

BIOLOGICAL DIVERSITY INDICATORS FOR THE MOUNTAINS CHARACTERIZATION OF THE PECULIARITIES IN ALPINE CONVENTION

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TERMS OF THE MANDATE

In the WORK PROGRAM of the Alpine Biodiversity Board (ABB) for the period 2021-2022 until the XVII Alpine Conference it is clearly stated that in the international context, mountain areas are still not sufficiently considered in biodiversity strategies and the ABB aims at addressing these problems by emphasizing the need of a specificity for the biodiversity of mountain. Therefore it is necessary to highlight the specificity of the biodiversity of mountain and alpine areas, in all its components to protect nature in the face of climate change and its impacts on ecosystems and habitats.

For these reasons, the first objective of the work agenda is to identify a series of indicators relevant to mountain biodiversity, integrating and updating the indicators of the "Ecological Network" platform. Indicators can serve as a starting point for more comprehensive and joint monitoring in Alpine countries.

The integration of indicators that promote the value of mountain biodiversity conservation will help realize the CBD vision of "Living in Harmony with Nature" by 2050 and strengthen coherence between international frameworks and science and science-based decision making. evidence.

ALPINE-SPECIFIC CHALLENGES UNTIL 2030

In a first brainstorming session, the WG MAP came up with the following challenges to biodiversity and ecosystems relevant in the Alps. Short, non-exhaustive descriptions of the identified challenges were added as a basis for discussion.

a) **Land use and soil:** Pressures on land use (due to agriculture, energy production, urbanization/settlement systems and urban sprawl, transport of people and goods, etc.) are ongoing and degrading biodiversity and ecosystems in the Alps. The Alpine territory with its **natural and cultural landscapes** and ecosystems needs to remain permeable and liveable for all species. Sustainable **spatial planning** practices are a tool to mitigate this. Land use is closely linked to soil quality and quantity, which in turn has an impact on biological diversity and functioning ecosystems. On the other hand, the **depopulation of rural areas** and **land abandonment** can lead to bush encroachment/ecological homogenization resulting in a decrease in the local biodiversity.

b) **Tourism:** Biodiversity is part of what makes tourist destinations in the Alps so attractive. However, the impacts from the development of tourism infrastructure and from tourist and leisure activities on biodiversity and ecosystems are also especially relevant in the Alps.

c) **Climate change:** As discussed below, climate change is an important driver of biodiversity loss. There is a climate-induced increase in natural hazards in the Alps, which poses a threat not only to the population but also to the habitats of vulnerable species, which may cause irreversible loss. Animal and plant species extinction is essentially irreversible. This makes it even more urgent to fight against biodiversity loss. The two crises of climate change and biodiversity loss cannot be regarded separately.

DOCUMENTS

With the expiration of the *Aichi Biodiversity Targets* in 2020, preparations are being made to follow a new set of ambitious biodiversity goals and milestones. In the brief *Elevating Mountains in the Convention on Biological Diversity's Post-2020*, second meeting of the open working group on the *Post-2020 Global Biodiversity Framework (GBF)* in February 2020 in Rome (<https://www.grida.no/publications/473>), highlights how mountains are important areas for world biodiversity and why these regions deserve specific attention and outlines concrete policy recommendations for the inclusion of mountains in the global framework for post-2020 biodiversity.

In the light of the relevant requests by the Conference of the Parties at its fourteenth meeting, by the Subsidiary Body on Scientific, Technical and Technological Advice at its twenty-third meeting, and by the Open-ended Working Group on the Post-2020 Global Biodiversity Framework at its first and second meetings (see CBD/SBSTTA/24/3), the document (CBD/SBSTTA/24/3Add.1, 25 November 2020), in section II, proposes an approach for the use of indicators to help monitor progress in the implementation of the post-2020 global biodiversity framework.... Da questo documento sono stati identificati indicatori in CBD/SBSTTA/24/3Add.13 ritenuti efficaci per la salvaguardia della biodiversità montana e dell'integrità dell'ecosistema. <https://www.cbd.int/doc/c/ddf4/06ce/f004afa32d48740b6c21ab98/sbstta-24-03-add1-en.pdf>

Given the uniqueness of mountain biodiversity and the relevance of the ecosystem services they provide to the well-being of people around the world, the need to elevate mountains in the GBF has been addressed and effective indicators of biodiversity status and trends identified. and mountain ecosystems, crucial to support the objectives of the Convention on Biological Diversity (CBD) Post-2020 - Global Biodiversity Framework (GBF) through the document *Indicators for Elevating Mountains in the Convention on Biological Diversity's Post-2020 Global Biodiversity Framework* which collects indicators of the *CBD/SBSTTA / 24 / 3Add.13* ratio and selects those most appropriate to the biodiversity of the mountain.

<https://www.cbd.int/doc/c/7faf/b992/b56af5209ee53b159efffc22/sbstta-24-item3-unepl-indicators-mountains-en.pdf>

THE INDICATORS CHARACTERISTICS

Indeed, adopting indicators that promote mountain biodiversity conservation will contribute to realizing the CBD's vision of "Living in Harmony with Nature" by 2050 and strengthen the coherence among international frameworks and science- and evidence-based policy-making.

Indicators suggested in *CBD/SBSTTA/24/3Add.1* fall into three groups:

- a. **Headline:** a minimum set of high-level indicators which capture the overall scope of the goals and targets of the post-2020 global biodiversity framework which can be used for tracking national progress, as well as for tracking regional and global progress. These indicators could also be used for communication purposes. Additionally, some countries may wish to use a subset of these indicators or only the goal level headline indicators for high-level communication and outreach.
- b. **Component:** a set of indicators for monitoring each component of each goal and target of the post-2020 global biodiversity framework at the national level as well as for tracking regional and global progress.
- c. **Complementary:** a set of indicators for thematic or in-depth analysis of each goal and target These indicators will be used at the global level, and, as appropriate at regional and national levels.

However, these indicators may be less relevant or applicable, for a majority of countries. Some of these indicators have significant data collection gaps or are highly specific.

A minimum set of high-level headline indicators tracks national, regional, and global progress on GBF goals and targets. Component indicators measure progress toward the goals' and targets' components more specifically. The indicators were selected in consultation with partners and experts based on specific criteria:

- (Meta)data publicly available;
- Methodology for data product published or peer reviewed;
- Evidence for regular update of the indicator;
- Mechanism for maintenance of the indicator;
- Can be disaggregated for mountains.

The spatial scale

The indicator can be produced with surveys on land use or integrated maps that may have a common level of complexity for all Alpine countries. Only in this way can the return of the indicator processing have a real meaning even over time with diachronic analysis. They help us and integrate the surveys, the analyzes through satellite images in which the national repertoires are subsequently integrated into the European DB (EEAEIONET). *"What we are able to see from satellite data is that the increase in soil that is sealed off by human infrastructure activities is even greater than we anticipated", says Chris Steenmans, Project Manager for Land and Remote Sensing at the EEA. "Fragmentation of land is a time bomb. Each year only a small fraction of the landscape will change its function. This is not enough for you to really feel the change as dramatic. But if you use satellite data over a span of ten years you can really see a difference".*http://www.esa.int/esaEO/SEM1VVVJD1E_index_2.html

The time scale

A second scalar dimension of the indicators is that of time. The parameters and measures identified for each indicator vary with frequencies other than those of others. Some vary very quickly over time, for others the variations are detectable only in much longer times. Some indicators of the first case may be therefore used, for example, as early warning signals to highlight the need for immediate and urgent action to deal with a certain phenomenon. Some others, in the second case, can, for example, measure the effects of response policies that have consolidated results (performance indicators).

An appreciable characteristic of an articulated set of indicators is also that of power count on the fact that their different temporal variability can allow an evaluation however significant, counting on the fact that at any time the evaluation will be possible based on a consistent number of indicators with a variable configuration. That is it also constitutes a response to different needs, from decision support to information and communication tool, which political decision makers attribute to indicators.

An example of an indicator whose variability is measurable in the medium to long term is consider for example the Red List Index (see I.2 SEBI 2010). The passage of especially from one category of threat to another implies the acknowledgment of notable ones transformations both in the habitats and in the structure of its population are not measurable if not over long periods. Otherwise, to remain as an example on a similar theme, on shorter times the variations of the Common Bird Index can be measured (see I1SEBI 2010). The temporal scalar dimension of an indicator has an implication on the periodization with which the data used to populate it are collected. Monitoring butterflies are, for example, carried out

every year (see I.1SEBI2010); the assessment of conservation status of a habitat (see I.5 SEBI 2010), required by the obligations of Reporting of the Habitat Directive, must take place every six years.

THE INDICATORS

The Alpine Convention must try to accommodate and integrate the different sets of indicators on the basis of past experiences. Consequently, based on the document Indicators for *Elevating Mountains in the Convention on Biological Diversity's Post-2020 Global Biodiversity Framework* which collects the indicators of the CBD / SBSTTA / 24 / 3Add.13 ratio, we will try to integrate with other indicators. For example, those already developed for the *Platform Ecological Connectivity at the Alpine Convention* derived from the SOIA/ABIS system of the Alpine Convention. In the final report of the Working Group "Environmental objectives and Indicators" of the Alpine Convention (3rd mandate) October 2004 entitled Documenting the transformations of the Alpine Habitat, a synoptic framework of 95 indicators is provided with the relative possibilities of representation for the system of Alpine level indicators according to the criteria also identified by the OECD (2003) from which those relating to biodiversity will be extracted; or by integrating the SEBI (*Streamlined European Biodiversity Indicators*) initiative: is a partnership between the European Environment Agency (EEA), its Topic Center on Biological Diversity (ETC/BD) and DG Environment of the European Commission.

The indicators are intended to be user-friendly, policy-relevant and to send a clear message. They provide information to policy-makers and the general public. The indicators in the current SEBI set are complementary; whilst each one provides a clear individual message about a given aspect of biodiversity, together they provide a 'big picture' that can improve the effectiveness of policy measures and help identify solutions to halt biodiversity loss.

The indicators, and considered significant at the reference scale to safeguard mountain biodiversity and ensure that the GBF recognizes the uniqueness of mountain environments. This is given by the possibility or not of being able to extrapolate the data necessary for their processing at the various reference scales. In fact, the study of an environmental system must be confronted with the multiplicity of relationships and dynamics that constitute it.

Aspects related to the different dimensions of Biodiversity should also be considered in an integrated way: ecosystemic; specific; genetic.

THE REFERENCE INDICATORS IN THIS PHASE

A.0.1 Extent of selected natural ecosystems

A.1.1 Extent of natural ecosystem (A.0.1) by type (Component)

A.1.1.1 Forest area as a proportion of total land area (SDG indicator 15.1.1) (Complementary)

2.0.1 Protected area coverage of important biodiversity areas

2.1.1 Protected area coverage by type (freshwater, mountain and terrestrial) (Component)

2.1.2 Protected area coverage of important biodiversity areas by type (marine, freshwater, mountain and terrestrial) (Component)

2.1.1.1 Protected area downgrading, downsizing and degazettement (PADDD) (Complementary)

2.1.1.2 Status of key biodiversity areas (Complementary)

2.1.1.3 Protected area coverage of key biodiversity areas (Complementary)

2.1.1.6 Proportion of terrestrial, freshwater and marine ecological regions which are conserved by protected areas or other effective area-based conservation measures (Complementary)

2.1.1.11 Protected Area Connectedness Index (PARC-Connectedness) (Complementary)

2.1.1.12 Number of hectares of UNESCO designated sites (natural and mixed World Heritage sites and Biosphere Reserves) (Complementary)

1.1.1.16 Free flowing rivers (Complementary)

A.1.1.11 Change in the extent of water-related ecosystems over time (Complementary)

A.1.1.23 Change in the extent of inland water ecosystems over time (Complementary)

4.1.1.36 Wetland Extent Trends Index (Complementary)

A.0.3 Red List Index*

A.1.4 Red list index by species group (including for terrestrial, freshwater and marine species) (Component)

A.1.1.41 Number of threatened species by species group (Complementary)

A.1.1.42 Wild bird index (Complementary) *

1.1.39 Percentage of threatened species that are improving in status according to the Red List (Complementary)

3.1.1.4 Percentage of threatened species that are improving in status (Complementary)

8.1.1.4 Red List Index (species used for food and medicine) (Complementary) *

19.1.1.3 Proportion of known species assessed through the IUCN Red List (Complementary)

5.0.1 Rate of invasive alien species spread

5.1.1 Numbers of invasive alien species introduction events (Component)

5.1.5 Proportion of key biodiversity areas threatened by invasive alien species (Component)

A.0.4 Species habitat index

2.0.2 Species Protection Index

A.1.6. Species habitat index by species group (Component)

A.1.7. The proportion of populations maintained within species (A.0.5) by species group (Component)

It is an obvious consequence that the changes shown by the European species with an unfavorable conservation status are particularly informative about the state of the territory. For these reasons, the European Bird Census Council in concert with BirdLife International has focused the attention of the European Union on the information provided by these indicators by developing the so-called Farmland Bird index.

This principle has been incorporated into the regulations relating to the Rural Development Plans. In the just approved "Commission regulation on laying down detailed rules for the application of Council Regulation No 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD)" a section (Section 3 - MONITORING AND EVALUATION) is dedicated precisely to the tools for evaluating the agricultural management of the territory. From this (Art. 51) derives an entire annex (Annex VII) dedicated to the structure and content of the annual reports on Rural Development Plans. The annex to its Point 2 mentions a list of progress indicators (listed in Annex VIII below) considered mandatory. Literally "The list of indicators (output and result, in relation to the targets of the program) as set out in Annex VIII to this Regulation is to be used". The first indicator of Axis II (Improving the environment and the countryside through land management), relating to Biodiversity, consists of "Population of farmland birds".

The year 2020 is a special year for the PanEuropean Common Bird Monitoring Scheme (PECBMS) because the general data set revision has been running. Therefore, we will spend time dedicated to the calculation of European indices and indicators on the tool and database update. The deep revision will enable us to implement new tools, clean up the database, and run various analyses. This way, we aim to improve data

quality controls and speed up all the processes needed to produce indices and indicators updates in the next years. Therefore, the 2020 Indicators update is not computed classically, but an estimate of the indicator value for the year 2018 is used instead. Indicators for all the regions are estimated using a **moving average (also called running mean)**.

For the 2020 update, we used the file "[indicators-europeeu-till2017.xls](#)" from the former year. We added the extrapolated value for the year 2018 to the data. It is possible to download both files, "[indicators-europeeu-till2017.xls](#)" and "[indicators-europeeu-till2017&estimate2018.xls](#)".

B.0.1 Population benefiting from ecosystem services

B.0.2 Value of all final ecosystem services (Gross Ecosystem Product)

6.0.1 Proportion of water with good ambient water quality (freshwater)

B.1.1. Population benefiting from ecosystem services (B.0.1) by type of ecosystem service

B.1.3. Value of all final ecosystem services (Gross Ecosystem Product) (B.0.2) for material service-related ecosystem services

B.1.4. Natural capital component of inclusive wealth

B.1.5. Value of all final ecosystem services (Gross Ecosystem Product) (B.0.2) for non-material service-related ecosystem services