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THE IDENTIFICATION OF SCIENTIFIC AND TECHNICAL NEEDS FOR THE ATTAINMENT OF TARGETS 14 AND 15 UNDER STRATEGIC GOAL D OF THE STRATEGIC PLAN FOR BIODIVERSITY 2011-2020¹

Note by the Executive Secretary

I. INTRODUCTION

1. In paragraph 1 of decision XI/13 B, the Conference of the Parties requested the Executive Secretary to prepare information on:

(a) Scientific and technical needs related to the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets;

(b) Existing policy support tools and methodologies developed or used under the Convention and their adequacy, impact and obstacles to their uptake, and gaps and needs for further development of such tools and methodologies;

(c) The adequacy of observations, and of data systems, for monitoring the biodiversity attributes addressed in the Aichi Biodiversity Targets; and

(d) Options for assessing the effects of the types of measures taken in accordance with the provisions of the Convention;

and to report on progress on these matters to a meeting of the Subsidiary Body on Scientific, Technical and Technological Advice prior to the twelfth meeting of the Conference of the Parties.

2. Accordingly, the Executive Secretary, through notification SCBD/STTM/DC/ac/81207 (2013-005) of 21 January 2013, invited the views of Parties and relevant organizations on these issues.

3. Eleven Parties (Argentina, Australia, Bolivia, Bulgaria, Canada, China, Colombia, Mexico, the European Union, France and the United Kingdom) and eight organizations (BirdLife, Conservation International, the Global Biodiversity Information Facility (GBIF), the Group on Earth Observations

^{*} UNEP/CBD/SBSTTA/17/1.

¹ The document does not cover Target 16, which is being addressed by ICNP.

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Biodiversity Observation Network (GEO-BON), the International Union for Conservation of Nature (IUCN), the Japan Civil Network for the United Nations Decade on Biodiversity, the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), and the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)) responded to this notification.

4. The present note, prepared on the basis of these and other inputs, contains for Targets 14 and 15 under Strategic Goal D of the Strategic Plan for Biodiversity 2011-2020: general observations and considerations regarding the adequacy of policy support tools; the adequacy of data, observations and indicators; and the effects of the types of measures taken in accordance with the provisions of the Convention on Biological Diversity; and on that basis draws conclusions on scientific and technical needs related to the implementation of the Strategic Plan and to each of these targets.

5. A draft of this note was subjected to peer review from 27 June to 15 July 2013. Comments from 19 Parties (Canada, Cook Islands, European Union, Fiji, Guatemala, Kiribati, Marshall Islands, Mexico, Micronesia (Federated States of), Nauru, Nepal, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu) and two organizations (Food and Agriculture Organization of the United Nations and the International Union for Conservation of Nature) were received and are reflected in this note.²

II. SCIENTIFIC AND TECHNICAL NEEDS FOR THE ATTAINMENT OF TARGETS 14 AND 15 UNDER STRATEGIC GOAL D

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

14.1 Elements of Target 14

6. All terrestrial, freshwater and marine ecosystems provide multiple ecosystem services. However, some ecosystems are particularly important in that they provide services that directly contribute to human well-being by providing services and goods to fulfil daily needs. Ecosystems which provide services related to the provision of food, fibre, medicines and fresh water, pollination of crops, filtration of pollutants, and protection from natural disasters are among those ecosystem services provided by biodiversity which are essential for human well-being. The target requires that such ecosystems are restored and safeguarded.

7. Restoration refers to the process of managing the recovery of an ecosystem that has been degraded, damaged or destroyed, as a means of sustaining ecosystems, maintaining their resilience and conserving biodiversity. Safeguarded is a general term, which relates to protection. There are a wide range of measures which can be used to protect ecosystems, from strict protected areas to community conserved areas. The most suitable type of restoration and protection will vary with the type of ecosystem being considered. As all ecosystems provide important services, countries need to identify and prioritize those ecosystems that are particularly important for human well-being given their national conditions and circumstances.

² Comments were provided by experts in their individual capacity. 14 Pacific Island States made a joint submission prepared at the margins of the Regional Workshop for the Pacific Countries on the Preparation of the Fifth National Report (Nadi, Fiji, 22-26 July 2013).

8. While all people are dependent on ecosystem services for their survival, some groups are particularly reliant on them for their well-being, and their specific circumstances need to be considered when taking action towards this target. In many countries the poor and vulnerable are directly reliant upon ecosystem services for their day-to-day survival. In many countries the poor and vulnerable are disproportionately composed of women. Furthermore, because of different gender roles, in some countries women may be reliant on certain types of ecosystems more than men. For many indigenous and local communities ecosystems not only provide services, but are also an essential part of their spirituality, worldview and identity.

14.2 Existing policy support tools and methodologies, their adequacy, impact, obstacles to their uptake, and gaps

Policy support tools and methodologies to help achieve Aichi Biodiversity Target 14

9. Given the emphasis on safeguarding in this target, the programme of work on protected areas and the tools associated with its implementation provide relevant guidance on the types of actions that could be taken to achieve this target. The policy support tools and methodologies associated with protected areas are discussed in greater detail under Target 11.

10. Given the links to human health, the work on health and biodiversity undertaken under the Convention is also relevant to this target. A number of international organizations have also developed tools and methodologies, which are related to human well-being. Examples of these include the environmental guidance note for disaster risk reduction" published by IUCN, the toolkits developed under the IUCN Water and Nature Initiative (WANI), and a toolkit for measuring and monitoring ecosystem services at the site scale developed by UNEP-WCMC.

11. With regards to restoration, while there is no specific programme of work on restoration under the Convention, the importance of restoration has been recognized in a number of decisions (see Target 15), and a wealth of guidance has been developed by other organizations. For example, the Society for Ecological Restoration has developed and compiled a range of tools, methodologies and case studies related to restoration. Similarly, most international non-governmental organizations have developed tools and methodologies related to ecosystem management and land-use planning that are relevant to Target 14, as well as materials related to the relationship between biodiversity and human well-being and tools to determine the most effective use for restoration funds.

The application of existing policy support tools and methodologies

12. The guidance related to the protection and restoration of ecosystems has been used to undertake a number of projects. However, it is unclear if these projects have been undertaken specifically to address the issues identified in this target. Furthermore, most of the projects undertaken have tended to be relatively small and carried out over a short amount of time. They have also not usually been carried out in arid and semi-arid areas. Additionally, many restoration projects have focused on the recovery of ecosystem structure, but very few have monitored the changes in the functioning of ecosystems and in the provision of ecosystem services.

Obstacles to the use of existing policy support tools and methodologies

13. Obstacles to the use of the guidance on protected areas and restoration are contained in the discussions on Targets 11 (UNEP/CBD/SBSTTA/17/2/Add.3) and 15 (below). Obstacles specific to Target 14 include challenges in identifying those ecosystems which are important for human well-being and the essential services they provide. Such information is needed to justify the costs associated with the protection and restoration of ecosystems in relation to human well-being; however, assessing the

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monetary value of ecosystem services remains challenging. A further obstacle is that while there is various guidance related to the different elements of the target there is as yet no unified guidance for the entirety of the target. Moreover, in countries or areas in which land is largely in the hands of local landowners, larger-scale planning processes and restoration projects may require particular awareness-raising and coordination efforts.

Gaps in policy support tools and methodologies

14. The main actions required to attain this target relate to safeguarding and restoring ecosystems. A wide range of guidance has been prepared for these two issues. Possible gaps include methodologies or tools for identifying and prioritizing those ecosystems that are particularly important for the provision of goods and services important for well-being, as well as methods for ensuring that the needs of women, indigenous and local communities, and the poor and vulnerable are appropriately considered in any actions which are taken towards this target. A further gap relates to guidance for assisting Parties in managing ecosystems for the delivery of multiple ecosystem services. Ecosystems have long been managed to maximize the provision of one specific type of service. Guidance on methods for optimizing the delivery of multiple ecosystem services could assist Parties in ensuring that this target is met. Further methodological gaps concern the restoration of multiple ecosystem services with limited knowledge of their functioning and of the species-specific responses to climate variations.

14.3 The adequacy of observations, and of data systems, for monitoring the biodiversity attributes addressed in Aichi Biodiversity Target 14 and the use and development of indicators for the target

Ability to assess/measure the status of progress towards the target at global, regional, national and subnational levels

15. A number of operational indicators were identified in the annex to decision XI/3 A:

(a) Trends in benefits that humans derive from selected ecosystem services;

(b) Trends in health and well-being of communities who depend directly on local ecosystem goods and services;

- (c) Trends in delivery of multiple ecosystem services;
- (d) Trends in proportion of total freshwater resources used;
- (e) Trends in proportion of the population using improved water services;
- (f) Population trends and extinction risk trends of species that provide ecosystem services;
- (g) Trends in economic and non-economic values of selected ecosystem services;
- (h) Trends in human and economic losses due to water or natural resource related disasters;
- (i) Trends in nutritional contribution of biodiversity: Food composition;
- (j) Trends in nutritional contribution of biodiversity: Food consumption;
- (k) Trends in incidence of emerging zoonotic diseases;
- (l) Trends in inclusive wealth;

- (m) Trends in prevalence of underweight children under-five years of age;
- (n) Trends in natural resource conflicts;
- (o) Trends in the condition of selected ecosystem services;
- (p) Trends in biocapacity;
- (q) Trends in area of degraded ecosystems restored or being restored.

16. This already large number of indicators is supplemented by additional indicators used at local, national or regional level (such as indicators of pollination services or on medicinal plants) as well as indicators related to other Aichi Biodiversity Targets (e.g. Targets 5, 11, 12, 18). Together these can capture the range of aspects related to Target 14 and thereby help to assessing progress made towards its achievement. However, most countries will likely wish to focus on a selected subset of these indicators, depending on national needs and priorities.

17. Monitoring progress towards this target entails assessing the status of ecosystems as well as trends in the services they provide and how different user groups benefit from their use. The types of ecosystem services that need to be monitored will likely vary from country to country and change over time as a result of societal needs. However, some ecosystem services, such as the provision of clean water and adequate food, will be of universal concern and are therefore already generally well monitored.

18. Thus, based on the information from several complementary indicators progress towards this target can be assessed at different scales.

Areas where enhanced monitoring/better data/additional observations/additional indicators would make a significant difference in our ability to monitor progress in order to guide appropriate/targeted action

19. While relatively good information exists on provisioning services, particularly those which are marketable, there is relatively little information on trends in the delivery of regulating, cultural and supporting services. Our current inability to monitor the delivery of these types of ecosystem services at the global level represents a major gap. More detailed information on the links between the condition of ecosystems and human well-being, as well as the links between ecosystems and the provision of water, would assist with monitoring progress towards this target. Furthermore, much of the information that is currently available is from developed countries. Efforts to improve the geographic coverage of the existing data would enhance our ability to monitor progress towards the attainment of this target. In addition, information on the effects of the variation of ecosystems across different landscapes on the delivery of ecosystem services may support Parties in achieving Target 14.

Limitations in making these enhancements

20. There are many different types of ecosystems, each of which provides several ecosystem services. As a result, the number of ecosystem services that need to be monitored is large. There are limited resources with which to undertake this monitoring. Additional efforts are also needed to monitor how the provision of ecosystem services changes in response to improved protection or restoration of ecosystems with a view to guiding management and/or restoration actions.

14.4 Assessing the effects of the types of measures taken in accordance with the provisions of the Convention

21. Most countries have taken actions to protect and restore ecosystems. The relatively rapid expansion of protected areas is regarded as one of the main environmental achievements of the past several decades. This needs to be followed up by appropriate management of these areas and their integration into the wider landscapes and seascapes. There are also numerous examples of successful ecosystem restoration projects, which illustrate that where actions have been taken to protect or restore ecosystems they have generally had a positive effect on biodiversity. However, there is relatively little information on the effects of such actions in restoring ecosystem functioning, improving the provision of ecosystem services, enhancing resilience, and/or contributing to human well-being, and the areas which have undergone restoration do not necessarily correspond to areas with relatively high provision of ecosystem services.

14.5 Conclusions from previous sections to enable identification and prioritization of scientific and technical needs related to the implementation of Target 14

Adequacy of guidance and tools in support of implementation at national level

22. The existing guidance and tools related to this target are adequate. However, additional guidance on methods for balancing the various demands on ecosystems and for identifying those ecosystems that are particularly important for human well-being as a result of the services they provide would assist Parties in attaining this target.

Adequacy of data and information for monitoring progress at different scales

23. The indicators and monitoring systems that are currently available provide several of the key elements required to monitor progress towards this target at different scales. Broader information on the provision of ecosystem services would be helpful in monitoring progress towards this target. However, enough information is available to be able to make a broad assessment of progress.

Effectiveness of actions taken

24. Where actions have been taken to protect and/or restore ecosystems, they have generally had positive effects on biodiversity at the local and/or regional levels. However, the information currently available does not enable the effects of these actions on the provision of ecosystem services or human well-being to be assessed at global scale.

Summary conclusion

25. The existing policy tools and guidance do not represent a limiting factor for Parties to take action towards this target. Similarly, although there are gaps, the existing indicators allow for broad assessments of progress to be made. However, our ability to link the information on the types of actions taken to reach this target with changes in the provision of ecosystem services and human well-being is currently limited.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification

15.1 Elements of Target 15

26. Ecosystem change, degradation and loss are some of the main sources of carbon dioxide, methane and other greenhouse gas emissions (other than the burning of fossil fuels). The reversal of these processes, through ecosystem restoration and rehabilitation, and the prevention of loss, represents an immense opportunity for biodiversity restoration, carbon sequestration and combating desertification. Restored landscapes and seascapes can improve the resilience of larger-scale ecosystems, contribute to climate change adaptation and mitigation, and generate additional benefits for people. Moreover, the conservation of habitats, especially in areas with high-density carbon stocks, can avoid the anthropogenic emission of greenhouse gases. This is particularly relevant for areas with large below-ground carbon stocks (peatlands and organic soils) currently threatened by climate change and land-use changes. Target 15 specifically calls for the restoration of at least 15 per cent of degraded ecosystems.

15.2 Existing policy support tools and methodologies, their adequacy, impact, obstacles to their uptake, and gaps

Policy support tools and methodologies to help achieve Aichi Biodiversity Target 15

27. Given that this target refers to conservation, the various tools and methods developed to support the implementation of the programme of work on protected areas are relevant to this target.³ Furthermore, the programmes of work on climate change and on forest biodiversity are also relevant, as is the various guidance that has been developed in relation to REDD+. Other relevant guidance includes the ecosystem approach and several issues of the CBD technical series.⁴ National climate change policies and plans which have been developed in response to commitments and guidance under the United Nations Framework Convention on Climate Change (UNFCCC) can also support the achievement of Target 15.

28. While there is no specific work programme on restoration under the Convention, the importance of restoration has been recognized in many programmes of work and decisions of the Conference of the Parties, and decision XI/16 is specifically on ecosystem restoration. An assessment of available guidance and guidelines related to restoration presented at the eleventh meeting of the Conference of the Parties identified 240 sets of guidance, of which 24 were of a generic nature and 130 were related to specific ecosystems.⁵ A similar assessment identified more than 1,200 publicly available tools/technologies on ecosystem restoration.⁶

³ Additional information related to protected areas is contained in UNEP/CBD/SBSTTA/17/2/Add.3 under Target 11.

⁴ CBD Technical Series 62: Contribution of ecosystem restoration to the objectives of the CBD and a healthy planet for all people;

CBD Technical Series 59: REDD+ and biodiversity;

CBD Technical Series 43: Forest resilience, biodiversity, and climate change - a synthesis of the biodiversity/resilience/stability relationship in forest ecosystems;

CBD Technical Series 26: Voluntary guidelines on biodiversity-inclusive impact assessment;

CBD Technical Series 10: Interlinkages between biological diversity and climate change.

⁵ See <u>https://www.cbd.int/doc/meetings/cop/cop-11/information/cop-11-inf-17-en.pdf</u>.

⁶ See <u>https://www.cbd.int/doc/meetings/cop/cop-11/information/cop-11-inf-18-en.pdf</u>.

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29. Furthermore, a range of organizations have developed relevant guidance related to restoration. For example, the UN-REDD Programme, the Food and Agriculture Organization of the United Nations, the World Bank, the Global Partnership on Forest and Landscape Restoration, and the Society for Ecological Restoration have all developed tools or guidance which can assist Parties in developing policies or taking actions in support of this target. IUCN has also developed materials which are relevant, including a guide for the construction of a geospatial model to identify and prioritize areas with the potential for forest landscape restoration at a regional level, a guide for trainers on climate change and forests, and information on principles of ecosystem-based adaptation to climate change. IUCN leads the development of tools to guide decision-making with regards to where restoration funds can be spent to best effect. FAO is establishing a forest and landscape restoration mechanism to support countries in more effectively planning and carrying out restoration work across a variety of terrestrial ecosystems and land-use systems. A restoration opportunity map has been produced that estimates the extent of degraded lands with potential for restoration at global level.⁷

The application of existing policy support tools and methodologies

30. Much of the guidance related to restoration and the use of protected areas has been used by Parties, though not necessarily in the context of this target. The programme of work on protected areas is consistently regarded as being among the most implemented programmes of work under the Convention (see under Target 11). There are numerous case studies illustrating the different types of restoration activities that have been undertaken around the world. However, with the information currently available it is not possible to comprehensively assess the extent to which specific tools or methodologies have been used at the global scale, nor their impact at national and subnational levels.

Obstacles to the use of existing policy support tools and methodologies

31. Making use of the available guidance often requires that it be tailored to suit national circumstances. This can often be an obstacle to the effective use of the existing policy support tools and methodologies, as there are relatively few examples of generic guidelines and tools being adapted to local needs. As a consequence there is a lack of sharing of best practices, as well as of mistakes and failures that should be avoided in future, in the application of guidance among countries and regions. Moreover there is a variety of guidance available on individual elements addressed by this target but there is no unifying guidance to address all of the target's components in a coherent manner. In countries with limited capacities, tools and methodologies that are accompanied by financial and technical support are implemented more frequently than others.

Gaps in policy support tools and methodologies

32. One policy support or methodological gap for this target relates to the identification and prioritization of those lands in need of restoration. In any given country there are likely to be several areas, which could be restored at any given time. Guidance to assist countries in prioritizing their restoration activities could assist with the attainment of this target, as would the development of tools to help clarify the desired outcomes of restoration activities. Similarly, there is limited guidance related to the identification of ecosystems that represent (potentially) vulnerable and significant carbon stocks. Additional guidance may be needed related to the restoration of dryland and grassland ecosystems, particularly in tropical and sub-tropical regions, as well as to mountain ecosystems. Further harmonization of approaches and methodologies related to ecosystems restoration, REDD+, and ecosystem-based adaptation to climate change at national level could be helpful. Additional guidance on costs and benefits of different methods for ecosystem restoration may also be needed.

⁷ The map was produced by the Global Partnership on Forest and Landscape Restoration, World Resources Institute, South Dakota State University and International Union for Conservation of Nature, September 2011.

15.3 The adequacy of observations, and of data systems, for monitoring the biodiversity attributes addressed in Aichi Biodiversity Target 15 and the use and development of indicators for the target

Ability to assess/measure the status of progress towards the target at global, regional, national and subnational levels

33. The following operational indicators were identified in the annex to decision XI/3 A:

- (a) Status and trends in extent and condition of habitats that provide carbon storage;
- (b) Population trends of forest-dependent species in forests under restoration.

34. In addition to these, several indicators identified primarily for other targets (in particular Targets 5, 7, 10, 11, 12, 14 and 18) are also relevant here, in particular trends in extent of selected biomes, ecosystems and habitats. Many of these indicators are based on data that can be disaggregated for ecosystems with particularly significant carbon stocks, such as forests, peatlands, and freshwater and coastal wetlands, thereby enabling an assessment of progress towards this target. For below-ground carbon stocks (peatlands and organic soils) there is a need for extensive field surveys and *in situ* monitoring systems; for above-ground biota, remote sensing techniques are becoming increasingly accurate for monitoring changes in biomass and vegetation cover, which can provide information related to desertification and other parameters. As the technologies related to remote sensing advance, our ability to monitor progress towards this target is also likely to improve.

Areas where enhanced monitoring/better data/additional observations/additional indicators would make a significant difference in our ability to monitor progress in order to guide appropriate/targeted action

35. The knowledge base regarding the size of carbon stocks in different ecosystems as well as their carbon fluxes and rates of sequestration is limited and has major geographic gaps. This is particularly true for peatlands and organic soils as well as coastal wetlands. Global databases of ecosystem protection and restoration activities aimed at climate mitigation and biodiversity protection/restoration exist only in prototype form. Although several degradation assessments exist, for example, the Global Land Degradation Assessment, information regarding the extent and location of degraded ecosystems worldwide is limited. Better information and monitoring of these issues would greatly enhance the capacity to monitor progress towards this target. Enhanced capacity, as well as the adaptation and more widespread use of appropriate tools for gathering information and monitoring at national level are needed.

Limitations in making these enhancements

36. The main limitation to addressing the issues noted above is the lack of resources with which to undertake the work. However, there is scope to focus existing monitoring tools and in-country capacities more effectively on degraded lands and their potential for restoration. In addition, the absence of agreement on what constitutes a "degraded ecosystem" is an obstacle to having better information on the amount and location of degraded ecosystems globally.

15.4 Assessing the effects of the types of measures taken in accordance with the provisions of the Convention

37. The two main actions required to reach this target are ecosystem protection and restoration. The conservation, restoration and sustainable management of ecosystems have proven to be cost-effective and immediately available means to sequester carbon dioxide and prevent the loss of other greenhouse gases, while also allowing people and ecosystems to adapt, reducing their vulnerability. Activities related to

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ecosystem protection and restoration are occurring in many countries and are generally having a positive effect on biodiversity; however, they will need to be scaled up if this target is to be met. This requires analyses of the trade-offs to alternative land-uses and clear understanding of tenure systems. In this context national and subnational governments and land managers need determine which actions can be successfully implemented within the local/national policy and political landscape. Furthermore, it is challenging to determine the effects of such actions on carbon sequestration, taking into account such factors as leakage, permanence and additionality, as well as on combating desertification, and improving ecosystem resilience more generally.

15.5 Conclusions from previous sections to enable identification and prioritization of scientific and technical needs related to the implementation of Target 15

Adequacy of guidance and tools in support of implementation at national level

38. Ample guidance has been developed in relation to the protection of ecosystems. Similarly, there is a range of guidance related to ecosystem restoration. However, the existing guidance needs to be more systematically tailored to national and local needs. Greater information on the benefits of restoration work to socioeconomic concerns, particularly those of local communities, could build greater interest and political support as well as enhance the effectiveness of restoration efforts. While there may be gaps in relation to the identification of those areas which are particularly important for their role as carbon stocks, the existing guidance, if appropriately tailored, appears to be adequate for reaching this target.

Adequacy of data and information for monitoring progress at different scales

39. There are several indicators that can be used to provide information on progress towards this target. However, there are information gaps in relation to the extent to which restoration activities are being undertaken at the global level, the location and extent of degraded lands, and carbon fluxes. Also, detailed information on degraded lands and restoration opportunities at national level is largely lacking. These gaps limit our ability to monitor the achievement of this target, though with the information available it should be possible to undertake a broad assessment.

Effectiveness of actions taken

40. Where actions for the protection and restoration of ecosystems have been undertaken these have generally been effective. There is a need to undertake these types of actions specifically while keeping climate change mitigation and adaptation in mind.

Summary conclusion

41. The available guidance appears to provide an adequate basis for this target to be implemented and to guide actions to be undertaken at the appropriate scales. Documenting these actions is crucial to disseminate knowledge about past successes and failures and to develop additional tailor-made guidance. While there are significant gaps in data and information, it should nonetheless be possible to have a broad assessment of progress towards this target.
