity in fisheries; UNEP/CBD/SBSTTA/19/INF/7 provides an overview of mainstreaming under the Convention and a compilation of previous decisions related to mainstreaming.

by restoring ecosystem services in agricultural landscapes, reducing waste and losses in supply chains, and addressing shifts in consumption patterns.

Actions to address the Aichi Biodiversity Targets

7. The actions listed under each target (as referred to in the key messages of GBO-4; see para. 6(a), above) were identified on the basis of the various lines of evidence in GBO-4, including information contained in the fifth national reports and published literature. If implemented they could enhance progress towards the Aichi Biodiversity Targets. The Conference of Parties, in paragraph 13 of decision XII/1, encouraged Parties and others to make use of these lists[3] emphasizing that the specific actions needed in each country will vary with national circumstances and priorities. Accordingly, the Conference of the Parties also encouraged Parties to develop their own lists of actions. To facilitate the use of the lists of proposed action and application to national circumstances, work is under way to bring together, on the CBD website, information and resources in relation to each Aichi Biodiversity Target, including the lists of actions and related policy support guides as further considered in the note by the Executive Secretary on key scientific and technical needs related to the implementation of the Strategic Plan for Biodiversity 2011-2020 and related research (UNEP/CBD/SBSTTA/19/3).

8. The fifth meeting of the Liaison Group on the Global Strategy for Plant Conservation (Paris, 8 July 2015) reviewed the implications of the mid-term review of progress towards the achievement of the Global Strategy for Plant Conservation.[4] The Group noted that progress towards targets which require mainstreaming, coordination mechanisms and establishing information flows, such as those related to the sustainability of production lands, crop genetic diversity, communication, education and public awareness and partnerships, tended to be slow and made a number of recommendations to strengthen these aspects.[5]

9. The Subsidiary Body was requested to identify further opportunities and additional key actions, including for those Aichi Biodiversity Targets for which there has been the least progress at the global level. The annex to the present note lists these targets, on the basis of the assessment of progress provided in GBO-4. As outlined in the annex, a number of activities are under way to enhance progress towards their achievement. Given the need for actions to be developed within the context of national circumstances, no further generic lists of actions are proposed. Instead, a focus on sectors is suggested, as elaborated in section III.

10. Additionally, the Subsidiary Body was requested to identify further opportunities and additional key actions for the achievement of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets, including, among others, the contributions of collective actions of indigenous peoples and local communities. Recently, the role of collective actions has been examined in the context of the strategy for resource mobilization but it has broader relevance for the Convention. There is a substantial evidence base for the role of collective actions of indigenous peoples and local communities in the conservation and sustainable use of biodiversity. However, local management systems are nested within regional and national institutional arrangements, networks and commodity chains, and sometimes there can be a mismatch between these different institutions. These ideas are further considered in documents prepared for the seventeenth meeting of the Subsidiary Body and the twelfth meeting of the

[3] The lists of actions are also available at www.cbd.int/sp/actions.

[4] Sharrock, S., Oldfield, S. and Wilson, O. (2014). Plant Conservation Report 2014: A review of progress in implementation of the Global Strategy for Plant Conservation 2011-2020. SCBD, Montreal, Canada and BGCI, Richmond, UK. Technical Series No. 81, 56 pages.

[5] https://www.cbd.int/doc/meetings/pc/gspclg-05/official/gspclg-05-02-en.doc

Conference of the Parties.[6] Such actions are cross-cutting in nature and therefore relevant to the attainment of many of the Aichi Biodiversity Targets.

11. With respect to the discrepancy between response measures and outcomes (see para. 6(b), above), further understanding would be aided by (a) regular updates of progress towards the targets, as new information becomes available; and (b) further analysis using counterfactual baselines. Such analysis would also help to elucidate the contribution of the actions taken under the Convention to other societal goals.

12. In addition, evaluations of the effectiveness of measures taken to implement the Strategic Plan for Biodiversity 2011-2020 could help to elucidate the links between actions taken and desired outcomes (as further discussed in document UNEP/CBD/SBSTTA/19/4), and help to inform the design of strategies, including sets of actions and policies, to achieve better outcomes for biodiversity.

Linkages among the Aichi Biodiversity Targets and the need for policy coherence

13. As emphasized in the GBO-4 key messages (see para. 6(c), above), the Aichi Biodiversity Targets are interdependent. The lists of actions to enhance progress towards each target indicate linkages to other targets, and case studies of successful examples of implementation in GBO-4 reinforce the point that coordinated action is needed on inter-related issues.

14. The interdependence of the Aichi Biodiversity Targets is also reflected in decision XII/1: "Actions to achieve the various Aichi Biodiversity Targets should be undertaken in a coherent and coordinated manner." The decision, based on the conclusions of GBO-4, further elaborates: "Attaining most of the Aichi Biodiversity Targets will require the implementation of a package of actions, typically including: legal or policy frameworks; socioeconomic incentives aligned with such frameworks; public and stakeholder engagement; monitoring; and enforcement. Coherence of policies across sectors and the corresponding government ministries is necessary to deliver an effective package of actions".[7]

Pathways to sustainable development and the role of sectors

15. The finding that the Aichi Biodiversity Targets would contribute significantly to broader global priorities addressed by the Sustainable Development Goals (see para. 6(d), above), is borne out by the way in which various elements of the Aichi Targets are reflected throughout the SDG framework. Thus, as noted in paragraph 28 below, the SDGs could help to elucidate the linkages between the conservation and sustainable use of biodiversity and broader globally agreed objectives, and provide a useful enabling framework for the implementation of the Strategic Plan for Biodiversity 2011-2020 and for the mainstreaming of biodiversity.

16. The last two key messages (see paras. 6(e) and (f) above), are closely inter-related. The scenarios analysis summarized in GBO-4 shows that plausible pathways exist for realizing the 2050 Vision of the Strategic Plan while also meeting climate goals and human development goals. Further analysis of these scenarios and their implications for food and agriculture and other sectors is provided in Technical Series No. 79 and summarized in section III of the present document. As is reported in GBO-4, these scenarios contrast with those contained in the fifth assessment report of the Intergovernmental Panel on Climate Change (IPPC). As a follow up to GBO-4, efforts are now under way, in cooperation with the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and IPCC, to develop a new generation of sustainability scenarios that will explicitly examine impacts on land-use change and biodiversity of various pathways for development and climate-change mitigation.

[6] See "Managing biodiversity is about people" UNEP/CBD/SBSTTA/17/INF/1 and "Conceptual and Methodological Framework for Evaluating the Contribution of Collective Action to Biodiversity Conservation" UNEP/CBD/COP/12/INF/7; The results of a dialogue workshop on assessment of collective action will be examined at the first meeting of the Subsidiary Body on Implementation, when it meets in Montreal, 2-6 May, 2016.

[7] Decision XII/1, paras. 3 and 4.

Review of technical reports

17. GBO-4 drew upon two major studies that have been published in the CBD Technical Series:

(a) Technical Series No. 78 *Progress towards the Aichi Biodiversity Targets: An Assessment of Biodiversity Trends, Policy Scenarios and Key Actions*[8] provides detailed information to support the target-by-target analysis in GBO-4 itself. It provides the basis for the first three key messages of GBO-4, summarized in paragraph 6 above;

(b) Technical Series No. 79 *How Sectors can contribute to sustainable use and conservation of biodiversity*[9] analyses current trends in the sectors of food and agriculture, wood production, water management, and marine fisheries and aquaculture, explores the consequences of how business-as-usual scenarios would impact on biodiversity, and using back-casting approach, how alternative scenarios could allow the 2050 vision of the Strategic Plan for Biodiversity be achieved while achieving a broader set of human development goals and limiting climate change to within 2 degrees. The implications of these analyses are explored in section III below.

18. GBO-4 was further complemented by Technical Series No. 81, *Plant Conservation Report 2014: A review of progress towards the Global Strategy for Plant Conservation 2011-2020*, which also noted challenges in mainstreaming plant conservation into productive sector as a key challenge to the achievement of several targets of the Global Strategy for which progress lags behind.

Review of national reports

19. GBO-4 draws upon an analysis of 64 national reports. To date (September 22), a total of 156 national reports have been received in final form[10] and these are being reviewed and analysed. While national reports received since the preparation of GBO-4 add further information on the status of biodiversity and actions taken by Parties, they reconfirm the main messages of GBO-4. For example, Figure 1 (see page 15 below) shows that the overall level of progress towards the Aichi Biodiversity Targets, based on self-assessments and other information provided by 130 Parties, is consistent with the assessment provided in GBO-4.

20. In addition to the overall analysis of the fifth national reports mentioned above, various thematic analyses have been undertaken or are under way:

(a) Approaches for assessing the effectiveness of measures taken;[11]

(b) Use of national indicators;[12]

(c) Integration of biodiversity into the agriculture and fisheries sectors;[13]

(d) Case studies on ecosystem based approaches to climate-change adaptation and disaster risk reduction.[14]

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[8] Leadley, P.W., Krug, C.B., Alkemade, R., Pereira, H.M., Sumaila U.R., Walpole, M., Marques, A., Newbold, T., Teh, L.S.L, van Kolck, J., Bellard, C., Januchowski-Hartley, S.R. and Mumby, P.J. (2014): Progress towards the Aichi Biodiversity Targets: An Assessment of Biodiversity Trends, Policy Scenarios and Key Actions. Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series No. 78, 500 pages.

[9] PBL Netherlands Environmental Assessment Agency. 2014. How Sectors can Contribute to Sustainable Use and Conservation of Biodiversity. Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series No. 79. Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series No. 78, 500 pages.

[10] An update on the status of the fifth national reports will be provided at the time of the meeting of SBSTTA-19, and a comprehensive review of the status of 5NR will be considered at SBI-1.

[11] UNEP/CBD/SBSTTA/19/4.

[12] UNEP/CBD/ID/AHTEG/2015/1/INF/3.

[13] UNEP/CBD/SBSTTA/19/INF/1 and UNEP/CBD/SBSTTA/19/INF/6.

[14] This will be addressed at SBSTTA-20. A draft report will be available for peer review.

21. A number of targeted communication products related to GBO-4 are also under preparation, including:

(a) A number of regional reports, based on GBO-4 and the national reports, are being prepared in collaboration with UNEP;

(b) A regional assessment for the Arctic is being prepared in collaboration with the Conservation of Arctic Flora and Fauna working group of the Arctic Council;

(c) An assessment of the contributions of indigenous peoples and local communities to the achievement of the Aichi Biodiversity Targets is being undertaken in collaboration with the Forest Peoples Programme and other members of the International Indigenous Forum on Biodiversity.

II. CONTEXT FOR MAINSTREAMING UNDER THE CONVENTION AND THE INTEGRATION OF BIODIVERSITY ACROSS RELEVANT SECTORS

Mainstreaming under the Convention

22. The Convention calls for Parties to "integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies" (Article 6(b)). This is the overarching mandate for "mainstreaming" under the Convention. Further, Article 10(a) calls on Parties to "integrate consideration of the conservation and sustainable use of biological resources into national decision-making". Other articles of the Convention also promote "mainstreaming" – or provide tools for it – notably the requirements to use impact assessment (Article 14), incentive measures (Article 11) and to regulate or manage processes and activities that have significant adverse impacts on biodiversity (Articles 7(c) and 8(l)).

23. The programmes of work developed under the Convention cover many aspects relevant to the integration of biodiversity into sectors (e.g.. the expanded programme of work on forest biodiversity), but do not cover all aspects of the interactions (e.g. the programme of work on agricultural biodiversity does not cover all aspects of the relationship between biodiversity and agriculture) and do not cover intersectoral aspects. The principles of the ecosystem approach (decision V/6) are very relevant, addressing, inter alia, the different needs of various sectors of society and the need to understand and manage the ecosystem in an economic context. However, the socioeconomic dimensions of the ecosystem approach are probably not well known and so the approach has not been used to its full potential.

24. The key instruments for the implementation of the Convention at national level are national biodiversity strategies and action plans (NBSAPs), developed in accordance with Article 6. The early NBSAPs were generally weak on mainstreaming, but this has improved in more recent NBSAPs. Guidance for NBSAPs adopted at the eighth meeting of the Conference of the Parties called for NBSAPs to address mainstreaming issues (and thus to address both paragraphs (a) and (b) of Article 6), and this was further strengthened at the tenth meeting of the Conference of the Parties and in NBSAPs aligned with the Strategic Plan for Biodiversity 2011-2020.

25. Successive editions of the *Global Biodiversity Outlook* have highlighted the importance of addressing the drivers of biodiversity loss and of mainstreaming biodiversity across sectors. In the second edition, the importance of the food and energy sectors was highlighted. The third edition concluded that: "There has been insufficient integration of biodiversity issues into broader policies, strategies and programmes, and the underlying drivers of biodiversity loss have not been addressed significantly. Actions to promote the conservation and sustainable use of biodiversity receive a tiny fraction of funding compared to activities aimed at promoting infrastructure and industrial developments. Moreover, biodiversity considerations are often ignored when such developments are designed, and opportunities to plan in ways that minimize unnecessary negative impacts on biodiversity are missed."

26. The Strategic Plan for Biodiversity 2011-2020 was developed against this background, recognizing that biodiversity loss could only be effectively addressed with simultaneous and coordinated action at a number of levels. Thus among the new Strategic Plan's five Goals are those focusing on addressing the underlying causes (or indirect drivers) of biodiversity loss (Goal A), the pressures or direct drivers (Goal B) and the benefits of biodiversity and ecosystem services to human societies (Goal D). Thus "mainstreaming" is embedded in the logic of the Strategic Plan.

27. As noted above (para. 6) several of GBO-4's key messages call for more effective mainstreaming.

The context of the post-2015 United Nations development agenda and the sustainable development goals and of other relevant international processes

28. The Conference of the Parties, at its thirteenth meeting, will consider the implications of the post-2015 United Nations development agenda and the sustainable development goals and of other relevant international processes for the future work of the Convention. These processes provide important context for work under the Convention, including on mainstreaming and the integration of biodiversity across sectors.

The post-2015 development agenda and the Sustainable Development Goals

29. The Sustainable Development Goals provide an important enabling framework for the implementation of the Strategic Plan for Biodiversity 2011-2020. The Sustainable Development Goals and related targets comprise an "integrated and indivisible" set. Moreover more than half of the targets are cross—cutting linking different goals. As noted in a report by the Secretary-General, this may facilitate integration and policy coherence across sectors.[15] That report highlights the central importance of two goals: Goal 10 on reducing inequality and Goal 12 on ensuring sustainable consumption and production patterns as central to sustainable development. Virtually all of the elements of the Aichi Biodiversity Targets are reflected among the goals and targets of the framework, including two Goals (Goals 14 and 15) focused on biodiversity, and many other Goals that include targets related to biodiversity. The central importance of health-biodiversity linkages for the Sustainable Development Goals is explored in a note by the Executive Secretary on the subject (UNEP/CBD/SBTTA/19/6).

The Sendai framework for disaster risk reduction

30. The "Sendai Framework for Disaster Risk Reduction", adopted by the Third World Conference on Disaster Risk Reduction, Sendai, Japan, 13-18 March, 2015, will serve as the global framework to guide disaster risk reduction efforts over the next 15 years (2015-2030). The framework puts emphasis on disaster prevention through risk-sensitive development programming, as well as on disaster response and reconstruction. For the first time in an international disaster risk reduction framework the sustainable management of ecosystems is recognized as a way to build disaster resilience; and ecosystems need to be taken into account in three priority areas: undertaking risk assessments; risk governance; and investing in resilience. The framework further acknowledges the need to tackle environmental drivers of disaster risk, including ecosystem degradation and climate change, as well as the environmental impacts of disasters. The Conference of the Parties has already adopted decisions relating to disaster risk reduction, notably decision XII/20 that encourages Parties to incorporate disaster risk reduction into relevant national plans and strategies. The Sendai Framework further supports this integration. The clear opportunity is for national level biodiversity-related agencies to fully engage in national follow-up processes to further mainstream biodiversity and ecosystem based approaches to disaster risk reduction.

[15] Report of the Secretary General on mainstreaming of the three dimensions of sustainable development throughout the United Nations system (A/70/75-E/2015/55), 30 March 2015.

The international arrangement on forests after 2015

31. On the basis of discussions in the United Nations Forum on Forests, the Economic and Social Council of the United Nations adopted a resolution on the international arrangement of forests after 2015. The resolution strengthens the international arrangement on forests, extends the Global Forest Objectives to 2030 and calls for the elaboration of a Strategic Plan 2017-2030. This provides an opportunity to promote a coherent approach to the achievement of the multilaterally agreed forest goals including the relevant Aichi Biodiversity Targets. Further information is provided in the note by the Executive Secretary on the role of international organizations in supporting the achievement of the Aichi Biodiversity Targets (UNEP/CBD/SBSTTA/19/8).

Reviewed Strategic Framework of the Food and Agriculture Organization of the United Nations

32. The Conference of the Parties, at its thirteenth meeting recognized the Reviewed Strategic Framework 2010-19 of the Food and Agriculture Organization of the United Nations (FAO) as an important contribution to the implementation of the Strategic Plan for Biodiversity 2011-2020 and to the achievement of the Aichi Biodiversity Targets. The framework addresses agriculture, forestry, fisheries and aquaculture, with its mutually reinforcing objectives to eradicate hunger, food insecurity, malnutrition and poverty while sustainably managing and utilizing natural resources. In the context of this framework, FAO has elaborated a number of principles for sustainable agriculture that could provide guidance for the implementation of Aichi Biodiversity Target 7:[16]

> Principle 1. Improving efficiency in the use of resources is crucial to sustainable agriculture;
>
> Principle 2. Sustainability requires direct action to conserve, protect and enhance natural resources;
>
> Principle 3. Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable;
>
> Principle 4. Enhanced resilience of people, communities and ecosystems is key to sustainable agriculture;
>
> Principle 5. Sustainable food and agriculture requires responsible and effective governance mechanisms.

The 2015 climate agreement

33. The 21st meeting of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) is expected to adopt an agreement to effectively address climate change with a view to keeping global temperature increases within 2 degrees or lower. Climate change is already impacting negatively on biodiversity as further explored in section III below. In addition, climate-change mitigation and adaptation measures may impact biodiversity in positive and negative ways. Therefore the agreement will have major implications for work under the Convention on Biological Diversity. This issue will be further addressed at the twentieth meeting of the Subsidiary Body.

III. THE INTEGRATION OF BIODIVERSITY ACROSS RELEVANT SECTORS, INCLUDING AGRICULTURE, FORESTS AND FISHERIES

34. This section draws upon GBO-4 and its technical reports, in particular Technical Series No. 79, to explore how biodiversity may be integrated within and across sectors. The analysis is based on scenarios examining current trends ("business-as-usual") and alternative pathways to achieve the 2050 vision of the Strategic Plan for Biodiversity 2011-2020, as well as a broader set of human development goals while also limiting climate change to within 2 degrees. This scenarios were originally developed for the Rio+20

[16] FAO. 2014. Building a common vision for sustainable food and agriculture: Principles and Approaches. http://www.fao.org/publications/card/en/c/bee03701-10d1-40da-bcb8-633c94446922/

Conference and subsequently extended to explore the implications for biodiversity mainstreaming in the sectors of food and agriculture, wood production, water management, and marine fisheries and aquaculture. A summary of the results was provided in GBO-4 (pages 134-139).

Integration of biodiversity into the food and agriculture sector

35. Addressing the indirect and direct drivers of biodiversity loss requires a focus on primary sectors. The characteristics of these sectors – agriculture, wood production, water management, and marine fisheries and aquaculture – are that they both impact on biodiversity and are dependent on biodiversity.

36. The food and agriculture sector alone is estimated to account for some two thirds of the recent and projected loss of terrestrial biodiversity. This mainly due to land-use change. In addition, agriculture has major impacts on freshwater biodiversity and coastal biodiversity particularly through nutrient loading.

37. Loss of biodiversity impacts negatively on agriculture itself, including through: the eroding genetic resource base of agro-biodiversity undermining current gains and future increases in productivity; the significant decline in pollinators which is impacting crop productivity; and the loss of soil carbon and fertility in farming systems.

38. Demand for the products produced by these sectors will continue to increase. If current trends continue, the demand for food, wood, water and bioenergy is projected to increase 1.5 – 2 fold due to increasing population and average wealth.

39. Mainstreaming biodiversity is more likely to succeed when aligned with the core values and interests of actors in the supply chain. This requires that sectors recognize the opportunities that biodiversity provides such as improved availability of food, fish and wood, improved soil productivity.

40. In the agricultural sector, pathways that achieve the joint biodiversity, climate and human development goals require a combination of measures including:

(a) Increases in productivity and the efficiency of use of land, water, fertilizers and other inputs – this is necessary to contain agricultural expansion and the loss of natural habitats, reduce water use and pollution from fertilizers and pesticides, while also meeting increases in food demand;

(b) Deployment of biodiversity in agricultural production and the wider landscape – this is necessary for the sustainability and productivity of agriculture itself, and to contribute to biodiversity conservation more generally;

(c) Measures to moderate increases in demand for food by reducing food waste and promoting sustainable diets.

41. There is a large potential for more biodiversity-friendly production measures in these sectors, and to a large extent, biodiversity-based solutions have a significant part to play in these measures. For example, in the agricultural sector, greater use of crop and livestock diversity as well as pest control organisms and pollinators can support sustainable production increases.

42. These measures can be implemented through, inter alia:

(a) Comprehensive land-use management – policy frameworks and spatial planning are needed to ensure that only the most suitable lands are used for agricultural expansion, while at the same time avoiding high biodiversity areas and land/soils with high carbon stocks, and limiting the overall conversion of natural habitats;

(b) Interventions in the supply chain to improve the sustainability of agricultural commodities – these should include specific biodiversity-related criteria;

(c) Behavioural change among consumers to reduce waste and adopt sustainable diets.

Each of these approaches will be necessary.

43. A range of stakeholders will need to be engaged to promote these measures and achieve mainstreaming:

(a) *Producers* are responsible for the immediate direct impacts of agriculture and are therefore key for any transformations in agriculture. They include small-scale or family farmers, and indigenous peoples and local communities, many of whom are economically constrained in their options. They also include commercial farming operations, some of which operate under direct contract from the food processing sector. A cornerstone of appropriate policies should be the identification and removal of constraints to positive changes by this range of producers. Approaches need to identify where the economic costs are incurred, and by whom, and explore opportunities to transfer expenditures on dealing with the problem at end point to reduce the problem at source;

(b) *Consumers* create the demand for agricultural products. There may be opportunities for leveraging the power of consumer choice by emphasizing the food security, health and cost benefits of choices that also benefit biodiversity. However, the challenges in creating the behavioural change needed should not be underestimated. It is vital that the quality and price enable consumers to make the "appropriate choice" without incurring undue economic burden;

(c) *The private sector* will be instrumental in contributing to change in consumption patterns and waste reduction. Major food marketing chains in particular can be very influential on producers of food through their procurement policies. Ensuring that large purchasers of products work together to ensure ecological sustainability would be one important way of accomplishing this;

(d) *The public sector* remains indispensable in creating an enabling environment through an appropriate mix of regulations and incentives. These instruments need to be aligned at national and local levels and international obligations, and policy coherence is key. Governments are able to influence the integration of biodiversity into the agricultural sector through a range of policies including: awareness-raising; improved valuation, accounting and reporting of biodiversity and ecosystem services; integrated land-use planning; payments for ecosystem services and incentives to align sector activities with biodiversity conservation and sustainable use and green taxation and reforming environmentally-harmful subsidies. Sustainable public procurement policies, by creating markets for "green products", can be a very effective tool, given the size of the public sector in most economies.

Integration of biodiversity into forestry and wood production

44. Land-use change is the largest driver of deforestation, and therefore biodiversity mainstreaming in agriculture and forestry need to be considered together in a landscape context. Efforts to promote integrated land use and spatial planning will also contribute to addressing deforestation, with forest restoration efforts becoming an increasingly important component of sustainable land management. In addition, much of the approach outlined above in relation to supply chains and the engagement of indigenous peoples, local communities and stakeholders also applies, in principle, to forests. The systematic application of sustainable forest management practices can advance the integration of biodiversity-related concerns in all types of forests. There is an increasing call on regional initiatives on criteria and indicators of sustainable forest management to report on the outcomes of forest operations with a view to enabling verifiable assessments of the degree of their sustainability.

45. Besides region-specific sustainable forest management practices, the main driver for integrating biodiversity considerations in large-scale forest operations aimed at international markets are market-driven certification and regulatory instruments such as the Forest Law Enforcement, Governance and Trade Action Plan of the European Union.

46. The degree to which biodiversity considerations factor into forest management varies between natural forests, planted forests and trees outside forests as well as the main purpose for which each of these forest categories are managed (protective, multi-use, productive).

47. The role of plantations in forestry is often controversial in the context of biodiversity conservation. On the one hand plantations generally have much reduced biodiversity and tend to focus on the delivery of only a few ecosystem services as compared to natural forests and they may also be less resilient to climate change and other impacts. Nonetheless, plantations can play an important role in taking the pressure off natural forests for the production of wood, pulp and other forest products. Plantations can also have a primary protective function, such as for erosion control and slope stabilization.

Integration of biodiversity into fisheries and aquaculture

48. About 260 million people are directly (capture) or indirectly (processing and ancillary services) employed in the fisheries and aquaculture sector supporting the livelihoods of 10 to 12 per cent of the world's population. Overfishing and destructive fishing practices (which damage marine habitats) are the main drivers of biodiversity loss in marine environments, though nutrient loading is also very important in coastal areas. Climate change and ocean acidification are also becoming important drivers. All of these impacts affect primarily the livelihoods of the 22 million small-scale fishers estimated to operate primarily in coastal waters.

49. Sustainable fisheries principles are reflected in a number of international instruments, including the United Nations Convention of the Law of the Sea; the 1993 FAO Compliance Agreement; the 1995 United Nations Fish Stock Agreement and the 1995 FAO Code of Conduct for Responsible Fisheries. Together with other accompanying guidelines and action plans, these represent a comprehensive global framework for fisheries policy and management and support mainstreaming of biodiversity in fisheries.

50. While much of the above information on food and agriculture is also relevant to fisheries, there are also some specificities to this sector. Key interventions to ensure sustainability are listed in GBO-4 under Target 6 and include:

(a) Promoting and enabling dialogue and enhanced cooperation and information exchange between fishing and conservation communities and the corresponding national agencies and associations;

(b) Making greater use of innovative fisheries management systems, such as community co-management, that provide fishers and local communities with a greater stake in the long-term health of fish stocks;

(c) Eliminating, reforming or phasing out subsidies that contribute to excess fishing capacity;

(d) Enhancing monitoring and enforcement of regulations to prevent illegal, unregulated and unreported fishing by flag-vessels;

(e) Phasing out fishing practices and gear that have serious adverse impacts on the seafloor or on non-target species;

(f) Further developing protected area networks and other effective area-based conservation measures, including the protection of areas particularly important for fisheries, such as spawning grounds and vulnerable areas.

51. One important element is the need to ensure that specific biodiversity-related objectives are incorporated into market certification schemes and mandates, work programmes and accountability frameworks of relevant fishery management organizations at national and regional levels. The Code of Conduct for Responsible Fisheries remains key to achieving sustainable fisheries and it has been shown that limited compliance with the Code of Conduct correlates negatively with biodiversity. This suggests the need for international development efforts to focus on regions with poor management performance, high biodiversity, rapidly increasing human populations and a high dependence on fishery livelihoods.

52. Reducing overcapacity is key, including by the removal of perverse subsidies. The implementation of a range of social and economic measures and incentives, in addition to conventional target-species based management measures, has proven to be very effective in reducing overcapacity and

overfishing. Fishing rights improve behaviour by providing a sense of long-term security in entitlements and an incentive to optimize production in the short- and long-term. A higher degree of participation in the decision-making process (including enhancing the mandate of fisheries management authority) can increase the legitimacy and relevance of the measures and promote compliance. In all measures, engaging the fisheries sector is critical to the success of implementation.

Integration in climate change policy

53. Climate-change mitigation is critically important for the protection of biodiversity and ecosystems. The effects of recent changes in climate on biodiversity and ecosystems are already evident and the recent fifth assessment report of the Intergovernmental Panel on Climate Change highlights the high risks of unchecked future greenhouse gas emissions on biodiversity and ecosystems. These include: large shifts in species ranges and biomes; changes in the ability of terrestrial and marine ecosystems to act as global sinks for carbon; substantially increased risk of extinctions, especially when combined with other types of anthropogenic pressures (e.g. pollution, land-use change); potential "tipping points" in some biomes with large detrimental effects on biodiversity and ecosystem services (e.g., coral reefs, arctic tundra, boreal forests, Amazon forest).

54. Keeping global warming within 2°C or less is essential for avoiding high risks of degradation of biodiversity and ecosystem services, especially in vulnerable systems such as coral reefs and mountains; even within these limits, significant negative impacts are inevitable. However, as noted above and reflected in GBO-4's main messages, land-use change is currently the largest driver of biodiversity loss in terrestrial ecosystems and is projected to remain so for most of this century under most scenarios, as more land is required for the production of food, agricultural commodities, wood and bioenergy as well as for urban and infrastructure development. Land-based approaches to climate-change mitigation may increase or decrease land-use change, and its impact on biodiversity, depending on the strategy adopted. As noted above, efforts are now under way, in follow up to GBO-4, to develop a new generation of sustainability scenarios that will explicitly examine impacts of various climate mitigation pathways on land-use change and biodiversity.

55. Three main pathways for land-based mitigation of greenhouse gas emissions are currently being explored that are likely to vary greatly in their direct land-use impacts on biodiversity and ecosystems:

(a) Bioenergy, and bioenergy with carbon capture and storage. Most scenarios presented in IPCC that are compatible with keeping temperature increases within 2 degrees or less (RCP 2.6) rely on this strategy;

(b) Halting deforestation, reducing forest degradation and ecosystem restoration: These mitigation strategies are the basis of REDD+ as well as major bilateral agreements. They also correspond to key Aichi Biodiversity Targets 5, 11, 15 among others;

(c) Reducing GHG emissions from food systems: recent studies have highlighted the importance of food systems in driving land-use change and greenhouse gas emissions. In particular, global convergence on a "healthy" diet and reductions in food waste could substantially reduce the need for additional land area to be cultivated, make significant contributions to climate mitigation and contribute to improving human health in developed and developing countries.

56. The conservation and sustainable use of biodiversity, and the ability to draw on traditional knowledge, provide a range of opportunities to contribute to climate-change mitigation and adaptation and disaster risk reduction. Options for ecosystem-based approaches to climate-change adaptation and disaster risk reduction will be considered at the twentieth meeting of the Subsidiary Body on the basis of an examination of case studies from the fifth national reports and other sources.

Challenges in mainstreaming

57. The technical arguments for the integration of biodiversity into productive sectors, including agriculture, forestry and fisheries, have been well made and are broadly accepted. This is especially the case for forestry and fisheries where resource managers and biodiversity managers share broad objectives (maintaining forests, fish stocks) even if they differ on priorities, especially over the short term. For agriculture, there is an emerging consensus at the international policy level (see for example the coincidence between FAO's vision for sustainable agriculture sector production systems[17] and Aichi Biodiversity Target 7, but still a lack of large-scale application of integrated approaches. Overall, major challenges remain for the integration of biodiversity into agriculture, forestry, fisheries and aquaculture.

58. Challenges in integrating biodiversity into the activities of the extractive industries (oil and gas, mining) are also becoming more apparent with the expansion of exploration and the development of new extraction approaches.

59. There has also been progress in linking biodiversity and climate change. However, as pointed out in GBO-4 and its underlying technical report, and noted above, further work is needed to ensure that biodiversity is properly taken into account in climate mitigation.

60. A comprehensive review of the scientific and technical needs for the implementation of the Strategic Plan, including policy support tools and methodologies, was undertaken for the seventeenth meeting of the Subsidiary Body. This showed that there are many policy tools available, including for mainstreaming. However, perhaps paradoxically, much of the "mainstreaming" work remains at the project or case-study level. For example, the Global Environment Facility identifies four areas for its interventions on mainstreaming: policy development; spatial and land-use planning; production practices; and finance mechanisms), but less than 10 per cent of its efforts are dedicated to policy development; the largest share (about half of the total) going to production practices. Also, the recent STAP report on mainstreaming repeatedly refers to the lack of any systematic assessment of the effectiveness of measures taken. A review of the fifth national reports also reveals many cases of mainstreaming, but relatively few comprehensive cross-sectoral policy frameworks.

61. There are a number of technical obstacles to the practical implementation of mainstreaming that need to be acknowledged and addressed so that they can be overcome where possible. There has been much investment in recent years in studying the economics of biodiversity. Economic instruments will be important in overcoming some of the obstacles to biodiversity mainstreaming. However, just as a purely technical approach is insufficient, to fully address the obstacles efforts will need to go beyond current mainstream economics and address the obstacles related to political economy, human behaviour and institutional issues.[18] In the more general context of development, this issue is highlighted in the 2015 *World Development Report* "*Mind, Behaviour and Society*." This is especially the case when there are trade-offs between different objectives or winners and losers among stakeholder groups. This is frequently the case in practice; even if integration of biodiversity into broader policies is a win-win for society at large, such an approach may not prevail in practice because some groups lose out or perceive that they risk doing so.

62. In summary, while there has been much progress (e.g., greater awareness within the biodiversity community of the imperative of mainstreaming and global-level policies provide a good framework), with a few exceptions, implementation at the national level appears to be patchy.

[17] Strategic Objective 2 of the FAO Reviewed Strategic Framework 2010-19.

[18] These include: Lack of transparency, vested interests, unequal distribution of costs and benefits from actions, short-term decision-making. Psychology of loses and gains, the need for collective action, lack of policy coherence, and inertia.

IV. POTENTIAL NEXT STEPS TO PROMOTE MAINSTREAMING IN SUPPORT OF THE STRATEGIC PLAN FOR BIODIVERSITY 2011-2020

63. There are a number of options for enhanced work under the Convention to further promote the mainstreaming of biodiversity within and across sectors. These may be further explored by the Subsidiary Body on Implementation at its first meeting, building upon the foregoing analysis and further work, including the International Expert Workshop on Biodiversity Mainstreaming to be held in Mexico.

64. *Comprehensive policy frameworks*. As noted by the Conference of the Parties, an important objective in the context of mainstreaming is to achieve policy coherence among biodiversity policies and sectoral and cross-sectoral policies, and the corresponding government ministries (decision XII/1, para. 7(c)). GBO-4 highlighted the need for coherent national frameworks comprising laws or policies with social and economic incentives working in the same direction as those laws and policies. These need to be developed in a broad manner, across sectors, and applied at various levels of government. Currently most countries have put in place many relevant policies, but fewer countries have comprehensive, joined-up frameworks that apply across the whole landscape. The Conference of the Parties at its thirteenth meeting could call for such frameworks, as a follow-up to the development of updated NBSAPs, and provide some relevant guidance for their development. The Conference of the Parties could also encourage intersectoral dialogue in countries and the development of a whole-of-government approach to biodiversity mainstreaming. Ideally, biodiversity policy should not be seen as being independent of sectoral and cross-sectoral policies; rather, sectoral and cross-sectoral policies should be seen as the vehicles through which crucial biodiversity goals are attained while enhancing human well-being. Coherent and efficient policies provide Parties with the basis for scaling up their efforts to implement the Strategic Plan for Biodiversity 2011-2020 and to achieve the Aichi Biodiversity Targets by 2020.

65. *Engagement of indigenous peoples, local communities and stakeholders.* As outlined above, it is necessary to engage indigenous peoples, local communities and all stakeholders and actors in the supply chain: producers, business, and consumers. The Subsidiary Body on Implementation could build upon existing initiatives under the Convention to promote this.

66. *Coordination and information flows*. In the context of the Global Strategy for Plant Conservation, arrangements that facilitate communication and coordination across sectors, such as co-focal points in different institutions, were considered to be a practical way to ensure that botanical considerations and knowledge are drawn upon in planning, implementation and reporting processes.

67. *Leveraging of support from partner organizations.* In addition to providing technical support, organizations that relate to particular sectors offer an effective channel to influence such sectors. For example, FAO can reach the agriculture, fishery and forestry sectors through its intergovernmental processes and meetings, as well as its national networks of focal points and country offices.

68. *Technical guidance.* While there is much guidance already, some gaps were identified by the Subsidiary Body at its seventeenth meeting, and there may be some others. Possible gaps include guidance on:

(a) Spatial planning to promote integrated landscape and seascape approaches;

(b) The integration of biodiversity into various sectors with either direct or indirect dependencies on biodiversity;

(c) Altering incentives (including social and economic incentives) that may lead to changes in behaviour by different groups, including businesses and consumers and addressing obstacles related to political economy, human behaviour and institutional issues.

69. *Assessments and awareness.* A concise summary of the technical arguments for mainstreaming (in particular from the perspective of productive sectors and broader sustainable development) would be

useful to provide the foundation for the foregoing. In addition, there is a need for more focussed assessments to fill gaps in understanding, for example, making a clear and coherent case for the role of biodiversity in supporting agricultural systems through pest control, pollination and soil fertility.

70. *Make use of international frameworks for sustainable development*. The Conference of the Parties, at its thirteenth meeting may wish to welcome the SDG framework, the Sendai Framework on Disaster Risk reduction, the FAO principles for sustainable agriculture, and other internationally agreed frameworks and encourage national level biodiversity related agencies to fully engage in national follow-up processes.

V. SUGGESTED RECOMMENDATIONS

The Subsidiary Body on Scientific, Technical and Technological Advice may wish to:

(a) *Take note* of the information contained in the note by the Executive Secretary on further consideration of the implications of the findings of the fourth edition of the *Global Biodiversity Outlook* and related reports, including with respect to mainstreaming and the integration of biodiversity across sectors (UNEP/CBD/SBSTTA/19/2);

(b) *Request* the Executive Secretary to make use of the information in the note by the Executive Secretary and related information in preparing for relevant agenda items for the first meeting of the Subsidiary Body on Implementation and the thirteenth meeting of the Conference of the Parties;

(c) *Welcome* the initiative by Mexico, as host county for the thirteenth meeting of the Conference of the Parties, to organize, in cooperation with the Executive Secretary and with the support of Switzerland, an international workshop on biodiversity mainstreaming, and request the Executive Secretary to make the outcomes of the workshop available to the Subsidiary Body on Scientific, Technical and Technological Advice at its twentieth meeting and to the Subsidiary Body on Implementation at its first meeting.

Annex

Targets where there has been the least progress at the global level[19]

Target	Status (Global; as reported in GBO4)	Follow up planned or needed
10 Ecosystems vulnerable to climate	Target not achieved by 2015 deadline	COP-12 adopted plan for coral reefs. Tools for other vulnerable ecosystems are a gap. Action also needed to reduce GHG emissions
12 Threatened species	Overall status of threatened species is worsening	IUCN and the Executive Secretary are preparing background information on possible steps to accelerate progress towards Target 12, and this is a focus of a current series of regional capacity-building workshops on Targets 11 & 12
14 Ecosystem services	Variable progress; ecosystems of particular importance for services in decline, poor communities impacted particularly	Opportunities provided by SDG framework and work on health and biodiversity. Additional actions may be needed. Also need improvements in data, indicators and monitoring
8 Pollution	Nutrient use levelling off in some areas but rising in others. Limited information on other pollutants	International nitrogen initiative under way. Marine debris to be addressed at SBSTTA-20
5 Habitat loss	Forest loss slowed in some areas, declines and degradation in other habitats	Capacity-building activities under way in partnership with other organizations
3 Incentives	Progress on positive incentives, but no overall progress on removing or phasing out perverse incentives	Modalities and milestones adopted. According to NR5, few countries have taken action on perverse incentives
4 Consumption & production	Many plans in place, but limited in scale and natural resource use continues to increase	Activities being pursued through programme on business and biodiversity and others
6 Fisheries	Some progress on actions, but fisheries still have adverse impact on biodiversity	Joint work under way with FAO and the RFMOs. Opportunity to address this issue under the mainstreaming agenda at COP-13
15 Restoration & resilience	Progress on restoration is being made, but there is still an overall loss of ecosystem and carbon stocks	Capacity-building activities under way in partnership with other organizations. Also opportunity to pursue this work jointly with Rio conventions

[19] Targets for which one or more elements was assessed as "moving away from target", as well as targets where half or more of the elements where assessed as "no significant progress" (or worse) are listed as a target where there has been the least progress at the global level. The targets are ordered by degree of progress, with those showing least progress listed first. Two other targets include one element (among 4 evaluated) assessed as "no significant progress"; these are targets 9 (invasive alien species) and 13 (genetic diversity).

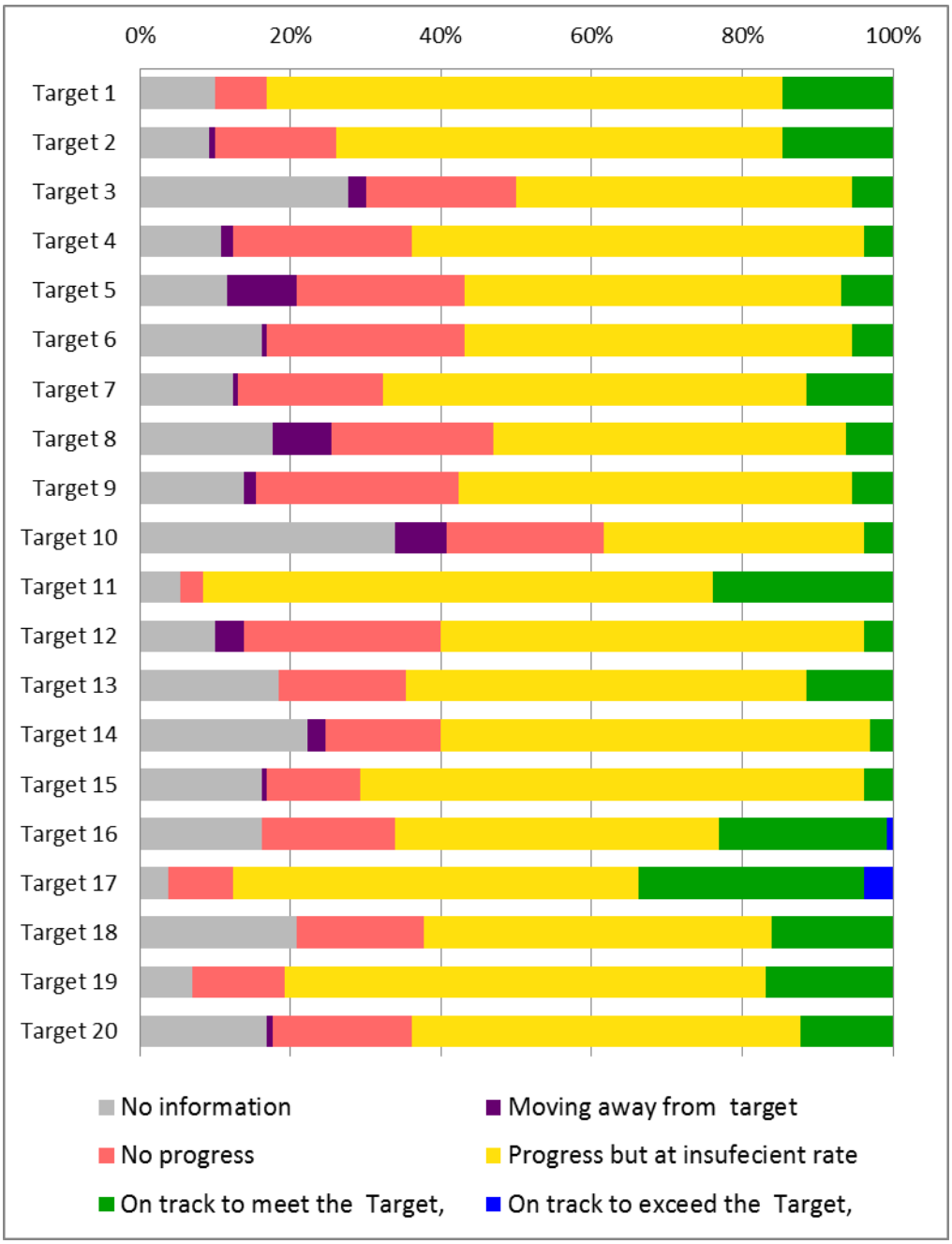

Figure. Assessment of progress towards the attainment of the Aichi Biodiversity Targets based on the information contained in 130 fifth national reports

Over 40 per cent of these reports explicitly assessed national progress towards the Aichi Biodiversity Targets. Where Parties explicitly assessed progress towards the Aichi Biodiversity Targets, these assessments were used and applied to the five scales used in the assessment. In the other cases the assessment has been inferred by the Secretariat of the Convention on Biological Diversity based on the information contained in the report; the assessment considered information related to the status and trends of biodiversity as well as information on actions taken or planned. A number of these reports did not contain information that allowed for an assessment of progress. These cases are represented in the figure as “No Information”.

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