

A global knowledge support service for biodiversity: Perspectives, options, and next steps

Parties to the Convention on Biological Diversity (CBD) are set to agree the post-2020 global biodiversity framework, at the 15th Conference of the Parties to the CBD under the Presidency of China, in Montreal, Canada in December 2022.

Throughout the negotiations of the framework, Parties have noted the need for capacity-building, and technical and scientific cooperation to enhance the generation, collection, assessment, access to and effective use of data, information, and knowledge to support implementation of the post-2020 global biodiversity framework. This discussion paper explores options for responding to this need through a global knowledge support service for biodiversity¹ that builds on existing tools, technologies, and networks to support national capacity and efforts, and to enable tracking progress on targets and goals.

The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), in collaboration with a range of national, regional, and global partners, is facilitating consultations on this initiative (see Annex 1). The consultations will help to define needs, opportunities, and possible ways forward to harness cooperation on knowledge services and support among multiple actors for strengthening national information and monitoring capacities for biodiversity.

Context

Effective delivery of the post-2020 global biodiversity framework will require strengthened national capacity for implementation, as well as enhanced transparency on progress being made towards its ambitions. National capacity for implementation, monitoring and reporting may be supported through greater cooperation to gather, manage, and use data from national networks and other sources, assisting national planning and implementation, as well as processes for reporting on progress towards the goal and targets of the post-2020 global biodiversity framework.

At the third meeting of the Subsidiary Body on Implementation (SBI) to the CBD (Online, 16 May – 13 June 2021 and Geneva, Switzerland, 14 – 29 March 2022), Parties and stakeholders noted the need to strengthen technical and scientific cooperation, with a view to enhancing the generation, collection, organization and timely access to, and effective use of data, information and knowledge to support the implementation of the post-2020 global biodiversity framework (see [CBD/SBI/REC/3/10](#)). The SBI recommendation refers to possible initiatives such as establishing a “global knowledge centre for biodiversity”, to support national capacities for biodiversity planning and implementation, and to enable tracking progress on achieving targets and goals.

The approach: Connecting existing tools, networks, and expertise

Through the consultations to date, key elements emerged for any initiative for ‘enhanced cooperation and collaboration’ on data, methods, and tools at national, regional, and global levels. It is critical for such an initiative to be:

- *Impartial*, providing information and support necessary for the implementation of the post-2020 global biodiversity framework and its monitoring framework.
- *Servicing* the needs and addressing opportunities identified by Parties and other stakeholders in a cost-effective way.
- *Connecting*, considering the key role on the CBD Clearing House Mechanism, recognising and ensuring the interoperability of existing tools, networks, and expertise,² and linking with the range of initiatives under development in support of implementation of the post-2020 global biodiversity framework, such as the NBSAP Accelerator initiative.

¹ The Global Knowledge Support Service for Biodiversity is a working title, anticipated to change to reflect final scope of support services. The establishment of a stand-alone global knowledge service or centre is not envisaged (cf. item 13 B on knowledge management - see pages 145-146 of document [CBD/COP/15/2](#) - compilation of draft COP15 decisions).

² Examples of tools that may be available via a global biodiversity knowledge service include [UN Biodiversity Lab](#), a [target tracker](#), [Data Reporting Tool \(DaRT\)](#), the [Online Reporting Tool](#), [BioLand](#), the World Environment Situation Room ([WESR](#)) those developed by the Biodiversity Indicators Partnership ([BIP](#)), [GEOBON](#) and [GBIF](#). Data, knowledge, platforms, tools, and resources would be included in the global biodiversity knowledge support service according to Parties needs’ and subject to agreement and availability from custodian agencies and organisations. Other relevant initiatives include the Bio-Bridge Initiative and the KM4B initiative.

- *Inclusive*, covering the full scope of the post-2020 global biodiversity framework, across all goals, targets, and other elements as agreed during CBD COP15, enhancing standardisation,³ and serving as an important mechanism for mainstreaming and reinforcing and supporting synergies, for example, through the Bern process,⁴ and the informal advisory group on synergies among biodiversity-related conventions.

The initiative might therefore be considered a Global Knowledge Support Service for Biodiversity. The service, connects and leverages existing tools, networks, and expertise to support Parties in addressing gaps, enhancing capacities and systems, and scaling up collaboration on data, information, and knowledge for the implementation of the post-2020 global biodiversity framework.

Defining needs and opportunities

Parties recognise that implementation of the post-2020 global biodiversity framework will require enhanced capacities, systems, and collaboration on biodiversity data, information, and knowledge, including, *inter alia*:

- **Data to action.** Parties and other stakeholders note that biodiversity-related data is often available, but there is a significant gap in ensuring such data informs effective action. The gap between data informing actions is related to several factors. One factor is the need for infrastructure that allows information to be collected, collated, and synthesised in a way to generate intelligence for policy and decision-makers. Experts note this is not only a skills challenge; it is also related to resource mobilisation challenges. Experts describe the need to use the data, information, and qualitative knowledge to generate narratives that catalyse action
- **Whole of society approach.** Consultations have highlighted the importance of working with a range of entities and stakeholders to collect and share information and knowledge for implementation of the post-2020 global biodiversity framework implementation. This would involve supporting development of integrated biodiversity information networks and governance at the national level. Experts noted that, for biodiversity information systems to be fully effective they need to involve with a range of ministries and agencies in national government, as well as with sub-national and local authorities. Others noted the need for business engagement, to enhance collection and use of biodiversity data and information. The mainstreaming of biodiversity data, information and knowledge processes may indeed require different approaches, both to engage various knowledge systems and to make such data, information, and knowledge relevant for the different actors.
- **Digitisation, standardisation, and interoperability.** Another opportunity is working to increase the level of standardisation and interoperability among existing data and tools. Many centres of expertise are working on enhanced and integrated platforms, at the request of users calling for greater harmonisation and interoperability. Such approaches need to be scaled up so that local, sub-national and national data can flow for various planning, monitoring, and reporting purposes. This could require strengthening interoperability and data flow among national and regional biodiversity information systems and cross-sectoral users, and with global data, tools, and platforms, including to track progress. Opportunities exist to engage countries to strengthen institutional interest and benefits of data sharing approaches, as well as developing appropriate data strategies and policies to enable it.
- **Collaborative approaches.** Collaboration across borders is a critical element, highlighted by Parties and stakeholders involved in consultations. It is seen as fundamental given transboundary nature of biodiversity and need for countries to have access to biodiversity information from other countries to develop and analyse their own. Experts also noted the value of learning and scaling up capacities through both international and regional exchanges. For example, international networks depend on national partners to create content and can be leveraged to enhanced capacities and coordination. Regional and/or sub-regional technical and scientific cooperation support centres and networks are seen to play a key role.
- **Coordinated approaches.** Consultations highlighted the range of initiatives, tools, and platforms around biodiversity knowledge. Additionally, it was noted that the current landscape of national, regional, and global data and tool providers is highly fragmented and characterised by disparities in institutional capacity, data availability and accessibility. The production of biodiversity data is costly, and requires investments in institutions, human and technological capacity, also to overcome the uneven pace of digitalisation across ministries and that of key public goods. The challenge is ensuring

³ Cf. [UN SEEA Ecosystem Accounting standards](#)

⁴ See [CBD/SBI/3/INF/29](#)

these pieces of the puzzle come together with complementarity, rather than duplication. Achieving cost-effectiveness, efficiency, and sustainability of knowledge services are concerns shared by many Parties, data providers and users alike. Avoiding duplication and making better use of existing resources are a necessary first step, which should be complemented with longer-term perspectives and financing required for national biodiversity monitoring.

- **Facilitated access to biodiversity-related data and tools.** Improved mechanisms may be required, which leverage and link existing capacity and data available at national, regional, and global scales, along with strategic investment to fill priority gaps. Mechanisms may facilitate improved access and verification by countries of global datasets, for example. Opportunities exist to advance more comprehensive and robust knowledge on the state and trends of biodiversity, drivers of biodiversity loss, possible measures for conservation, restoration, sustainable use, fair and equitable benefit sharing from the use of genetic resources, and potential means of implementation.
- **Supporting the development and use of national biodiversity information systems.** There are several examples of outstanding national biodiversity institutions and information systems. These examples and experiences could be built upon to support others where there is variation across countries in terms of expertise and resources to support such national systems. Many global datasets, tools, and networks that provide an aggregated overview of progress towards goals and targets are derived from national-level data, which can be delivered through such national biodiversity institutions or systems. Data collated at the national or sub-national scale is valuable to a range of national decision-makers. Due to disparities within and among countries, national data often require significantly more investment at various stages of the data value chain – collection, publication, aggregation to national and global scales, efforts for uptake, and impact – which could be supported by national or international data providers. Opportunities exist to facilitate peer to peer learning between nations and regions, sharing training materials, tools, and other resources, to better enable those countries requiring additional capacity support.
- **Strengthening national biodiversity knowledge management capacities** including the human resources and institutional capacity of Parties to: (i) generate, aggregate, manage and analyse biodiversity data; (ii) use digital technologies, e.g. artificial intelligence (AI) and machine learning (ML), to manage information and derive insights from data; (iii) institutionalize information and knowledge sharing; and (iv) to use available data, information and knowledge to support evidence-based decision-making and action, and for monitoring and reporting of progress towards the achievement of national targets as contributions to the global; goals and targets.
- **Building on networks**, particularly with a network of regional and sub-regional technical and scientific cooperation support centres, in line with the long-term strategic framework for capacity development, to support the implementation of the post-2020 global biodiversity framework.

Supporting national capacity on biodiversity data, information, and knowledge

Biodiversity data collected at the national or sub-national scale is the basis for many global datasets, indicators and tools that will be relevant in the implementation and monitoring of the post-2020 global biodiversity framework. It is also of enormous value to countries for implementation and tracking progress at the national scale, to the private sector for managing their impacts and dependencies, to civil society organisations for understanding environmental change, and for greater legitimacy and enhanced transparency in understanding progress towards global goals and targets. The production of primary data at the national level may range from field observations and remote sensing of biodiversity and drivers of biodiversity loss, to tracking financial flows and the flows of benefits from the sustainable use of biodiversity, which in turn create the foundation for knowledge and insights in support of national decision making across sectors.

Generating, collating, and making such information accessible requires enhanced cooperation, coordination, national capacity, and sufficient resourcing. In addition to national investment in these activities, existing global networks, such as those coordinated by UN Statistics Division, OECD, GBIF, GEOBON, IUCN and others could complement these resources, providing support in a federated approach (see Figure 1). Similarly, global networks such as the [Biodiversity Indicators Partnership](#) (BIP) can provide expert advice to governments on the available data and metrics to support decision-making.

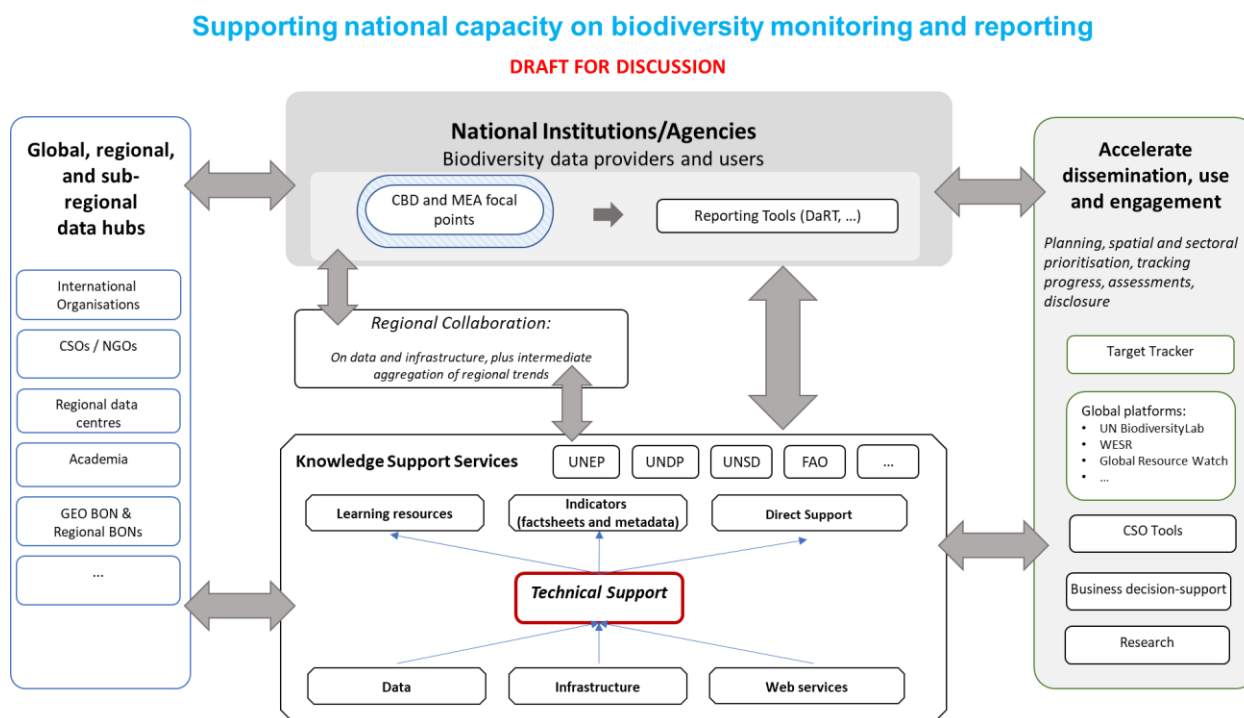


Figure 1. Initial mapping of examples of existing data, tools and networks that could support national institutions.

In addition, data users require confidence – trust – in all stages of the data value chain and the tools that analyse and display the data. In other words, the data methodologies and format need to be fit for their intended purpose, and the process of national data collection needs to be driven by national institutions. The purpose or intended use of biodiversity data includes national stocktake, planning and prioritisation processes, private sector decision-making and disclosure, as well as monitoring and reporting progress on the implementation of the post-2020 global biodiversity framework. The combination of availability and trust in data and the replicability of systems and workflows are key success factors to establishing biodiversity information systems that could respond to both national needs and international commitments. Country ownership and strengthening national capacities in the context of national circumstances are essential to the effectiveness and sustainability of any knowledge support services.

Options for enhanced cooperation on knowledge support services

The implementation of the post-2020 global biodiversity framework will require a range of knowledge and data solutions, not least to fulfil its ambition of implementation through whole-of-government and whole-of-society approaches. This mainstreaming agenda will significantly expand the user-base of biodiversity data and knowledge. Furthermore, due to the location specificity and dynamism of biological systems, the analyses, interpretation of trends and statistics derived from these datasets could be better supported through scientific cooperation.

Greater cooperation among the current sponsors of data, tools and platforms can provide much needed capacity and data support at the national level. The options below highlight key elements of a system of knowledge support services to deliver the capacities needed for implementation of the post-2020 global biodiversity framework.

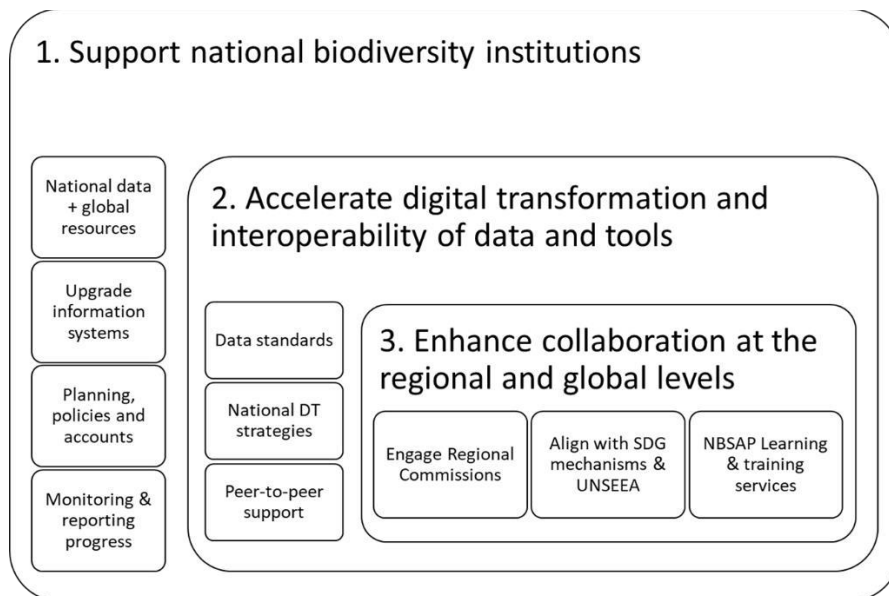


Figure 2. Key components for enhancing cooperation on knowledge services

Component 1: Invest in national biodiversity institutions

A key focus is to invest in national capacity by drawing on a range of existing data, tools, and networks available at national, regional, and global levels. Key elements include drawing on primary data from field collections and/or global sources, validating and publishing the data in national information system(s); using the knowledge and data for national planning, policies, and other uses such as national accounts; and finally drawing on these information sources for monitoring and reporting progress to be collated for tracking progress on the implementation of the post-2020 global biodiversity framework, and potentially other regional and global assessments.

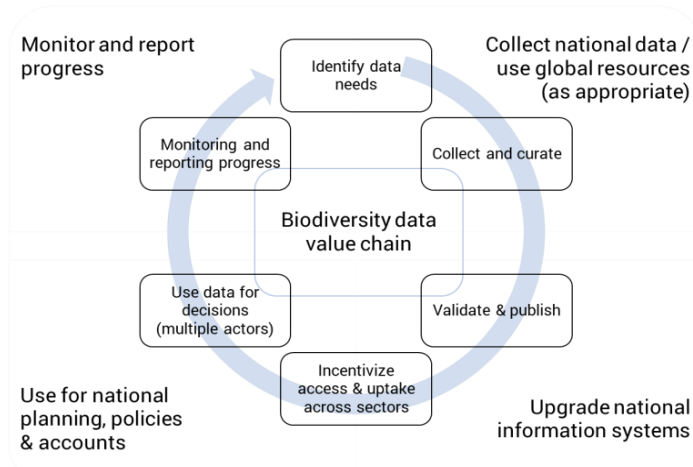
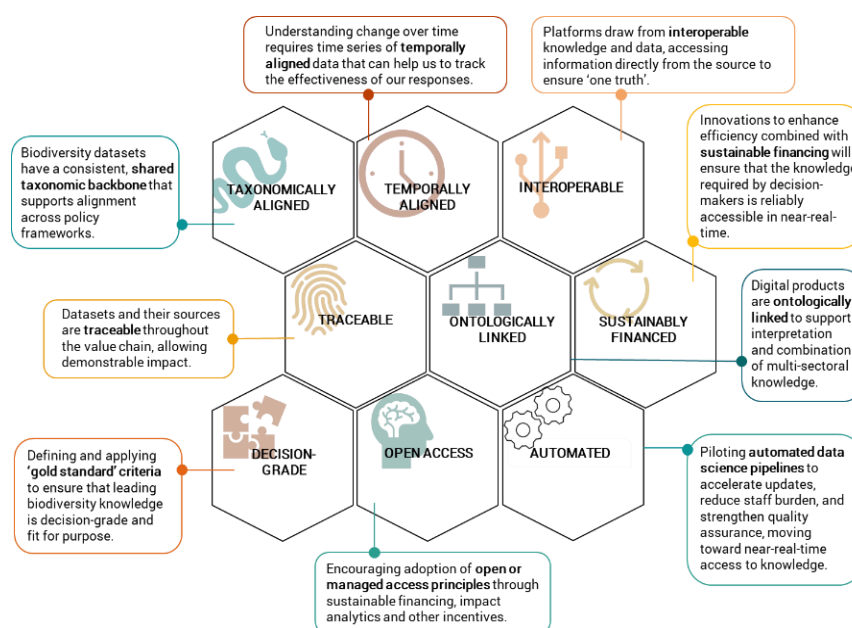


Figure 3. Simplified data value chain with opportunities for greater synergies in support services

Component 2: Accelerate national digital transformation strategies and interoperability of data and tools

Data collection built on open-source principles, using data standards that match where possible to the standards being used in the global data space will greatly enhance interoperability and a variety of end-user applications. Adhering to these open, global data standards will increase the opportunity for Parties to be able to share their national level data used to monitor progress on the implementation of the post-2020 global biodiversity framework across multiple platforms. Dedicated support services could advise on the necessary data/infrastructure standards that could be used in the data value chain from collection to decision-support platforms. Greater alignment on database infrastructure and templates for national biodiversity information systems could create efficiencies in aggregating national reporting to regional platforms and global efforts to track progress. Such enhancements will require appropriate data access and sharing policies, as well as institutional support, linked to national digitalisation / digital transformation strategies.

Figure 4. Building blocks for enhanced interoperability and efficient data-sharing



National digital transformation strategies

UNDP's [Digital Development Compass](#) shows a quick overview of the national level (sector-agnostic) digital readiness of each country, which be used for a high-level assessment to explore commonly missing pieces (e.g. data sharing or privacy laws) at the national level. These initial discussions pave the way to explore options for technological solutions to modernize and interconnect core national knowledge databases, which may include updating and standardising the technological infrastructure and code of core platforms, streamlining data inputs and flows, and developing technological tools (such as web services or application programming interfaces - APIs). These are all ways to address/overcome data compatibility issues across systems.

Facilitate peer-to-peer support for national infrastructure and capacity

Countries with a longer history of investment in national biodiversity institutions could play a key role in advancing peer-to-peer efforts, partnering with neighbouring or other countries to develop institutional capacity. Peer-to-peer support could include developing capacity on national assessments and the collation of biodiversity data and knowledge, to sharing architecture and infrastructure for biodiversity information systems and sharing lessons learned for financing of national infrastructure. Such efforts could provide efficiencies in the development and tailoring of national solutions, also benefitting from the experiences and lessons learnt by peers.

Component 3: Enhance collaboration at the regional and global levels

Enhance collaboration and support at the regional level

The UN Regional Economic Commissions are an integral part of their regional institutional landscape. The five Regional Commissions – the Economic Commission for Europe (UNECE), the Economic and Social Commission for Asia and the Pacific (UNESCAP), the Economic Commission for Latin America (ECLAC), the Economic Commission for Africa (ECA) and the Economic and Social Commission for Western Asia (UNESCWA) – share key objectives aiming to foster economic integration at the sub-regional and regional levels, to promote the regional implementation of internationally agreed development goals. To achieve these objectives, the Regional Commissions promote multilateral dialogue, knowledge sharing and networking at the regional level, presenting an opportunity to leverage existing efforts develop capacity on national statistics also for biodiversity-related data and knowledge. These existing efforts might also link to the relevant processes established under the CBD relating to knowledge management. For example, the CHM, technical and scientific cooperation, capacity building and technology transfer. Further mechanisms might be established to implement (and support implementation of) the monitoring framework for the post-2020 global biodiversity framework.

Align data approaches to SDG mechanisms and UNSEEA requirements

The United Nations Statistics Division (UNSD) is engaged in the development of methodology, data collection, capacity development, and coordination in the fields of environmental statistics and indicators. Opportunities exist to align with the support provided on the elaboration of frameworks, concepts, methods, definitions, and data compilation guidelines to support the development and harmonization of national and international statistics on the environment. Furthermore, existing technical cooperation, training and capacity development is provided through regional and sub-regional projects, international training workshops, fellowship arrangements and assistance to countries, which could potentially be expanded to include a focus on biodiversity.

Learning and training services

The NBSAP Forum is a global partnership supporting the revision and implementation of National Biodiversity Strategy and Action Plans (NBSAPs). The Secretariat of Convention on Biological Diversity (CBD), the UN Development Programme (UNDP), and the UN Environment Programme (UNEP) host this partnership. The purpose of the web portal is to support countries in finding the information they need to develop and implement effective NBSAPs. This online community of practice also connects a wide range of stakeholders who need access to timely information regarding NBSAP best practices, guidance, and resources, or may be able wish to contribute with information, knowledge, support, and resources. Experiences from the NBSAP Partnership will also inform development of the NBSAP Accelerator initiative and in particular its knowledge hub, with which synergies will be developed as the scoping progresses.

Governance

Embed South-South cooperation in the governance structure

South-South cooperation will be a key success factor to support national capacities for biodiversity planning and implementation, and to enable tracking progress on achieving targets and goals. It is proposed that this initiative embeds South-South cooperation in its governance model, also reflecting existing peer-to-peer support. National institutes and regional centres that may wish to express interest in joining this effort may include SANBI, Alexander von Humboldt Biodiversity Institute, Association of Southeast Asian Nations (ASEAN) Centre for Biodiversity, Secretariat of the Pacific Regional Environment Programme (SPREP), the European knowledge centre for biodiversity (KCBD), among others. In addition, connecting to the knowledge and capacity development efforts of UNEP, UNDP, UNSD and potentially the Regional Commissions could generate significant efficiencies. The Secretariat of the CBD and funders will fulfil an ex officio oversight role.

Linking to a package of support initiatives

Various ongoing and planned initiatives will contribute to addressing gaps and responding to needs related to the implementation of the post-2020 global biodiversity framework. This initiative on a *knowledge support service* aims to enhance cooperation and coherence on the underlying data, tools, and infrastructure to enable and scale the efforts of the broader package of support that includes (but is not restricted to) the following:

The Global Environmental Facility (GEF) early action support was announced at COP15 Part 1 and will be jointly implemented by UNEP and UNDP in 138 GEF-eligible countries. The early action support work will include a review of the alignment of existing NBSAPs with the post-2020 global biodiversity framework, and an assessment of the sufficiency of national monitoring systems, including existing structures for data collection at various levels, to track national progress across the scope of this framework, and to report on national progress as a contribution towards the global goals and targets. While all countries will receive the same level of financial support regardless of size and context, they will have flexibility in determining the allocation of resources between the project objectives, including those mentioned above.

Additionally, *the eighth GEF replenishment cycle* is anticipated to provide resources to support Parties in the implementation of the post-2020 global biodiversity framework, including through the revision or updating of national biodiversity strategies and action plans, developing national biodiversity information systems, biodiversity financing and communication plans, and implementation of national reporting obligations building on national monitoring systems.

The *NBSAP Accelerator Partnership* is envisaged to bring together a broad range of stakeholders and initiatives operating in a decentralized manner. This is expected to incentivize cooperation among donors and recipient countries, UN agencies and international and regional organizations to work together and ensure a dynamic environment that promotes ambition and innovation to achieve tangible results. All partners are expected to endorse the Partnership's guiding principles and to bring something to the table – be it funding, high-level political commitment or in-kind support – building on their strengths and expertise in the multilateral biodiversity arena and future evolutions of the Partnership. This mechanism will be supported by a knowledge hub that will ensure better standardisation of data and development of indicators that have been defined as crucial gap to be developed in priority.

The German-funded initiative *Leveraging the Biodiversity Indicators Partnership to strengthen national biodiversity monitoring systems for enhanced implementation of the post-2020 global biodiversity framework* is focused on working at the national scale, in partnership with regional partners and global indicator developers (members of the BIP), to enhance and consolidate national biodiversity monitoring systems, to conduct effective monitoring and reporting of progress towards national targets and contributions to the goals and targets of the post-2020 global biodiversity framework. Materials generated through this initiative and lessons learnt will be shared widely for use by Parties.

SDGs reporting and UNSEEA through the ongoing work of the UN Statistics Division and Statistics Commission, working with and through National Statistical Offices, provide monitoring and reporting of progress across targets of the SDGs. This presents an opportunity to mainstream biodiversity monitoring into national monitoring and statistical systems and provides potentially relevant workflows and infrastructure. Furthermore, the UN System of Environmental-Economic Accounting (SEEA) Ecosystem Accounting provides a standard framework with agreed definitions and typologies for biophysical accounts of ecosystem extent, condition and services, which allows for integrating economic and environmental data to provide a more comprehensive and multipurpose view of the interrelationships between the economy and the stocks and changes in natural capital, and support biodiversity mainstreaming in decision-making across policy sectors.

EU support to centres of excellence on biodiversity in Sub-Saharan Africa. An EU initiative will align and deepen the support to three scientific and technical observatories of renewable natural resources recognised as regional centres of excellence for biodiversity, land, and forests, covering the whole Sub-Saharan Africa (SSA). These centres are (1) the Observatoire des Forêts d'Afrique Centrale (OFAC) in Yaoundé covering Central Africa; (2) the Regional Centre For Mapping Of Resources For Development (RCMRD) in Nairobi covering East and Southern Africa; and (3) the Observatoire de la Biodiversité et des Aires Protégées en Afrique de l'Ouest (OBAPAO) covering West Africa bringing together the Centre de Suivi Ecologique (CSE) in Dakar, the Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle (AGRHYMET) in Niamey and the University of Ghana in Accra.

COOP4CBD. This initiative provides a bridge between the European KCBD and the GKSSB to advance the implementation of the post-2020 global biodiversity framework and to make more effective use of existing expertise and initiatives by building on existing networks of experts and institutions, engaging scientists into the CBD processes, supporting the implementation of monitoring, reporting and review, and increasing technical and scientific cooperation.

Other relevant global initiatives include for example the *Group of Earth Observation Biodiversity Observation Network (GEOBON)* and development of a global biodiversity observation system (GBIOS) focused on elements of the scope of the global biodiversity framework; *BES-Net and the Sub-Global Assessment Network* (and its National Ecosystem Assessment Initiative); and work with *UN Women on the gender responsiveness* of the post-2020 global biodiversity framework and monitoring framework.

Annex 1: Consultations

UNEP-WCMC, in collaboration with a range of partners, is facilitating consultations to determine the needs and opportunities for global knowledge support services for biodiversity, to support implementation of the post-2020 global biodiversity framework.

The consultations take the form of direct discussions with Parties to the CBD, and other stakeholders, such as UN agencies, data partners and the private sector. In addition, an informal advisory committee was established to provide advice on the knowledge support service, with representation from national biodiversity agencies, and UN agencies. Finally, a side event at CBD COP15 heard views from Parties, data partners, and others, on the potential value of a global knowledge support service for biodiversity. The consultation phase will continue into early 2023, including through surveys and questionnaires to Parties to the CBD.

Bilateral Consultations

Throughout July 2022 – December 2022, bilateral consultations have been held with 11 Parties, and four UN agencies/ MEA Secretariats (including UNSD, UNDP and SCBD). National agencies were selected within countries. In addition, views were sought from data partners (such as BirdLife International, DaRT, GBIF, GEOBON, IUCN, NatureServe, OECD and WWF).

Advisory Committee

An informal advisory committee is convened by UNEP-WCMC with the purpose of:

- Providing strategic guidance on the global knowledge support service, and on the scoping study, including the approach to consultations, the assessment of results and the proposal of ways forward.
- Providing insights in the approaches to national monitoring systems and case study examples.
- Providing structured opportunities for relevant partners to advise on the scope of work and to share information on on-going and planned activities to promote synergy and coherence.
- Communicating the project, its aims, and its activities to their respective partners, including governments and other stakeholders.
- Building a broad and representative coalition to take forth ideas identified and developed as part of this project.

Members of the advisory group represent organisations with interests, experience, and a role in global, regional, or national level monitoring, review, and reporting of implementation of global goals and targets, including the SDGs and the post-2020 global biodiversity framework.

CBD COP15 – side event

A side event on the Global knowledge support services for biodiversity: services to support Parties and stakeholders' implementation of the post-2020 global biodiversity framework was held on 7 December 2022 at 13h15 – 14h45 at the 15th Meeting of the Conference of the Parties to the CBD (Montreal, Canada), under the Presidency of China. During the side event contributions from Parties and stakeholders were invited, including members of the Advisory Committee. Views were shared by participants, on the scope, role, design, and attributes of global knowledge support services for biodiversity. The side event highlighted the needs expressed by Parties, for greater capacity development and scientific and technical collaboration, to enhance implementation of the global biodiversity framework, and how the global knowledge support services may be able to address those needs. The feedback heard during the side event has been incorporated into this options paper.