UNEP

CBD

Convention on Biological Diversity

Distr.
GENERAL

CBD/SBSTTA/22/INF/6
20 June 2018

ENGLISH ONLY

SUBSIDIARY BODY ON SCIENTIFIC,
TECHNICAL AND TECHNOLOGICAL ADVICE
Twenty-second meeting
Montreal, Canada, 2-7 July 2018
Item 7 of the provisional agenda*

INTEGRATION OF PROTECTED AREAS AND OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES INTO WIDER LAND- AND SEASCAPES

Note by the Executive Secretary

1. In paragraph 9(a) of decision XIII/2, the Conference of the Parties invited Parties, other Governments, relevant partners, regional agencies, bilateral and multilateral funding agencies, in conjunction with the Secretariat of the Convention on Biological Diversity, taking into account information provided by, and in consultation with Parties and other Governments, to undertake a review of experiences on, inter alia, additional measures to enhance integration of protected areas and other effective area-based conservation measures into the wider land- and seascapes. Then, in paragraph 10(a) of the same decision, the Conference of the Parties requested the Executive Secretary to develop voluntary guidance on the elements listed in paragraph 9(a).

2. Accordingly, the Secretariat, issued notification 2017-065, dated 12 July 2017, inviting Parties, other Governments, relevant partners, regional agencies, as well as bilateral and multilateral funding agencies, to submit information and experiences on various elements of protected areas, pursuant to paragraph 9(a (i-iv)). A total of 23 Parties and organizations responded and 39 documents were submitted. Then, the Secretariat, in collaboration with the United Nations Development Programme,[1] prepared voluntary guidance on the integration of protected areas and other effective area-based conservation measures into the wider land- and seascapes and presented it as annex I in the presession document submitted to this twenty second meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (CBD/SBSTTA/22/6).

3. The present information document is submitted in support of the voluntary guidance, in particular section A of annex I on suggested steps for enhancing and supporting integration into landscapes and seascapes and sectors.

* CBD/SBSTTA/22/1.

[1] Taking into account submissions received in response to notification 2017-065 and other available information as well as noting lessons learned from the relevant biodiversity-related conventions and agreements.

INTEGRATION OF PROTECTED AREAS AND OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES INTO WIDER LAND- AND SEASCAPES

I. CONTEXT

1. The integration of protected areas into wider landscapes, seascapes and sectors is made up of several components. The first is habitat fragmentation, which can have profound impacts on the functioning and integrity of complex ecological systems. However, the rate and extent of fragmentation, especially of forests, is immense. A recent study found that 70 per cent of the global forest cover is only within 1 kilometre of a forest edge (such as a road, or converted land use, such as agriculture), reducing biodiversity by as much as 75 per cent and imperilling ecosystem functioning.[2] Intact habitat is increasingly recognized as essential for the functioning of larger ecological systems, as well as for ecosystem services, including water, carbon sequestration and human health.[3]

2. In the programme of work on protected areas, Goal 1.2 states that "By 2015, all protected areas and protected area systems are integrated into the wider land- and seascape, and relevant sectors, by applying the ecosystem approach and taking into account ecological connectivity and the concept, where appropriate, of ecological networks." In decision X/6, the Conference of the Parties, among other things, highlighted for Parties the importance of integrating biodiversity into poverty eradication and development, and in decision XIII/3, among other things, stressed the importance of mainstreaming and integrating biodiversity within and across sectors. In decision X/31, the Conference of the Parties, among other things, invited Parties to facilitate the integration of protected areas in national and economic development plans, where they exist.

3. Protected area integration can be defined as: "the process of ensuring that the design and management of protected areas, corridors and the surrounding matrix fosters a connected, functional ecological network."[4] Protected area mainstreaming can be defined as the integration of the values, impacts and dependencies of the biodiversity and ecosystem services provided by protected areas into key sectors, such as agriculture, fisheries, forestry, mining, energy, tourism and transportation.

4. Protected areas safeguard the biodiversity and ecosystems that underpin the Sustainable Development Goals.[5] Protected areas are especially important in achieving goals related to poverty alleviation, water security, carbon sequestration, climate change adaptation, economic development and disaster risk reduction. Protected areas are an essential strategy for the emerging field of nature-based solutions to various global challenges, such as water security.[6] They are particularly important as a nature-based solution for climate mitigation[7] and climate adaptation.[8] Nature provides at least a third of climate solutions if the planet is to stay under 1.5° C, and protected areas are an essential strategy for achieving this goal.

---

[2] Hadded, N.M. et al. 2015. Habitat fragmentation and its lasting impact on Earth's ecosystems. Science Advances: 1(2): e1500052, Mar 2015. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4643828/

[3] Watson, J. et al. 2018. The exceptional value of intact forest ecosystems. Nature Ecology and Evolution 2, 599-610.

[4] Ervin, J., K. J. Mulongoy, K. Lawrence, E. Game, D. Sheppard, P. Bridgewater, G. Bennett, S.B. Gidda and P. Bos. 2010. Making Protected Areas Relevant: A guide to integrating protected areas into wider landscapes, seascapes and sectoral plans and strategies. CBD Technical Series No. 44. Montreal, Canada: Convention on Biological Diversity, 94 pp.

[5] See for example CBD. 2016. Biodiversity and the 2030 Agenda. Montreal: Secretariat of the Convention on Biological Diversity. Available at https://www.cbd.int/development/doc/biodiversity-2030-agenda-policy-brief-en.pdf

[6] See for example: United Nations Development Programme. 2018. Nature for water, Nature for life: Nature-based solutions for achieving the Global Goals. New York, UNDP; available at www.natureforlife.world.

[7] See Bronson et al., 2017. Natural Climate Solutions. PNAS: 114(44): 11645-11650 available at: http://www.pnas.org/content/114/44/11645.

[8] Dudley, N. et al. 2009. Natural Solutions – Protected Areas: Helping People Cope with Climate Change. Switzerland: IUCN. Available at: https://www.iucn.org/content/natural-solutions-protected-areas-helping-people-cope-climate-change.

5. Despite these advances, the progress of protected area integration and mainstreaming remains slow, with very few countries identifying specific strategies within their national biodiversity strategies and action plans.[9] Urgent action is required by Parties to make progress on both of these aims.

6. This section aims to provide voluntary guidance to Parties on how to increase landscape and seascape connectivity, and how to decrease fragmentation.

A. This section outlines suggested steps for enhancing and supporting landscape and seascape integration

(a) *Review national visions, goals and targets:* The first step is to ensure that national visions, goals and targets include elements of protected area connectivity, including increasing habitat connectivity and decreasing habitat fragmentation at the landscape and seascape scale. Different types of national goals and visions exist, but may include, for example, the following:

(i) *National development plans*: Many national development plans recognize the importance of biodiversity, but few recognize the need to promote connectivity and guard against habitat fragmentation;

(ii) *Infrastructure plans*: There will likely be at least five trillion USD spent annually in infrastructure by 2030.[10] Infrastructure is one of the leading causes of habitat fragmentation. Understanding how infrastructure can affect landscape connectivity, and identifying measures to safeguard against fragmentation will ensure that the impacts of infrastructure development are minimized. Of particular importance are road, railway and energy infrastructure developments, especially along migratory routes;

(iii) *National water security plans*: Three quarters of the world depend upon forests for drinking water. Forest fragmentation can limit the effectiveness of landscapes in capturing and storing surface water, and intact forests are critical for functioning hydrosheds. Yet few national water security plans specifically address the issue of forest fragmentation;

(iv) *Green growth development plans*: Green growth development plans outline how a country will transition to a development model that decouples economic growth with environmental degradation;

(v) *Integrated coastal development plans*: Integrated coastal development plans are increasingly popular tools to balance the many competing interests within a coastal area. Among the many competing topics, planners should address the fragmentation of habitats, especially those that ensure the ecological functioning of coastal habitats, such as nesting areas, spawning and aggregation areas;

(vi) *Agricultural development plans*: Agricultural development still accounts for the majority of forest lass in many parts of the world. New areas of agricultural expansion should consider impacts on habitat fragmentation;

(vii) *National forestry plans*: Forest management plans and national forest plans should include strategies to minimize forest fragmentation and loss of connectivity, including through siting of planned harvests, by incorporating corridors, and by adjusting management practices within areas important for connectivity;

[9] See UNDP. 2016. National Biodiversity Strategies and Action Plans: Natural Catalysts for Accelerating Action on Sustainable Development Goals. Interim Report. United Nations Development Programme. December 2016. UNDP: New York, United States of America. 10017, available at: https://www.cbd.int/doc/nbsap/NBSAPs-catalysts-SDGs.pdf

[1010] See http://reports.weforum.org/green-investing-2013/required-infrastructure-needs/

(viii) *Disaster mitigation strategies*: Many national disaster plans are increasingly referencing biodiversity as a strategy for avoiding and mitigating disasters.

(b) *Identify key species, ecosystems and ecological processes:* Different species have different needs for connectivity. Planners can start by identifying which species, ecosystems and ecological processes can benefit from improved connectivity, and which are vulnerable to habitat fragmentation. Some examples of key species, ecosystems and ecological processes include:

(i) *Species dependent upon intact ecosystems:* Many species, such as interior forest songbirds, depend upon fully intact ecosystems. Once fragmentation reaches a certain threshold, many species may become vulnerable to the encroachment of more generalist species and invasive alien species;

(ii) *Wide-ranging species*: Species whose ranges cover large areas, and which must move across many ecosystem types for feeding, breeding and migration, are particularly sensitive to fragmentation;

(iii) *Ecosystems with interdependent interlinkages*: Ecosystems that exist within a landscape or seascape of interacting ecological processes are especially vulnerable to fragmentation, such as marine species that utilize coastal areas for nesting;

(iv) *Species and ecosystems processes that depend upon functioning ecological processes*: Many ecological processes, such as seasonal flooding, or fire, are essential to the functioning of ecosystems. Planners should identify those ecological processes that are essential, and identify threats to connectivity of those processes, such as dams and diversions, that threaten the functioning of ecosystems;

(v) *Species and ecosystems vulnerable to climate change*: Under various climate scenarios, the ranges of a wide variety of species and ecosystems will shift. Planners should identify these potential shifts, and ensure connectivity along major corridors.

(c) *Conduct a national review of status and trends*: As part of the 6th National Report, Parties should consider assessing the level of landscape and seascape habitat fragmentation and connectivity for key species, ecosystems and ecological processes, including a review of the role of protected areas in maintaining landscape and seascape connectivity, and any key gaps. Elements of this review can include:

(i) *Status of protected area connectivity*: A review of the extent of connectivity gaps between protected areas will enable planners to understand the scope and breadth of connectivity, and identify areas to fill those gaps. A range of approaches can be applied:[11]

i. *Nearest neighbor approach*: Based on standard survey data

ii. *Spatial pattern indices*: Based on remotely sensed data

iii. *Scale-area data*: Based on point or grid-based data of species occurrence

iv. *Graph theory approaches*: Based on habitat data and species dispersal data

v. *Buffer radius and incidence function models*: Based on a radius around a core area

vi. *Actual species movement*: Based on an estimate of actual connectivity patterns

(ii) *Status and review of fragmentation*: The reverse process of reviewing the status of *protected* area connectivity is a review of landscape- and seascape-level fragmentation.

[11] Fagan and Calabrese, 2006, and Ervin et al. 2010

This review can include an assessment of the extent of fragmentation, as well as the drivers of fragmentation.

(iii) *Status of existing designated corridors*: A review of biodiversity corridors can reveal key gaps and areas for designating new connectivity measures.

(iv) *Status and trends of other efforts to mitigate fragmentation and maintain connectivity*: In addition *to* conservation corridors, there are other means to mitigate fragmentation and maintain connectivity. Planners can conduct a stock take and understand key gaps and lessons in these efforts.

(v) *Status and trends of species vulnerable to habitat fragmentation*: Planners should consider a review of the population status and trends of species most vulnerable to habitat *fragmentation*, and most dependent upon connectivity. The results can inform where new connectivity measures should be located, and help to identify steps to mitigate the impacts of fragmentation.

(vi) *Status and trends of ecosystems vulnerable to habitat fragmentation*: Planners should also *consider* a wider review of the status and trends of fragmentation within the ecosystems that are vulnerable to habitat fragmentation, including for example, riverine, coastal, montane, wetland and forest ecosystems.

(d) *Review specific goals for species and ecosystems*: Once a review is completed, planners may want to establish or bolster specific goals for connectivity and integration of species and ecosystems. The following list provides some guidelines for setting goals:[12]

(i) *Identify the minimum size and connectivity* of the habitat needed to sustain individuals within the population, as well as across a broader meta-population;

(ii) *Identify species and habitats of particular importance*, such as IUCN Red Listed of Threatened Species, and habitats under immediate threat, such as through incompatible land uses;

(iii) *Identify ecologically functional populations* — the number and distribution of a species needed to fulfil their ecological niche within a functioning ecosystem;

(iv) *Identify needs for daily*, seasonal and lifecycle movement and dispersal;

(v) *Ensure that species are distributed* across the ecological regions to which they are native, to safeguard against natural disasters and environmental changes;

(vi) *Consider recommendations from national and international recovery plans* when setting goals for species that are on endangered species lists, such as the IUCN species survival commission action plan;

(vii) *Incorporate the results of population viability analyses* — the minimum number of individuals and sub-populations needed to sustain a broader population over time — into the goals for species for both populations and meta-populations;

(viii) *Incorporate the concept of minimum dynamic area* — the minimum area of an ecological system needed to ensure survival or recolonisation;

(ix) *Use the results from species-area relationships* (the relationship of a patch size to the density of individuals within that patch) to determine the minimum size of a habitat patch needed to sustain a focal species;

(x) *Set higher connectivity goals* for species with limited distribution and ranges;

[12] From Ervin et al., 2010.

(xi) *Consider historic natural ranges of variability* as a guide post in setting connectivity goals;

(xii) *Allow for a range of goals* to provide more flexibility, and to allow planners to make tradeoffs between one target and the next; and

(xiii) *Observe the precautionary principle* by including safety margins and redundancy in the goals for species and systems.

(e) *Conduct an assessment of the benefits of connectivity within the national context:* Well-functioning, well-connected protected areas convey multiple benefits, including those listed below. Parties should consider conducting an assessment, including of the economic and social benefits, including:[13]

(i) *Livelihood security*: Connectivity ensures that communities have the natural resources they need to sustain their livelihoods – more than 3.6 billion people depend on biodiversity and ecosystems to maintain their livelihoods, including forestry, fisheries and agriculture;

(ii) *Municipal water supplies*: Connectivity helps ensure intact ecosystems that supply key water supplies for municipal drinking water as well as for agricultural water supplies. Connectivity ensures that natural land cover is intact and can continue to provide the quantity and quality required by an ever-increasing population. More than 3,200 cities around the world could improve their water security through forest conservation measures;[14]

(iii) *Agriculture*: Connectivity is key for ensuring the maintenance of ecosystem services required by agriculture, including water, soil stabilization, and pollination;

(iv) *Natural disaster mitigation*: Well-connected ecosystems provide natural buffers against the effects of severe flooding, storm surges, high winds, and the increasing impacts of climate change;

(v) *Fisheries*: Connected, intact ecosystems ensure that areas of importance to fisheries stocks, such as migratory routes, nursery and incubation sites and spawning grounds are maintained, a primary livelihood for most coastal communities around the world; an

(vi) *Tourism*: Intact, connected ecosystems provide the natural infrastructure required for a nature-based tourism industry

(f) *Identify and prioritize the challenges and opportunities within sectors*: Planners should clearly understand the range of challenges and opportunities involved in engaging with sectors to increase habitat connectivity and decrease fragmentation. This process entails

(i) *Identifying the sectors most responsible for habitat fragmentation*. These may include, for example, transportation, agriculture, energy, infrastructure and urban development;

(ii) *Identifying and developing strategies to engage various sectors* in developing strategies for mitigating the impacts on protected areas;

(g) *Prioritize and implement measures* to decrease habitat fragmentation within landscapes and seascapes and to increase connectivity, including the creation of new protected areas and the identification of other effective area-based conservation measures, as well as indigenous and community conserved areas, that can serve as stepping stones between habitats, the creation of conservation corridors

[13] See Ervin et al., 2010. Making Protected Areas Relevant. CBD Technical Series 44. Available at: https://www.cbd.int/doc/publications/cbd-ts-44-en.pdf

[14] See https://global.nature.org/content/beyond-the-source

to connect key habitats, the creation of buffer zones to mitigate the impacts of various sectors, to enhance the protected and conserved areas estate, and the promotion of sectoral practices that reduce and mitigate their impacts on biodiversity, such as organic agriculture and long-rotation forestry.

a. There are a range of different types of actions that can be applied to promote connectivity and decrease habitat fragmentation. A review of more than 75 NBSAPs[15] identified and consolidated a range of types of actions, including the following:

   (i) *Assess*: Conduct assessments, reviews, or studies on various aspects of connectivity;

   (ii) *Research*: Conduct research on various issue related to connectivity and fragmentation;

   (iii) *Targets*: Define targets, goals, criteria, indicators related to connectivity and fragmentation;

   (iv) *Inventory*: Create maps, and undertake inventory on corridors and other aspects of connectivity and fragmentation;

   (v) *Database*: Create a database and/or develop data systems for storing information about connectivity and fragmentation;

   (vi) *Policy*: Develop and enact policies, laws, regulations, guidelines related to connectivity and fragmentation;

   (vii) *Plans*: Develop plans, programs, schemes and other guidance on implementing connectivity measures;

   (viii) *Align*: Align sectoral and biodiversity policies, plans, practices, and decisions to be consistent with maintaining connectivity and minimizing fragmentation;

   (ix) *Report*: Develop, publish, and/or disseminate reports and other materials on the status of connectivity and fragmentation;

   (x) *Guidelines*: Develop guidelines, standards, targets related to connectivity;

   (xi) *Demonstration*: Establish a pilot site or demonstration site, in order to show proof of a concept or to learn before scaling up;

   (xii) *Mechanism*: Create a mechanism or tool that fosters connectivity, such as a payment for ecosystem services scheme, or land swap mechanism

   (xiii) *Enforce*: Enforce laws, policies, regulations and practices that are related to connectivity and fragmentation, such as preventing illegal logging in key connectivity areas;

   (xiv) *Consult*: Consult with or engage with stakeholders related to the location and purpose of connectivity measures;

   (xv) *Implement*: Implement existing plans, programs, schemes

   (xvi) *Infrastructure*: Design and build infrastructure in order to minimize fragmentation and maintain connectivity

   (xvii) *Skills*: Provide training, workshops and capacity building to key stakeholders so they have the skills required to implement key connectivity measures;

[15] UNDP. 2016. NBSAPs: Natural Catalysts for Achieving the SDGs. Available at: https://www.cbd.int/doc/nbsap/NBSAPs-catalysts-SDGs.pdf

(xviii) *Educate*: Promote biodiversity awareness, campaigns, and education at various levels about the importance of connectivity;

(xix) *Advocate*: Promote, advocate, and build support for connectivity measure through dedicated campaigns and strategies

(xx) *Govern*: Improve governance, including development of alternative governance arrangements, such as community-led conservation corridors;

(xxi) *Coordination*: Improve coordination, collaboration between different agencies, communities, sectors related to connectivity;

(xxii) *Monitoring*: Conduct monitoring, evaluation of the effectiveness of measures related to connectivity; and

(xxiii) *Resources*: Mobilize resources to fill financial gaps

b. Suggested measures for screening and prioritizing strategies to improve connectivity, decrease fragmentation include:[16]

(i) Effectiveness: Is the strategy effective in achieving the goals of protected area integration? Will it result in long-term changes that improve connectivity?

(ii) Efficiency: Is the strategy efficient in achieving protected area integration relative to other potential strategies? What is the potential return on investment?

(iii) Feasibility: Is the strategy feasible to implement? How politically palatable is it among key decision makers? How practical are the steps needed to implement the strategy? Is funding available or likely to become available?

(iv) Affordability: What is the overall cost of implementing the strategy? Is the strategy easy to implement given existing resources?

(v) Social and economic impact: How will the strategy affect local communities? Will the strategy improve social benefits and human well-being? What are potential negative social and economic impacts?

(vi) Public support: How much public support or opposition is there likely to be?

(vii) Risk: Are there other inherent risks that might be involved in implementation?

(h) Examples of actions taken to foster connectivity and avoid fragmentation: There are a wide range of actions that can be taken, as illustrated by the indicative list above. Below are some concrete action included in the latest rounds of National Biodiversity Strategies and Action Plans.[17]

[16] Op. Cit.

[17] All NBSAPs cited are available at www.cbd.int/nbsap

Examples of recent NBSAP actions that foster connectivity:

Paraguay: “At the time of requesting an EIA from an owner, the evaluator should review the context of each farm with respect to neighbouring farms to procure biological connectivity.”

Viet Nam: “Develop policies for the management of biodiversity corridors, defining management objectives, the use of land in biodiversity corridors, and their connection to the development of land use planning at the local level”

Yemen: “Incorporate protected areas, connectivity corridors and land use buffer zones as a core component of land use plans”

Zambia: “Regularize Forest Management Plans for national parks to ensure connectivity, habitat resilience and ultimate refuges for wildlife in face of climate change”

Botswana: “By 2020, to identify, map and quantify the critical linkages between the Okavango Delta and wet season habitats in adjacent ecosystems.”

Burundi: “Preserving the buffer zone of Lake Tanganyika (150 m wide and 50 km long) and establish a corridor between the mountains of Inanzegwe, Kibimbi and Muyange”

China: “Establish species migration corridors and reduce negative impacts of climate change on biodiversity, and cultivate excellent new varieties with improved ability to cope with climate change”

Colombia: “280,000 hectares restored or rehabilitated for protective aims, including biological corridors for connectivity and the prevention of deforestation.”

Costa Rica: “By 2025, create at least six biological corridors as climate refugia.”

Dominican Republic: “Strengthen connectivity between protected ecosystems through existing initiatives (Biosphere Reserve Jaragua-Bahoruco-Enriquillo, the Caribbean Biological Corridor, Corridor Guaconejo - Quita Espuela) and others.”