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ANALYSIS OF PROGRESS ON AICHI BIODIVERSITY TARGETS 5 AND 15

Note by the Executive Secretary

1. The Executive Secretary is circulating herewith, for the information of participants in the twentieth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice and the first meeting of the Subsidiary Body on Implementation, the "Analysis of progress on Aichi Biodiversity Targets 5 and 15", compiled by the Secretariat of the Convention on Biological Diversity.

2. The Analysis of progress on Aichi Biodiversity Targets 5 and 15 is relevant to the work of the Convention on Biological Diversity, in particular with regard to Article 8(f) and decisions X/2, X/17, X/36, XI/16, XI/19, and XII/19.

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** UNEP/CBD/SBI/1/1/Rev.1.

Analysis of progress on Aichi Biodiversity Targets 5 and 15

CONTENTS

Introduction

1. In its decision X/2, paragraph 14, the Conference of the Parties, decided that at its future meetings it would review progress in the implementation of the Strategic Plan for Biodiversity 2011-2020, and requested the Executive Secretary to prepare an analysis/synthesis of national, regional and other actions, including targets as appropriate, established in accordance with the Strategic Plan for Biodiversity 2011-2020 (para. 17(b)). This report focuses on targets 5 and 15 of the Strategic Plan, and touches upon other related targets where relevant.

2. Aichi Biodiversity Target 5 is: "By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced."

3. Aichi Biodiversity Target 15 is: "By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has 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."

4. The Conference of the Parties, in 2014 at its twelfth meeting, undertook a midterm evaluation of the status of Aichi Biodiversity Targets on the basis of the fourth edition of the Global Biodiversity Outlook (GBO 4)[1]. With regards to Target 5, the evaluation concluded that no significant overall progress has been made, in the face of likely high rates of declines of natural habitats, albeit with medium confidence given the scarcity of data for many ecosystem types. Variation in rates of progress between ecosystems was also noted, with rates of forest cover loss significantly slowed in some tropical areas, although with great regional variations. Proxy indicators and extrapolations suggested that habitats of all types, including forests, grasslands, wetlands and river systems continued to be fragmented and degraded.

5. With regards to Target 15, the evaluation noted, with low confidence given the scarcity of available data, that despite restoration and conservation efforts there was still a net loss of forests, contributing to total global emissions, and that while many restoration activities were under way it was not possible to assess whether or not they would be enough to meet the quantitative target of restoring 15% of degraded ecosystems by 2020.

6. The current outlook for achieving Aichi Biodiversity Targets 5 and 15 is particularly concerning given that ecosystem conservation and restoration play a central role in the implementation of the Strategic Plan. The destruction and degradation of natural habitats that Target 5 seeks to reduce represents the single most important driver of biodiversity loss. Preventing further fragmentation of habitats is essential to avoid species populations becoming isolated and to enable essential movements across landscapes and aquatic environments, especially in the face of climate change. Achieving Target 5 therefore underpins the success in meeting many other Aichi Biodiversity Targets, in particular Target 12 on preventing the extinction of endangered species.

7. Where conversion has already taken place but pressure on the land is decreasing, the reversal of habitat loss, fragmentation and degradation, through ecosystem restoration, represents an immense opportunity for both biodiversity restoration and carbon sequestration. By preserving and restoring natural habitats and ecosystems, both targets support the provision of ecosystem services and associated benefits for people, such as water quality, derived from these ecosystems, in particular including for indigenous peoples and local communities and the rural poor, in support of Target 14. Conserved and restored landscapes and seascapes are more resilient than degraded systems and therefore contribute to the adaptive capacity of ecosystems and societies, contributing to climate change adaptation in support of Targets 14 and 15.[1]

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[1] Secretariat of the Convention on Biological Diversity (2014) *Global Biodiversity Outlook* 4. Montreal, 155 pages.

8. Conversely, the achievement of Targets 5 and 15 can benefit from actions under other targets. Effective and well-connected protected area networks (Target 11) can help reduce habitat loss and landscape degradation[2]. The sustainable management of areas under agriculture, forestry and aquaculture (Target 7), the reduction of pollution, including from excessive nutrients (Target 8) and the control or eradication of priority invasive alien species (Target 9) are all measures that can help reduce the degradation and fragmentation of natural ecosystems. Addressing underlying drivers of degradation, such as incentives harmful to biodiversity (Target 3), is also crucial to ensure the efficiency of these measures, which should be part of an integrated national biodiversity strategy and action plan (Target 17) that defines clear and achievable national targets in support of Targets 5 and 15. Financial resource mobilization (Target 20) and associated positive incentive measures, like REDD+ and PES (Target 3), are also likely to be facilitated by the setting of clear and measurable objectives.

9. The Sustainable Development Goals (SDGs), adopted by world leaders in September 2015, also emphasize the importance of the conservation and restoration of ecosystems within a global agenda for sustainable development by 2030, in line with Targets 5 and 15. Over the next 15 years, they will provide a framework for countries to "mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind." Goal 15 in particular contemplates the aims of the Strategic Plan on Biodiversity and emphasizes the importance of "Sustainably manag[ing] forests, combat[ing] desertification, halt[ing] and revers[ing] land degradation, halt[ing] biodiversity loss". Targets 1 to 4 under this Goal provide further detail of how this may be achieved. [3] These targets constitute a renewed expression, by the international community as a whole, of the importance of a variety of ecosystems and their benefits for populations. The demonstration of synergies between the 2030 Agenda for Sustainable Development and Aichi Biodiversity Targets 5 and 15 could be a lever for financial resource mobilization, in line with its targets to "Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems" and to "Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation".

10. This report aims providing an updated assessment of progress towards Targets 5 and 15 and outlook for their achievement by 2020, based on a review of national plans for their implementation and global indicators. **Section 1** provides further detail of the strategy of the Secretariat for furthering progress under these two targets. **Section 2** presents, under the various components of both targets, relevant data and indicators of progress and outlook for their implementation in the Latin America region, based on an analysis of National Reports and National Biodiversity Strategies and Action Plans (NBSAPs) for 22 countries. **Section 3** discusses the potential for linkages with other global agendas. Conclusions and next steps are proposed in **Section 4.**

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[2] Brazil has successfully used the creation of protected areas in strategic locations to control the deforestation frontier in the Amazon. From 2002 to 2009, the Brazilian Amazon Protected Area network expanded by 60%; a large part of these new areas were created in regions of intense land conflict to act as green barriers against deforestation. - Soares-Filho B. et al. (2010). Role of Brazilian Amazon protected areas in climate change mitigation. *PNAS* 107, 10821;

[3] 15.1. "By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements"; 15.2. "By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally"; 15.3. "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world; 15.4. "By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development".

1 Strategy for collection and sharing information and data on status and priority actions

11. The Secretariat, in collaboration with partner organizations, has undertaken efforts to reach out to Parties including through the organization of regional capacity-building workshops and has collected information on the status of elements of Aichi Biodiversity Target 5 and 15 through a review of National Reports and National Biodiversity Strategies and Action Plans (NBSAPs).[4]

12. In order to identify potential barriers to effective implementation of the targets at the national scale, a review of 5th National Reports and NBSAPs was conducted for 22 Parties in Latin America[5], focusing on information provided with regards to Targets 5 and 15. The aim of this review is to assess how close current national strategies and action plans bring the region to meeting Targets 5 and 15 and how these strategies and plans may be strengthened. The analysis breaks down reporting on both targets, according to elements which relate not only to the accuracy of information provided on progress towards these targets, but also clarity in the definition of national targets, the accuracy of the assessment of past and current rates of habitat loss, degradation and fragmentation and the level of detail in the actions presented in support of achieving the targets. For the group of 22 countries reviewed, statistics on the frequency of occurrence of these elements in reporting or target setting have been compiled and are presented in Section 2 under relevant components of the Targets, together with examples of best practice found in the national reports reviewed.

13. This information can help to determine where further support is particularly needed to support countries in setting measurable and achievable targets, based on accurate information on the state and trends of natural ecosystems and a comprehensive diagnosis of the direct and underlying drivers of their loss, degradation and fragmentation. Further support may also be needed to ensure that national targets are supported by effective measures and associated finance, and that progress is monitored over time to ensure that implementation actions can be adaptively managed.

14. The review was completed by a questionnaire[6] sent to representatives of these Parties that took part to a workshop on ecosystem conservation and restoration held in Bogota, Colombia, 4-8th of April 2016. Section 1 of the questionnaire draws on recommendations for action at the national level to further implementation of Targets 5 and 15 from the GBO-4, and aims at identifying how relevant these actions are in various countries and what the barriers may be to their implementation. Results from the questionnaire will be presented in a further version of this information note to be presented prior to CBD COP 13, when responses from a greater sample of Parties have been collected. Section 2, 3 and 4 of the questionnaire aim at verifying the information collected through the review of national reports.

15. Country-specific results from the review of reports and questionnaire responses are being compiled in 'data dossiers' at the attention of CBD Focal points, with a view to highlighting potential gaps in data and actions. Priority actions to improve national reporting and target setting and further

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[4] The text of the Convention requires Parties to submit National Biodiversity Strategies and Action Plans ('NBSAPs'), as well as national reports that describe measures taken to implement the provisions of the Convention and their effectiveness in meeting the objectives of the Convention. Since the adoption of the Strategic Plan for Biodiversity 2011-2020 at CBD COP 10, revised NBSAPs are expected to describe how Parties intend to implement the Strategic Plan and achieve the Aichi Targets at the national level. Accordingly, national reports are expected to contain a number of sections that inform specifically on progress towards achieving the Aichi Biodiversity Targets at the national level.

[5] Argentina, Belize, Plurinational State of Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay Bolivarian Republic of Venezuela.

[6] Section 1: Diagnosis of causes and actions to address them (17 questions)

Section 2: Linkages to climate change mitigation and adaptation (5 questions)

Section 3: Assessment of state and trends of natural ecosystems (15 questions)

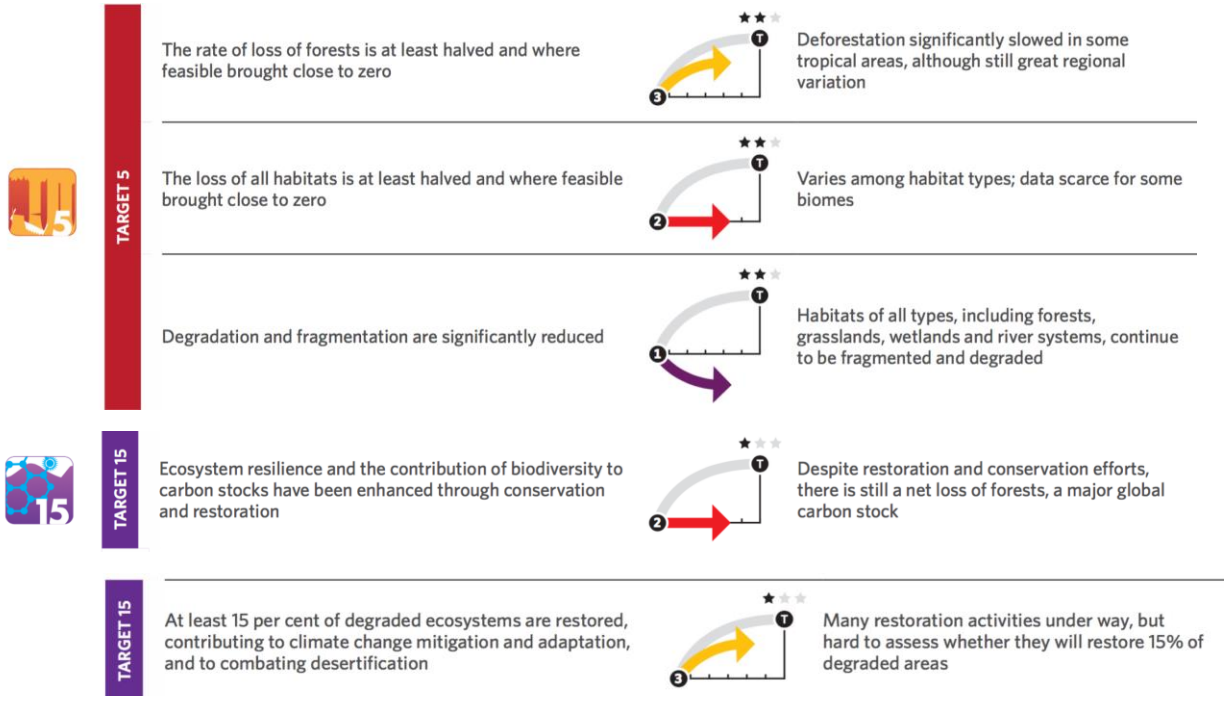
Section 4: Target setting (9 questions)

implementation of the targets at the national scale, drafted by country representatives at the workshop, will be attached to these data dossiers. Progress on the implementation of these priority actions will be assessed and presented at COP 13. Similar regional workshops are planned for Asian countries (Bangkok, June 2016) and for Small Island Developing States (tbd, August 2016). Further workshops will be organized in other regions subject to the availability of funding.

2 Progress under various elements of Targets 5 and 15

16. The wording of Targets 5 and 15 comprise several components, which were assessed individually in the evaluation conducted for the Global Biodiversity Outlook 4. A "dashboard of progress" was presented for each of these components, using available information from a number of global and regional indicators and assessments. The results, however uncertain given the lack of data, showed little progress achieved on all the components, leaving it clear that the targets would not be reached by 2020 unless substantially more efforts are deployed by Parties to implement the targets. The following section presents newly available data under these components that can help assess current progress and understand barriers to further implementation.

Figure 1 – "Dashboard" of progress on the components of Targets 5 and 15 (Source: GBO-4)



2.1 Target 5 – "Halve the rate of loss of natural forests and reduce it to zero where possible"

17. The wording of Target 5 expressly addresses all natural ecosystems, including forests, when calling for the rate of natural ecosystems loss to be abated by half by 2020, and where possible reduced to zero. The rate of loss of natural ecosystems can be deducted where time series of the extent of these ecosystems are available, as measured through remote sensing or field-based techniques. However, with the exception of forests, there is no globally consistent dataset that can provide an indication of progress on this element of Target 5. The following section presents two datasets, the FAO Forest Resource Assessment 2015 and the Global Forest Change dataset, which can provide an indication of progress against this target as far as forest ecosystems are concerned. No similar dataset is available for other ecosystem types, but an index has been developed for wetlands, the Wetland Extent Trends ('WET') Index, also presented below.

2.1.1 Indication from the FAO FRA

18. Information on forest dynamics, including on the extent of natural forest is provided by countries since 1990 and every 5 years since 2000 through the Global Forest Resources Assessment (FRA) of the Food and Agriculture Organization of the United Nations (FAO). National FRA reports generally come from a combination of ground-based measurement/assessment and remote sensing at the national scale, depending on capacity. An analysis of compiled data for all countries can help understand how much progress is being made to abate the rate of loss of natural forests at the global scale.

19. Many criteria have been proposed for what should constitute "natural forest", including how the forest was established (through natural re- generation or planting), the origin of the tree species, the degree of human intervention (also known as "intactness") and ecological functioning. [7] In FRA reports, natural forest is defined as the sum of 'primary forest', defined as "naturally regenerated forest of native species where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed", and 'other naturally regenerated forest', defined as "naturally regenerated forest where there are clearly visible indications of human activities". The term therefore encompasses all but actively planted forests, which includes areas where assisted natural regeneration is taking place. This ignores the fact that, under sustainable management practices, forests with assisted regeneration may be predominantly "modified natural forests" with significant ecological value and that provide habitat for many species and where sustainable forest management (SFM) intends to return them to a natural state.[8]

20. Figure 2 presents the total area of natural forest for each of the reporting intervals of the FAO FRA since 2000, per continent. The concentration of natural forest loss in tropical regions appears very clearly, with Africa and South America registering a steady loss over the period whilst Europe, North America and Oceania remain stable. The rate of loss appears to be slightly slowing in the case of Latin America, reflecting the slowdown of deforestation achieved by Brazil between 2004 and 2014. In Asia, significant losses in Indonesia are partly masked by reported gains in China. The area regained through large-scale reforestation may not constitute the same natural habitat as the old-growth forest lost, underlining the shortcoming of looking at forest loss in net terms. Similarly, significant losses at the national scale could be masked by gains in comparatively biodiversity-poor forest regrowth (such as single species plantations) as the data does not disaggregate for gross loss.

21. This lack of clarity is a significant shortcoming of the data and caution should be taken not to consider forest restoration as the direct inverse of forest loss. Whilst forest loss will, in most cases, lead to an abrupt loss of carbon stocks, reforestation and restoration may require several decades to return to an equivalent level of carbon stock and the associated biodiversity recovers even more slowly[9].

22. From the standpoint of biodiversity, restoration is not a perfect remedy to natural habitat loss. Biodiversity loss is a one-way street and restored ecosystems may take very long period of times to recover to their full ecological functioning.[9] The value of protecting native forests cannot be directly

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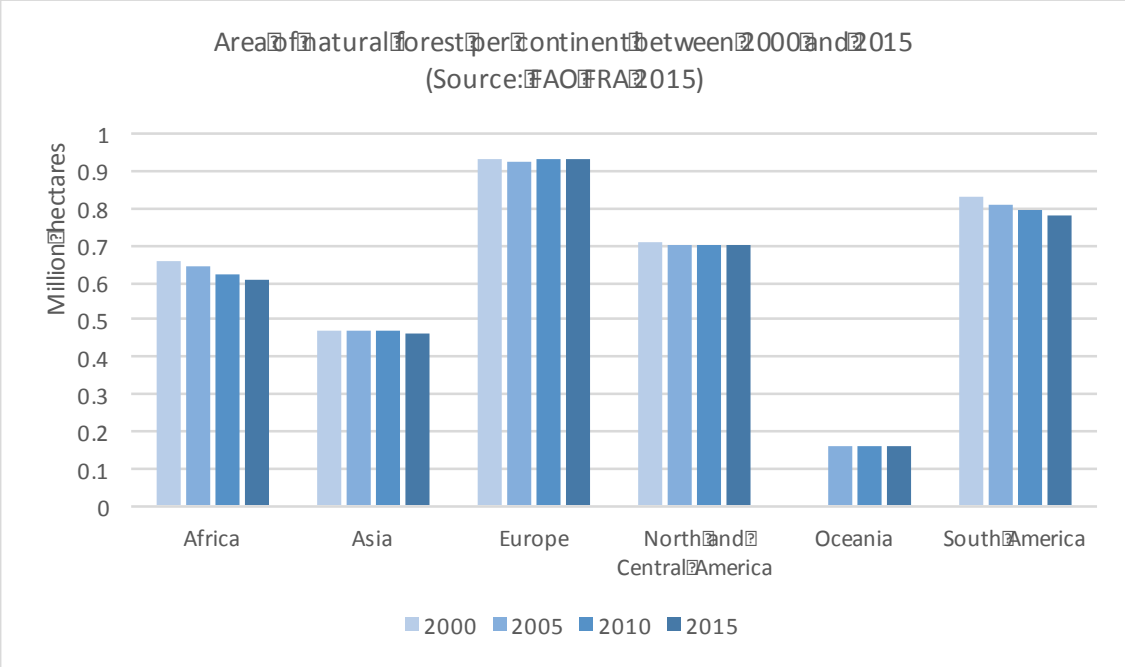
[7] Lisen Runsten and Lera Miles, *Defining "Natural Forest": Implications for REDD+ Planning* (Cambridge: UNEP-WCMC, forthcoming).

[8] In Canada and Scandinavia in particular, net natural forest loss in recent years may be explained by the fact that assisted natural regeneration is not offsetting the losses from timber exploitation despite both being part of an integrated vision for the sustainable productive management of forests in a semi-natural state. – See also: Carle J, Holmgren P (2003) *Definitions Related to Planted Forests*. FAO Working Paper 79. Forestry Department, Food and Agriculture Organization of the United Nations (FAO). Rome, Italy.

[9] See Parrotta J. et al. (2012) Understanding Relationships between Biodiversity, Carbon, Forests and People: The Key to Achieving REDD+ Objectives. A Global Assessment Report. Prepared by the Global Forest Expert Panel on Biodiversity, Forest Management, and REDD+, IUFRO World Series 31, IUFRO, Austria. Available at

compared with that of planting new ones.[10] In the context of the implementation of the Strategic Plan for Biodiversity, it is therefore important in target setting and reporting to consider these targets independently and avoid reporting that would conflate the two (e.g. "net deforestation"), bus instead consider reductions in the clearing of native forests (gross deforestation) separately from increases in the establishment of new forests on previously cleared lands (reforestation).

Figure 2 – Area of natural forest per continent between 2000 and 2015 (Source: FAO FRA 2015)[11]



23. Figure 3, overleaf, represents the rate of change in natural forest area between 2010 and 2015 as an annual average for every country. High rates of natural forest area loss can be observed in a majority of countries. This representation gives equal weight to countries regardless of their forest cover, making small losses absolute terms in low forest cover countries stand out. Since implementation of the Strategic Plan for Biodiversity is at the national scale, a disaggregation of rates of natural forest loss as seen on these maps can highlight where national efforts are insufficient to reverse the trend and where more support may be needed. In Figure 4, annual average rates in changes of natural forest area are compared for two periods, the 2005-2010 period, which can be taken as the baseline prior to the adoption of the Strategic Plan, and the 2010-2015, which corresponds to the first half of the implementation period of the Plan. The results reflect the variety of national situations with regard to changes in natural forest area. They should be treated with caution as they are net figures that do not disaggregate between loss and regain over the period. From the standpoint of natural habitat loss, a shortcoming of this data is therefore that significant degradation, or the replacement of old-growth forest by early regenerating forest over large areas, would not be visible.

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http://www.iufro.org/science/gfep/biodiv-forman-redd-panel/report/

[10] Brown S. and Zarin D. (2013) What Does Zero Deforestation Mean?, *Science* Vol 342 Issue 15

[11] Note: a few countries for which data was unavailable for all reporting periods were omitted from the total. Australia, for which data was unavailable in 2000, was included but the 2000 reporting period omitted for Oceania. Europe includes the Russian Federation.

24. A first group of countries, in blue, were already registering gains in natural forest area prior to the adoption of the Strategic Plan. Since its adoption, dark blue countries have seen their rate of gain in natural forest area accelerate, which likely reflects policies to increase natural forest cover through reforestation and the designation of new protected areas. Light blue countries have continued to gain in natural forest area, albeit more slowly than prior to 2010. This may be due to the position of these countries at the end of the forest transition curve, with most areas offering obvious potential for forest restoration having already been covered. Countries in green are those where a net loss of natural forest area was occurring prior to 2010 and has continued over the first half of the implementation period, but at a reduced rate. Successful policies that explicitly seek to address deforestation can explain this change, as in the case of Brazil. This group of countries is particularly relevant for the implementation of Target 5 and appears on track to achieve the target. Another group of countries, in red, is also particularly relevant but is seeing an acceleration in the rate of loss of natural forest area. The African continent stands out in particular, with most countries in the West and Central African tropical moist forest basins concerned, as well as much of Austral Africa's dry and coastal forests. South East Asia appears divided between countries such as Thailand and Viet Nam, where reforestation programmes appear to have reversed the trend of net natural forest loss, and Indonesia, Cambodia and Myanmar where deforestation continues to soar. A number of countries in South America are also concerned, and in some cases their situation may be due to the leakage of drivers of deforestation from countries that have strengthened forest conservation policies and their enforcement. Rapidly increasing rates of forest loss in Paraguay for example have been linked to a shift of strategy by actors in the Brazilian soy and cattle industry towards land acquisition outside Brazil.[12] These countries are failing to make progress towards the implementation of Target 5 and should be the focus of international efforts to support its achievement.

2.1.2 Indication through the Global Forest Change data

25. Remote-sensing observations make it possible to map land cover and land cover changes over large areas or even at global scale, at relatively low costs and regular intervals. The analysis of remote sensing data of forest cover from the Global Forest Change (GCF) dataset[13] can be a useful complement to data derived from national inventories and ground-based observations. In line with the findings from the FAO FRA, remote sensing-based data on forest cover confirms that more efforts are needed to achieve the objective of Target 5.

26. Using this data to measure progress under Target 5 has limitations. Firstly, because of errors of interpretation in the automatic treatment of Landsat images, the map may be prone to underestimating or overestimating forest cover by including certain agricultural crops.[14] Tree crops such as cashew, rubber or oil palm will also be counted as tree cover gain despite not providing the same habitat for species as the natural forest cover they may be replacing. Finally, loss of tree cover may occur for many reasons, including deforestation, fire, and logging within the course of sustainable forestry operations. Unlike the FAO FRA, the dataset therefore does not represent the phenomenon of deforestation as a transition from one land use to another but rather the mere loss of tree cover, which may not be permanent.[15] However, it has the benefit of being available at yearly

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[12] http://www.pnas.org/content/113/15/4021.full.pdf

[13] The Global Forest Change dataset is a high-resolution dataset characterizing forest extent and change. Trees are defined as vegetation taller than 5m in height and are expressed as a percentage of canopy cover for the year 2000, at a resolution of 30 meters. Different thresholds of canopy cover can be used to define forest extent using the data. 'Forest Cover Loss' is defined as a stand-replacement disturbance, or the loss of the canopy cover within the forest extent thus defined, is available at yearly intervals between 2001 and 2014. 'Forest Cover Gain', the inverse of forest loss, is also available at yearly intervals. – see Hansen, M. (2013) High-resolution global maps of 21st-century forest cover change. *Science* 342, 850–853

[14] Tropek *et al.*, (2014) Comment on "High-resolution global maps of 21st-century forest cover change", *Science* Vol. 344, Issue 6187, pp. 981DOI: 10.1126/science.1248753

[15] FAO FRA Website, "Comparing results from the Global Forest Resources Assessment and remote sensing" - http://www.fao.org/forest-resources-assessment/en/

intervals and in a spatially explicit format, which can provide an indication of where and when forest loss is being successfully reduced. The high resolution of the data means that drivers of loss may be identified from the visual observation of patterns of forest cover loss in combination with other contextual information. Whilst loss of tree cover may occur as part of the natural fire regime of an ecosystem, sometimes the geometric patterns associated with it leave little doubt as to its anthropogenic causes, as illustrated by Figure 4 on forest cover loss in Paraguay.

Figure 3 – Average annual rate of change in natural forest area per country between 2010 and 2015

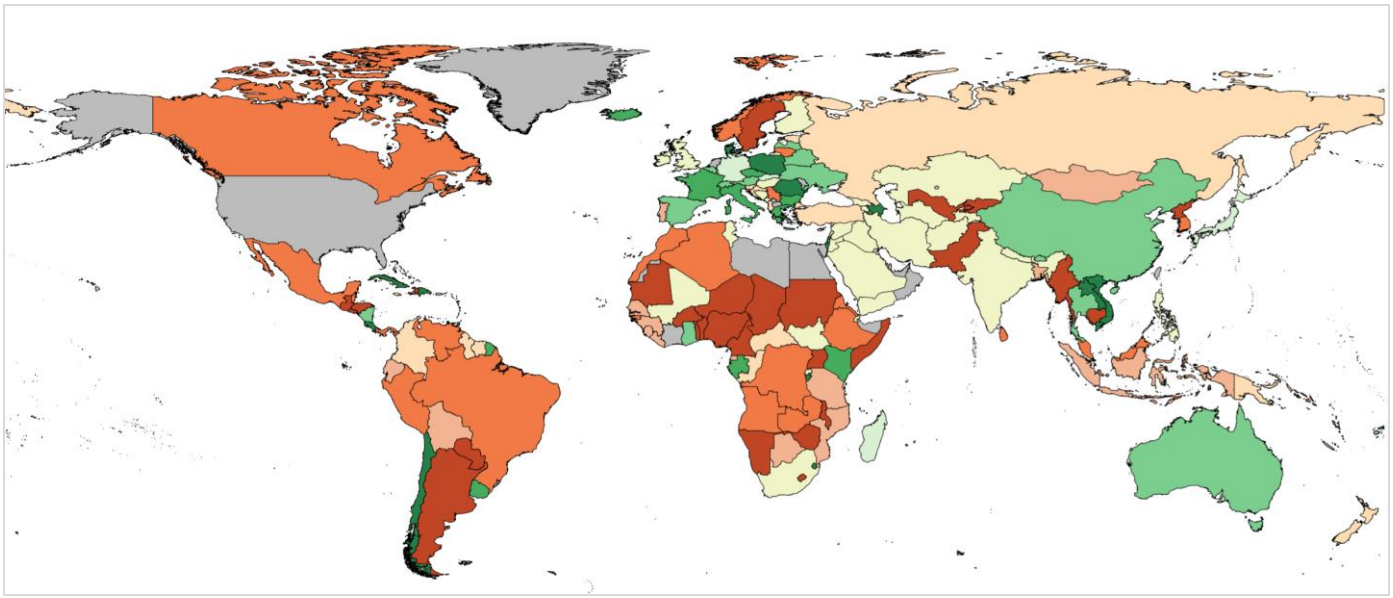
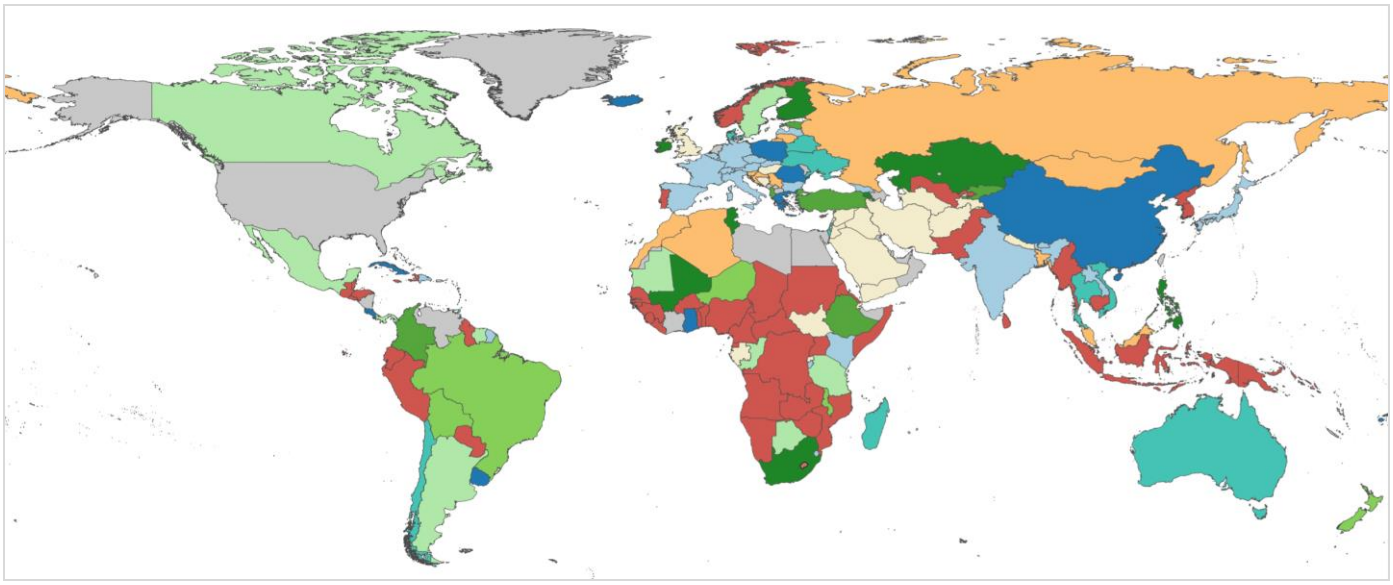


Figure 4 – Change in average annual rate of change in natural forest area between the periods 2005-2010 and 2010-2015



Legend for Figure 3 – Average annual rate of change in natural forest area per country between 2010 and 2015 (Source: FAO FRA 2015)

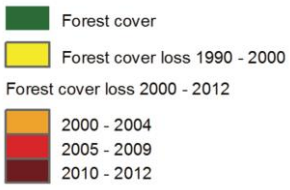
- >1% Gain
- 0.5-1% Gain
- 0.1-0.5% Gain
- < 0.1% Gain
- No change
- < 0.1% Loss
- 0.5-1% Loss
- 0.1-0.5% Loss
- >1% Loss
- NoData or non-party

Legend for Figure 4 – Change in average annual rate of change in natural forest area between the periods 2005-2010 and 2010-2015 (Source: FAO FRA 2015)

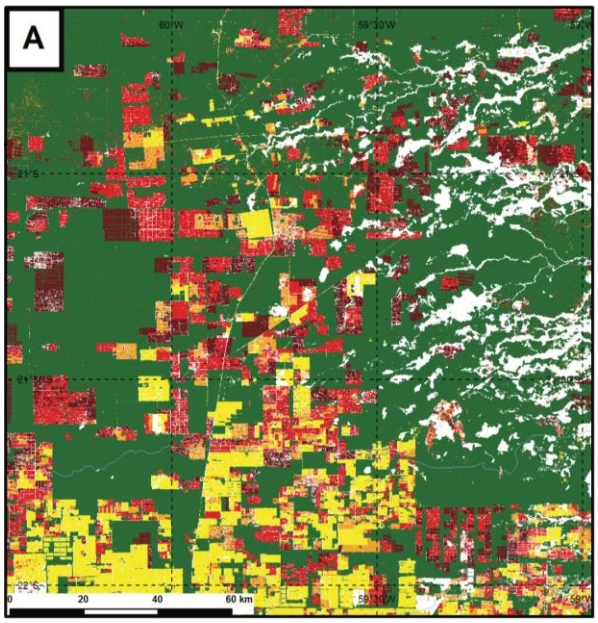
- Increase in rate of natural forest lost
- Went from net natural forest area gain to net loss
- No change in natural forest cover
- Reduction in rate of natural forest area loss < 25%
- Reduction in rate of natural forest area loss 25-50%
- Reduction in rate of natural forest area loss > 50%
- Reduction in rate of natural forest area loss > 90%
- Went from loss in natural forest area to net gain
- Natural forest gain in , slowing
- Natural forest gain, accelerating
- NoData or non-party

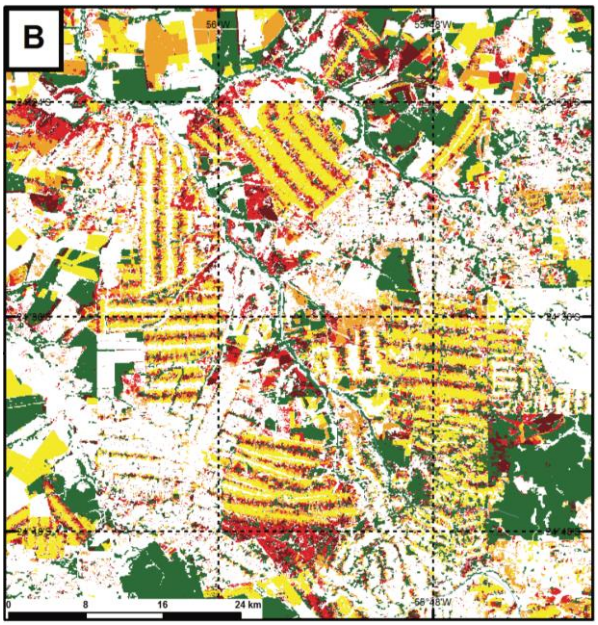
27. This information, in turn, can be fed back into the adaptive management of policies aimed at reducing deforestation and degradation. Data from the GCF is freely available online through portals like the Global Forest Watch (see Box 1 below) and Parties that do not have access to regularly updated remote-sensing data may wish to use it for the purpose of assessing current rates and spatial patterns of forest cover loss.

Figure 4. (A) Patterns of loss of forest cover in the Chaco, where the majority of change is attributed to agricultural expansion. (B) Patterns of loss of forest cover in eastern Paraguay, associated with agricultural development along roads



Most of the land use change in eastern Paraguay is attributed to the expansion of soybean cultivation and the preparation of land for livestock production (Adapted from Walcott et al., 2015 - Data source: Hansen et al., 2013).





28. The graphs on Figure 5 present quantitative forest cover loss data from the GCF map for different regions of the world, focusing on tropical and developing countries.[16] Trying to calculate a net loss figure that includes both loss and gain would be too uncertain given concerns over the quality of the gain data, therefore only gross loss is presented. Tree cover loss appears to have been rising steadily since 2005 in the tropics. A slight deceleration of the increase may be discernible since 2010 but that trends remains to be confirmed given the significant annual variations in the area lost between years and is a long way from the objective of a 50% reduction.

29. Regionally, the results corroborate those from the analysis of FAO FRA data, showing that there might be a slight acceleration in the slowdown of rates of forest cover loss in Latin America since 2010, bringing a 50% reduction of the 2010 rate into sight. In Africa, rates of forest cover loss have increased over the entire period, and accelerated since 2010. The data is inconclusive for Asia, where a reversion of the annual increase in forest cover loss may be happening but remains very uncertain given the level of volatility between years. These results point at the need for more action to reverse the current trend in increase in forest loss in tropical countries, which harbour a large fraction of the world's biodiversity

[16] Because the data does not disaggregate between natural and managed forests, gross loss results in temperate and boreal regions are distorted by timber harvest cycles in what may be sustainably managed productive forests.

Figure 5. Gross forest cover loss for different regions
Source: Hansen et al., 2013

30. A recently published analysis addresses some of the critics of using remote-sensing data for the purpose of monitoring deforestation at large scales.[17] It uses the Global Forest Change map of tree cover loss to stratify a random sample of forest loss areas over three regions (Sub-Saharan Africa, Latin America and South and South East Asia), where direct reference observations are made to ensure the accuracy of the classification. The sample-based estimate also allows for the distinction between 'natural' and 'managed' forest, providing for disaggregated estimates of gross natural forest loss that are more directly relevant to Target 5.[18] Presented with 95% confidence intervals in accordance with good practice guidance from the IPCC, the sample-based results are above those obtained from the map for all three regions by a significant margin (see Table 1). The figures represent forest loss between 2000 and 2012 and are only available for that interval. An assessment carbon emissions resulting from the loss is also provided based on modelled above-ground carbon built from sample lidar observations.

[17] Tyukavina. A, et al. (2015) Aboveground carbon loss in natural and managed tropical forests from 2000 to 2012, *Environmental Research Letters* 10, 074002

[18] Natural forest is here characterized based on tree canopy tree height and forest intactness

31. Whilst it offers a more accurate assessment of forest cover loss and emissions from deforestation, the analysis is only provided for one time interval and thus does not offer information on how rates of natural forest cover loss may have changed over the period. However, it provides a useful indication that the GCF may be underestimating forest cover loss, as well as on the fraction of gross forest loss that is happening in natural forests. This fraction appears to be highest in Latin America, probably due to the pattern of frontier deforestation prevalent on the continent, as opposed to Asia and Africa where small-scale tree cover loss in secondary forest as part of rotational slash-and-burn systems might not have been considered as natural forest cover loss by classification of natural forest used, which relies on criteria of height and intactness.

Table 1. Gross forest cover loss and natural forest cover loss based on a sample estimate methodology – Adapted from Tyukavina et al. 2015

	Gross Forest cover loss (Mha)		Natural forest cover loss (Mha)	Sample of gross forest cover loss
	Map	Sample estimate		
Sub-Saharan Africa	20.7	36.9 ± 6.2	14.5 ± 4.9	39%
Latin America	58.3	67.3 ± 6.1	44.0 ± 5.7	65%
South and Southeast Asia	34.2	36.4 ± 3.8	18.9 ± 4.5	52%
Pan-tropical total	113.1	140.5 ± 11.6	77.5 ± 8.8	55%

Box 1 - Global Forest Watch

Global Forest Watch (GFW) is an interactive online forest monitoring and alert system which uses a range of remote-sensing and other sources of spatial data, including the Global Forest Change annual map of tree cover loss, to provide information about the status of forest landscapes worldwide. Global Forest Watch is free and accessible through a simple web interface (www.globalforestwatch.org) where a number of forest-related spatial datasets can be consulted. Users can also create custom maps, analyse forest trends, subscribe to alerts, or download data for a given area or the entire world. The canopy cover threshold used to characterize forest can easily be modified to fit with national definitions.

A number of biodiversity-related layers can be overlaid on the forest loss and gain data, such as the location of protected areas, biodiversity hotspots, endemic bird areas, alliance for zero extinction sites and tiger conservation landscapes. This information could be used by countries as an indicator of progress under Target 5 and to inform the setting of national targets and actions to implement it.

2.2 Target 5 – "Halve the rate of loss of natural ecosystems and reduce it to zero where possible"

32. Assessing progress against this component of Target 5 runs against the lack of globally consistent indicators for tracking extent of ecosystems other than forests. Indicators and proxies can be built after compiling extent time series data available from the scientific literature and analyzing them with statistical modelling to determine the underlying trend in the time-series. This method requires careful identification of potential ecological and biogeographic biases in the underlying dataset thus compiled but already underpins indices such as the Living Planet Index, which tracks trends in populations of various taxonomic groups and is used as an indicator of progress under Aichi Biodiversity Targets 5, 6 and 12.

33. The Wetlands Extent Trends (WET) index[19] is the first example of such an index for ecosystems, and may be used as a relevant indicator for Target 5. Results from the WET Index show that natural wetlands declined by about 30% on average between 1970 and 2008. Marine and coastal wetlands were affected at a higher rate than inland wetlands. There are significant regional variations in the index, with lost area ranging from 50% in Europe to about 17% in Oceania over the period (see Figure 6 below). The low number of studies found for Latin America means that the index could not be calculated for that region. Concluding on a change in the rate of loss further to the adoption of the Strategic Plan for Biodiversity is not possible as the Index only runs until 2008. This study could however be replicated in the future and the database completed with data from national reporting, where is is available and including on other ecosystems than wetlands. Whilst this may provide a useful indication of progress towards Target 5 with regards to wetlands, the results cannot be easily disaggregated at the national scale to assess the performance of individual Parties at reducing natural wetland loss (although it may be possible where sufficient studies are found for one country).

34. The paucity of data on ecosystem other than forests is concerning. As efforts to curb the loss of natural ecosystems and to restore degraded ecosystems focus on forests for their benefits in terms of climate mitigation, this could happen at the detriment of biodiversity-rich ecosystems other than forest, in particular old-growth grasslands.[20] Grassland biomes can sometimes be misrepresented as the result of anthropogenic actions that cleared forest and arrested subsequent succession, and therefore be the target of forest restoration efforts. Efforts are underway to develop criteria for the identification of old-growth grasslands and to distinguish them from recently formed anthropogenic vegetation, which could help to safeguards conflicts between forest restoration and the conservation of grassland ecosystems.[21]

35. Without time-series data on the extent of these ecosystems, it will be difficult to monitor this impact, and to report on progress under Target 5 beyond forest ecosystems. A publication of the FAO from 2005 noted already that historical data on pasture is scarce in most regions of the world, meaning that the degree of change or degradation has to be inferred from present condition.[22] An analysis of FAO statistical data on productive grasslands was conducted in 2008, and concluded on rapid rates of area decrease in all regions.[23] The trends observed were over the period 1980 to 2000 and do not permit to conclude on rates of loss post 2010.

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[19] Dixon M. *et al*. (2016) Tracking global change in ecosystem area: The Wetland Extent Trends index, *Biological Conservation* 193:27-35

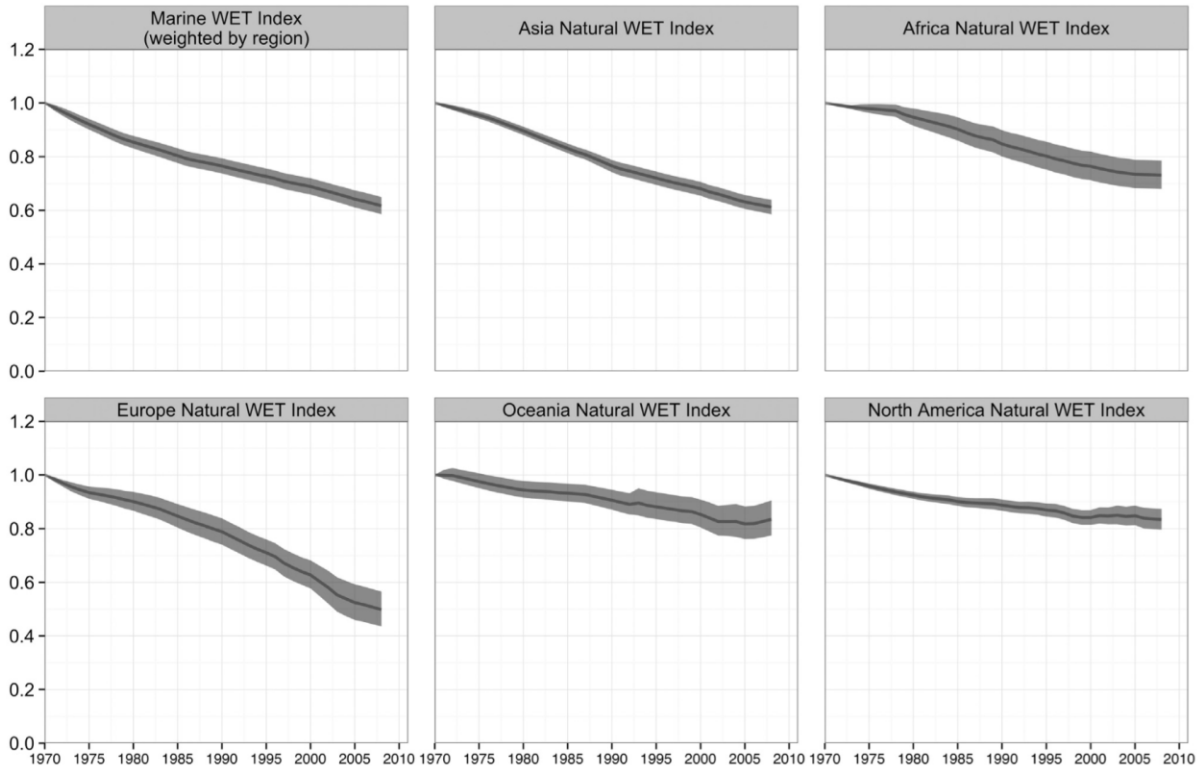
[20] Veldman J. W. *et al.* (2015) Tyranny of trees in grassy biomes, *Science* Vol. 347, Issue 6221

[21] Veldman J. W. *et al.* (2015) Toward an old-growth concept for grasslands, savannas, and woodlands, *Frontiers in Ecology and the Environment,* Volume 13, Issue 3 Pages 154–162

[22] Suttie J.M., Reynolds S.G. and Batello C. (Eds.) *(2005)* Grasslands of the World, *Plant Production and Protection Series No. 34*, FAO. Available at http://www.fao.org/docrep/008/y8344e/y8344e00.htm

[23] *http://www.fao.org/ag/agp/agpc/doc/grass_stats/grass-stats.htm*

Figure 6 - Marine WET indices and the regional inland natural WET indices (excluding the Neotropics) from 1970 to 2008 with 95% confidence intervals (Source: Dixon et al., 2016)



36. This section presented a number of data sources that provide and indication of progress under Target 5. An important caveat to the data source presented is that they are simply measures of change in area and do not reflect change in ecosystem condition. Further indicators and underlying data are crucially needed to better monitor this other aspect of Target 5, addressed in Section 2.3.

2.2.1 Outlook based on national plans and reporting

37. Measuring progress towards halving and, where possible, bringing to zero the rate of loss of natural ecosystems requires information on the extent and distribution of these ecosystems, past and present. To this end, the analysis of national reports examined whether countries have included information on the current extent and distribution of natural ecosystem, and on rates and location of natural ecosystem loss, degradation and fragmentation. Results for the 22 countries reviewed show that forests are the ecosystems that are best covered by quantitative assessments of extent and loss (13 countries, or 59% of the total reviewed), with spatially explicit information included in almost half of reports. Wetlands were the second most measured type of ecosystem, with 32% of countries including quantitative information on their extent. Quantitative information on other ecosystems is much rarer (found in 5 reports) and spatially explicit information remains scarce. Finally, a number of countries presented maps of land cover including natural ecosystems, although without including a quantitative measure of their extent.

38. Forest ecosystems are also prominent in the reporting on rates of natural habitat loss. This may be explained by the historical collection of data on forest cover through international initiatives

such as the FAO FRA.[24] More recently, the preparation undertaken by a number of countries to the REDD+ mechanism, as well as the significant financial and technical support received from the UN-REDD Programme and the Forest Carbon Partnership Facility for this purpose may also have improved greatly the availability and quality of information on forests. The establishment of national forest reference levels typically involve the collation and analysis of historical and most recent satellite imagery to deliver accurate data on the forest cover loss and change, and the measurement, reporting and verification (MRV) of emissions from forest requires the setting up of a monitoring system that can produce frequent assessment of changes in forest cover and carbon stocks. Out of the 22 countries reviewed, 16 are partners to the UN-REDD Programme, and 14 made a reference in their national reports to the preparations they are undertaking to receive results-based payments for REDD+.

39. As of April 2016, out of 8 countries in the LAC region receiving support from the UN-REDD Programme, 7 had completed their REDD+ National Strategy or Action Plan, 7 had set up their national forest monitoring system, and 4 had submitted a national forest reference level. In national reports however, references to the REDD+ strategy and information collected on forest through REDD+ related processes lacked specificity. Countries that have completed elements of a REDD+ framework could make better use of the information thus generated in their 6th national reports, and provide more detail of how actions under Targets 5 and 15 in their NBSAPs aligns with their REDD+ National Strategy or Action Plan.

40. In terms of information that countries have provided regarding the diagnosis of causes of ecosystem loss and degradation and how they intend to address them, almost all reports reviewed included a description of drivers of natural habitat loss, and almost half considered the role of underlying drivers, a crucial information for the design of measures that can provide results in the long-term. Fewer reports, however, looked at how drivers of loss affected different ecosystem types, and none of the reports reviewed contained spatially explicit information on the drivers of ecosystem loss and degradation.

41. The national report from Peru presented a table of the main threats on natural ecosystems and their importance in different ecosystems (high, medium or low). This type of assessment can be a valuable tool for policy design by helping to prioritize actions on the most threatened ecosystems, whilst making sure that pressures are not merely being displaced to other ecosystems under a lower degree of threat.

42. These various assessments of the state, trends and pressures of natural ecosystems can form the basis of a sound national target to reduce their loss. Out of 22 countries reviewed, 12 (55%) were found to have set a national target in support of Aichi Biodiversity Target 5. Fewer countries however have set themselves a quantitative national target, in line with the wording of Target 5 which calls for "*at least halving and, where possible, bringing close to zero"* the rate of loss of natural ecosystems. Measuring progress towards achieving a reduction by half of that rate requires a baseline rate, established over a certain period. Based on that baseline rate, countries should be able to set a target reduction in the rate (which in keeping with Aichi Biodiversity Target 5, should be over 50%), and a target date for that reduction to be achieved (which, in keeping with the period for implementing the Strategic Plan, should be 2020).

43. Since the target is a global one, countries will set their own national targets as a contribution to the global target. Levels of efforts between countries may vary and national targets may only partially reflect the text of Aichi Biodiversity Target 5. Another possibility is that all aspects of a given Aichi Biodiversity Target are reflected but spread between several national targets. Notwithstanding

[24] Note should be taken, however, that explicit linkages to reporting under the Forest Resource Assessment are rarely explicit. A detailed review of reporting under both fora would be required to assess whether the information presented is the same.

this flexibility, the elements described above should be considered in the target setting and included if the contribution of national action to achieving the objective of the global target is to be measured. The analyses of National Reports and NBSAPs show that very few countries have specified the baseline or reference year to be used, the target rate of abatement and a target date for that abatement to be achieved (3, 4 and 5 countries, respectively). Without these elements, it will be difficult to measure and report on progress at the national level and implementation may not be as strong. Moreover, this challenges an aggregation of national targets which would be required in order to provide a more accurate outlook on the achievement of Target 5 at the regional or global scale.

44. In order to measure the change in the rate of loss of natural ecosystem, a baseline year or period is needed. The wording of the Strategic Plan does not specify what that baseline period should be, but since the Plan was agreed to at the end of 2010 it can be reasonably assumed that 2010 is the year of reference. An analysis of national targets for 73 countries that have submitted a NBSAP post 2010 reveals, however, that out of 56 countries that were found to have set a national target under Target 5, 19 set a quantitative objective for the abatement of the rate of loss of natural ecosystems (ranging from 10 to 70%) and one, Brazil, explicitly specified the baseline year to be used for assessing that reduction (2009).

45. Few countries (6, or 27%), established priorities amongst the natural ecosystems present on their territory for the implementation of Target 5. In most cases, forests, already prominent in the assessment of past rates of loss and degradation, were often the only type of natural ecosystem considered in the national target. This suggests the need for better data to be collected on rates of loss, degradation and fragmentation in ecosystems other than forests, which may also harbour significant biodiversity and provide important services. Brazil's national target under Target 5 meets all the elements for a fully measurable target, stating that "By 2020, the rate of loss of native habitats is reduced by at least 50% (in comparison with the 2009 rate) and, as much as possible, brought close to zero, and degradation and fragmentation is significantly reduced in all biomes". In addition, Brazil has also included specific targets for the abatement of rates of loss in different biomes. The experience of Brazil in setting a target for the reduction of emissions from deforestation in the Amazon against results-based payments from Norway, as well as tracking progress under that target and eventually achieving it beyond expectations, may have helped the country measure and set its ambition with such precision in the context of Aichi Biodiversity Target 5.[25]

2.3 Target 5 – "Significantly reduce the rate of degradation and fragmentation"

46. The condition of natural habitats is important for biodiversity. Habitats which are highly degraded or fragmented are less likely to be able to support their full complement of species or provide the same level of ecosystem services provided by intact habitats. A recent analysis of global forest cover revealed that 70% of remaining forest is within 1 km of the forest's edge, subject to the degrading effects of fragmentation, and that habitat fragmentation reduces biodiversity by 13 to 75% and impairs key ecosystem functions by decreasing biomass and altering nutrient cycles.[26]

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[25] In March 2004, the Brazilian government initiated a range of policies and enforcement actions (under the Action Plan for Preservation and Control of Deforestation in the Legal Amazon) that brought sharp reductions in the rate of deforestation. In 2008, Brazil signed an agreement with Norway to receive payments during a 5-year period for bringing greenhouse gas emissions from deforestation below a 10-year average (1996–2005). Norway pledged up to USD 1 billion for this agreement, which stipulated that these funds would be donated to the Amazon Fund (Fundo Amazônia), managed by the Brazilian National Development Bank and invested in actions to prevent deforestation and to promote the conservation and sustainable use of the Amazon biome. For more details see Birdsall N. et al. (2014) *The Brazil-Norway Agreement with Performance-Based Payments for Forest Conservation: Successes, Challenges, and Lessons*, CGD Climate and Forest Paper Series #4, available at http://www.cgdev.org/sites/default/files/brazil-norway-agreement-performance-based-payments-forest-conservation-brief.pdf [accessed 13/03/2016]

[26] Haddad N. M. *et al.* (2015) Habitat fragmentation and its lasting impact on Earth's ecosystems, *Science Advances,* Vol. 1, No. 2, e1500052 DOI: 10.1126/sciadv.1500052

47. Whilst the diminution of extent of habitats is relatively simple to measure, degradation and fragmentation require indicators and associated data collection that are specific to the structure, composition and function of the ecosystem under consideration, and can cover many aspects ranging from the richness in species to the provision of ecosystem services to human populations. This complexity means that the development of globally consistent indicators is especially challenging. It probably also explains the low rates of national reporting and target setting on this component of Target 5, highlighting the crucial need for further capacity-building and technical support in this area.

2.3.1 Global indicators on ecosystem degradation and fragmentation

48. A suite of global indicators has been developed under the Group for Earth Observation Biodiversity Observation Network (GEO BON), based on information from small set of 'Essential Biodiversity Variables'. These indicators rely on large global datasets, remote-sensing based information and model-based integration of multiple data sources and types, including ground-based observations to provide modelled estimates of the impact of observed of changes in land cover on species habitats and biodiversity. These indicators can be used at various scales, including national scale. Two of the essential biodiversity variables, the Species Habitat Indices and the Biodiversity Habitat Index, have been identified as having potential for monitoring progress on Target 5, specifically with regards to degradation and fragmentation. Further details can be found in UNEP/CBD/ID/AHTEG/2015/INF/13.

Another indicator, the Global Ecosystem Restoration Index, is still in development but will eventually provide global coverage information relevant for Target 15 by tracking the state of ecosystems on restoration-disturbance axis using energy balance, ecosystem productivity and transition in land cover. The online information portal "BON in a Box" (see Box 2) provides access to data from these indicators, which can be disaggregated at the national scale for the purpose of assessing baseline impacts of degradation and fragmentation on biodiversity and monitoring of progress under national targets and actions to reduce them.

Box 2 – BON in a Box (http://geobon.org/bon-in-a-box/what-is-bon-in-a-box/)

BON in a Box aims to serve as a technology transfer mechanism that allows countries access to the most advanced and effective monitoring protocols, tools and software thereby, lowering the threshold for a country to set up, enhance or harmonize a national biodiversity observing system. BON in a BOX will give nations, regions and others a common and scientifically sound set of biodiversity variables, monitoring methods and guidelines, mapping software, and data management, analysis, discovery and reporting tools and platforms, thereby increasing the power at not only a national but also a regional and global scale to detect important biodiversity trends and their underlying mechanisms.

2.3.2 Outlook based on national plans and reporting

49. Assessments of the level of degradation of ecosystems are less frequent than ecosystem loss in the reports reviewed, likely because they are usually more complex and costly undertakings than the collection of data on natural habitat conversion, which can be obtained from remote-sensing imagery or even through a study of national cadastres. An exception is the area of forest ecosystems affected by fires. This information provided in several national reports, perhaps due to its availability through freely accessible remote-sensing data. In the 22 countries reviewed, most of information on degradation or fragmentation is in relation to freshwater resources and waterways, with a few countries providing assessments of the degree of soil degradation.

50. The national report from Chile presented a particularly clear assessment of ecosystem loss and degradation, covering a wide range of ecosystems with a regional breakdown of their extent and recent loss and an estimate of emissions resulting from this loss as far as forests are concerned. The

report also included information on the degree of degradation of freshwater ecosystems and marine fish stocks. Such quantitative assessments of the state and trends of ecosystems is important in order to set priorities in national actions in support of Targets 5 and 15. Such assessments can be supported by the use of a variety of indicators on degradation.[27] This assessment led Chile, for example, to recognize that recent rates of natural forest loss are particularly concerning in the central region of the country and require immediate attention.

Table 2 – Overview of the provision of information relevant to Target 5 in national reports and NBSAPs from 22 countries in Latin America and the Caribbean

Assessment of the extent of natural ecosystems	**No. of countries**	**%age of group**
Have included a quantitative measure of forest ecosystems	**13**	**59%**
Spatially explicit information on forest ecosystems	**9**	**41%**
Have included a quantitative measure of wetlands	**7**	**32%**
Spatially explicit information on wetlands	**3**	**14%**
Have included a quantitative measure of other ecosystems	**5**	**23%**
Spatially explicit information on other ecosystems	**3**	**14%**
Ecosystem maps without area information	**5**	**23%**
Assessment of the rate of loss of natural habitats	**No. of countries**	**%age of group**
Have indicated a rate of loss for forests	**18**	**82%**
Have indicated a rate of loss for wetlands	**4**	**18%**
Have indicated a rate of loss for other ecosystems	**5**	**23%**
Have included spatially explicit information related to habitat loss	**7**	**32%**
Diagnosis of drivers of natural habitat loss, degradation and fragmentation	**No. of countries**	**%age of group**
Description of drivers of natural habitat loss	**21**	**95%**
Description of drivers per ecosystem type	**9**	**41%**
Description of proximate and underlying drivers	**10**	**45%**
Setting of a national target under Target 5	**No. of countries**	**%age of group**
Have set a national target under Target 5	**12**	**55%**
Specification of a rate of abatement	**3**	**14%**
Specification of a target date	**5**	**23%**
Specification of baseline period for the rate to be abated	**4**	**18%**
Prioritization of certain ecosystems	**6**	**27%**
Assessment of ecosystem degradation	**No. of countries**	**%age of group**
Have included a quantitative measure of degradation in forests	**9**	**35%**
Have included a quantitative measure of degradation in wetlands	**3**	**12%**
Have included a quantitative measure of degradation in other ecosystems	**5**	**19%**
Assessment of the rate of natural habitat degradation and fragmentation	**No. of countries**	**%age of group**
Have indicated a rate for ecosystem degradation	**12**	**55%**
Have indicated a rate for ecosystem fragmentation	**3**	**14%**
Have included spatially explicit information related to degradation or fragmentation	**5**	**23%**

[27] The following sources can be consulted for guidance on indicators for forest degradation: Thompson, I.D., M.R. Guariguata, K. Okabe, C. Bahamondez, R. Nasi, V. Heymell, and C. Sabogal. 2013. An operational framework for defining and monitoring forest degradation. *Ecology and Society* **18**(2): 20

2.4 Target 15 - "ecosystem resilience has been enhanced through conservation and restoration, […] thereby contributing to climate change adaptation and to combating desertification."

51. Ecosystem resilience refers to the ability of an ecosystem to cope with and respond to disturbances and to restore itself. In general, highly resilient ecosystems can respond to natural disturbances, such as fire, flooding and pest outbreaks, more quickly than ecosystems which have low resilience. Degraded ecosystems tend to have lower resilience and are therefore less able to recover after a disturbance. With the growing impacts of climate change, ecosystem resilience will become increasingly important as ecosystems will need to cope with changing environmental conditions and more frequent extreme weather events. The degraded state of ecosystems may cumulate with the effects of climate change and bring natural ecosystems over "tipping points", into a different stable state which may not provide the same services and support the same species, [28]

52. One way Parties can prioritize their actions to enhance ecosystem resilience is by preventing the loss and degradation of ecosystems and promoting their restoration, in areas where ecosystems are the most vulnerable to climate change. The vulnerability of ecosystems to future potential impacts of climate change was considered in over three quarters of reports (17 countries or 77%), demonstrating that this is an aspect that is already receiving significant attention. Two countries (9% of reports) had included information on the spatial variation of this vulnerability. Climate change impacts on the same ecosystem type are likely to vary in severity depending on the location, and the addition of such information could help to further prioritize actions that seek to increase to resilience to climate change impacts of these most vulnerable ecosystems. Such an increase in the resilience of natural ecosystems would contribute to the continued delivery of services that they provide, including in terms of adapting to climate change and combating desertification. The restoration of ecosystems can also be part of a strategy of Ecosystem-based adaptation. Several countries reviewed (9, or 41%) showed linkages between actions to support the achievement of the Strategic Plan and adaptation goals, and half of them (11, or 50%), showed linkages to combating desertification. These results are encouraging, even though the mention of these related objectives often lack in specificity. The two following sections provide more information on how the conservation and restoration of ecosystems may contribute to climate change adaptation and combating desertification.

Table 3. Summary of the evaluation of information provided in NBSAPs and national reports with regards to Target 15's component on climate change adaptation and desertification

Assessment of linkages with climate change adaptation and combating desertification	No. of countries	%age of group
Assessment of climate vulnerability of ecosystems	**17**	**77%**
Spatially explicit assessment of climate vulnerability of ecosystems	**2**	**9%**
Mention of potential contribution to adaptation goals	**9**	**41%**
Mention of contribution to combating desertification	**11**	**50%**

2.4.1 Ecosystem-based adaptation and disaster risk-reduction

53. Ecosystem-based Adaptation (EbA) is the use of biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse impacts of climate change. It uses

[28] A tipping point is defined in the Global Biodiversity Outlook, as a situation in which an ecosystem experiences a shift to a new state, with significant changes to biodiversity and the services to people it underpins, at a regional or global scale. The tipping points are a major concern for decision-makers because of their potentially large impacts on biodiversity, ecosystem services, climate change and human well-being. - Secretariat of the Convention on Biological Diversity (2010) Global Biodiversity Outlook 3, accessible at https://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf

sustainable management, conservation and restoration of ecosystems, takes into account anticipated climate change impact and reduces the vulnerability of communities to these impacts.

54. EbA can be cost-effective in comparison to the high initial costs of 'hard' infrastructural approaches to climate change adaptation, as well as their maintenance costs.[29] It may also complement hard infrastructure approaches, through the development of hybrid approaches that use hard infrastructure to support the development of particular ecosystem functions.[30] In cases where EbA measures involving the restoration of natural ecosystems are more cost-effective than hard infrastructure, the mobilization of financial resource to implement such measures may contribute to progress towards Aichi Biodiversity Target 15.

55. EbA can provide multiple/additional benefits beyond reducing vulnerability to climate change that support the achievements of other Aichi Biodiversity Targets, such as contributing to the sustainable provision of food and forest products (Aichi Biodiversity Target 14), to the conservation of species dependent on the ecosystems thus restored (e.g. by protecting natural breakwaters which are also habitats/spawning grounds for fish) (Aichi Biodiversity Targets 6, 10) and to climate change mitigation (through carbon sequestration and preservation).

56. EbA can also be part of a risk management strategy with respect to the risks posed by climate hazards, including disaster risk reduction measures (also referred to as Eco-DRR).[31] Intact, natural ecosystems can play an important role in regulating local climate regimes and reducing risks associated with climate related hazards, such as floods, sea-level rise and cyclones.[32] More details on the benefits of Eco-DRR can be found in SBSTTA 20/10/Add.1

57. Ideally, EbA and Eco-DRR measures should be integrated in wider planning at the landscape scale, based on an understanding of ecosystems and the future impacts of climate change, using assessments at an appropriate functional scale (e.g. watershed, river basin, coastal zone, transboundary) which take into account the interconnectivity of different areas. This can help avoid adaptation activities having unintended negative impacts, including on biodiversity.

2.4.2 Linkages between Target 15 and the UNCCD's goal of Land Degradation Neutrality

58. At UNCCD COP 11 an intergovernmental working group was created on 2013 on Land Degradation Neutrality (LDN). After the concept was incorporated in Goal 5 of the Sustainable Development Goals in September 2015, UNCCD COP 12 decided to make the concept the main framework for the implementation of the convention. To achieve LDN, degradation of productive land should be avoided and already degraded lands need to be restored. The objective is therefore relevant to both Aichi Biodiversity Targets 5 and 15. Healthy, living soils underpin the functioning of most terrestrial ecosystems. They can be habitats for many species and stock vast stores of carbon. In semi-natural ecosystems, anthropogenic activity may have degraded the soils, impacting not only biodiversity but also the productivity of these areas for agriculture. The implementation of climate-smart agriculture and agroforestry policies can help to restore soils as part of a sustainable and resilient vision for water, food and energy security.

59. The three elements of a monitoring framework for the implementation of the LDN objective, trend in land use/land cover, trend in land productivity and trend in soil carbon stocks are all relevant

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[29] For example, coral reefs can reduce wave energy by an average of 97%, providing a more cost-effective defence from storm surges than engineered structures - Ferrario, F. *et al.* (2014) *Nature Commun.* Vol 5, 3794

[30] For example, in coastal management projects that seek to reduce the impact of rising sea levels, where the construction of structures (e.g. reef modules) on the seabed can support the development of natural reefs.

[31] Source: UNEP coastal ecosystem-based adaptation (EBA) website, accessible at http://web.unep.org/coastal-eba/

[32] The World Bank (2009) *Convenient Solutions to an Inconvenient Truth: Ecosystem-based Approaches to Climate Change*, accessible at http://go.nature.com/jUnzvL

for assessing progress on Target 5 and 15. Efforts to collect information at the national scale under these indicators could feed into National reports to the CBD and vice-versa.

2.5 "the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, […] thereby contributing to climate change mitigation"

60. Degraded ecosystems are not only less resilient to climate change, they also tend to have lower carbon stocks. The degradation of ecosystems in most cases results in the release of carbon, while restoration can help to increase carbon sequestration and therefore contributes to climate change mitigation. Improving the way ecosystems are managed and used is therefore not only crucial to reducing habitat loss, the main driver of biodiversity decline; it is also a key component in efforts to mitigate climate change and adapt to its consequences. More information on this topic can be found in UNEP/CBD/SBSTTA/20/10 on biodiversity and climate change, which reviews and summarizes the current knowledge on the potential contribution of a wide range of ecosystems, other than forests to climate change mitigation. UNEP/CBD/SBSTTA/20/INF/3 highlights ways in which the management, protection and restoration of ecosystems can contribute to climate change mitigation by reducing emissions from ecosystem degradation and by enhancing carbon sinks. The paragraph below summarizes key points from the report.

61. According to recent estimates, terrestrial and coastal ecosystems store more than five times as much carbon in plant biomass and soil organic matter as is currently contained in the atmosphere, and land use change and degradation of vegetation and soils are responsible for 10% of the total anthropogenic carbon emissions including those from fossil fuel combustion. At the same time, terrestrial ecosystems not affected by land use change remove a net amount of around 2.55 gigatonnes of carbon (Gt C) per year from the atmosphere While in the past the terrestrial carbon sink has mostly been attributed to forests, a recent analysis of remote sensing data suggests that other ecosystems, in particular dryland systems such as tropical savannahs and shrublands, also make a significant contribution.

62. The role that the conservation and restoration of functional ecosystems may play in this regard has long been the object of negotiations under the UNFCCC. National plans and commitments to mitigate climate change are therefore highly relevant to the implementation of this component of Target The role of ecosystems in climate mitigation is considered in the UNFCCC as the Land Use, Land Use Change and Forestry (LULUCF) sector. Forest ecosystems in developing countries, which are under particular pressure from conversion and responsible for a large share of LULUCF emissions, have taken an increasing importance in the UNFCCC negotiations since 2003. The UNFCCC COP has issued a series of decisions setting up a mechanism whereby developing countries may receive payments for the results they have achieved to reduce emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of carbon stocks in developing countries (REDD+).[33] A number of the LULUCF intended mitigation contributions thus fall under the scope of REDD+ with many countries, especially developing ones, emphasizing the importance of a reduction of the loss of forest ecosystems and on forest restoration, and making these contributions conditional to further international financial support to enable forest-related mitigation.

63. Prior to UNFCCC COP 21, Parties were asked to prepare and submit *"intended nationally determined contributions"*[34] ('INDCs'), outlining what post-2020 actions they intend to take under a new international agreement. INDCs present the actions that Parties are proposing to undertake to mitigate emissions under a variety of sectors. The importance of ecosystem-based climate change mitigation is reflected in the content of the INDCs, which include contributions with regards to

[33] Notably UNFCCC Decision 1/CP.16, UN Doc. FCCC/CP/2010/7/Add.1, as well as UNFCCC decisions 9/CP.19, 10/CP.19, 11/CP.19, 12/CP.19, 13/CP.19, 14/CP.19 and 15/CP.19.

[34] All INDCs submitted by parties can be consulted at http://unfccc.int/focus/indc_portal/items/8766.php

emissions from the conversion and degradation of natural ecosystems under both LULUCF and REDD+.

64. INDCs from 22 Latin American countries were reviewed for LULUCF and REDD+ objectives. Six were found to have quantitative targets under LULUCF or REDD+ (see Table 4 below). One country (Guatemala) made an explicit reference to the link between these targets and their NBSAPs, noting that "Among the relevant actions is the implementation of the National Biodiversity Strategy and Action Plan 2012 - 2022 , which allows for the integration of biodiversity in adaptation and mitigation to climate change and for the appreciation of ancestral knowledge of indigenous peoples, recognizing the cultural relevance of rural and and indigenous economic models in adapting to climate change".

Table 4 - Quantitative area or carbon-based LULUCF or REDD+ contributions in INDCs

Country	Quantitative area or carbon-based LULUCF or REDD+ contributions in INDCs
Honduras	1,000,000 hectares by 2030
Guatemala	1,200,000 hectares of forest restoration
Chile	100,000 of forest land by 2030, equivalent to 600 000 TCo2 by 2030
Belize	• Zero illegal deforestation by 2020 • Increased the surface of forested and reforested areas to 4.5 million hectares by 2030. • Increased forest areas with integrated and sustainable community management approaches with 16.9 million hectares in 2030, in reference to 3.1 million hectares by 2010. • Strengthened environmental functions (carbon capture and storage, organic matter and soil fertility, biodiversity conservation and water availability) in about 29 million hectares by 2030. • Net forest coverage has increased in 2030 to more than 54 million hectares compared to the 52.5 million in 2010. • Joint mitigation and adaptation capacity has increased in areas covered by forests, agricultural and forestry systems from 0.35 units in 2010 to 0.78 in 2030, as measured by the Index of Sustainable Forest Life, achieving productivity and conservation systems that are both complementary and resilient.
Ecuador	500,000 additional hectares until 2017 and an additional 100,000 hectares per year until 2025
Uruguay	13200 Gg annually (with domestic resources); 19200 Gg annually (conditional on additional means of implementation.

65. Intended mitigation contributions through LULUCF or REDD+ are highly relevant to Aichi Biodiversity Targets 5 and 15. Not all REDD+ actions or actions in the LULUCF sector are aligned with biodiversity objectives, but measures can be taken to maximise synergies and reduce potential conflicts between forest and other ecosystem-based mitigation and the conservation and restoration of natural habitats. Among the five activities encompassed by REDD+,[35] the reduction of deforestation and forest degradation, as well as the conservation of carbon stocks presents obvious linkages with Aichi Biodiversity Targets 5. The enhancement of carbon stocks, on the other hand, contemplates the

[35] Decision 1/CP.16 of the UNFCCC encouraged Parties to undertake mitigation actions in the forest sector through the following activities, commonly known as REDD+: (a) Reducing emissions from deforestation; (b) Reducing emissions from forest degradation; (c) Conservation of forest carbon stocks; (d) Sustainable management of forests; (e) Enhancement of forest carbon stocks

restoration of degraded ecosystems of Aichi Biodiversity Target 15. Depending on the specific actions implemented in support of these activities as well as their location, REDD+ national strategies may also support a number of other Aichi Biodiversity Targets.

66. These linkages at the national scale between REDD+ and NBSAPs are further described in UNEP/CBD/COP/12/INF/15. The potential for REDD+ to contribute to progress under the Strategic Plan for Biodiversity 2011-2020 and ways to measure this contribution are discussed in UNEP/CBD/SBSTTA/20/INF/30, which also highlights the role that information generated by national efforts to implement REDD+ could play in monitoring progress under a number of Aichi Biodiversity Targets, including Targets 5 and 15.

67. Despite the intention of many of the countries reviewed to take part in the REDD+ mechanism, few had included in their reports an assessment of the carbon stocks contained in natural ecosystems, or of the average density in biomass carbon of these ecosystems (2 countries or 9%), and even fewer in a spatially explicit manner (1 country or 5%). This is in contrast with the relatively high number of countries (9, or 41%) that mention the role of measures to conserve and restore natural ecosystems to slow the decrease or increase biomass carbon stocks. Technical support received under REDD+ can help countries assess and monitor carbon-related variables. These assessments could be used to report on how the *"contribution of biodiversity to carbon stocks has been enhanced"*.

68. The development of REDD+ under the UNFCCC, with its promise of results-based payments, places the focus of ecosystem-based approaches for mitigation on forests, with potential risks for other ecosystems.[36] However, whilst ecosystems other than forests cannot be considered for results-based payments under REDD+, the experience and capacity that countries have acquired on the measurement and management of carbon stocks in forests may prove useful when implementing ecosystem-based mitigation actions in other ecosystems.

69. Moreover, the implementation of the intended contributions of developing countries – be it with regards to the role of ecosystems in climate change mitigation of adaptation – may receive financial support from the Green Climate Fund and other financial mechanisms. Some of these contributions are even made conditional on the availability of international finance. Thus, planning for these synergies could enhance the potential for climate mitigation finance to contribute to Aichi Biodiversity Target 20 on the mobilization of financial resources for the implementation of the Strategic Plan. Beyond the results-based payments that may eventually be obtained through REDD+, this is already demonstrated by the significant amounts of private sector finance that has been put forward in support of extensive programmes for reforestation and forest ecosystem restoration, discussed in the following section.

Target 15 - "… restoration of at least 15 per cent of degraded ecosystems"

70. Despite inclusion of a quantitative objective (the restoration of 15% of degraded ecosystems), the measurement of progress on the restoration of degraded ecosystems presents conceptual difficulties. From an ecological perspective, degradation – as well as restoration– presents at least two dimensions: the extent of degraded area and the degree of degradation in each location. Quantifying restoration efforts runs up against this ambiguity, and the same 15% objective could in theory be realised by restoring a small area from a fully degraded to a fully restored state or a bigger area from a partially degraded to a partially restored state.[37] In theory, the relationship between the area of an

[36] As a result of REDD+, many forests will be better protected but land-use change may be displaced to non-forest natural ecosystems. For more details see Miles, L. & Dickson, B. (2010) REDD-plus and biodiversity: challenges and opportunities, 236(61), p.63. and Miles, L. & Kapos, V. (2008) Reducing Greenhouse Gas Emissions from Deforestation and Forest Degradation: Global Land-Use Implications. Science, 320(5882), pp.1454–1455. Available at: http://www.sciencemag.org/cgi/content/abstract/320/5882/1454

[37] Kotiaho et al. 2015: Target for ecosystem repair is impractical - *Nature* 519: 33.

ecosystem affected and the degree of degradation could be translated into a single metric, used to set national ambitions and track progress under Aichi Biodiversity Target 15's 15% objective.[38]

2.5.1 Outlook based on national plans and reporting

71. However, the analysis of Parties' reports shows that few include clear quantitative metrics in the assessment of the current state of ecosystem degradation, in their national target setting and on reporting of progress under Aichi Biodiversity Target 15. The most common metric used in the national reports and NBSAPs for measuring and setting targets on degradation is the area of degraded ecosystem, especially for terrestrial ecosystems such as forests. Information on the degree of degradation was more seldom presented (8 countries or 31%), and related to other ecosystems (freshwater quality in lakes or rivers) rather than used in combination with information on the area of terrestrial degraded ecosystems (see also section 2.3.2 above).

72. In the context of the implementation of the Strategic Plan, Parties are free to interpret the Targets in their national context. However, the analysis shows that more clarity may serve to support the setting of national targets and the development of national plans to support Aichi Biodiversity Target 15. Of the 22 countries reviewed, half had set a national target that clearly aligned with the objective of Aichi Biodiversity Target 15, and 9 (41%), had included a quantitative element in their target. In the rare cases where countries have set a quantitative target under Target 15, they have either set it by referring to the area (in hectares) that will be placed under restoration measures, especially with regards to forests, or used a target percentage for the restoration of degraded ecosystem without explaining how this percentage would be measured. Many metrics of degradation (and therefore restoration) are possible,[39] and a reference to area does not give any information as to the baseline and target degree of degradation to be achieved through these measures (e.g. the density of biomass carbon stocks, species richness, or degree of fragmentation).

73. However, Parties appear to have in some cases found the setting of an area for restoration the only available measure of their ambition. Whilst area may be a practical metric for avoided ecosystem loss, note should be taken that gains in natural ecosystems from restoration is not the "mirror-image opposite of loss".[40] Forest ecosystem illustrate well this difficulty: in most cases, their loss is concentrated and abrupt, and can be clearly measure through remote-sensing sources. Forest gain, in contrast, "is a highly variable, dispersed, and protracted process that is challenging to document and monitor with commonly used forest definitions and technology".[41] Meaningfully implementing and monitoring quantitative progress under Target 15 would therefore require additional more metrics than area for defining and assessing ecosystems, that can shed light on the quality and trajectory of restoration outcomes, both spatially and temporally.[42] Area-based targets provide a useful indication of the level of ambition with regards to the achievement of Target 15. However, further information about the type of restoration actions to be undertaken is needed in order to assess the potential from

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[38] As pointed by Kotiaho et al., "damage to an ecosystem's condition [could] be reduced by 15% over an entire area of degraded landscape or, for example, by 33% in a randomly selected 45% of that area to attain the same reduction."

[39] A survey was conducted by FAO in 2009 on the use of indicators for forest degradation. Indicators listed by one or more countries included aesthetic values; area affected by fire; disappearance of biodiversity/species; erosion; forest/canopy cover; fragmentation; occupancy/dominance of invasive/introduced species; presence of pioneer species/indicator species; soil fertility; soil properties; soil structure; species composition; stock density; production/value of timber and non-wood forest products (NWFPs); water quality; wildlife habitats; and wildlife risk. See FAO (2011) *Assessing forest degradation Towards the development of globally applicable guidelines,* Forest Resources Assessment Working Paper 177. Accessible at http://www.fao.org/docrep/015/i2479e/i2479e00.pdf

[40] Chazdon, R. L. (2014) *Second growth: The promise of tropical forest regeneration in an age of deforestation*. University of Chicago Press, Chicago, IL.

[41] *Ibid.*

[42] Chazdon, R. L., P. H. Brancalion, L. Laestadius, A. Bennett-Curry, K. Buckingham, C. Kumar, J. Moll-Rocek, I. C. G. Vieira, and S. J. Wilson. 2016. When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio* doi:10.1007/s13280-016-0772-y:1-13.

these actions for the recovery of ecosystem functions, including the provision of services to people and habitat for species.

74. Furthermore, certain elements of ecosystem degradation such as water quality or soil erosion do not lend themselves to a measurement by area. Other indicators could be developed and monitored to measure other various aspects of ecosystem function, within and outside the areas designated for restoration. The reports reviewed showed that some countries are already using indicators that can measure the degree of degradation of various ecosystems, such water quality, carbon stocks, fish stocks, richness and density of species. Indicators of fragmentation can also be used to assess degradation, such as the density of dams on waterways or forest fragmentation by roads and other installations.

75. Where time series exists for these indicators, it may be possible to set individual targets that aim at achieving a certain value or trend for the indicator (e.g. under at least 25% of species of fish stock show a population increase, and no more than 25% of them show a decrease between 2015 and 2020). 36% of reports found made use of at least one such indicators of the degree of degradation of ecosystems, often in relation to water quality in freshwater ecosystems. However, despite the presentation of this information, no quantitative national target was found that explicitly referred to the degree of restoration to be achieved. Many of these indicators of the degree of degradation can double as indicators of the provision of ecosystem services, and therefore provide metrics for the measurement of progress under Target Aichi 14, in combination with data on the use of these services.

76. Independently of national targets set under their NBSAPs or INDCs, several Parties to the CBD have pledged actions on forest restoration and reforestation under a number of international initiatives that seek to support climate change mitigation, adaptation, improving water provision and meeting other social and economic development goals. These initiatives represent a great potential to bolster the implementation of Target 15, however their exact contribution to the achievement of the target will depend on how and where they will be implemented.

Table 5. Summary of the evaluation of information provided in NBSAPs and national reports with regards to Target 15's component on climate change adaptation and desertification

Contribution of biodiversity to carbon stocks	No. of countries	%age of group
Assessment of carbon stock/density in various ecosystems	**2**	**9%**
Spatially explicit assessment of carbon stock and density	**1**	**5%**
Conservation actions specifically aimed at preserving carbon stocks	**9**	**41%**

2.5.2 Outlook for implementation based on international initiatives for landscape restoration (Bonn Challenge, Initiative 20x20, AFR100)

77. The Bonn Challenge, launched in 2011 at a ministerial roundtable in Bonn, Germany, is a global aspiration to restore 150 million hectares of the world's deforested and degraded lands by 2020. It relies on the landscape restoration approach, which aims to restore ecological integrity at the same time as improving human wellbeing through multi-functional landscapes. Rather than being a new commitment, it aims to support existing ones, including Aichi Biodiversity Target 15, through the setting of area-based commitments by governmental and non-governmental organizations. As of March 2016, the Challenge has received 13 pledges amounting to 86 million hectares of land targeted for reforestation or restoration or 57% of the overall target.

78. Further to the Bonn Challenge, the Secretary-General's Climate Summit held in New York in 2014 led to the adoption of the New York Declaration on Forests, a voluntary and non-legally binding political declaration. Signatories of the Declaration, ranging from governments, civil society

organizations and companies, pledged to "At least halve the rate of loss of natural forests globally by 2020 and strive to end natural forest loss by 2030" and to "restore 150 million hectares of degraded landscapes and forestlands by 2020 and significantly increase the rate of global restoration thereafter, which would restore at least an additional 200 million hectares by 2030". The declaration has been signed by 37 governments, 20 sub-national governments, 53 multi-national companies, 16 groups representing indigenous communities and 63 non-government organizations.

79. Initiative 20x20, launched formally at UNFCCC COP 20 in Lima, will support the Bonn Challenge and the New York Declaration on Forests. It aims to start the restoration of twenty million hectares of degraded land in Latin America and the Caribbean by 2020 under a combination of sustainable, climate- resilient agro-forestry, agro-pastoral activities, improved agriculture and assisted or natural reforestation as well as five million hectares of avoided deforestation. The initiative is aiming to leverage 1 billion USD in finance to pursue its goals and has already received expressions of ambition representing 830 million USD from the private sector. In addition to Initiative 20x20, AFR100 (the African Restoration Initiative), launched at UNFCCC COP 21 in Paris, is a country-led effort to bring 100 million hectares of land in Africa into restoration by 2030, restoring productivity to deforested and degraded landscapes in order to improve livelihoods. 13 countries have so far pledged to restore 41 million hectares of land, and 1 billion USD in development finance and 545 million USD in private sector investment have been pledged in support of these efforts.

80. There is a clear potential for these various expressions of ambition to contribute to progress under Aichi Biodiversity Targets 5 and 15, however the exact extent of this contribution will be determined by the specific actions that countries are taking to implement them and where these actions take place. Several Parties reviewed are under the process or have conducted national scale assessment of restoration opportunities, sometimes with the technical support from external partners.[43]

81. Actions aiming at the restoration of ecosystems to their natural state, through natural or assisted regeneration or even remediation depending on the level of degradation of the ecosystem, directly support the achievement of Aichi Biodiversity Target 15. Other restoration actions such as the development of agro-forestry and sustainable agro-pastoral activities, as well as the development of sustainably managed forest plantations, are more concerned with the sustainable management of semi-natural ecosystems, and thus do not directly support progress under Aichi Biodiversity Target 15 but rather on Aichi Biodiversity Target 7. Other types of actions that might be undertaken under these initiatives, such as the afforestation of natural areas of grassland[44] or the conversion of degraded forests to monospecific plantations, may actually work against the objectives of Aichi Biodiversity Targets 5 and 15.

82. In undertaking more detailed planning of how these ambitions will be realized, countries may wish to consider the role of the restoration of natural ecosystems, through natural regeneration or active interventions, and the potential for synergies with their national biodiversity targets as expressed in countries' NBSAPs, including in early stages of the planning of restoration actions such as assessments of restoration opportunities. The 6th National Report to the CBD, in 2018, could be an opportunity to report on the consolidation of these ambitions which should be included in revised national biodiversity strategies and action plans with their NBSAP, and acknowledge that their

[43] For example, the Restoration Opportunities Assessment Methodology (ROAM), produced by IUCN and the World Resources Institute, provides a flexible and affordable framework approach for countries to rapidly identify and analyse forest landscape restoration (FLR) potential and locate specific areas of opportunity at a national or sub-national level. ROAM is being rolled out in a number of countries that have made pledges under the Bonn Challenge. More information can be found at https://www.iucn.org/about/work/programmes/forest/fp_our_work/fp_our_work_thematic/fp_our_work_flr/approach_to_forest_landscape_restoration/restoration_opportunities_assessment_methodology/

[44] Veldman et al. (2015) Tyranny of trees in grassy biomes, *Science*, 347(6221), p. 484.

national contributions to achieving the global targets of the Strategic Plan for Biodiversity 2011-2020 could be bolstered by these synergies.

83. At the country level, a similar analysis of deforested areas and degraded forest areas from the same data, compared with areas pledged for reforestation and restoration under the Bonn Challenge, reveals that in many of the countries that have made such pledges, the area pledged represents a significant proportion of the overall area degraded and deforested according to the WRI assessment, sometimes greater than the 15% that Aichi Biodiversity Target 15 aims at (see Table 6 below). This is a mere indication as two important caveats need to be considered before using these results to measure the potential contribution of these commitments to Aichi Biodiversity Target 15. The first one is that there is currently little clarity over how countries intend to implement these commitments. Reforestation and restoration targets can be met through a variety of actions that are more or less aligned with biodiversity objectives. The second one is that forests, currently the main focus of these initiatives, are only one of many natural ecosystems that may be degraded and in need of restoration.

84. Current national reporting to the CBD shows that most countries have yet to make explicit links between these global initiatives and Aichi Biodiversity Target 15. Countries that have made area-based pledges for restoration often do not count with a quantitative commitment under Target 14. This may be explained by the fact that these ambitions were only recently expressed or may have been expressed by different Ministries. It is often unclear whether these ambitions are additional to previously expressed targets for restoration, be it the restoration of natural ecosystems in support of Aichi Biodiversity Target 15 or a target for carbon sinks through reforestation contained in their INDCs. Furthermore, in many cases the details of how they will be implemented on the ground – and therefore their potential to contribute to biodiversity objectives – remains to be determined. As the details of the implementation of these national plans are defined, Parties should strive to enhance intra and inter-ministerial coordination in order to ensure a convergence between their national restoration plans and NBSAPs.

Table 6 – Proportion of areas with potential for restoration covered by national restoration ambitions (Source : IUCN report on the application of ROAM methodologies for the assessment of restoration opportunities at the national scale)

Country	Bonn challenge ambition in ha (target from national restoration plan)	Area with potential for restoration resulting from national-scale assessment in ha	Proportion of area with potential targeted for restoration
Colombia	1,000,000 (210,000)	3,700,000	27% (6%)
Costa Rica	1,000,000	2,622,050	38%
El Salvador	1,000,000	1,253,077	80%
Guatemala	3,900,000	3,989,465	98%
Mexico	950,000	4,295,826	22%
Nicaragua	1,000,000	1,204,893	83%

3 Conclusions and recommendations

85. Progress under Aichi Biodiversity Targets 5 and 15 may be better now as compared to the mid-term assessment in the fourth edition of the Global Biodiversity Outlook. Specifically, it is estimated that the abatement of natural forest loss by 50% may be achievable in Latin America by 2020 if current efforts are continued and improved and the FRA reported a decrease in the net rate of forest loss in the region. The sum of ecosystem restoration pledges in the region is also significant. Whilst such an area is yet to be under active restoration and more assessments are needed to understand how these pledges will be implemented on the ground, the political will seems to exist to bring at least 15% of degraded areas under restoration by 2020. The outlook for Africa and SE Asia, on the other hand, is particularly concerning with an acceleration of the rates of natural ecosystem loss since the adoption of the Strategic Plan. Efforts to curb deforestation are underway with many African

and Asian countries receiving support for the planning of REDD+ and land restoration efforts but they are unlikely to allow for the targets to be achieved by 2020. This estimation of progress may improve following completion of the series of workshops covering more United Nations regions, comments from SBSTTA 20 and inputs from partner organizations, and an updated document will be presented to COP 13.

86. The regional review of National Reports and NBSAPs conducted here reveals huge variation amongst countries in the amount, accuracy and type of information provided, both with regards to the assessment of state and trends of natural ecosystems and the setting of national targets. This variation is likely to be even greater across regions. Setting national targets and reporting progress on the quantitative elements of Targets 5 and 15 requires the gathering of quantitative data on past and current rates of loss, degradation and fragmentation which may not always be readily available. (e.g. an estimate of the current degree of degradation in ecosystem condition, the targeted 15% reduction). A number of freely available sources of information are available or in development which can help countries improve the data.

87. Assessing progress against this component of Target 5 illustrates the lack of globally consistent indicators for tracking extent of ecosystems other than forests. Similarly, forests are very prominent, both in terms in the information provided by Parties on the state and trends of natural ecosystems and in the national targets set. This may be due to the greater availability of information with regards to forests relative to other natural ecosystems, further amplified by the preparation to the REDD+ mechanism undertaken by many developing country Parties. This is positive in light of the importance of forest ecosystems to terrestrial biodiversity and for a wide range of ecosystem services, including climate change mitigation and adaptation. However, non-forests natural ecosystems also absorb and store vast quantities of carbon. Moreover, from the standpoint of biodiversity, national targets should be representative of the diversity of all natural ecosystems. The current emphasis on forests may be detrimental to the conservation and sustainable use of a wider variety of natural ecosystems. This highlights the urgent need for more data collection on the extent and state of ecosystems other than forests at the global scale, and further support and guidance to for the planning of actions and reporting of progress specifically focused on ecosystem other than forests.

88. Similarly, global-scale information on the state of degradation and fragmentation of ecosystems is lacking, despite the fact that these processes have been demonstrated to have very significant impacts on biodiversity. Efforts underway by the GEO BON represent a commendable effort to fill this gap for degradation. However, given the specific dimensions of degradation for various ecosystems, Parties should make further efforts to develop nationally-specific indicators for degradation and fragmentation, aided by increased support of the Secretariat and external partners.

89. The wording of Aichi Biodiversity Targets 5 and 15 can be interpreted differentially by Parties when they are setting their national targets. Whilst this allows for flexibility in the definition of national actions to support the targets, and countries will report on them accordingly, this lack of clarity may also impede the ability of countries to clearly define national targets, and report on progress in ways that can make it difficult to aggregate data for the purpose of regional or global assessments. Convergence on the national interpretation of the targets, fostered by regional workshops on exchanges of experience, could help to streamline national reporting and provide a stronger basis for the assessment of progress towards the target at the regional scale. This convergence in the understanding of the targets and metrics could also help detect and address the phenomena of ‘leakage’ of drivers of ecosystem loss among countries.

90. Targets and reporting on the reduction of natural ecosystem loss expressed in net terms equate the value of protecting native forests with an increase in area of plantations, and mask biodiversity loss. Guidelines for national reporting should encourage countries to systematically report on both gross and net ecosystem loss and set national targets for gross loss and gain separately, as well as separate true plantation forest (i.e., one or few species) from assisted natural regeneration.

91. Under the Convention, the focus of review for the coming years will be progress in the implementation of the most recent strategic plan. This requires, as reflected in existing mandates provided by the Conference of the Parties, the review of national targets, plans and actions, as well as their outcomes. Because of the low proportion of countries that provided quantitative information and the differences in the metrics used, a regional-scale or global-scale aggregation of national data with regards to the state and trends of ecosystem loss and degradation is not possible. It cannot be accurately assessed, from a review of national reports and NBSAPs, if the sum of current national efforts will be sufficient to meet Aichi Biodiversity Targets 5 and 15, nor how far we are from meeting them. Therefore, the establishment of a review process that is conducive to the assessment of comprehensive policy frameworks (in the form of national strategies and action plans) and that facilitates constructive mutual learning among Parties appears most appropriate. The details of the proposal for such a review mechanism are discussed in document UNEP/CBD/SBI/1/10/Add.3.

92. The success of any review mechanism largely depends on the quality and completeness of the information reviewed. Aggregating current national reporting is very time consuming and mostly unsuccessful given the lack or poor quality of the data presented. Where it exists, compatibility in the metrics used is not always assured. Providing more detailed guidelines for reporting on the quantitative Aichi Biodiversity Targets, as well as sources of global data that can be used at the country level, would contribute to the assessment. Countries could also be encouraged to report directly into a web interface, as is already the case for other conventions. The guidelines for the sixth national report and other developments in the context of national reporting that SBI will consider at its first meeting, are aimed to improve the information basis for this review. In this context, support to Parties in the gathering of information and the preparation of their national reports and the development or revision of their national biodiversity strategies and action plans is critically important. SBI may wish to consider a recommendation to the Conference of the Parties to request the Global Environment Facility to complement and streamline existing support to strengthen national reporting and planning.

93. Parties should make further use of potential synergies between Aichi Biodiversity Targets 5 and 15 and related conventions and international agendas, such as the Sustainable Development Goals. Countries that have completed elements of a REDD+ framework could make better use of the information thus generated in their 6th national reports, and provide more detail of how actions under Targets 5 and 15 in their NBSAPs align with their REDD+ National Strategy or Action Plan. Synergies may also exist with national efforts to achieve a Land Degradation Neutrality objective under the UNCCD, as well as data collected to report on progress under this objective. The implementation of the intended contributions of developing countries under the UNFCCC – be it with regards to the role of ecosystems in climate change mitigation or adaptation – may receive financial support from the Green Climate Fund and other financial mechanisms. The development of specific criteria and safeguards could help ensure that those investments align with the objectives of the Strategic Plan for Biodiversity by recognizing the value of conserving natural and old-growth ecosystems and promoting ecological principles in landscape restoration.

94. The comparison between progress and targets reported in national reports and NBSAPs to the Secretariat of the CBD does not always take into account existing restoration commitments under other fora. The timing of reporting to the CBD could be an explanation, when these commitments are taken posterior to the adoption of these political commitments. In that sense, information from the NBSAPs and National Reports could be underestimates of the extent of commitments and actions to reach the targets. However, the NBSAP should be viewed and used as a “living” planning document, adapting to the changing needs and commitments, and should seek to incorporate relevant national pledges and programmed implementation whenever these arise. This should also be an opportunity to mainstream the objectives of Target 5 and 15, as well as the wider objectives of the Strategic Plan for Biodiversity, within programmes that may be a primary objective of climate change mitigation or restoration of land productivity. In undertaking more detailed planning of how these ambitions will be realized, countries may wish to consider the role of restoration of natural ecosystems, through natural regeneration and/or active interventions, including in early stages of the planning of restoration

actions, such as assessments of restoration opportunities and the potential for synergies with their national biodiversity targets, as expressed in countries' NBSAPs. The 6th National Report to the CBD, in 2018, could be an opportunity to report on the consolidation of these ambitions which should be included in revised national biodiversity strategies and action plans with their NBSAP, and acknowledge that their national contributions to achieving the global targets of the Strategic Plan for Biodiversity 2011-2020 could be bolstered by these synergies.

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