



CURATING  
TOMORROW

# Mainstreaming Biodiversity in Museums

Museums and the Global Biodiversity Framework



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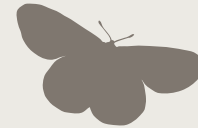


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**Curating Tomorrow** is a consultancy for museums and the heritage sector, helping them draw on their unique resources to enhance their contributions to sustainable development agendas, including the Sustainable Development Goals, climate action, nature conservation, Disaster Risk Reduction and human rights. Curating Tomorrow also applies the museum-based skill of curating to thinking about and addressing real-world challenges, not necessarily involving museums or museum collections.

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Commemorating the 75th  
anniversary of the Universal  
Declaration of Human Rights.





**How can museums  
unlock their potential for  
biodiversity and people?**

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SECTION 1

# THE CONVENTION ON BIOLOGICAL DIVERSITY AND GLOBAL BIODIVERSITY FRAMEWORK



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## WHAT IS THIS?

This guide has been written to help museums, museum funders and regulators, and similar institutions such as visitor centres and libraries, to strengthen their contributions to the conservation and sustainable use of biodiversity, and to share the benefits of use of biodiversity more fairly, by:

1. **Encouraging them to adopt the three goals of the Convention on Biological Diversity (CBD) to inform all their activities.** The three goals could be easily written into the policies, workplans, programmes and partnerships of museums.
2. **To make concrete contributions to biodiversity by using the new Global Biodiversity Framework (GBF),** as the main current programme to support the CBD, to mainstream biodiversity into their various activities.
3. **Adopting good practices,** in terms of using recognised principles and frameworks, to avoid reinventing the wheel, or using less effective methods.

The guide should be of use to staff in a wide variety of roles. In addition, it should be useful to museums' current and potential partners, including conservationists and local community groups.

**The guide is structured in three parts:**

1. **Introduction and background on the Convention on Biological Diversity and Global Biodiversity Framework**
2. **A 'Mainstreaming Biodiversity in Museums' framework, that every museum and museum-related organization can use, based on Targets 14-23 of the GBF**
3. **A deep dive into GBF Targets 1-13, and useful resources and further information (to be a source of reference)**

## WHY IS IT NEEDED?

Many museums are interested in nature conservation and support biodiversity-positive activities such as education and research. They also make negative impacts on biodiversity through heavy use of resources. Museum organizations, funders and governments are increasingly requiring museums to support biodiversity conservation.

However, with few exceptions, museums' work has not been connected to the goals of the Convention on Biological Diversity (CBD), the main multilateral agreement for biodiversity conservation. There is also a large gap between what museums and collections could do for biodiversity, and what they are required to do by funders and regulators.

Biodiversity has not yet been mainstreamed into the museum sector, meaning there is an enormous untapped potential to do more to support biodiversity conservation, sustainable use and benefit-sharing, the subject of the CBD.

*Biodiversity has not yet been mainstreamed into the museum sector,*

The Global Biodiversity Framework (GBF) is an action-focussed programme for the CBD, running from 2022-30. The GBF provides a ready-made template to embed action for biodiversity into museums: this guide aims to help museums make use of it.

Mainstreaming the goals of the Convention on Biological Diversity and the GBF Targets into the work of the museum sector would have benefits for nature, people and museums.

*Mainstreaming biodiversity would benefit nature, people and museums*



# WHAT DOES MAINSTREAMING BIODIVERSITY MEAN?

There are many definitions of mainstreaming biodiversity/ biodiversity mainstreaming<sup>1</sup>, but they are all more or less based on **embedding biodiversity considerations, values, and outcomes into goals, programmes of activity, monitoring and reporting.**

Mainstreaming biodiversity essentially means **better decision-making to benefit biodiversity, people and sustainable development.**

Mainstreaming biodiversity does not mean adding biodiversity as a new strand of work, but making it part of core work. Nor does it mean a ‘top-down’ approach: it is top-down, bottom-up and transversal. It brings people and communities together, and raises their voices, concerns and ideas, as well as bringing existing agreements and commitments for biodiversity into the work of sectors.

In terms of museums, mainstreaming can be taken to mean **unlocking and enhancing their potential** to contribute to the conservation and sustainable use of biodiversity, and **reducing and eliminating** their negative impacts, by embedding biodiversity considerations into their goals, activities, monitoring and reporting.

*“Biodiversity mainstreaming is generally understood as ensuring that biodiversity, and the services it provides, are appropriately and adequately factored into policies and practices that rely and have an impact on it.”* CBD

Mainstreaming biodiversity would help to achieve the 17 Sustainable Development Goals.



## THE CBD

The Convention on Biological Diversity (known informally as the Biodiversity Convention or CBD) is one of the three 'Rio Conventions' that were adopted at the Rio Earth Summit in 1992. The others are the Framework Convention on Climate Change (UNFCCC, which later gave rise to the Paris Agreement) and the Convention to Combat Desertification (UNCCD). The Convention builds upon earlier environmental agreements, to attempt a more holistic approach to conserving and using biological diversity.

**The overarching goals of the Convention - its three goals - are:**

- 1. “the conservation of biological diversity,”**
- 2. “the sustainable use of its components and”**
- 3. “the fair and equitable sharing of the benefits arising out of the utilization of genetic resources...”**

(Convention on Biological Diversity, Article 1).

The third goal recognizes that there is an imbalance between where a lot of biodiversity is - in Global South countries - and where economic power lies, ie. in the Global North. The third goal aims to encourage Global South countries to preserve and make use of biodiversity, and to share in the financial and other benefits from any use, and to promote co-operation between countries to help resources flow to those providing access to biodiversity.

The Convention has 196 Parties, including all UN member countries except for the USA.



## SOME DEFINITIONS FROM THE CBD

Article 2 of the Convention provides some definitions for its purposes including:

“Biological diversity’ means the variability among living organisms from all sources including... terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.”

“Biological resources’ includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.”

“Sustainable use’ means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.”

“Ecosystem’ means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.”

A useful way of considering the difference between biodiversity and biological resources is that, while many biological resources are renewable, biodiversity itself is not: it is a non-renewable resource.

*While many biological resources are renewable, biodiversity itself is not: it is a non-renewable resource.*

## THE CBD AT A GLANCE

### The CBD consists of 42 Articles and two appendices (Annexes).<sup>2</sup>

The Preamble and Articles 1-5 establish the context, goals and principles.

Articles 6-9 address the conservation of biological diversity, in terms of laws and plans (6), identifying the aspects of biological diversity to be conserved (7), in-situ and ex-situ conservation (8-9).

Article 10 addresses the sustainable use of biological diversity.

Countries are supposed to support the conservation and sustainable use of biological diversity through financial incentives (11); support for research and training (12); education and public awareness programmes (13); and assessing the potential impacts of construction projects through environmental impact assessment (14).

In terms of the third goal of the Convention, on Access and Benefit-sharing, countries are expected to provide access to genetic resources and to share access to biotechnology, while ensuring that financial and other benefits are fairly shared (15-16, 19).

Countries are to promote the sharing of information from publicly available sources with other countries (17), and to support technical and scientific co-operation (18).

Countries providing access to genetic resources should be empowered to take part in research activity and to benefit from research. The impacts of genetically modified organisms should be carefully managed (19).

Articles 20-42 cover procedural matters, including finance, a dispute mechanism, and management of the Convention.

Countries develop National Biodiversity Strategies and Action Plans and communicate their action for the CBD at meetings called the COP, meaning Conference of the Parties of the CBD.



# APPLYING THE CONVENTION TO THE MUSEUM SECTOR

**It would be very easy to align the goals and articles of the CBD with the museum sector, for example, if it would:**

adopt the three goals of the CBD, to support biodiversity conservation, sustainable use and benefit-sharing (Art. 1)

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make use of the definitions (Art. 2)

---

that museums in different countries agree to co-operate with one another and with other sectors for biodiversity conservation, sustainable use and benefit-sharing (Art. 5)

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that they “integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies” (Art. 6)

---

that they support identification and monitoring of biological diversity (Art. 7)

---

support in-situ and ex-situ conservation drawing on the knowledge of local people (Arts. 8-9)

---

“protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements” and empower people to take part in restoring degraded habitats (Art. 10)

---



align research and public education with the goals of the CBD (Arts. 12-13)

---

make collections information widely available to support research, conservation and co-operation (Arts. 17-18)

---

adopt Access and Benefit-sharing of Use of Genetic Resources practices and processes (Arts. 15, 16, 19)

---

and align reporting requirements with the goals of the CBD

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We will explore how museums can embed these high-level commitments and approaches through this guide, using the Targets of the Global Biodiversity Framework.

*Did you know the Secretariat of the Convention on Biological Diversity, based in Montreal, has its own museum and exhibition, consisting of objects donated by countries representing their distinctive biodiversity and traditional uses of biodiversity? [Find out more here](#)<sup>3</sup>*



# THE ECOSYSTEM APPROACH

Soon after it was agreed, the CBD developed a general approach to biodiversity conservation and sustainable use called the **Ecosystem Approach**<sup>4</sup>, which addresses conservation and management at a landscape scale. This has been defined as “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way”, thus covering the three goals of the CBD. This is a very important framework to understand properly.

*“a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way”*

## Applying the Ecosystem Approach to the museum sector

Museums could usefully consider themselves within the wider context of the specific ecosystem they are in (and be clear on what that ecosystem is), and other ecosystems they are concerned with through their topic area. They could collect and interpret information in relation to that ecosystem. This could be, for example, a valley, forest, watershed, or a particular place or region. Working at the same scale as others working on ecosystem management would help museums to be effective in partnerships. They could embed the Ecosystem Approach principles into their own principles and plans.

### Further information

The **CBD website**<sup>5</sup> has a section on the Ecosystem Approach, including guides for beginners and advanced users, as well as a database of case studies, and a bibliography.

The Approach has been set out as having 12 Principles (paraphrased below):

1. The objectives for managing land, water, and living resources is a matter of societal choice, determined through negotiations and trade-offs among stakeholders having different perceptions, interests, and intentions
2. Management of ecosystems should be decentralized to the lowest appropriate level
3. Ecosystem managers should consider the effects of their activities on other ecosystems
4. Financial markets and activities should be directed to supporting ecosystem conservation and sustainable use
5. Ecosystems should be conserved to function well, to maintain and enhance ecosystem services (the benefits people derive from ecosystems)
6. Ecosystems should be exploited/used within limits (to avoid over-exploitation)
7. Ecosystems should be managed at an appropriate scale for conservation and good functioning, and to preserve intergenerational equity
8. Management should have long-term objectives
9. Management must recognise that change is inevitable
10. Conservation and sustainable use should be appropriately balanced
11. The ecosystem approach should consider all forms of relevant information, including scientific and Indigenous and local knowledge, innovations and practices
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines

# THE CBD AS AN AGREEMENT FOR PEOPLE AND BIODIVERSITY

The CBD is more than an agreement to protect biodiversity. It is also an agreement to promote and protect people's access to use biodiversity in sustainable ways, to benefit from its use in fair ways, and to protect and restore cultural diversity in relation to biodiversity.

The CBD does not define the terms “indigenous and local communities” or “indigenous peoples and local communities.” It is considered undesirable to have a single, fixed definition, as it can lead to discrimination and persecution.

**Article 8(j) of the CBD**<sup>6</sup> aims to “respect, preserve and maintain traditional knowledge of Indigenous Peoples and local communities related to biodiversity conservation and sustainable use”.

Article 10(c) aims to “Protect and encourage customary [traditional] use of biological resources”.

A number of **codes of conduct** have been developed by the CBD, to support good practice regarding Indigenous Peoples and local communities, and traditional knowledge (explored in a later section on Indigenous and local knowledge of biodiversity and intellectual property rights, Section 2).

## Human rights and the CBD

As a UN agreement, the CBD is based on acknowledgement and respect for human rights, as established in the Universal Declaration of Human Rights and in subsequent agreements, notably the Right to Development, rights from the Rio Declaration, and regional agreements such as the Aarhus Convention and Escazú Agreement. Since the CBD was developed, the right to a clean, healthy and sustainable environment was adopted in 2022, recognizing that many existing human rights are not achievable without such an environment.

In general terms, **people everywhere have well-established rights**<sup>7</sup> to a stable climate, safe water and sanitation, clean air, soils and water, healthy, nutritious and sustainably produced food, healthy ecosystems and biodiversity, and participation, access to information and access to justice in environmental matters. People in vulnerable situations need to be involved in the design and implementation of actions to use, conserve and restore nature, respecting, protecting and fulfilling their human rights. Many human rights agreements refer to the rights of particular groups of people in relation to biodiversity, for example the UN Declaration on the Rights of Indigenous Peoples, UN Declaration on the Rights of Peasants and Other People Working in Rural Areas, Right to Development and more.

In relation to museums, and natural history museums in particular, people have the right to participate freely in cultural life, to enjoy the arts, and to share in scientific advancement and its benefits.

People also have the right to access science and to take part in science, as well as to access information, and to freedom of expression and to contribute to the life of the community, and the right to education. People also have the right to take part in public affairs. As in any discussion on human rights, rights are connected and indivisible.



See [Museums and Human Rights](#)<sup>8</sup> for more information.

[Advice on the involvement of local communities in the CBD \(2011\)](#)<sup>9</sup>

[Glossary of Relevant Key Terms and Concepts within the Context of Article 8\(j\) and Related Provisions. CBD](#)<sup>10</sup>

[Cultural Survival 2022, The Convention on Biological Diversity and Indigenous Peoples](#)<sup>11</sup>

[Special Rapporteur on Human Rights and the Environment](#)<sup>12</sup> (including reports and calls for information, and information on the right to a clean, healthy and sustainable environment)

[Knox, J. \(2018\) Framework Principles on Human Rights and the Environment \(user-friendly version\). UN.](#)<sup>13</sup>

[ECLAC and OHCHR \(2016\). Society, Rights and the Environment. ECLAC and OHCHR.](#)<sup>14</sup>

[UNECE \(2014\). Protecting the Environment: the power is in your hands \(quick guide to the Aarhus Convention\). UNECE.](#)<sup>15</sup>

[UNEP \(2019\). Environmental Rule of Law: first global report. UNEP.](#)<sup>16</sup>

[UNEP \(2022\). Right to a clean, healthy and sustainable environment](#)<sup>17</sup>

[UNEP \(2023\). What is the Right to a Healthy Environment? - Information note](#)<sup>18</sup>

[UNEP and OHCHR \(2021\) Key messages: human rights and the environment \[biodiversity, COVID-19, hazardous substances, gender equality\]](#)<sup>19</sup>

[UN Special Rapporteur on Human Rights and the Environment and UNEP \(2020\). Right to a Healthy Environment: good practices. UNEP.](#)<sup>20</sup>

*people everywhere have well-established rights to a stable climate, safe water and sanitation, clean air, soils and water, healthy, nutritious and sustainably produced food, healthy ecosystems and biodiversity, and participation, access to information and access to justice in environmental matters.*



## KEY SOURCES OF INFORMATION

Museums should draw on the best available information to inform programming and decision making. There are huge quantities of information available on biodiversity, conservation and the environment, which can be confusing to navigate. A number of organizations produce good-quality information, including reviews, good practices and case studies, as well as raw data, that can be readily accessed and made use of by museums. These include:

The [CBD website](#)<sup>21</sup> is a vital source of information.

[Glowka, L., Burhenne-Guilmin, F. and H. Synge \(1994\). A Guide to the Convention on Biological Diversity. IUCN.](#)<sup>22</sup> [the definitive guide on the meaning of the contents of the CBD]

The [CBD Clearing House Mechanism](#)<sup>23</sup> provides key information on countries' actions for the CBD, including progress with the NBSAPs (National Biodiversity Strategies and Action Plans).

[IUCN \(International Union for the Conservation of Nature\)](#)<sup>24</sup> is the world's largest environmental network. [IUCN's Issue Briefs](#)<sup>25</sup> provide key information on conservation and use of biodiversity.

[UNEP \(United Nations Environment Programme\)](#)<sup>26</sup> provides access to large quantities of real-time data on the environment, as well as reports, fact sheets, and more. [UNEP's Frontiers Report](#)<sup>27</sup> covers emerging environmental issues.

[IPBES \(the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services\)](#)<sup>28</sup> produces scientific Assessments on specific themes that inform UN processes.

The [Conservation Measures Partnership](#)<sup>29</sup> develops the **Conservation Standards**, which aim to develop better ways to design, manage, and measure the impacts of conservation action.



The **British Ecological Society**<sup>30</sup> is the oldest ecological society in the world, and has a vision “for nature and people to thrive in a world inspired by ecology.” The Society runs open-access journals, produces guidelines, training and public engagement activities.

The British Ecological Society produces **Applied Ecology Resources**<sup>31</sup>, an open-access portal of information on the management of biodiversity and the environment, and the open-access journal **Ecological Solutions and Evidence**.<sup>32</sup>

The **PANORAMA - Solutions for a Healthy Planet**<sup>33</sup> platform provides examples of tested and replicable solutions in biodiversity conservation and broader sustainability issues.

**Conservation Evidence**<sup>34</sup> is a free, authoritative information resource summarising the documented effectiveness of conservation actions, a series of **Synopses**<sup>35</sup> on particular conservation topics/challenges, and an open-access book, **What Works in Conservation**<sup>36</sup>, which is issued periodically.

The **SDG Tracker**<sup>37</sup> provides access to information on countries’ progress in achieving the targets of the Sustainable Development Goals, which include many targets relating to biodiversity.



## THE GLOBAL BIODIVERSITY FRAMEWORK

The Global Biodiversity Framework (GBF) is the current programme to advance the goals of the CBD. The CBD website provides [detailed information on the GBF, and on the goals and targets](#).<sup>38</sup> It was adopted in 2022 and runs until 2030. The mission of the GBF is “To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity, and ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation.”

*The Global Biodiversity Framework (GBF) is the current programme to advance the goals of the CBD.*

**It aims to achieve this through the following considerations (paraphrased):**

- Recognising the rights of Indigenous Peoples and local communities
- That nature means different things to different people, and both nature and nature's contributions to people are vital for human existence and quality of life
- That the Framework is for everyone
- Broad public support should be mobilised
- Conserving biological diversity as part of sustainable development
- Human rights should be respected, protected, promoted and fulfilled, and acknowledging the right to a clean, healthy and sustainable environment; the rights in the Rio Declaration; and to intergenerational equity
- Ensuring gender equality and empowerment
- Using science, traditional knowledge and practices, and the Ecosystem Approach
- Transforming education at all levels
- Appropriate resourcing
- Human health and biodiversity
- The GBF is a contribution towards the SDGs, and the two frameworks are mutually supportive



The GBF has four goals: the three goals of the CBD plus a fourth on implementation.

These are achieved through 23 Targets under three headings.

See [here](#) for further information<sup>39</sup>

1. Reducing threats to biodiversity (GBF Goal 1)	
GBF Target 1	All areas are planned or managed to bring loss of areas of high biodiversity importance close to zero
GBF Target 2	30% of degraded areas are under effective restoration
GBF Target 3	30% of areas are effectively conserved
GBF Target 4	Threatened species are recovering, genetic diversity is being maintained and human-wildlife conflict is being managed
GBF Target 5	Use, harvesting and trade of wild species is sustainable, safe and legal
GBF Target 6	Reduce rates of introduction and establishment of invasive alien species by 50 per cent
GBF Target 7	Pollution reduced, halving nutrient loss and pesticide risk
GBF Target 8	Minimize impacts of climate change and ocean acidification including through nature-based solutions and/or ecosystem-based approaches

**2. Meeting people's needs through sustainable use and benefit-sharing (GBF Goals 2 & 3)**

GBF Target 9	Management of wild species is sustainable and benefits people
GBF Target 10	Areas under agriculture, aquaculture, fisheries and forestry are managed sustainably
GBF Target 11	Nature's contributions to people are restored, maintained and enhanced
GBF Target 12	Urban green and blue spaces enhanced for human well-being
GBF Target 13	Fair and equitable sharing of benefits from genetic resources, digital sequence information and associated traditional knowledge

**3. Tools and solutions for implementation and mainstreaming (GBF Goal 4)**

GBF Target 14	The multiple values of biodiversity are integrated into decision-making at all levels
GBF Target 15	Businesses assess and disclose biodiversity dependencies, impacts and risks, and reduce negative impacts
GBF Target 16	Sustainable consumption choices are enabled, and food waste reduced by half
GBF Target 17	Strengthen biosafety and distribute benefits of biotechnology
GBF Target 18	Reduce harmful incentives by at least \$500 billion per year
GBF Target 19	Financial resources increased to \$200 billion per year, including \$30 billion through international finance
GBF Target 20	Capacity-building and development, technology transfer, and technical and scientific cooperation for implementation is strengthened
GBF Target 21	Data, information and knowledge for decision-making is available
GBF Target 22	Ensure participation, justice, and rights for indigenous peoples and local communities, women, youth, persons with disabilities and environmental defenders
GBF Target 23	Implementation follows a gender-responsive approach



SECTION 2

# A ROADMAP TO MAINSTREAM BIODIVERSITY INTO THE WORK OF MUSEUMS

## SECTION CONTENTS

### HOW TO MAINSTREAM BIODIVERSITY IN MUSEUMS

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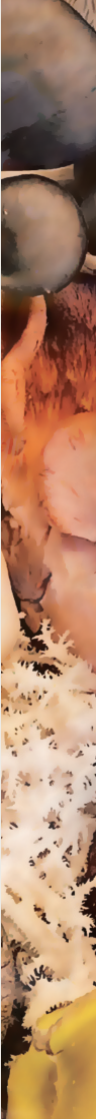
#### A ROADMAP TO MAINSTREAM BIODIVERSITY IN MUSEUMS

Seven Key Activities to mainstream biodiversity in museums:

1. Reflect biodiversity and sustainable use in collections
2. Adopt Education for Sustainable Development
3. Empower everyone to take part in biodiversity decisions and use biodiversity sustainably
4. Shift to sustainable/responsible/regenerative tourism
5. Unlock the potential of collections for research on biodiversity
6. Consider biodiversity in every organizational decision
7. Work as part of local and global partnerships for biodiversity

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#### MONITORING MUSEUMS' CONTRIBUTIONS TO THE GLOBAL BIODIVERSITY FRAMEWORK



# HOW TO MAINSTREAM BIODIVERSITY IN MUSEUMS

There are many ways that museums can support the Global Biodiversity Framework, to mainstream biodiversity into their work. How? By understanding how they contribute to its goals and targets - and how they hold them back - and strengthening their positive benefits, and reducing and eliminating their harmful impacts.

Targets 14-23 of the GBF consist of 'Tools and Solutions', practical actions to implement the Framework, in other words, to mainstream biodiversity into policies, plans and actions. Targets 1-13 are explored in depth in Section 3.

*There are many ways that museums can support the Global Biodiversity Framework, to mainstream biodiversity into their work.*



**Targets 14-23 of the GBF are concerned with tools and solutions for implementation and mainstreaming**

14. The multiple values of biodiversity are integrated into decision-making at all levels
15. Businesses assess and disclose biodiversity dependencies impacts and risks, and reduce negative impacts
16. Sustainable consumption choices are enabled, and food waste reduced by half
17. Strengthen biosafety and distribute benefits of biotechnology
18. Reduce harmful incentives by at least \$500 billion per year
19. Financial resources increased to \$200 billion per year, including \$30 billion through international finance
20. Capacity-building and development, technology transfer, and technical and scientific cooperation for implementation is strengthened
21. Data, information and knowledge for decision-making is available
22. Ensure participation, justice, and rights for indigenous peoples and local communities, women, youth, persons with disabilities and environmental defenders
23. Implementation follows a gender-responsive approach

On the following pages, you will find a table setting out how the 'Tools and Solutions' Targets of the GBF relate to the work of museums.

This is followed by a simple roadmap, to help you to mainstream biodiversity in museums.

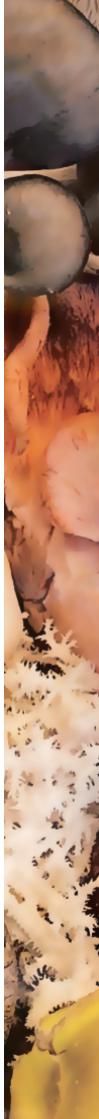
More detailed information on how museum activities can mainstream biodiversity is also provided, for you to set goals and make plans. This is based on the Seven Key Activities from '[Museums and the Sustainable Development Goals](#)'.<sup>40</sup>

Lastly, a monitoring framework is provided, based on the Seven Key Activities and the Targets of the GBF.

## How the 'Tools and Solutions' Targets of the GBF relates to the work of museums

GBF Target	Main aims of the target (paraphrased)	What this means for museums
14	<p><b>Mainstreaming biodiversity:</b> Integrate biodiversity and its multiple values into policies, regulations, planning and activities at all levels and in all sectors, “aligning all relevant public and private activities, fiscal and financial flows with the goals and targets of this framework”.</p>	<p>Museum regulators and funders should require museums to integrate the goals, targets, definitions and principles of the GBF across all aspects of activity, and include them in monitoring and reporting. They should also ensure they are requiring museums to take actions that are positive, and not harmful, for biodiversity, recognising its multiple uses and values. All museums should embed these into their work.</p>
15	<p><b>Sustainable production and supply chains:</b> Take legal, administrative or policy measures to encourage and enable business to monitor and report their impacts on biodiversity, including across the supply chain; provide consumers with information to promote sustainable consumption; report on compliance on access and benefit-sharing, to progressively reduce negative impacts and enhance positive benefits on biodiversity.</p>	<p>Museum regulators, funders and museums should commit to analysing their positive and negative impacts on biodiversity, make plans to manage these in line with the GBF targets, and to communicate progress and challenges openly to stakeholders, using good practice from sustainability reporting and biodiversity accounting.</p>
16	<p><b>Sustainable consumption:</b> Ensure people are encouraged and enabled to make sustainable consumption choices, including through policies, education and access to relevant and accurate information and alternatives. Reduce food waste, overconsumption and waste generation.</p>	<p>Ensure people and communities are provided with good quality information and encouragement on options to make informed sustainable-living choices. Ensure museums are encouraged to do so through effective policies, requirements and guidance.</p>


GBF Target	Main aims of the target (paraphrased)	What this means for museums
17	<b>Biosafety and biotechnology:</b> Establish biosafety measures, and measures for sharing benefits of use of biotechnology.	This target aims to protect biodiversity from negative impacts of genetically modified organisms. Museums may support it through education and compliance regarding collecting and shipping specimens.
18	<b>Eliminate harmful incentives:</b> Identify and remove financial and other incentives that are harmful for biodiversity.	This target would relate to museum regulators and funders, who should evaluate where their funding causes negative impacts, and make concrete plans to eliminate these impacts.
19	<b>Resource mobilisation:</b> Increase funding to support domestic and international action for biodiversity.	This could involve museum regulators, funders and individual museums strengthening their financial support for international action for biodiversity, and promoting public support.
20	<b>Capacity Development and Technical and Scientific Cooperation:</b> Strengthen international capacity-building and sharing of resources to support the GBF through science and monitoring, especially through support for Global South countries.	Again, funding could be directed towards support for international capacity-building, and to science and scientific use of collections.
21	<b>Knowledge Management, Awareness-Raising, Education and Research:</b> Ensure access to the best available data, information and knowledge for decision makers, practitioners and the public.	A major opportunity for museums, as knowledge-based resources and hubs for information, education and research.
22	<b>Equitable, Inclusive, and Effective Participation in Decision-Making:</b> Ensure the full, inclusive and effective participation of people in decision-making, access to justice and information related to biodiversity.	Another major opportunity for museums, empowering people to participate in public affairs related to biodiversity.
23	<b>Gender equality:</b> Ensure gender equality in the implementation of the GBF.	Another major opportunity for museums, to involve women, girls, men, boys and gender-diverse people in all activities related to biodiversity and the GBF.



# A ROADMAP TO MAINSTREAM BIODIVERSITY IN MUSEUMS

1. Understand the three goals of the CBD, and adopt them as far as possible as a basis for your work on biodiversity. Make them your commitments.
2. Understand biodiversity in the place[s] where your work makes a difference, and commit to protecting, restoring and using biodiversity in sustainable ways.
3. Set a high ambition to act for biodiversity in line with, or adapting, existing visions and missions. Make sure this ambition is converted into action, rapidly. You could start today.
4. Review your current programmes of activity, in terms of how they support and how they undermine the three goals of the CBD. Use the Seven Key Activities on the following pages to guide that evaluation. What is working well? What opportunity is there to scale-up activity? What challenges need greater attention? What are the main positive benefits and negative impacts of your activities? What potential is under-used?

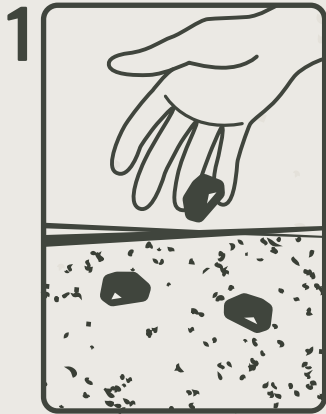
5. Make concrete plans to strengthen your contribution to the CBD, using the Seven Key Activities on the following pages, to enhance benefits and reduce any negative impacts.

-  Reflect biodiversity and sustainable use in collections
-  Adopt Education for Sustainable Development
-  Empower everyone to take part in biodiversity decisions and use biodiversity sustainably
-  Shift to sustainable/responsible/regenerative tourism
-  Unlock the potential of collections for research on biodiversity
-  Consider biodiversity in every organizational decision
-  Work as part of local and global partnerships for biodiversity

6. Monitor, evaluate and communicate activity, using the goals of the CBD and the Targets of the GBF. A monitoring framework is provided.



# GROW YOUR MUSEUM'S ACTIONS FOR BIODIVERSITY



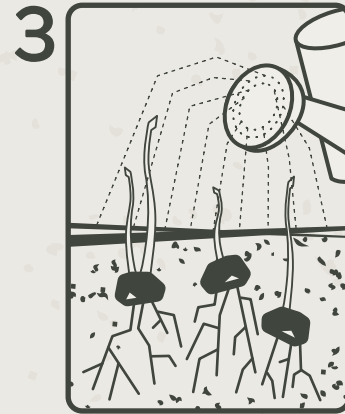
## PLANT THE SEEDS...

Plant the three goals of the CBD in the foundation of your museum, in its mission and goals.



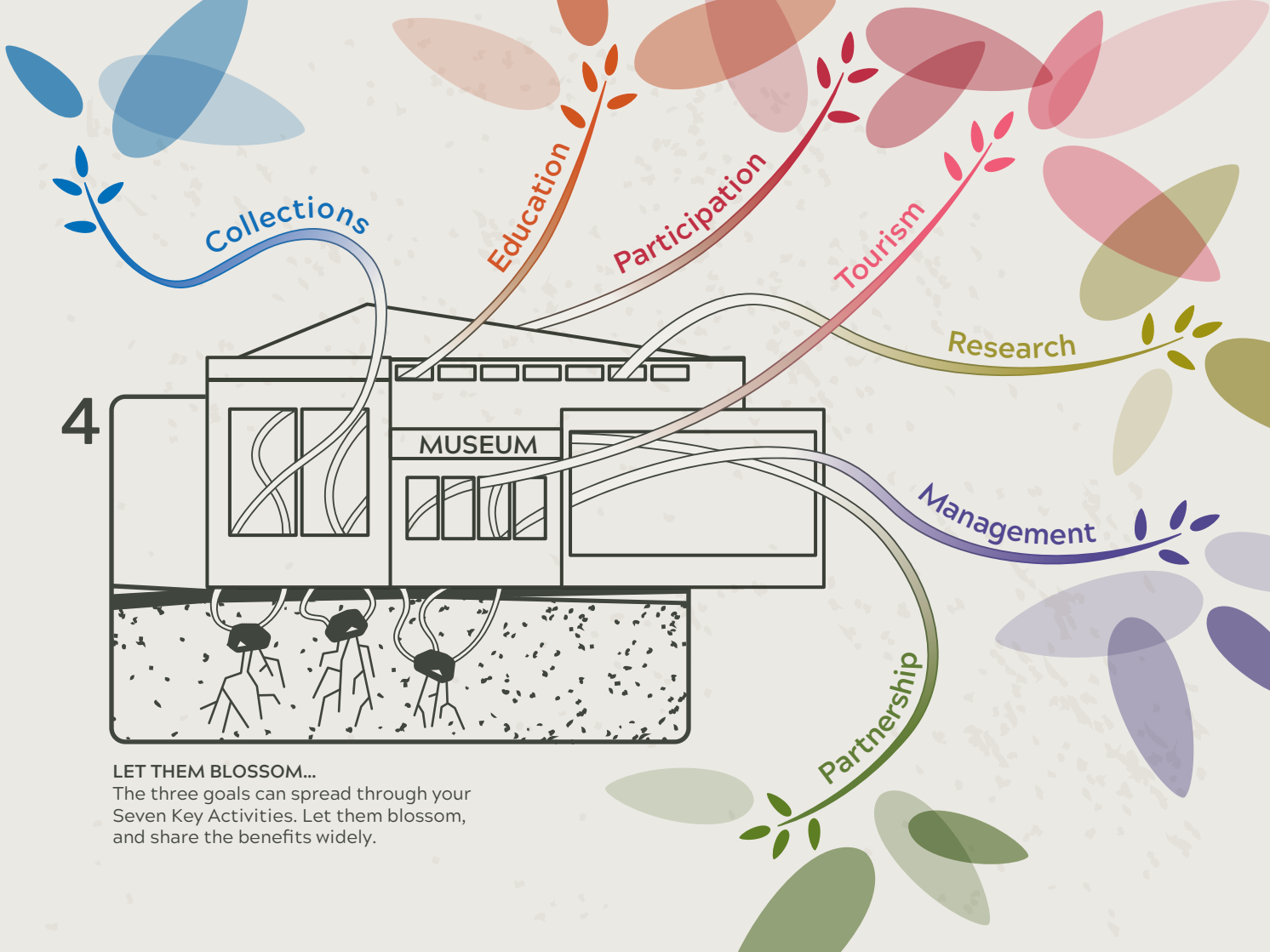
## LET THEM TAKE ROOT...

Write the three CBD goals into your museum's plans, activities, and evaluation.



## HELP THEM GROW...

Make sure the achievement of the three goals is nurtured through time, funding and other resources.



4

Collections

Education

Participation

Tourism

Research

Management

Partnership

MUSEUM

**LET THEM BLOSSOM...**

The three goals can spread through your Seven Key Activities. Let them blossom, and share the benefits widely.



## SEVEN ACTIVITIES TO MAINSTREAM BIODIVERSITY IN MUSEUMS

### KEY ACTIVITY 1

## Reflect biodiversity and sustainable use in collections

Target 21 of the Global Biodiversity Framework aims to “Ensure that the best available data, information and knowledge, are accessible to decision makers, practitioners and the public to guide effective and equitable governance, integrated and participatory management of biodiversity, and to strengthen communication, awareness-raising, education, monitoring, research and knowledge management...” while protecting the rights of Indigenous Peoples and local communities.



## What to collect and represent in museum collections?

Museum collections are a core resource that can contribute to biodiversity conservation and sustainable use in many ways, supporting research, education and public awareness to guide action for biodiversity.

Collections need to be available, accessible and ready for use, and used in ways that are meaningful to people, and adaptable, as knowledge resources closely linked to Target 21 of the GBF. In order to fulfil these requirements, those caring for and developing collections need to be mindful of challenges and opportunities for biological diversity conservation, restoration, sustainable use, and the fair sharing of benefits.

The Convention on Biological Diversity Annex 1 includes an indicative list of elements of biological diversity that can be used by museums to identify priorities for collections and collection-development plans:

1. **Ecosystems and habitats:** containing high diversity, large numbers of endemic or threatened species, or wilderness; required by migratory species; of social, economic, cultural or scientific importance; or, which are representative, unique or associated with key evolutionary or other biological processes;
2. **Species and communities of species** which are: threatened; wild relatives of domesticated or cultivated species; of medicinal, agricultural or other economic value; or social, scientific or cultural importance; or importance for research into the conservation and sustainable use of biological diversity, such as indicator species; and
3. **Described genomes and genes** of social, scientific or economic importance. [e.g. local heritage varieties of crops]

*be mindful of challenges and opportunities for biological diversity conservation, restoration, sustainable use, and the fair sharing of benefits*

## Where to start?

**1. Review your vision/mission to identify the area[s] that your work relates to.**

**2. Work with experts and with local communities and other stakeholders**, with an emphasis on involving minorities and those with special associations with aspects of biodiversity (e.g. rural workers and small-scale producers, as well as scientists and conservation managers), to identify:

- key ecosystems and habitats
- species
- genetic varieties of importance in those areas (including domesticated plants and animals)
- plants and animals that are used by people (e.g. for food)
- cultural associations and values related to biological diversity (e.g. species, places)
- and to understand protected areas and threats to biological diversity (using [Protected Planet](#)<sup>41</sup> as an information source)

The National Biodiversity Strategy and Action Plan, or local strategies and plans can help inform this stage. See the section on ‘Assessments of biodiversity and areas of high biodiversity value’ for links to assessments of wild and domesticated species and breeds. The [UNESCO Lists of Intangible Cultural Heritage](#)<sup>42</sup> may help to identify traditional uses and nature-related activities, or be helpful to you in how to go about describing, documenting and promoting cultural practices related to biodiversity.

**3. Evaluate your collection to identify how well those elements of biological diversity can be protected, restored and sustainably used** through collection-based activities. Work with experts and local communities to identify collection development priorities, for example the continuation of time series for research, and/or for gaps and weaknesses to be addressed through targeted collecting.

**4. Develop collections to strengthen their contribution to the goals of the CBD.** It should go without saying that any collecting should comply with international, national and local laws and regulations, and documenting biodiversity and cultural practices should protect the rights of people and communities. The [UNESCO \(2021\) Guidance Note for Inventorying Intangible Cultural Heritage](#)<sup>43</sup> may also help in documenting intangible cultural heritage related to biodiversity (see also the sections below on intellectual property rights, and on Access and Benefit-sharing).

## Curating biodiversity data, and sharing it widely

Effective collections combine good practices in specimen preservation with effective information management, to maintain and develop collections as knowledge-based resources. This is essential to allow users - the public and specialist users - to find and use collections as tools for conservation and to promote sustainable use of biodiversity.

Article 17 of the CBD aims to “facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries. Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge as such and in combination with... technologies... It shall also, where feasible, include repatriation of information.”

There is a great imbalance between where museum collections are stored, ie. in Global North countries, cities and towns, and where they and associated information and knowledge could be most useful, ie. countries and communities where they originated from. Too much information remains locked away on specimen labels: this must be mobilized.

Online data aggregators are a key tool for researchers and others to find, access and use biodiversity data. Among these, **GBIF (the Global Biodiversity Information Facility)**<sup>44</sup> is the largest and most comprehensive, and there are many national online databases of biodiversity information. Getting more museum data into GBIF, and/or other data aggregators should be a key goal for museums who want their biodiversity-related data to be discoverable and used.

**Increasing the amount of records in GBIF is one of the official indicators for the Global Biodiversity Framework**<sup>45</sup>, for Target 21: “Growth in species occurrence records accessible through the Global Biodiversity Information Facility”, presenting a **major opportunity for museums** to contribute directly to the GBF, and to monitor and communicate their activity for biodiversity.

*Getting specimen data into GBIF  
is one of the official GBF indicators!*

## Further information

See 'Reducing threats to biodiversity', Section 3

[iDigBio, Natural History Collections as Primary Data in Ecological Research](#)<sup>46</sup>

[GBIF \(2010\). Best Practice Guide for Data Discovery and Publishing Strategy and Action Plan. GBIF.](#)<sup>47</sup>

[The FAIR Data Principles](#)<sup>48</sup> (2016) refer to the principles that information is Findable, Accessible, Interoperable [between information systems], and Reusable

[Canhos, D. A. L., Chapman, A. D., & Canhos, V. P. \(2004\). Study on data-sharing with countries of origin. Global Biodiversity Information Facility, Copenhagen.](#)<sup>49</sup>

*Too much information remains locked away on specimen labels: this must be mobilized.*

## Indigenous and local knowledge of biodiversity and intellectual property rights

Museums may be documenting and/or sharing information on traditional knowledge associated with biodiversity and/or use of biodiversity. They should have processes and procedures in place to ensure that the rights of people and communities involved are protected. Among the **codes of conduct** developed and agreed by the parties to the CBD, three are particularly relevant:

The **Tkarihwaí:ri Code of Ethical Conduct**<sup>50</sup> (2011) to Ensure Respect for the Cultural and Intellectual Heritage of Indigenous and local communities. (pronounced ‘Tga-ree-wa-yie-ree’, a Mohawk term meaning ‘the proper way’)

The **Rutzolijirisaxik Voluntary Guidelines**<sup>51</sup> (2018) for the Repatriation of Traditional Knowledge Relevant for the Conservation and Sustainable Use of Biological Diversity. (meaning ‘returning to one’s place of origin’ in the Kaqchikel Maya language)

The **Mo’otz Kuxtal Voluntary Guidelines**<sup>52</sup> (2019) relating to use and benefit-sharing of Indigenous Peoples’ and local communities’ knowledge, innovations and practices relevant for the conservation and sustainable use of biological diversity. (pronounced ‘mo-ots koosh-tal’ in the Maya language, meaning ‘roots of life’)

## Further information

See ‘Access and Benefit-sharing’, Section 3

The **CARE Principles**<sup>53</sup> (from the Global Indigenous Data Alliance) relate to information governance of traditional knowledge.

The World Intellectual Property Organization (WIPO) has developed a number of resources:

[WIPO Indigenous Peoples and Local Communities Portal](#)<sup>54</sup>

[WIPO \(2017\). Protect and Promote Your Culture: a Practical Guide to Intellectual Property for Indigenous Peoples and Local Communities. WIPO.](#)<sup>55</sup>

[WIPO \(2017\). Documenting Traditional Knowledge: a toolkit. WIPO.](#)<sup>56</sup>

[WIPO \(2020\). Intellectual Property and Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions. WIPO.](#)<sup>57</sup>

[WIPO webinar series: How to Protect and Promote Your Culture](#)<sup>58</sup>

[WIPO database of biodiversity-related access and benefit-sharing agreements](#)<sup>59</sup>

## Repatriating information on traditional knowledge on the use of biodiversity

As outlined above, Article 17 of the CBD also relates to Indigenous and traditional knowledge associated with the conservation and use of biodiversity. Museums can aim to repatriate such information, following the existing guidelines that are already agreed by the Parties to the CBD.

The **Rutzolijirisaxik Voluntary Guidelines<sup>60</sup> for the Repatriation of Traditional Knowledge Relevant for the Conservation and Sustainable Use of Biological Diversity (2018)** are intended for use by governments and authorities, as well as museums, herbaria, zoos, botanical gardens, databases, libraries, archives and more. Repatriation refers to “the return of knowledge, innovations and practices of indigenous peoples and local communities to where it originated or was obtained for the recovery, revitalization, and protection of knowledge on biological diversity.”

The Guidelines could be usefully implemented in the museum sector. These include guidance on setting up a team for repatriation, training on the repatriation process, identifying relevant traditional knowledge, identifying original knowledge holders, supporting communities’ ability to receive knowledge, formats of documenting traditional knowledge that enable repatriation, benefit-sharing, sacred and secret knowledge, community-to-community exchanges, and knowledge-sharing platforms.

## Environmental Impact Assessment

Urban development, roadbuilding, agriculture and many other activities have the potential to cause great harm to biodiversity. Ironically, museums can also cause significant harm to biodiversity when building and other ‘development’ projects are not properly planned, or when biodiversity is not taken into account. Environmental impact assessment forms part of Article 14 of the CBD, where each country committed to adopt procedures for “the environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures.” The public participation aspect is important, and an opportunity for museums, and is covered in Key Activity 3 ‘Promote Cultural Participation for All’.

The CBD has developed useful **Voluntary Guidelines on Biodiversity-inclusive Environmental Impact Assessment (2006)<sup>61</sup>** that can help museums understand any impacts of major projects on biodiversity, including building plans for museums themselves.

These can be used in conjunction with the **Akwé:Kon Voluntary guidelines for the conduct of cultural, environmental and social impact assessments (2004)<sup>62</sup>**, for developments taking place in areas with cultural and/or spiritual significance for Indigenous Peoples and local communities.

 KEY ACTIVITY 2

# Adopt Education for Sustainable Development

Education and awareness are recognised as being fundamental to achieving the goals of the CBD, GBF and SDGs. Article 13 of the CBD relates to education and public awareness programmes. This has been expanded and refined to become CEPA: Communication, Education and Public Awareness (so there is some overlap with the next Key Activity on Cultural Participation). CEPA is much more than formal (schools) learning, but is about participation, capacity-building, involving people in shaping education and information programmes, and more. CEPA is closely related to the educational aspects of the SDGs, such as SDGs 4.7 (Education for Sustainable Development), 12.8 (promote universal understanding of sustainable lifestyles) and 13.3 (build knowledge and capacity to meet climate change), which are, in turn, related to well-established human rights.

The GBF includes two Targets on education: Target 16 on education to promote sustainable lifestyles, and Target 21 on education and access to information.

The CBD guide **Communication, Education and Public Awareness (CEPA): A Toolkit for National Focal Points and NBSAP Coordinators**<sup>63</sup> states that public awareness is “a first step in developing understanding and concern, to help people know of the issue, to make the issue part of the public discourse or put the issue on the agenda”. Education “develops understanding, clarifies values, develops attitudes of concern for the environment and develops the motivation and skills to act for the environment”.



Section K of the GBF is dedicated to ‘Communication, education, awareness and uptake’. It notes that enhancing communication, education and awareness on biodiversity, and the uptake of the GBF, “is essential to achieve its effective implementation” by promoting:

- **Appreciation of nature’s contributions to people, traditional knowledge, and biodiversity’s contribution to sustainable development**
- **The three goals of the CBD, including improving sustainable livelihoods, eradicating poverty, and sustainable development**
- **The need for urgent action to implement the GBF, involving all people**
- **Helping people understand the GBF and how they can support its achievement**
- **Sharing lessons learnt and good practices in acting for biodiversity**
- **“Integrating transformative education on biodiversity into formal, non-formal and informal educational programmes, promoting curriculum on biodiversity conservation and sustainable use in educational institutions and promoting knowledge, attitudes, values, behaviours and lifestyles that are consistent with living in harmony with nature.”**
- **“Raising awareness on the critical role of science, technology and innovation to strengthen scientific and technical capacities to monitor biodiversity, address knowledge gaps and develop innovative solutions to improve the conservation and sustainable use of biodiversity.”**



The list opposite can be used by museums and other institutions to plan their education and public awareness programmes. Communication for the GBF has been **further clarified by the CBD (COP 15 Decision 15.14)**<sup>64</sup>, as four goals:

**Goal A - Increase understanding, awareness and appreciation of the different visions and approaches to achieve sustainable development and the multiple values of biodiversity, including the associated systems of knowledge, values and approaches used by indigenous peoples and local communities**

**Goal B - Raise awareness among all actors of the existence of the goals and targets of the Kunming-Montreal Global Biodiversity Framework and progress made towards their achievement**

**Goal C - Develop and promote platforms and partnerships, including with media, educators and civil society, to share information on successes, lessons learned and experiences in acting for biodiversity**

**Goal D - Demonstrate the relevance of the Kunming-Montreal Global Biodiversity Framework [the GBF] to poverty eradication, climate change, land degradation, human health, human rights, equity and sustainable development**

Goal A emphasizes the importance of including diverse ideas of nature and sustainability, from local and Indigenous knowledge, and “revision of education curricula to include biodiversity values and the importance of a reconnection with nature”.

Goals B notes that “Communications should promote positive results-driven action by supporting efforts in a positive way, offering cautions as to the consequences of failure, or demonstrating ways in which action in other domains can be emulated to produce progress towards the mission.”

Goal C states: “Collaboration is needed to promote and develop ways to integrate biodiversity into the education system in order to equip and empower learners with the knowledge, skills, values and attitudes to act for biodiversity and the planet, building on synergies with Sustainable Development Goals 4.7 and 12.8. This can be done by creating and promoting ‘learning ecosystems’ connecting families, schools, community actors, public-facing institutions such as zoos, aquariums, museums, botanical gardens and libraries, and businesses and non-governmental organizations (NGOs), which allow for direct translation of biodiversity awareness and knowledge into action on the ground.”

Goal D emphasizes the close connection between conserving and sustainably using biodiversity with meeting human needs, and respecting, protecting and fulfilling human rights, including the right to a clean, healthy and sustainable environment.

Museums can embed these goals, and actions for them, into their existing and new educational programmes, and also ensure that staff keep up to date through training.

**Stockholm+50 recommended expanding nature-based education**<sup>65</sup> to help redefine the relationship between humans and nature. The report recommended that education should go beyond ecological knowledge (although this is also essential), to include practical skills to contribute to environmental protection, learning about local environmental issues and taking part in addressing them, in community projects. Local and Indigenous knowledge of nature should be included in curricula, as well as the rights of nature and education on the right to a clean, health and sustainable environment.

Empowering people to have knowledge, motivation and skills to contribute to biodiversity conservation and take part in ecosystem restoration presents a major opportunity and distinctive contribution for museums to make (see Ecosystem Restoration section).

The CBD guide **Communication, Education and Public Awareness (CEPA): A Toolkit for National Focal Points and NBSAP Coordinators**<sup>66</sup> provides a thorough exploration of CEPA and developing communication strategies.

## Further information

**CBD website section on Communication, Education and Public Awareness**<sup>67</sup>

**CBD, COP15 decision 15.14 (Communication), including further discussion on the goals and key activities for CEPA.**<sup>68</sup> Specifically refers to museums (also available in other languages).

**Learning For Nature self-paced courses**<sup>69</sup>

**INFORMEA self-paced courses**<sup>70</sup>

**UNESCO (2012). Education for Sustainable Development Good Practices in Addressing Biodiversity. UNESCO.**<sup>71</sup>

**UNESCO (2019). Safeguarding Intangible Cultural Heritage in Education. UNESCO.**<sup>72</sup>

**UNESCO, Lists of Intangible Cultural Heritage**<sup>73</sup>

**WWF education resources**<sup>74</sup>

## KEY ACTIVITY 3

# Empower everyone to take part in biodiversity decisions and use biodiversity sustainably

People and communities can contribute to all three goals of the CBD, in terms of taking part in biodiversity conservation and restoration, making sustainable use of biodiversity, and sharing the benefits of use of biodiversity fairly (although this last is in a broad interpretation of the third CBD goal). These are cultural activities, in the sense that they involve people in creating, expressing and sharing ideas, and in collective decision making to determine the cultural life of the community. This involvement helps make better decisions with a stronger public mandate, helps provide people with benefits from nature's contributions to people, protects and promotes cultural diversity, and fulfils the basic principles of the CBD in terms of supporting people's basic rights to participate in environmental matters. Museums can support people to take part in all three CBD goals. See also Key Activities 2 (Learning opportunities) and 5 (Research, for information on citizen science), as these activities can also support cultural participation in and with biodiversity.

## Public participation in decisions regarding biodiversity

Target 22 of the GBF aims to “Ensure the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to biodiversity by indigenous peoples and local communities, respecting their cultures and their rights over lands, territories, resources, and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities and ensure the full protection of environmental human rights defenders.” Target 23 also relates to the full and equal participation of women and girls in addressing the GBF.

Involving local communities and Indigenous Peoples in decisions about biological diversity is fundamental to well-managed conservation and sustainable development. People also have a range of well-established rights to information, participation in decision-making and access to justice on environmental matters (from the Rio Declaration, Aarhus Convention for Europe, and Escazú Agreement for Latin American and Caribbean countries). Museums can help people gain access to information on local and global biodiversity, and to share their views and establish shared viewpoints through public events and consultations. This could be especially important regarding planning applications, for infrastructure projects, or where a strong public mandate is required (e.g. a large renewable energy project, or ecosystem restoration project).

The Akwé:Kon Voluntary guidelines for the conduct of cultural, environmental and social impact assessments (2004)<sup>75</sup> (referred to in Key Activity One) include a ten-point process for involving people and communities in biodiversity-related 'developments':

1. Notification and public consultation of the proposed development by the proponent;
2. Identification of Indigenous and local communities and relevant stakeholders likely to be affected by the proposed development;
3. Establishment of effective mechanisms for Indigenous and local community participation, including for the participation of women, the youth, the elderly and other vulnerable groups, in the impact assessment processes;
4. Establishment of an agreed process for recording the views and concerns of the members of the Indigenous or local community whose interests are likely to be impacted by a proposed development;
5. Establishment of a process whereby local and Indigenous communities may have the option to accept or oppose a proposed development that may impact on their community;

6. Identification and provision of sufficient human, financial, technical and legal resources for effective indigenous and local community participation in all phases of impact assessment procedures;
7. Establishment of an environmental management or monitoring plan (EMP), including contingency plans regarding possible adverse cultural, environmental and social impacts resulting from a proposed development;
8. Identification of actors responsible for liability, redress, insurance and compensation;
9. Conclusion, as appropriate, of agreements, or action plans, on mutually agreed terms, between the proponent of the proposed development and the affected Indigenous and local communities, for the implementation of measures to prevent or mitigate any negative impacts of the proposed development;
10. Establishment of a review and appeals process.

## Everyone can benefit from contact with and connection with nature

Empowering all people to be able to connect with nature would have benefits for them and for nature, and support their human right to an adequate standard of living. This would support Targets 11 and 12 of the GBF, and many other Targets (see also ‘Nature in People’s Lives’ and ‘Access and Benefit-sharing’ sections).

Promoting the sustainable use and fair sharing of benefits of use of biodiversity should aim to help more people and communities to gain these benefits, ie. to support under-served people and communities, and also to reduce over-consumption by high consumers. For museums, this could mean a greater focus on supporting poor people, women and girls, disabled people, LGBT people, ethnic and other minorities, to shift activities away from (over-)provision for high-consuming middle classes.

## Everyone can take part in biodiversity conservation and ecosystem restoration

Ecosystem restoration is an activity that everyone can take part in, whether it means at home, in the garden, locally in the community, or by supporting projects farther afield. The International Decade on Ecosystem Restoration provides many resources and guidance that can support museums to empower people and communities to take part in ecosystem restoration. See the section on ‘Ecosystem Restoration’ for more information.

## Further information

See the earlier section on Environmental Impact Assessment (Key Activity 1)

[Advice on the involvement of local communities in the CBD \(2011\)](#)<sup>6</sup>

[UNEP, Principle 10 of the Rio Declaration](#)<sup>77</sup>

[Escazú Agreement \(2018\)](#)<sup>78</sup>

[ECLAC and OHCHR \(2016\). Society, Rights and the Environment. ECLAC and OHCHR.](#)<sup>79</sup>

[UNECE \(2014\). Aarhus Convention Implementation Guide. UNECE.](#)<sup>80</sup>

[UNECE \(2014\). Protecting the Environment: the power is in your hands \(quick guide to the Aarhus Convention\). UNECE.](#)<sup>81</sup>

[Global Witness \(2022\). Decade of Defiance \[environmental defenders\]](#)<sup>82</sup>

## KEY ACTIVITY 4

# Shift to sustainable/ responsible/regenerative tourism

*Empower everyone to connect with  
nature and use it sustainably*

Target 14 of the GBF aims to “Ensure the full integration of biodiversity and its multiple values into policies, regulations, planning and development processes... within and across all levels of government and across all sectors, in particular those with significant impacts on biodiversity, progressively aligning all relevant public and private activities, fiscal and financial flows with the goals and targets of this framework.”

Tourism can bring social, environmental and economic benefits when it is well managed, but it can also be the source of many problems: gentrification and loss of opportunity for local communities, the heavy carbon emissions from visitor travel and high waste production, excessive pressure on the environment, and economic benefits do not necessarily flow to communities or for environmental protection. In relation to biodiversity and sustainable use, tourism often leads to habitat destruction, pollution, over-exploitation of wildlife, disturbance and human-wildlife conflict, and can lead to the erosion of traditional access to biodiversity and

decline of traditional practices relating to biodiversity. The carbon footprint of global tourism has expanded rapidly, so that it represented an incredible 8% of global emissions from 2009-13, and is increasing rapidly. Tourism can be considered as a sector with a significant impact on biodiversity.

A shift to sustainable/responsible/regenerative tourism is essential, and museums can support this in many ways, and shift away from unsustainable/irresponsible tourism. While sustainable/responsible tourism is sometimes (not always) considered as a ‘do no harm’ approach, more correctly it should be thought of as, or aim to be, a regenerative approach.

The [Global Sustainable Tourism Council Criteria for Destinations](#)<sup>83</sup> provide an excellent framework to assess the impacts of tourism and to plan and take action.

The **Future of Tourism**<sup>64</sup> initiative draws on the GSTC Criteria, and proposed a set of Principles for tourism in the context of the recovery from the COVID-19 pandemic, that museums can use as a guideline to reduce tourist-related emissions and increase benefits for biodiversity and communities.

1. See the whole picture: seeing tourism in relation to the overall place
2. Use sustainability standards, such as from GSTC
3. Collaborate in destination management
4. Choose quality over quantity, in terms of the quality of tourist experiences and the benefits to communities, rather than emphasising large visitor numbers as a measure of ‘success’
5. Demand fair income distribution, to share benefits of tourism fairly with communities
6. Reduce tourism’s burden, in terms of recognising and addressing environmental and social impacts
7. Redefine economic success, rather than GDP, for example small business development, income distribution and sustainable local supply chains
8. Mitigate climate impacts, reducing emissions and investing in green infrastructure, and fast reduction in transport emissions
9. Close the loop on resources, turning away from disposable plastic and other wastes
10. Contain tourism’s land use, to limit sprawling tourist developments
11. Diversify source markets, to encourage domestic tourism
12. Protect sense of place, to protect natural and cultural assets and retain distinctiveness
13. Operate business responsibly

Museums can adopt these frameworks, and take part in sustainable tourism schemes, such as the scheme run by the GSTC, or national or local schemes. They can do so immediately.



## Further information

[CBD, Biological Diversity and Tourism](#)<sup>85</sup>

[CBD \(2004\). Guidelines on Biodiversity and Tourism Development. CBD and UNEP.](#)<sup>86</sup>

[CBD and UNEP \(2007\). Managing Tourism and Biodiversity: User's Manual on the Guidelines on Biodiversity and Tourism Development. CBD.](#)<sup>87</sup>

[CBD, WTO and UNEP \(2009\). Tourism for Nature and Development: A Good Practice Guide. CBD.](#)<sup>88</sup>

[CBD and UNWTO \(2018\). Mainstreaming Biodiversity into Tourism Development: Report on Status, Trends and Relevant Activities. CBD and UNWTO.](#)<sup>89</sup>

[Department of Environment and Science \(2020\). Best Practice Ecotourism Development Guidelines. DES \(Queensland, Australia\).](#)<sup>90</sup>

[IUCN \(2018\). Tourism and Visitor Management In Protected Areas. IUCN](#)<sup>91</sup>

[King, C. \(2022\). Beyond Sustainability: A Global Study of Nature-based Solutions in Regenerative Tourism. Travel and Tourism Research Association: Advancing Tourism Research Globally. 38.](#)<sup>92</sup>

[UNEP and UNWTO \(2005\). Making Tourism More Sustainable. UNEP.](#)<sup>93</sup>

[UNWTO \(2004\). Tourism and Biodiversity: Achieving Common Goals Towards Sustainability. UNWTO.](#)<sup>94</sup>

[UNWTO \(2015\). Tourism and the Sustainable Development Goals. UNWTO.](#)<sup>95</sup>

[World Sustainable Travel Council \(2022\). Nature Positive Travel and Tourism: toolbox of nature positive tourism resources. WSTC.](#)<sup>96</sup>



## KEY ACTIVITY 5

# Unlock the potential of collections for research on biodiversity

As mentioned earlier, the CBD includes a number of commitments to promote research to support the conservation and sustainable use of biodiversity (especially Articles 12 and 17), including the sharing and exchange of information from all publicly available sources, and promoting repatriation of information.

In the GBF, these activities are strengthened through two targets, namely Target 20 and Target 21 outlined in Key Activity 1. Target 21 aims to “ensure the best available data, information and knowledge, are available to decision makers, practitioners and the public” for a variety of purposes, including “research and knowledge management”. It goes without saying that well-curated collections - including well-curated information - are a fundamental knowledge tool for a variety of purposes, and can contribute to this Target. Target 20 also aims to strengthen capacity, including for scientific research and monitoring, with a focus on supporting Global South.

Everyone has the right to benefit from scientific advancement, which is recognised in the Universal Declaration of Human Rights. This right has been further explained in a [General Comment on Science and Economic, Social and Cultural Rights](#)<sup>97</sup>, in that there need to be an availability of opportunities both to ‘do science’ and to benefit from science, that such opportunities need to be available to everyone, and they should be of good quality. Museums are included in the list of such opportunities.

Museums and the museum sector can support biodiversity-related research in a number of ways:

- By committing to the fundamental role of collections and related information as knowledge-resources for research, and facilitating research.
- Through ensuring research-useful collections exist to support effective biodiversity conservation and sustainable use.
- By maintaining collections in a good condition, ready to use, with well-curated data, that is easily discoverable online (e.g through GBIF) to promote use, especially in originating countries.
- By ensuring collections and staffing are appropriately resourced.
- By consulting with researchers on the potential of collections to address biodiversity-related challenges and priorities for collection development, and to understand researchers' needs.
- By making research on biodiversity and sustainable use available to the public.
- By supporting research and innovation that contributes to environmentally friendly technologies and products, that benefit biodiversity.
- By promoting people's participation in science, notably through citizen science projects and activities.
- They can also support science and research through the other activities outlined in this guide (e.g. education, participation).
- By taking part in and supporting international collaborations that support biodiversity-related research.
- By strengthening partnerships and collaborations with Global South countries, and sharing information on collections with originating countries, as countries already committed to in the CBD.
- By adopting Access and Benefit-sharing practices, both in the strict sense and in a broad interpretation.

The fundamental connection between understanding biodiversity and ecological change, and well-curated museum collections, has been made many times. A British Ecological Society cross-journal issue on [Leveraging Natural History Collections to Understand the Impact of Global Change](#)<sup>98</sup> (2022) notes:

“Natural history collections in museums, herbaria, seed and tissue banks provide one of the most valuable information sources in an ecologist’s toolbox: time series data. These collections not only permanently archive preserved specimens, but also critical historical and contemporary information about how species distributions, interactions, and phenotypes respond to global change across time scales. Whether specimens are serving as indicators of environmental change or as the measurement of an ecological response, they remain critical to understanding ecological impacts of global change.”

The issue contains numerous articles, mostly open access.

Another excellent collection of articles can be found in the theme issue [‘Biological collections for understanding biodiversity in the Anthropocene’](#)<sup>99</sup> (2019).

McLean et al. (2016) analysed the [contribution of collections to mammalogy](#)<sup>99a</sup> during 2005–14 to articles in the Journal of Mammalogy. Their results “**demonstrate that natural history collections are critical infrastructure supporting substantial numbers of research publications annually. They also reveal that use of historic specimens in addition to ongoing voucher [specimen] collection remains an integral approach to many research questions in mammalogy**”. Research fell into five broad categories: systematics and biogeography, genomics, morphology and morphometrics, stable isotope ecology, and parasites and pathogens.

They also noted that, to be useful, the following scientific-curatorial practices were necessary:

- Voucher specimen collection is a necessity for ongoing usefulness of collections.
- Specimens need to be curated effectively and preserved in a variety of forms, maintaining connections with ecological and other environmental information as far as possible, notably georeferencing.
- Data need to be well-managed and discoverable, and made widely available through e.g. [GBIF](#)<sup>100</sup> or other online aggregators for different kinds of data.

## Further information

The [Global Register of Research Collections](#)<sup>101</sup> provides information on scientific collections worldwide, in terms of their location and holdings.

[Gardner, J. L. et al. \(2014\). Are natural history collections coming to an end as time-series? \*Frontiers in Ecology and the Environment\*, 12\(8\), 436-438.](#)<sup>102</sup>

[McGhie, H.A. \(2019\). Museum Collections and Biodiversity Conservation. \*Curating Tomorrow\*.](#)<sup>103</sup>

[Rohwer V.G., Rohwer Y. and C.B. Dillman \(2022\) Declining growth of natural history collections fails future generations. \*PLoS Biol\* 20\(4\): e3001613.](#)<sup>104</sup>

*"natural history collections  
are critical infrastructure"*

## Citizen Science

The British Ecological Society website states “Citizen Science, also known as Community Science, is a way anyone can help ecologists make scientific discoveries even in their local park or the comfort of their own home. Citizen science can be broadly defined as the involvement of volunteers in research, and is a way to combine primary ecological research with environmental education and public engagement. Citizen Science initiatives are becoming more common, and with technological innovations increasing the ways in which individuals can participate, projects can even become global in scale, long-term, and engage hundreds of thousands of volunteers.”

IUCN Netherlands has identified three main contributions of citizen science to biodiversity conservation<sup>105</sup>:

1. It helps hold decision-makers accountable for their decisions.
2. Citizen science fosters inclusion in decision making.
3. It contributes to science, by generating data, testing hypotheses, and providing capacity for science.

Species whose range is changing in response to climate change can act as ‘opportunities’ for citizen science and public engagement on climate change.<sup>106</sup>

## Further information

The [British Ecological Society’s Citizen Science Hub](#)<sup>107</sup> provides access to series of training resources, case studies, and contact details for those interested in conducting Citizen Science projects.

A [British Ecological Society Special Feature](#)<sup>108</sup> (2021) provides numerous articles on the contribution of citizen science to the advancement of ecological, and people and nature-based knowledge.

[IUCN Netherlands and WWF Netherlands report on a workshop on citizen science](#)<sup>109</sup>

[Pocock, M. J., Chapman, D. S., Sheppard, L. J., & Roy, H. E. \(2014\). Choosing and Using Citizen Science: a guide to when and how to use citizen science to monitor biodiversity and the environment. NERC/Centre for Ecology & Hydrology.](#)<sup>110</sup>

[Tweddle, J. C., Robinson, L. D., Pocock, M. J. O., & Roy, H. E. \(2012\). Guide to citizen science: developing, implementing and evaluating citizen science to study biodiversity and the environment in the UK. NERC/Centre for Ecology & Hydrology.](#)<sup>111</sup>

[Zooniverse ‘Notes from Nature’ projects](#)<sup>112</sup> are citizen science projects to digitise museum collections and data.

## KEY ACTIVITY 6

# Consider biodiversity in every organizational decision

The ways museums are managed and their everyday decisions and practices present many opportunities to mainstream biodiversity actions. These include:

- Employment (including recruiting, training, staff safety, across the supply chain)
- Responsible use of resources (energy efficiency, renewable energy, sustainable use of resources, approach to waste and waste management)
- Commercial activities and procurement (e.g. suppliers used, natural resources used)
- Ethical and responsible leadership and management (including reporting)
- Disaster management and Risk Reduction

Target 14 of the GBF has already been referred to in Key Activity 4. It aims to “Ensure the full integration of biodiversity and its multiple values into policies, regulations, planning and development processes... aligning all relevant public and private activities, fiscal and financial flows with the goals and targets of this framework.” This can be applied to all museums policies, strategies and plans.

In addition, Target 15 of the GBF aims to “Take legal, administrative or policy measures to encourage and enable business, and in particular to ensure that large and transnational companies and financial institutions:

(a) Regularly monitor, assess, and transparently disclose their risks, dependencies and impacts on biodiversity, including with requirements for all large as well as transnational companies and financial institutions along their operations, supply and value chains and portfolios;

(b) Provide information needed to consumers to promote sustainable consumption patterns;

(c) Report on compliance with access and benefit-sharing regulations and measures, as applicable;

in order to progressively reduce negative impacts on biodiversity, increase positive impacts, reduce biodiversity-related risks to business and financial institutions, and promote actions to ensure sustainable patterns of production.”

Target 15 can (and should) be readily applied to the museum sector, as a major buyer, user, provider and sometimes seller of resources, goods and services that impact on biodiversity.

Using good-practice standards and principles for assessing and reporting biodiversity-related impacts can help museums plan and deliver effective actions for biodiversity, and provide regulators and the public with information on their progress and challenges, and fulfil regulators' own obligations. This can help them - museums and regulators - use public funding in a responsible way; deliver genuine biodiversity outcomes; and show that environmental claims are real and not 'greenwash'.

There are well-developed principles for sustainability reporting that could be easily adopted by museums and the museum sector, to support good practice. Activities are assessed and communicated in terms of **dependencies on biodiversity and biological resources**, ie. what aspects of biodiversity and biological resources are required in the delivery of the organization's activity; and **impacts on biodiversity**, both positive and negative. Organizations share relevant information (referred to as disclosures) in sustainability reports, following the guidance of the different schemes, although the same principles could be applied in more general reports, such as a sustainability section in annual reports. Some schemes (referred to below) are based around the various categories of ecosystem services.

## Further information

These resources can help museums to plan and report their activities in line with good practice, and can also support funders and regulators to put an effective regulatory framework in place, to ensure they are creating biodiversity-positive outcomes. While the main schemes may seem a bit daunting at first, the principles can be readily used by anyone. You only need to use one of them, so choose the one that works best for you, or that will most influence your stakeholders. The most important thing is to start, and to get better from there. Anyone can take the headings of a sustainability report and include it in their reporting, if they aren't already doing so ([Mainstreaming the Sustainable Development Goals in Museums](#)<sup>113</sup> gives an introduction to this).



The **Ten Principles of the UN Global Compact**<sup>114</sup> provide a simple, holistic framework that is closely related to the three goals of the CBD and to the GBF, as well as to wider Sustainable Development Goals. They are a simple, widely used framework, that can be easily used by a museum of any size, even a tiny one.

The **Global Reporting Initiative** is one of the largest sustainability reporting schemes. The scheme has a number of biodiversity-related disclosures, with detailed guidance. **The Standard for Biodiversity**<sup>115</sup> has been recently revised, to contribute to the GBF.

**Finance for Biodiversity Foundation (2022). Act Now! The why and how of biodiversity integration by financial institutions.** [FBF](#).<sup>116</sup>

**United Nations Environment Programme (2023). Stepping Up on Biodiversity: What the Kunming-Montreal Global Biodiversity Framework means for Responsible Investors.** [UNEP](#).<sup>117</sup>

**United Nations Environment Programme (2023). Nature Risk Profile: A methodology for profiling nature related dependencies and impacts.** [Cambridge, United Kingdom](#).<sup>118</sup>

**Science Based Targets Network (2020). Science-based Targets for Nature: initial guidance for business.** [SBTN](#).<sup>119</sup>

**Setting Science Based Targets for Nature: a step-by-step guide**<sup>120</sup>

**Taskforce on Nature-related Financial Disclosures (2023). Recommendations.**<sup>121</sup>

**Taskforce on Nature-related Risk and Opportunity Management and Disclosure Framework**<sup>122</sup>

The **Climate Disclosures Standards Board (CDSB) Framework**<sup>123</sup> sets out an approach to reporting environmental and social information in organizations' reports, including biodiversity considerations.

 KEY ACTIVITY 7

## Work as part of local and global partnerships for biodiversity

Museums have great freedom to set up and take part in collaborations and partnerships. Their collections, topics and programmes can raise awareness of biodiversity goals, conservation, restoration, sustainable use, and benefit-sharing, locally and globally.

It is especially important that Global North museums raise awareness of biodiversity challenges and actions in Global South countries, so people in Global North countries can learn from them, and to build a stronger mandate for public and political action for global biodiversity, and to address global inequality.

Partnerships support a range of GBF Targets, by mobilizing resources (19), supporting capacity-building (20), sharing information and knowledge (21), and inclusive decision-making (22).

There are plenty of international initiatives to take part in, including:

**[International Decade on Ecosystem Restoration \(2021-30\)](#)**<sup>124</sup>  
(see the section on Ecosystem Restoration)

**[International Decade on Ocean Science for Sustainable Development \(2021-30\)](#)**<sup>125</sup>

**[International Decade of Family Farming \(2019-28\)](#)**<sup>126</sup>

Promote **relevant international days, weeks, years and decades**<sup>127</sup> such as those listed below. Put them in your diary!

World Wetlands Day (2nd February)

World Wildlife Day (3rd March)

International Mother Earth Day (22nd April)

International Day for Biological Diversity (22nd May)

World Environment Day (5th June)

Take part in **International Museum Day**<sup>128</sup> (18 May), in ways that support biodiversity goals

Museums can register their actions for the GBF on the **Action Agenda Portal**<sup>129</sup>, as part of a global movement of changemakers, and encourage local people and groups to do the same. <https://www.cbd.int/portals/action-agenda/> To facilitate partnership working, museums and their networks can work to common principles and objectives with other sustainable development actors, as has been highlighted throughout this guide.

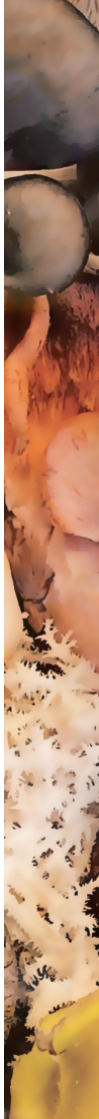
The UN system has developed a **Common Approach to Integrate Biodiversity and Nature-based Solutions**<sup>130</sup> that could inform museum practice, promote synergy and partnerships, and avoid reinventing the wheel. The website provides a set of **50+ Actions** (actually many more than fifty) that museums could take to contribute to the Common Approach, alone and together, to scale up action for biodiversity.

Museums, and especially their organizations and funders, can collate activity to be fed into reporting for the CBD and GBF, and to communicate it widely to public groups and different stakeholders.

## MONITORING MUSEUMS' CONTRIBUTIONS TO THE GLOBAL BIODIVERSITY FRAMEWORK

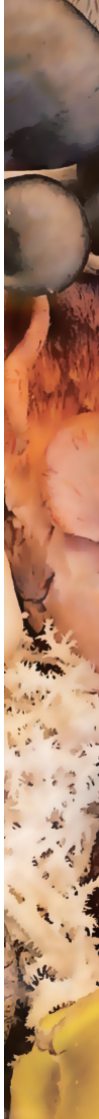
The monitoring framework below is modified from the **official monitoring framework for the GBF<sup>131</sup>**, to promote coherence and to ease collation of museums' contributions to the GBF. The monitoring framework can be considered in relation to the seven key activities outlined in the previous sections. In practice, these seven activities can contribute to many of the Targets (eg. education and research could probably contribute to all Targets).

GBF Target	Short description	Indicators and actions for museums	Activity
<b>1. Reducing threats to biodiversity</b>			
1	All areas are planned or managed to bring loss of areas of high biodiversity importance close to zero	Local biodiversity-rich areas are identified, effectively protected and promoted; museums contribute to identification and ongoing management of areas of high biodiversity	1
2	30% of degraded areas are under effective restoration	% of local degraded areas under restoration actions, with museum involvement	1
3	30 per cent of areas are effectively conserved	% of local area under conservation, with museum involvement	1
4	Threatened species are recovering, genetic diversity is being maintained and human-wildlife conflict is being managed	Key threatened species are increasing, human-wildlife conflict is effectively managed with reductions in incidents	1, 5
5	Use, harvesting and trade of wild species is sustainable, safe and legal	Assessments of wild species harvesting; museums use wild species in sustainable ways	1, 5, 6
6	Reduce rates of introduction and establishment of invasive alien species by 50 per cent	Monitoring of introduction and spread of invasive species locally; attention to invasive species in museum grounds	1, 5, 6
7	Pollution reduced, halving nutrient loss and pesticide risk	Monitoring of pollution locally, in rivers, plastic pollution etc.; reduction of museums' pollution	1, 5, 6
8	Minimize impacts of climate change and ocean acidification including through nature-based solutions and/or ecosystem-based approaches	Reduction in GHG emissions, adaptation plans in place, NbS activities, both locally and in museums' own activities	1, 6



GBF Target	Short description	Indicators and actions for museums	Activity
<b>2. Meeting people's needs through sustainable use and benefit-sharing</b>			
9	Management of wild species is sustainable and benefits people	Proportion of population benefiting from use of wild species in sustainable ways  Proportion of utilized local wild species that are used sustainably	1, 3, 4, 6
10	Areas under agriculture, aquaculture, fisheries and forestry are managed sustainably	Monitoring of impacts of agriculture etc. on biodiversity, rare breeds effectively protected	1, 5
11	Nature's contributions to people are restored, maintained and enhanced	Assessments of ecosystem services, nature connectedness, human health and mortality assessments, reduced inequality in health and wellbeing outcomes	1-7
12	Urban green and blue spaces enhanced for human well-being	Assessments of people's use of, and connection to nature, and reducing inequality of these	1, 3, 4
13	Fair and equitable sharing of benefits from genetic resources, digital sequence information and associated traditional knowledge	Museums have IP and Access and Benefit-sharing processes in place, they measure and increase the benefits flowing to source countries and communities	1, 5, 6, 7

GBF Target	Short description	Indicators and actions for museums	Activity
<b>3. Tools and solutions for implementation and mainstreaming</b>			
14	The multiple values of biodiversity are integrated into decision-making at all levels	Multiple values of biodiversity reflected in museum regulations, policies, plans and decision-making	6, 7
15	Businesses assess and disclose biodiversity dependencies, impacts and risks, and reduce negative impacts	Museums assess and report biodiversity impacts using sustainability reporting good practice	6
16	Sustainable consumption choices are enabled, and food waste reduced by half	Museums adopt Global Citizenship Education and Education for Sustainable Development as approaches, promote low-impact lifestyles, and reduce their own impacts	2, 4, 6
17	Strengthen biosafety and distribute benefits of biotechnology	Museums have effective risk management plans in place for biosafety and biotechnology	6
18	Reduce harmful incentives by at least \$500 billion per year	Museum funding comes from biodiversity-friendly sources; museum actions to promote awareness of harmful incentives and transparency	6, 7
19	Financial resources increased to \$200 billion per year, including \$30 billion through international finance	Amount of money flowing from or through museums to Global South countries for biodiversity purposes	6, 7

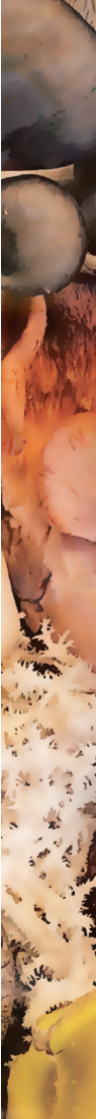


GBF Target	Short description	Indicators and actions for museums	Activity
<b>3. Tools and solutions for implementation and mainstreaming</b>			
20	Capacity-building and development, technology transfer, and technical and scientific cooperation for implementation is strengthened	Museum projects and sharing of resources that support capacity-development and science in Global South countries	6, 7
21	Data, information and knowledge for decision-making is available	% of museum collection information included in GBIF and other online aggregators; availability of environmental information to source communities, local communities, scientists, policy makers, and other stakeholders	1-7
22	Ensure participation, justice, and rights for indigenous peoples and local communities, women, youth, persons with disabilities and environmental defenders	Museum activities involve local people in decision-making on environmental matters, promoting universal opportunity to share viewpoints; % of local population participating in such activities; % of local population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	3, 7
23	Implementation follows a gender-responsive approach	Representation of women and girls in activities for the GBF; % of local population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	3, 6, 7



*"This is a framework for all - for the whole of government and the whole of society.*

*Its success requires political will and recognition at the highest level of government, and relies on action and cooperation by all levels of government and by all actors of society." GBF*





SECTION 3

# THE GLOBAL BIODIVERSITY FRAMEWORK

DEEP DIVE INTO GBF TARGETS 1-13,  
AND USEFUL RESOURCES AND  
FURTHER INFORMATION

## SECTION CONTENTS

### REDUCING THREATS TO BIODIVERSITY

Assessments of biodiversity and areas of high biodiversity value

Ecosystem restoration

Protected areas, and areas managed for biodiversity

Invasive species

Pollution

Climate change

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### MEETING PEOPLE'S NEEDS THROUGH SUSTAINABLE USE AND BENEFIT-SHARING

Sustainable use of wild species

Sustainable agriculture, fisheries and forestry

Nature-based Solutions

Nature in people's lives

Pandemics and One Health

Access and Benefit-sharing



# REDUCING THREATS TO BIODIVERSITY

**Targets 1-8 of the GBF are concerned with reducing threats to biodiversity.**

1. All areas are planned or managed to bring loss of areas of high biodiversity importance close to zero
2. 30% of degraded areas are under effective restoration
3. 30 per cent of areas are effectively conserved
4. Threatened species are recovering, genetic diversity is being maintained and human-wildlife conflict is being managed
5. Use, harvesting and trade of wild species is sustainable, safe and legal
6. Reduce rates of introduction and establishment of invasive alien species by 50 per cent
7. Pollution reduced, halving nutrient loss and pesticide risk
8. Minimize impacts of climate change and ocean acidification including through nature-based solutions and/or ecosystem-based approaches

Assessments of biodiversity and areas of high biodiversity value

Target 1 of the GBF aims to halt destruction of areas of high biodiversity value, and Target 4 aims to halt human-induced extinctions and maintain genetic diversity in wild and domesticated species.

The CBD's Global Biodiversity Outlook (GBO)<sup>132</sup> is the flagship publication of the CBD, assessing the status of biodiversity and implementation of the Convention.

UNEP's Global Environmental Outlook (GEO)<sup>133</sup> is a flagship report, produced since 1995 to review the state and direction of the global environment.

Local Biodiversity Outlooks (LBOs)<sup>134</sup> highlight the contribution of Indigenous Peoples and local communities in biodiversity conservation, restoration and sustainable use.

**IUCN Red List**<sup>135</sup> is the world's most comprehensive information source on the global extinction risk status of animal, fungus and plant species. The List provides detailed information on the distribution, population, threats and conservation of thousands of assessed species.

**IUCN'S Red List of Ecosystems**<sup>136</sup> provides information on threatened ecosystems. The List makes use of the **IUCN Global Ecosystem Typology**.<sup>137</sup>

The **IPBES Assessments**<sup>138</sup> review the state of biodiversity, ecosystem services, and use of biodiversity. IPBES also provides access to an **online catalogue of relevant assessments**.<sup>139</sup>

The **Living Planet Index**<sup>140</sup> is a measure of the state of the world's biological diversity based on population trends of vertebrate species from terrestrial, freshwater and marine habitats. It is accompanied by the annual **Living Planet Report**. The Living Planet Index is **often incorrectly interpreted**<sup>141</sup> in the media.

## Further information

**Food and Agriculture Organization, Domestic Animal Diversity - Information System (DAD - IS)**<sup>142</sup>

**Crop Wild Relatives Global Portal**<sup>143</sup> [repository of information including a manual, lists of species in each country, database of projects and experts, open-access resources]

**Interactive Toolkit for Crop Wild Relative Conservation Planning, v.1.0**<sup>144</sup>

**Crop Wild Relatives Project**<sup>145</sup>



## Ecosystem restoration

Target 2 of the GBF aims to bring 30% of degraded habitats under effective restoration by 2030, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.

The UN Decade on Ecosystem Restoration<sup>146</sup> defines restoration as “assisting in the recovery of ecosystems that have been degraded or destroyed, as well as conserving the ecosystems that are still intact. Healthier ecosystems, with richer biodiversity, yield greater benefits such as more fertile soils, bigger yields of timber and fish, and larger stores of greenhouse gases.”

*Ecosystem restoration means assisting in the recovery of ecosystems that have been degraded or destroyed, and conserving intact ecosystems*

The **Society of Ecological Restoration** has produced a very useful set of Principles and associated guidance on ecological restoration.

**The eight Principles are:**

Principle 1: Ecological restoration engages stakeholders

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Principle 2: Ecological restoration draws on many types of knowledge

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Principle 3: Ecological restoration practice is informed by native reference ecosystems ['original' or intact ecosystems], while considering environmental change

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Principle 4: Ecological restoration supports ecosystem recovery processes

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Principle 5: Ecosystem recovery is assessed against clear goals and objectives, using measurable indicators

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Principle 6: Ecological restoration seeks the highest level of recovery attainable

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Principle 7: Ecological restoration gains cumulative value when applied at large scales

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Principle 8: Ecological restoration is part of a continuum of restorative activities

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Detailed and practical guidance is given in '**International Principles and Standards for the Practice of Ecosystem Restoration**' (Gann et al. 2019)<sup>147</sup>. See [here](#)<sup>148</sup> for a short summary of the Principles.



The **UN Decade of Ecosystem Restoration (2021-30)** is a major initiative, to prevent, halt and reverse the degradation of ecosystems around the world; and to restore the relationship between humans and nature. The Decade is an invitation to all parts of society to take part in ecosystem restoration.

The term ‘**rewilding**’ has been used increasingly, but with different aims and approaches which has led to some confusion and negative impacts. See [IUCN Issue Brief \(2021\). The Benefits and Risks of Rewilding](#)<sup>149</sup>.

IUCN developed a definition of rewilding, and a set of ten principles to support positive outcomes for communities and biodiversity. The IUCN definition is that rewilding means “the process of rebuilding, following major human disturbance, a natural ecosystem by restoring natural processes and the complete or near complete food-web at all trophic levels as a self-sustaining and resilient ecosystem using biota that would have been present had the disturbance not occurred.”

*rewilding means restoring  
natural processes after  
major human disturbance*



**The ten principles<sup>150</sup> are:**

1. Rewilding uses wildlife to restore food webs and food chains

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2. Rewilding plans should identify core rewilded areas, ways to connect them, and ensure outcomes are to the mutual benefit of people and nature

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3. Rewilding requires local engagement and community support

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4. Rewilding focuses on the recovery of ecological processes, interactions and conditions based on similar healthy ecosystems

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5. Rewilding recognises that ecosystems are dynamic and constantly changing

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6. Rewilding should anticipate the effects of climate change and act as a tool to mitigate its impacts

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7. Rewilding is informed by science and considers local knowledge

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8. Rewilding recognises the intrinsic value of all species

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9. Rewilding is adaptive and dependent on monitoring and feedback

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10. Rewilding is a paradigm shift in the coexistence of humans and nature

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See [here<sup>151</sup>](#) also.

Further explanation and considerations are provided in the guidance.



## Further information

The [CBD website](#)<sup>152</sup> has a section on ecosystem restoration

The [Society for Ecological Restoration](#)<sup>153</sup> website, with a [project database of restoration case studies](#)<sup>154</sup>, a [database of resources](#)<sup>155</sup>, the journal [Restoration Ecology](#)<sup>156</sup>, and an [e-learning course](#).<sup>157</sup>

[Gann, G.D. et al. \(2019\). International Principles and Standards for the Practice of Ecosystem Restoration \(Second edition\). Society for Ecological Restoration.](#)<sup>158</sup>

[UN Decade on Ecosystem Restoration](#)<sup>159</sup>, including a practical Playbook, Principles and communication materials.

[IUCN \(2021\). Community Organizing Toolkit on Ecosystem Restoration. IUCN.](#)<sup>160</sup>

[IUCN \(2012\). Ecological restoration for protected areas: principles, guidelines and best practices. IUCN](#)<sup>161</sup>

[IUCN \(2013\). Guidelines for Reintroductions and Other Conservation Translocations. IUCN.](#)<sup>162</sup>

[Commonland](#)<sup>163</sup> works on restoration projects worldwide, with a conceptual framework of 'Four Returns' (for people, communities, nature and business).

## Protected areas, and areas managed for biodiversity

Target 3 of the GBF aims for 30% of land and sea of each country to be under effective conservation management, including in both Protected Areas and Other Effective Area-based Conservation Measures. This is sometimes referred to as ‘30x30’.

A ‘**Protected area**’ means a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives, as defined in the CBD. Currently 16% of terrestrial and inland water, and 8% of marine areas are in protected areas.

‘**Other Effective Area-based Conservation Measures (OECMs)**’<sup>164</sup> are sites outside of formally protected areas that make significant contributions to biodiversity conservation.

## Further information

### [CBD and Protected Areas](#)<sup>165</sup>

[CBD \(2012\). Recognizing and Supporting Territories and Areas Conserved by Indigenous Peoples and Local Communities - Global Overview and National Case Studies.](#)<sup>166</sup> CBD Technical Series No. 64. CBD.

[Protected Planet](#)<sup>167</sup> provides one-stop access to information on protected areas.

The [ICCA Registry](#)<sup>168</sup> includes information on territories and areas conserved by Indigenous Peoples and local communities (ICCAs). Communities can register their own initiatives.

[Dudley, N. and S. Stolton \(eds.\) \(2022\). Best Practice in Delivering the 30x30 Target \(2nd Edition, October 2022\). The Nature Conservancy and Equilibrium Research.](#)<sup>169</sup>

[WWF and IUCN WCPA \(2023\). 30x30: A Guide to Inclusive, Equitable and Effective Implementation of Target 3 of the Kunming-Montreal Global Biodiversity Framework. WWF and IUCN.](#)<sup>170</sup>



[IUCN's work on protected areas and land use](#)<sup>171</sup>

[IUCN WCPA Good Practice Guidelines on Protected and Conserved Areas Series](#)<sup>172</sup>

[Marine Protection Atlas](#)<sup>173</sup>

See the [Marine Protected Areas Guide](#)<sup>174</sup> on the status of marine protected areas by country, and [The MPA Guide: A framework to achieve global goals for the ocean](#)<sup>175</sup> for more information.

[Ocean+ Habitats](#)<sup>176</sup> is an online platform providing information to manage and conserve ocean ecosystems.

[Karadeniz N. and Yenilmez Arpa, N. \(2022\). Guidelines for engaging stakeholders in managing protected areas. FAO and MAF.](#)<sup>177</sup>

[World Wildlife Fund work on people and communities](#)<sup>178</sup>

[IUCN \(2016\). A Global Standard for the Identification of Key Biodiversity Areas, Version 1.0. IUCN.](#)<sup>179</sup>

[IUCN \(2000\). Indigenous and Traditional Peoples and Protected Areas. IUCN.](#)<sup>180</sup>

[IUCN \(2021\). Guidelines on the Cultural and Spiritual Significance of Nature in Protected and Conserved Areas. IUCN.](#)<sup>181</sup>

[IUCN and WWF Principles and Guidelines on Indigenous and Traditional Peoples and Protected Areas \(Joint Statement\)](#)<sup>182</sup>

## Invasive species

Target 6 of the GBF aims to reduce the threat posed by invasive alien species on biodiversity and ecosystem services, by preventing the spread of priority invasive alien species, reducing the rates of introduction and establishment of other invasive alien species by at least 50 per cent, and eradicating or controlling invasive alien species especially in priority sites (ie. ecosystems vulnerable to invasive species), such as islands by 2030.

The CBD has used the following definition of invasive alien species, as “species whose introduction and/or spread outside their natural past or present distribution threatens biological diversity.” The [IPBES Invasive Species Assessment \(2023\)](#)<sup>183</sup> uses a different definition, as “a subset of established alien species that spread and have a negative impact on biodiversity, local ecosystems and species. Many invasive alien species also have impacts on nature’s contributions to people... and good quality of life.”

The [terminology of invasive/alien/introduced species](#)<sup>184</sup> is complex and contested.

Invasive alien species may be spread by deliberate release by people (e.g. for hunting); escape from human settings (e.g. gardens or aviaries); as a contaminant in transported material (e.g. seeds or in soil); as a stowaway (e.g. rats, mice); travel via corridors such as roads, canals or rivers; or spread unaided by people.

**Key messages regarding invasive species (also referred to as invasive alien species, or IAS) are**<sup>185</sup>:

1. Invasive alien species have affected native biodiversity in almost every type of ecosystem, and are one of the greatest drivers of biodiversity loss.
2. Globalization has facilitated the introduction and spread of non-native (or alien) species.
3. For an alien species to become invasive, it must arrive, out-compete native organisms, spread, increase its population, and harm ecosystems in its introduced range.
4. The impacts of invasive alien species are compounded by other drivers of biodiversity loss, notably climate change.
5. Prevention is the most cost-effective and feasible method of controlling invasive alien species, requiring collaboration among sectors.



The IPBES Invasive Species Assessment (2023)<sup>186</sup> has four key messages, and is a key source of information:

1. **Invasive alien species are a major threat to nature, nature’s contributions to people, and good quality of life**
2. **Globally, invasive alien species and their impacts are increasing rapidly and predicted to continue rising in the future**
3. **Invasive alien species and their negative impact can be prevented and mitigated through effective management**
4. **Ambitious progress to manage biological invasions can be achieved with integrated governance**

The CBD has developed a set of Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species (2002).<sup>187</sup> Among these are two Principles that clearly relate to the work of museums:

**Guiding principle 5: Research and monitoring**

Collections and collections information can contribute to baselines on biodiversity, and to ongoing monitoring of the spread of invasive species. Museums can also facilitate the involvement of communities in monitoring of invasive species.

**Guiding principle 6: Education and public awareness**

“Raising the public’s awareness of the invasive alien species is crucial to the successful management of invasive alien species”, including the causes of invasion, and as part of successful control programmes.

Similarly, the IPBES Invasive Species Assessment (2023)<sup>188</sup> states that “Public awareness, commitment and engagement and capacity-building are crucial for the prevention and control of invasive alien species... Advances can be achieved through adequately and sustainably resourced public awareness campaigns, education, citizen science, and targeted investment in research innovation and environmentally sound technology.”

## Further information

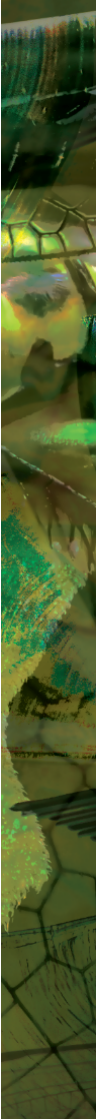
See the [CBD website section on invasive species](#)<sup>189</sup>, with case studies and a [toolkit](#).

See the [CBD website](#)<sup>190</sup>, for information on the 2009 Biodiversity Day, themed around invasive alien species.

The [Global Invasive Species Database \(GISD\)](#)<sup>191</sup> aims to increase public awareness about invasive species and to facilitate effective prevention and management activities

[IUCN \(2000\). IUCN Guidelines for the Prevention of](#)

*Education, awareness and research  
can help reduce the introduction  
and spread of invasive species.*



## Pollution

Target 7 of the GBF aims to “reduce pollution risks and the negative impact of pollution from all sources, by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services”, including reducing excess nutrients from agriculture by 50% or more, and reducing the risk from pesticides and highly hazardous chemicals by at least half, including through integrated pest management, based on science, taking into account food security and livelihoods; and also reducing plastic pollution.

Museums may generate large amounts of waste, including plastics, chemicals, air pollution, as well as less obvious forms such as light or noise pollution. Rapidly transitioning to minimise pollution - ideally by reducing consumption in the first place - should be a high priority for museums and their regulators.

## Further information

[IUCN Issue Brief: Plastic pollution](#)<sup>193</sup>

Earth Day Network (2018). [Plastic Pollution Primer and Action Toolkit](#).<sup>194</sup>

World Environment Day 2023. [Practical Guide: Beat Plastic Pollution](#).<sup>195</sup>

The American Institute for Conservation [Conservation Wiki](#)<sup>196</sup> is a good source of advice on low-impact working practices.

[ICCROM’s Our Collections Matter Toolkit](#)<sup>197</sup> provides access to many tools that can contribute to reducing and eliminating pollution.



## Climate change

Target 8 of the GBF aims to “Minimize the impact of climate change and ocean acidification on biodiversity and increase its resilience through mitigation, adaptation, and disaster risk reduction actions, including through nature-based solution and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity.”

Climate change is one of the main drivers of biodiversity loss. **Climate change has impacts at individual (physiological), species and community levels.**<sup>198</sup> In turn, biodiversity can contribute to climate action through Nature-based Solutions and Ecosystem-based Adaptation.

Museums can be the source of high emissions, from energy use, waste, standards that require lots of energy, and visitor emissions from travel to museums. It has been suggested that museums can support climate action in five main ways:

1. **Mitigation through museums: support all of society to reduce its greenhouse gas.**
2. **Mitigation in museums: aggressively reduce greenhouse gas emissions across all aspects of their activity.**
3. **Adaptation through museums: support all of society, and nature, to face and cope with current and projected climate change impacts.**
4. **Adaptation in museums: adapt their practices, location, programmes and collections to be fit for the future.**
5. **Climate action should be undertaken as part of sustainable development, climate justice and a just transition.**



For more information on how museums can contribute to climate action, see [Action for Climate Empowerment](#)<sup>199</sup> (the name for the public-facing, all-of-society aspect of the UNFCCC and Paris Agreement), and [Mobilising Museums for Climate Action](#)<sup>200</sup>, which includes sections on the relationships between biodiversity and climate action.

To understand how to manage and reduce emissions, see [Measuring and Reporting Greenhouse Gas Emission: an introduction for museums and cultural institutions](#).<sup>201</sup>

For information on how natural history collections can contribute to understanding and managing climate impacts on biodiversity, see [Museum Collections and Biodiversity Conservation](#).<sup>202</sup>

## Further information

The [CBD website](#)<sup>203</sup> has a section on climate change and biodiversity.

The [CBD Technical Series](#)<sup>204</sup> includes a number of reports on climate impacts on biodiversity, including No. 41 on 'Biodiversity and Climate Change Mitigation and Adaptation', No. 42 'Review of the Literature on the Links Between Biodiversity and Climate Change: impacts, adaptation and mitigation', and No. 85 'Synthesis Report on Experiences With Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction'.

[UNEP's website](#)<sup>205</sup> has a section on climate action, including key messages, and a roadmap for climate action.

[IUCN](#)<sup>206</sup> has a section on climate change and its impacts on biodiversity on its website

[IUCN \(2016\). Adapting to Climate Change: guidance for protected area managers and planners](#).<sup>207</sup> IUCN Best Practice Guidelines (no.24). IUCN

The [Museums for Climate Action](#)<sup>208</sup> website provides a range of alternative 'possible museums', as well as links to resources on climate action for museums.

[ICCROM's Our Collections Matter Toolkit](#)<sup>209</sup> provides access to many tools to contribute to climate action, and explains how they relate to the Sustainable Development Goals.

# MEETING PEOPLE'S NEEDS THROUGH SUSTAINABLE USE AND BENEFIT-SHARING

**Targets 9-13 of the GBF cover the use of biological diversity, and the sharing of benefits from use. These embody a range of concepts, around ecosystem services and nature's contributions to people.**

9. Management of wild species is sustainable and benefits people
10. Areas under agriculture, aquaculture, fisheries and forestry are managed sustainably
11. Nature's contributions to people are restored, maintained and enhanced
12. Urban green and blue spaces enhanced for human well-being
13. Fair and equitable sharing of benefits from genetic resources, digital sequence information and associated traditional knowledge

The CBD produced a [useful glossary](#)<sup>210</sup> of some of the key terms:

**People's needs** include clean air, water, food, fibre, shelter, a safe climate, energy security (e.g. for fuel, cooking, heating), secure livelihoods, and health and spiritual well-being.

**Sustainable use** means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations. [this definition is provided in the CBD itself]

**Benefit-sharing** refers to the third goal of the CBD, meaning fair and equitable sharing of the benefits arising out of the utilization of genetic resources (and associated traditional knowledge).



**Nature's Contributions to People (NCP)** (a concept similar to and inclusive of ecosystem services, see below, and **biodiversity values**) refers to all the contributions from biodiversity to people's well-being or quality of life. They include (a) material contributions, such as the production of food, feed, fibre, medicines and energy, (b) regulating services, such as the regulation of air and water quality, climate regulation, pollination, regulation of pests and diseases and provision of habitat, and (c) other non-material contributions, such as learning, inspiration, health, physical, psychological, spiritual well-being and experiences and supporting identities and culture, as well as maintaining options for future generations.

In addition, some key terms are:

**Ecosystem Services (ES)**<sup>211</sup> are the benefits people obtain from ecosystems. According to the original formulation of the Millennium Ecosystem Assessment (2005), ecosystem services were divided into four categories:

- **Provisioning services:** products from ecosystems such as food, fibre and medicines
- **Regulating services:** benefit to people from ecosystem processes such as water purification, air quality maintenance and climate regulation

- **Supporting services:** functions that are necessary for the production of other ecosystem services, such as soil formation and nutrient cycling
- **Cultural services:** we gain non-material benefits from our interaction with the natural environment such as education, wellbeing, aesthetic value, and spiritual values of nature and being in nature

**Natural Capital**<sup>212</sup> is the stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people (from the Natural Capital Coalition).

**Natural Capital may be valued**<sup>213</sup> both for how it is used, and with 'non-use values' (eg. people value it for existing).

**Nature-based Solutions (NbS)**<sup>214</sup> are actions to protect, sustainably manage, and restore natural or modified ecosystems, which address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. Nature-based Solutions are similar to Ecosystem Services, but NbS also focus on benefits to nature, as well as to people.

The **Addis Ababa Principles of Sustainable Use**<sup>215</sup> (2004) are a framework used for the CBD, and that can also inform the museum sector's work.

## Sustainable use of wild species

Target 9 of the GBF aims to ensure that wild species are managed and used to provide social, economic and environmental benefits for people in sustainable ways, in relation to biodiversity-based activities, products and services. This is closely related to Target 5, which aims to eliminate unsustainable harvesting as well as preventing the spread of diseases between wildlife and people. Customary use of biodiversity by Indigenous Peoples and local communities is to be protected and encouraged (it is part of Articles 8 and 10 of the CBD).

*Customary use of biodiversity  
is to be protected and encouraged*

The [IPBES Global Assessment Report on Biodiversity and Ecosystem Services \(2019\)](#)<sup>216</sup> found that over-exploitation is the second largest driver of biodiversity loss on land and in freshwater (habitat conversion is the largest), and the largest driver in marine ecosystems (largely from over-fishing and over-harvesting).

The [IPBES Assessment on The Sustainable Use of Wild Species \(2022\)](#)<sup>217</sup> is a key reference. Key messages include:

- Billions of people rely on wild species for food, medicine, energy, income and other purposes, notably people in vulnerable situations.
- About 50,000 wild species are used for various purpose.
- Sustainable use of wild species is central to the identity and existence of many Indigenous Peoples and local communities.
- Sustainable use of wild species is critical to reversing biodiversity decline.



**Unsustainable use of wild species** is wide-ranging, including over-hunting, poaching, taking wild plants for gardens, for medicinal products, disturbance from tourism, and many more challenges.

‘**Customary sustainable use**’ refers to uses of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements. It is closely associated with Traditional Knowledge (TK), Traditional Customary Expressions (TCEs) and Local Ecological Knowledge (LEK). Documenting customary sustainable use should be undertaken in ways that respect and protect the rights of people and communities involved (notably in terms of ensuring their IP is protected) (discussed in more detail in Section 2, Key Activity One, Reflect biodiversity and sustainable use in collections).

### Further information

The [CBD website](#)<sup>218</sup> has a section on traditional knowledge, innovations and practices.

[CBD Plan of Action on Customary Sustainable Use of Biodiversity \(2023\)](#),<sup>219</sup>

[Forest People’s Programme \(2011\). Customary Sustainable Use of Biodiversity by Indigenous Peoples and Local Communities](#)<sup>220</sup> (report and case studies)

Natural Justice has produced an e-learning course on [traditional knowledge and customary sustainable use of biodiversity](#).<sup>221</sup>

### Sustainable agriculture, fisheries and forestry

Target 10 of the GBF aims to ensure that agriculture, fisheries, aquaculture and forestry are managed sustainably, with sustainable use of biodiversity, an increase in biodiversity-friendly practices, including low impact agriculture, and that conserve nature’s contributions to people for the long-term.

As noted above, the [IPBES Global Assessment Report on Biodiversity and Ecosystem Services \(2019\)](#)<sup>222</sup> found that land-use change is the biggest cause of biodiversity loss on land and in freshwater, and that over-exploitation is the main cause in marine habitats. Key messages are:

- Land-use change is mostly driven by agriculture, forestry and urbanization.
- Over one third of land and nearly three quarters of freshwater resources are devoted to crop or livestock production.
- Between 1990 and 2015, 290 million hectares of native forest were lost, while the area of planted forests grew by 110 million hectares.

The **IPBES Assessment Report on Land Degradation and Restoration (2018)**<sup>223</sup> notes that land degradation occurs in all parts of the world. Combatting it is an urgent priority to protect biodiversity and nature's contributions to people, including contribution to climate mitigation and adaptation. Currently, it negatively impacts on at least 3.2 billion people. Forms of degradation include land abandonment, as well as degradation of soils, forests and freshwater environments.

**Food and Agriculture Organization (FAO) (2018). Transforming Food and Agriculture to Achieve the SDGs: 20 interconnected actions to guide decision-makers**<sup>224</sup> outlines a set of actions aiming to increase productivity and employment; protect and enhance natural resources; improve livelihoods; enhance resilience of communities and nature; and adapt to new challenges. See also **FAO (2014). Building a Common Vision for Sustainable Food and Agriculture.**<sup>225</sup>

## Further information

See also 'Assessments of Biodiversity', and 'Protected Areas' earlier in Section 3

**CBD (2004). How Sectors Can Contribute to Sustainable Use of Biodiversity**<sup>226</sup>

**IUCN (2020). Approaches to Sustainable Agriculture.**  
**IUCN**<sup>227</sup>

**IUCN's work on fisheries and agriculture**<sup>228</sup>

**CIFOR**<sup>229</sup> conducts research on the most pressing challenges of forest and landscape management around the world. The website provides access to a range of resources.

**The Sea Around Us**<sup>230</sup> is a research initiative that assesses the impact of fisheries on the marine ecosystems of the world, and offers mitigating solutions to a range of stakeholders.



## Nature-based Solutions

Target 11 of the GBF aims to maintain, restore and enhance nature's contributions to people, including ecosystem services, especially regulating services of air, water, climate, reducing disaster risk, and protection from natural hazards, through Nature-based Solutions and/or ecosystem-based approaches, for the benefit of all people and nature.

IUCN developed a [Global Standard for Nature-based Solutions](#).<sup>231</sup> The [Guidance for Using the IUCN Global Standard for Nature-based Solutions](#)<sup>232</sup> gives a concise explanation of the Standard. The [IUCN website has a section dedicated to NbS](#),<sup>233</sup> with links to resources on how they contribute to climate adaptation, Disaster Risk Reduction, and other challenges.

[Seddon et al. \(2020\) 'Understanding the value and limits of nature-based solutions to climate change and other global challenges'](#)<sup>234</sup> provides an overview, to promote a critical understanding of NbS and their use in climate adaptation and in meeting other challenges.

## Further information

[CBD \(2016\). Synthesis Report on Experiences With Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction. CBD Technical Series No. 85. CBD](#)<sup>235</sup>

[IUCN \(2015\). Protected Areas as Tools for Disaster Risk Reduction: a handbook for practitioners. IUCN.](#)<sup>236</sup>

[Jigyasu, R. and S. Sen \(editors\) \(2022\). Words into Action: Using Traditional and Indigenous Knowledges for Disaster Risk Reduction. UNDRR.](#)<sup>237</sup>

[UNDRR \(2021\). Words into Action: Nature-based Solutions for Disaster Risk Reduction. UNDRR.](#)<sup>238</sup>

[The Nature-based Solutions Initiative](#),<sup>239</sup> based at the University of Oxford, is an interdisciplinary programme of research, education and policy advice.

[WWF work on Nature-based Solutions](#)<sup>240</sup>



## Nature in people's lives

Target 12 of the GBF aims to enhance the availability of green and blue spaces in built-up areas, factor biodiversity considerations into urban planning, enhance native biodiversity, and “improving human health and well-being and connection to nature...”

The concept of ‘**connection to nature**’ (or nature connectedness) has been explored by a team of researchers at the University of Derby (UK). They identified five pathways that supported “a new relationship with nature that moves beyond utility and control, beyond knowledge and identification”:

**Senses** - Tuning in to nature through the senses

**Emotion** - Feeling alive through the emotions and feelings nature brings

**Beauty** - Noticing nature’s beauty

**Meaning** - Nature bringing meaning to our lives

**Compassion** - Caring and taking action for nature

It is important to note that the scientific explanation of nature is not identified as a pathway to nature connectedness, although it is crucial as a source of information for decision-making, and scientific inquiry. Citizen science initiatives can support nature connectedness, by incorporating activities that emphasize noticing nature (Pocock et al. 2023).

The **IPBES Values Assessment (2022)**<sup>241</sup> aimed to understand different world-views and values in relation to biodiversity and ecosystem services (Nature’s Contributions to People). It presents a framework:

- living from nature (natural resource viewpoint)
- living in nature (health and wellbeing benefits, experience)
- living with nature (stewardship), and
- living as nature (oneness and harmony with nature)

The Assessment found that nature is consistently undervalued in priorities across sectors and policies, and that ensuring the diverse values of nature are represented in decision making leads to better outcomes for sustainable development. Considering diverse values is likely to better reflect local aspirations for sustainable development.



## Further information

People and Nature<sup>242</sup> is an open-access journal from the British Ecological Society, accompanied by a plain-language blog<sup>243</sup> with summaries of papers.

Nature Connectedness Research Group. A New Relationship With Nature: what it means and what we can do (briefing)<sup>244</sup>

The Nature Connection Handbook: A Guide for Increasing People's Connection with Nature.<sup>245</sup>

Nature Connectedness Research Group and National Trust. Nature and Me: Five ways to strengthen the relationship between people and nature.<sup>246</sup>

Pocock, M.J.O. et al. (2023). The benefits of citizen science and nature-noticing activities for well-being, nature connectedness and pro-nature conservation behaviours. People and Nature.<sup>247</sup>

Richardson, M. et al. (2020) The green care code: How nature connectedness and simple activities help explain pro-nature conservation behaviours. People and Nature.<sup>248</sup>

Salazar, G., Kunkle, K. and M. C. Monroe (2020). Practitioner guide to assessing connection to nature. Washington, DC: North American Association for Environmental Education.<sup>249</sup>

IUCN (2023). Guidelines on Human-Wildlife Conflict and Coexistence: first edition. IUCN.<sup>250</sup>

## Pandemics and One Health

A pandemic is an outbreak of an infectious disease that has spread over a large area. **IPBES held a workshop on biodiversity and pandemics**<sup>251</sup> in 2020, in the context of the COVID-19 pandemic, which made the following key findings:

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Pandemics represent an existential threat to the health and welfare of people across our planet.

---

Pandemics are becoming more frequent, with a rise in disease events that cause them.

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Preventative strategies are necessary.

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Pandemics emerge from microbes in nature: 70% of emerging diseases (e.g. Ebola, Zika, Nipah) and almost all known pandemics (flu, HIV/AIDS, COVID-19) are zoonoses (originating from animals), that spill over to humans and/or via domesticated animals.

---

Human disruption of ecosystems and unsustainable consumption (land-use change, expansion into wild areas, wildlife trade) drive pandemic risk: the risk of pandemics is increasing rapidly, with five new diseases emerging in people each year.

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Climate change has major implications for current and future pandemic risk.

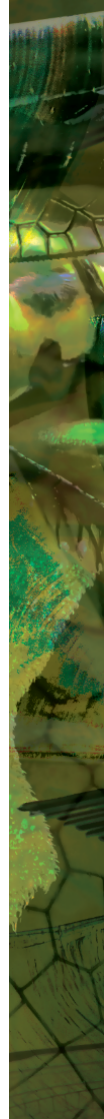
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Reducing human alteration of nature may reduce pandemic risk.

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The One Health approach considers the interactions between human, domesticated animal, and ecosystem/wild animal health in an integrated way, to understand and reduce health risk.

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Land-use change and expansion into wild areas cause more than 30% of emerging disease events.

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Trade and consumption of wildlife is a globally important risk for future pandemics.

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Current strategies aim to control diseases after they emerge.

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Escape from the Pandemic Era requires a shift to preventing pandemics.

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Closing knowledge and data gaps on the emergence and spread of pathogens and hosts could contribute to pandemic prevention.

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Education can play a key role in preventing pandemics emerging, and protecting people from emerging health threats.

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All sectors can contribute to reduce the risk of pandemics arising, and reducing their impact.

## Further information

[CBD, Biodiversity and Health](#)<sup>252</sup>

[Romanelli, C. et al. \(2015\). Connecting Global Priorities: biodiversity and human health: a state of knowledge review. WHO/CBD.](#)<sup>253</sup>

[UNEP and International Livestock Research Institute \(2020\). Preventing the Next Pandemic: zoonotic diseases and how to break the chain of transmission. UNEP.](#)<sup>254</sup>

[WHO, One Health](#)<sup>255</sup>

[One Health Commission, One Health Tools and Toolkits](#)<sup>256</sup>

[One Health Workforce Academies, One Health](#)<sup>257</sup>

[One Health Workforce Competency Framework and Evaluation Toolkit \(2022\)](#)<sup>258</sup>

[WWF \(2020\). COVID-19: Urgent Call to Protect People and Nature. WWF.](#)<sup>259</sup>



## Access and Benefit-sharing

Target 13 of the GBF aims to ensure fair and equitable sharing of benefits from the use of genetic resources, and associated traditional knowledge, with an aim for a significant increase in the benefits shared. This Target relates to the third goal of the CBD, which was further expanded upon in the Nagoya Protocol (2010).

Countries that have adopted the Nagoya Protocol have the following obligations, set out as ‘an ABC of ABS’ (shown here in summary form):

**Access obligations:** clear rules and procedures on how to access genetic resources and traditional knowledge.

**Benefit-sharing obligations:** increasing opportunities for sharing benefits from use of genetic resources and associated traditional knowledge.

**Compliance obligations:** complying with ABS regulations and conditions, transparent monitoring of use of genetic resources.

Key concepts in ABS are that genetic resources and associated traditional knowledge are accessed based on **Prior, Informed Consent** of the stakeholders involved, and that benefits are identified, agreed and shared based on **Mutually Agreed Terms**, and that these are properly documented.

**Access** is not clearly defined in the Nagoya Protocol, so it is important to understand how it is interpreted in different countries (from the Clearing House, link below). It applies to access of resources or associated traditional knowledge after 29 December 1993 (when the Protocol came into force). Generally speaking, it refers to access for research and development on genetic material for biotechnological purposes resulting in commercialization or that could lead to commercialization.

**Benefit-sharing** has been expanded upon in the Nagoya Protocol, but museums could also interpret it in a broad way, as set out in the section below. Considerations for benefit-sharing could include:

- What kinds of benefits? What non-monetary and/or monetary benefits can be shared?
- With whom should benefits be shared? With the provider country government, partner institutions and/or with Indigenous and local communities or landowners? With the wider global scientific community?
- What is fair and equitable? What do providers expect/want/need and what benefits can your institution generate?

### Taking a broad view on benefit-sharing

The Nagoya Protocol sets out a specific meaning of Access and Benefit-sharing, but this principle could also be considered for other museum activities in an informal way. For example, imagine a museum stages an exhibition about the biodiversity of another country, and makes a significant amount of money from tickets sold for the exhibition. Using a broad approach of benefit-sharing, it seems only fair that a share of the profits should flow to the other country (especially if it is a poor country), or to projects that help conserve the biodiversity of that country, or otherwise support sustainable use of biodiversity in that country. The principles of Mutually Agreed Terms and Prior, Informed Consent could be relevant and useful in this context.

While the Nagoya Protocol is specific in that it relates to sharing benefits from the use of genetic materials and associated traditional knowledge, a more general view of traditional knowledge is included in both the CBD itself (arts. 8(j) and 10(c)) and guidelines including the [Rutzoljirisaxik Voluntary Guidelines \(2018\)](#)<sup>260</sup> and the [Mo'otz Kuxtal Voluntary Guidelines \(2019\)](#).<sup>261</sup> These define traditional knowledge as meaning “knowledge, innovations and practices that are held by indigenous peoples and local communities, embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.” This can be relevant to the work of museums, as a principle.

### Forms of benefit

The [Nagoya Protocol \(Annex\)](#)<sup>262</sup> includes a list of possible monetary and non-monetary benefits, that can help inform ABS agreements, but can also be considered by museums for their other activities under a broad interpretation of benefit-sharing. These are explained in more detail on the [Nagoya Learning Portal](#).<sup>263</sup>

#### Monetary benefits may include (in summary form):

- a) Access fees/fee per sample collected or otherwise acquired
- b) Commercial products
- c) Joint ownership of relevant intellectual property rights
- d) Licensing fees in the case of commercialization
- e) Research funding
- f) Royalties
- g) Salaries
- h) Funds for conservation and sustainable use of biodiversity



**Non-monetary benefits may include (in summary form):**

- a) Access to information relevant to conservation and/or sustainable use of biological diversity
- b) Education and training
- c) Membership of networks
- d) Research directed towards priority needs (e.g. health and food security)
- e) Research exchange and partnerships
- f) Recognition of contributions

**Further information**

The [CBD website](#)<sup>264</sup> has a section on ABS, including e-learning courses and model contracts.

The [Access and Benefit-Sharing Clearing House \(ABSCH\)](#)<sup>265</sup> provides one-stop-shop access to providers and users of genetic resources and associated traditional knowledge.

[Botanic Gardens Conservation International \(BGCI\)](#)<sup>266</sup> has developed a **learning package on ABS**, with e-learning modules, as well as **principles for ABS policies**, and links to further information.

The [Society for the Preservation of Natural History Collections \(SPNHC\)](#) has developed a number of resources including: an [Access and Benefit-Sharing wiki](#)<sup>267</sup> and [Best practices](#).<sup>268</sup>

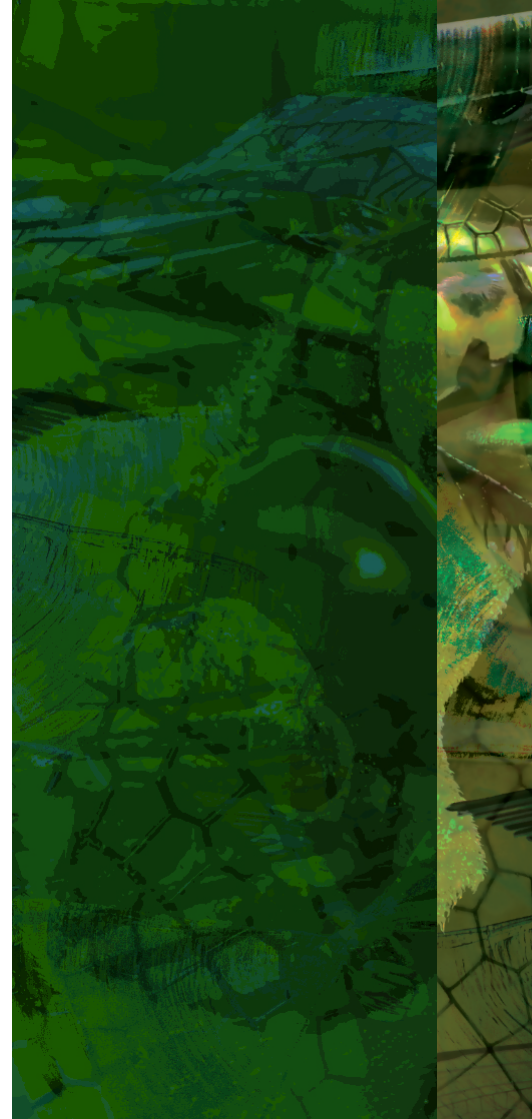


[Nagoya Protocol Learning Portal](#)<sup>269</sup> has e-learning courses, guides, case studies and other resources.

[INFORMEA](#)<sup>270</sup> includes several e-learning courses on the Nagoya Protocol, and Access and Benefit-Sharing.

[Watanabe, M.E. \(2017\). The Nagoya Protocol: big steps, new problems. BioScience, 67\(4\), 400-400.](#)<sup>271</sup>

[An Explanation of the Nagoya Protocol by Article.](#)<sup>272</sup>





# FURTHER READING



## Further reading

**CBD, Mainstreaming Biodiversity**  
<https://www.cbd.int/mainstreaming/>

**CBD (2011). NBSAP training modules version 2.1 - Module 3. Mainstreaming biodiversity into national sectoral and cross-sectoral strategies, policies, plans and programs. CBD.**  
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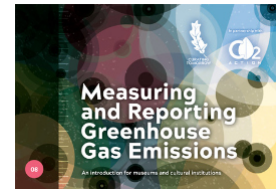
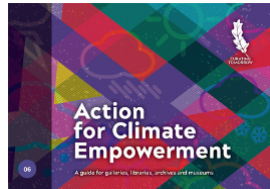
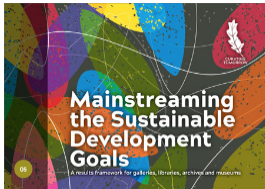
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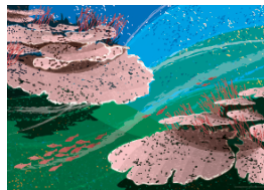
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