



The Intergovernmental Science-Policy on Biodiversity and Ecosystem Services: Capacity-building Related Considerations from a UNESCO perspective

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Abstract: UNESCO as an agency of United Nations has been active in capacity building in basic sciences, environmental and earth sciences as well as science policy, and has helped to launch many global programmes, among these some relating to biotechnology, biosphere reserves, biodiversity and sustainable development. Its programmes involve stakeholders and UNESCO gives importance to collaboration and promotes North-South activities at all levels involving a range of actors, from schools and national governments in its activities. The International Year of Biodiversity was used by UNESCO to create awareness and promote understanding of the importance of biodiversity and ecosystems. UNESCO works closely with governments and has strengthened the science-policy interface in biodiversity. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is a new initiative in which UNESCO is deeply involved. This article discusses UNESCO's experience in capacity building and its relevance for IPBES.

Key words: UNESCO, biodiversity, International Year of Biodiversity, capacity building, IPBES, biotechnology, ecosystem.

Introduction

In the experience of the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a specialized agency of the UN system dealing with, *inter alia*, capacity in the field of natural and social sciences through education and other measures, the building of peace, the alleviation of poverty, sustainable development and intercultural dialogue can benefit enormously from capacity-building in the area of sciences. One of the main means of implementation of science activities in UNESCO in the areas of biodiversity and ecosystem services is indeed the provision of assistance to and capacity-building in Member States in relation to participating actively in scientific research and monitoring; scientific assessments; and capacity-building for the formulation of national science policies and related action plans.

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Catalyzing the further development of capacity for operating effectively at the science-policy interface should be one of the core functions of the forthcoming Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services – IPBES. It has been advocated that IPBES' mandate should include a capacity-building element. This would ensure that the Platform is enabled to trigger capacity-building efforts from, and in support of, the various constituencies that it will address.

We believe that the convening power of IPBES at the science-policy interface would be greatly enhanced by attributing to the Platform an appropriate mandate and functions in the area of capacity-building. The precursors of this proposed initiative were the International Mechanism on Scientific Expertise on Biodiversity (IMoSEB) resulting from recommendations of the Paris Declaration on Biodiversity which was adopted at UNESCO Headquarters in January 2005. Concurrently the Millennium Ecosystem Assessment (MA), a scientific assessment of ecosystem services on which human well-being depends, was completed (MA 2005). UNESCO was one of the co-sponsors for this assessment. The results and follow-up of both can be taken on board in the process of the establishment of IPBES.

The Nature, Role and Contribution of UNESCO's Scientific Assessments to the Sustainability Agenda

Biodiversity and ecosystem services are at the core of UNESCO's mandate. The Organization administers the World Heritage Convention that covers many sites of great biodiversity value. It also administers the Intergovernmental Oceanographic Commission (IOC). UNESCO provides the Secretariat to, and coordinates, the World Water Assessment Programme on behalf of 24 UN agencies. The Organization has also co-sponsored the MA (2000-2005) as well as the International Assessment of Agricultural Science and Technology for Development (IAASTD, 2005-2008), for which it has coordinated the assessment for the Latin American and Caribbean region.

UNESCO is responsible for the implementation of the Man and the Biosphere Programme (MAB), which encompasses expert activities in relation to marine and coastal, island, wetland, mountain, arid, savannah, tropical forest, agricultural and urban/peri-urban ecosystems. One of the main means of implementation of science activities in UNESCO is provision of assistance to and capacity-building in Member States in formulating national science policies and related action plans.

As regards capacity-building, UNESCO runs the MAB Young Scientists Awards scheme, which encompasses biodiversity as a priority area, as well as the UNESCO Fellowships for World Heritage Site Managers. In addition UNESCO possesses more than 50 field offices worldwide, including regional offices for S&T in all continents.

UNESCO's Philosophy of Capacity-building in Support of Science

In 1993, UNESCO produced the first World Science Report. Since then four other reports have been published in 1996, 1998, 2005 and the most recent launched in November 2010 (UNESCO 2010a). This year also saw the launch of UNESCO's first global report on engineering – *Engineering: Issues, Challenges and Opportunities for Development*, which includes contributions on environmental engineering.

In order that science contribute in a real and substantial way to sustainable socio-economic development, a coherent strategy on human resource needs and development needs to be outlined, national priorities in science set and an enabling environment put in place to promote and foster endogenous research and innovation. National legislation needs to be reviewed in view of global changes and challenges like climate change and dependence on decreasing fossil fuel resources.

In this context, UNESCO's work in the natural sciences has made a significant contribution to developing national capacities, especially for the developing countries and least developed countries to attain critical masses of trained teaching and research capacity in basic sciences, science policy, environmental and earth sciences. Capacity-building programmes in science policy formulation both at the regional as well as the national, country levels have been undertaken resulting in policy briefs. The emphasis has always been towards participatory policy formulation bringing on board the numerous stakeholders, in particular policy makers and representatives of the scientific community.

As the lead agency for the UN Decade of Education for Sustainable Development (2005-2014), and UN Focal Point for Water and Oceans, UNESCO attempts to work with governments and civil society in promoting appropriate management strategies for the sustainable use of available natural resources and limiting the damaging impact of increasing human activity on ecosystems' functioning and capacity to deliver services. The importance of science in this endeavour is unarguable in the review of the current status, providing statistical and scientific evidence to underpin

decisions for policy change, advice and best practices. The UNESCO MAB Programme, an intergovernmental programme setup in the early 1970s, provides through its World Network of Biosphere Reserves, living laboratories where the relationship between communities and their environment can be studied and monitored. It provides opportunities for research into workable approaches to sustainable development taking into consideration the environmental, economic, social and cultural perspectives. Education and information activities are organized according to conservation, sustainable use and development issues and related topics. Some of the landmark projects that co-exist alongside the MAB Programme are “Ecole régionale postuniversitaire d’aménagement et de gestion intégrés des forêts et territoires tropicaux” (ERAIFT), UNEP/UNESCO Great Ape Survival Partnership (GRASP) and the Global and Climate Change in Mountain Sites (GLOCHAMOST).

UNESCO works with a range of organizations including scientific organizations and civil society groups and promotes North-South, South-South and North-South-South collaboration and exchange to advance science.

A set of principles were agreed upon that IPBES should take into account in carrying out its work, and UNESCO complies with most of these. UNESCO has the advantage of its multifaceted mandate which brings in not only the social but also the cultural dimensions and in particular within the programmes in the natural sciences, a specific programme dealing with Local and Indigenous Knowledge Systems (LINKS). This dimension should not be underestimated, and some case studies have demonstrated that the reinstating of traditional practices for management and use of bioresources have been successful in improving these (UNESCO 2010b). Involvement of indigenous populations is imperative to the success of any bioresource management strategy (UNESCO 2007; CBD 2009a), and wider policy in this regard should consider and include the issue of benefit sharing; this is already being looked at, at the global level (Normile 2010).

UNESCO sees IPBES as an independent intergovernmental process serving the needs of multiple constituencies. At the same time, UNESCO supports the notion that capacity development in scientific assessments of biodiversity and ecosystem services for sustainable development should constitute one of the core functions of IPBES and, in fact, a function that cuts across all constituencies to which the Platform will address its work.

Box 1: UNESCO and Capacity Building: Selected Examples

UNESCO has established many UNESCO Chairs in the biodiversity and ecosystem services area worldwide. Since 1999, the UNESCO Regional Post-graduate Training School on Integrated Management of Tropical Forests (ERAIFT) has been operating in the Democratic Republic of Congo. UNESCO and TWAS jointly implement an Associateship Scheme at Centres of Excellence in the South. Within the framework of the IBSP, UNESCO's programmes in biotechnology provide research and training opportunities for scientists especially from developing countries. The areas include environmental biotechnology, the inventorisation and management of microbial repositories and appropriate use of this diversity; in this regard increasing attention is being focussed on bioprospecting in extreme environments. In addition, UNESCO possesses more than 50 field offices worldwide, including regional offices for S&T in all continents.

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Initiatives on dealing with coping strategies for mountain biosphere reserves, is a follow-up on the Global Change in Mountain Regions (GLOCHAMORE) Initiative and has its main objectives to implement some of the research areas identified in the GLOCHAMORE Research Strategy (Mountain Research Initiative 2005). Among these are ecosystem functioning and services impacting on mountain biospheres and the livelihoods of mountain populations, and biodiversity, in particular biodiversity assessment and monitoring in the context of climate change.

The International Year of Biodiversity: Intended Objectives and Results¹

In the spring of 2008, the Executive Board of UNESCO recalled the UN General Assembly resolution 61/203 proclaiming 2010 as the International Year of Biodiversity (IYB). The UNESCO Secretariat organized a high-

level launch of the Year at UNESCO Headquarters in Paris on 21 and 22 January 2010. The event was attended by Heads of States, governments and their representatives, representatives of UNESCO Member States, high-level representatives of several UN specialized agencies, funds and programmes, and of the Multilateral Environmental Agreements and the non-governmental community.

The IYB launch was followed by a five-day UNESCO International Conference on Biodiversity Science and Policy, held at UNESCO Headquarters from 25 to 29 January 2010. As part of UNESCO's capacity- and awareness-building activities in support of IYB, a UNESCO IYB Travelling Exhibition in English and French was launched on 21 January 2010 at UNESCO Headquarters in Paris. It has travelled widely and at this time has been translated into at least four other languages. An electronic version of all of the Exhibition's panels is available on the UNESCO IYB website² as a resource tool on biodiversity for schools.

An International Conference on Biological and Cultural Diversity was held in Montreal from 8 to 11 June 2010. A plan for joint actions by UNESCO and CBD in the area of biological and cultural diversity was developed and subsequently adopted by the CBD COP 10 in Nagoya October 2010.

Several governments that are Member States to UNESCO undertook specific activities in support of the Year. UNESCO field offices were mobilized and engaged actively in IYB.

Several of these activities contributed to building capacity in communicating effectively on various issues and enhanced the capacity to understand the issues related to biodiversity and ecosystem services.

Box 2: A sample of UNESCO sponsored and supported activities during IYB 2010

1. UNESCO IYB Travelling Exhibition in English and French has travelled widely and has been translated into many languages. It has been at many international events related to biodiversity and environmental forums. An electronic version of all of the Exhibition's panels is available on the UNESCO IYB website <http://www.unep.org/iyb/>.
2. An International Conference on Biological and Cultural Diversity was held in Montreal from 8 to 11 June 2010 with more than

Box 2 continued

Box 2 continued

150 participants and led to a Conference Declaration. A plan for joint actions by UNESCO and CBD in the area of biological and cultural diversity was developed and subsequently adopted by the CBD COP 10 in Nagoya, October 2010.

3. Many governments launched activities like conferences and campaigns to highlight IYB and create awareness among youth and students.
4. UNESCO field offices actively participated in many activities besides initiating activities on their own.
5. The UNESCO Associated Schools Project network (ASPnet) was used to mobilize classrooms, schools and communities in the framework of IYB. Reported ASPnet IYB-related activities took place in Austria, Brazil, Costa Rica, Peru, Portugal and the United Kingdom. Further, several biosphere reserves under UNESCO's MAB Programme undertook activities in the context of IYB. Examples include the ASPnet flagship Blue Danube River Project for which a special IYB publication was prepared, or the Karst Biosphere Reserve in Slovenia, where the first congress for young researchers from elementary schools was organized. The French Federation of UNESCO Clubs coordinated an initiative on biodiversity learning and participation in schools, which led to the publication of a compendium presenting the various projects undertaken in 13 countries from various regions of the world.

Science-policy interface in biodiversity and IPBES³

On the occasion of the International Conference on Biodiversity Science and Governance, held at UNESCO Headquarters in January 2005, representatives of governments, the scientific community, NGOs and the international community at large adopted the Paris Declaration on Biodiversity. The Declaration called for a consultative process on the need for an International Mechanism on Scientific Expertise on Biodiversity (IMoSEB). In the same year, the Millennium Ecosystem Assessment (MA) was completed. Launched by the Secretary-General of the UN in 2001, the MA involved more than 1,300 experts from all disciplines and fields and representing more than 100 countries.

In 2007, it was decided that discussions on how to implement the recommendations of the IMoSEB consultations and further assessments of

ecosystem services in the framework of the MA follow-up process should be dealt with in a combined way in the context of consultations on the establishment of a possible Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Moreover, it was recommended that the United Nations Environment Programme (UNEP) should facilitate the organization of these consultations. This was fulfilled. Government representatives attending the third and final *ad hoc* intergovernmental and multistakeholder meeting on IPBES acknowledged the importance of biodiversity and ecosystem services in terrestrial, marine and coastal, and inland water habitats which, while critically important for sustainable development and current and future human well-being, particularly for poverty eradication, are currently experiencing significant loss. They also acknowledged that the science-policy interface on biodiversity and ecosystem services must be strengthened at all levels; the importance of ensuring the highest quality and independence of the science made available; equally that of enhancing cooperation with relevant UN bodies, and of building capacity to mainstream biodiversity and ecosystem services.

Finally, the government representatives concluded that an intergovernmental science-policy platform for biodiversity and ecosystem services should be established to strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development.

Focusing on government needs and based on priorities established by the IPBES Plenary, which will be the decision-making body of IPBES, government representatives proposed that the Platform should:

- respond to requests from governments, including those conveyed to it by multilateral environmental agreements related to biodiversity and ecosystem services as determined by their respective governing bodies.;
- identify and prioritize key scientific information needed for policy-makers at appropriate levels, and catalyse efforts to generate new knowledge through dialogue with key scientific organizations, policy-makers and funding organizations. These must be scientifically credible, independent and peer-reviewed, including identifying uncertainties, and there should be a clear transparent process for sharing and incorporating relevant data. The new Platform should maintain a catalogue of relevant assessments, identify the need for

regional and subregional assessments and help to catalyse support for subregional and national assessments, as appropriate;

- support policy formulation and implementation by identifying policy-relevant tools and methodologies, such as those arising from assessments, enabling decision-makers to gain access to those tools and methodologies, and where necessary promoting and catalysing their further development;
- prioritize *key capacity-building needs to improve the science-policy interface* at appropriate levels; provide and call for financial and other support for the highest priority needs;
- be established as an independent intergovernmental body administered by one or more existing UN organizations, agencies, funds or programmes. The IPBES Plenary should be open to participation by all Member States of the UN and regional economic integration organizations. Intergovernmental organizations and other relevant stakeholders should participate in the Plenary as observers, in accordance with the rules of procedure established by the Plenary. Through its rules of procedure, the Plenary should, in general, decide by consensus of government representatives.

It appears clearly that in light of the foreseen functions of IPBES, capacity-building will be a key ingredient of the Platform's success.

In terms of next steps, representatives of governments recommended that the sixty-fifth session of the UN General Assembly be invited to consider the conclusions of the third and final meeting on IPBES, and to take appropriate action for its establishment. The willingness of UNESCO's Member States to be institutionally associated with, and to support, IPBES was stated and reiterated on several occasions and was indeed recently taken note of by the UN General Assembly in its deliberations in relation to the Platform.

In the light of UNESCO's science mandate, as well as its long-standing and active role in relation to biodiversity and ecosystem services, representatives of governments participating in the IPBES consultations have identified UNESCO as a central player with regard to IPBES. Moreover, the Organization's multidisciplinary mandate, as well as its expertise in the area of capacity-building, would be vital assets in the effective implementation of the Platform's programme of work.

Some Considerations on IPCC, with Particular Reference to Capacity-building-related Issues

Following the attribution to the Intergovernmental Panel on Climate Change (IPCC) of the Nobel Peace Prize in 2007, an IPCC Scholarship Programme was setup with the aim to provide opportunities for participation of developing country young scientists in climate change research.

In a recent report by the Inter-Academy Panel (IAC) on the evaluation of the IPCC, capacity-building was referred to as an important area of focus for the IPCC in the future. Currently, although the IPCC does not have a mandate in capacity-building *per se, de facto*, through its scientific and technical work, for example, in the area of scenarios development, the Panel assists in building further capacity in the area of climate change research and assessments of related scientific knowledge.

The IAC report recognizes the significant and ever-since growing participation of developing country scientists in the IPCC reports. However, it also stresses that in light of its mandate, the IPCC can mainly encourage relevant competent organization to undertake efforts for building capacity in support of climate change research and assessments (IAC 2010). Lessons can be drawn from the IPCC experience: while in the case of IPBES, the Platform's mandate could and perhaps should encompass capacity-building, a challenge lies in finding a balance between the Platform's focused scientific work and its role as a catalyser and builder of capacity in the area of scientific assessments of biodiversity and ecosystem services.

The Role of UNESCO in Building Capacity in Priority Areas Related to Biodiversity and Biotechnology

Priority areas and issues in the field of biodiversity and bioconservation need to be identified bearing in mind the food, fuel and resource needs of especially rural communities. Much of these broad needs have been identified under the Gap Analysis submitted at the Second *ad hoc* intergovernmental and multi-stakeholder meeting on IPBES (UNEP 2009).

Biopolicies need to be revised, revisited and implemented, and in their formulation, all tiers of stakeholders need to be mobilized and involved, in particular, those who are dependent on the plant biodiversity for their livelihoods and daily needs. Realistic, affordable and accessible fuel alternatives need to be found for those dependent on forests for their fuel source. This remains a real challenge for scientists and governments alike as the impact of rural communities on forest ecosystems is *taxing these*

dwindling resources. The recent focus on biofuels as alternative fuel options, and monocultures for commercial gain are not without problems, among these, impact on food production, dead forest syndromes and the loss of biodiversity.

The issues of biosecurity and biocontrol have become a real global problem with increased mobility of people across national borders. In particular, small, insular systems like those found in small islands states whose ecosystems are particularly, vulnerable to invasive exotic plant and animal species and new pathogens brought in with these. The introduction of such invasive alien species has an economic cost (McNeely 2001) and directly affects food production and native biodiversity. A statement by the UNEP Executive Director indicated that in sub-Saharan Africa, the cost of one invasive alien species the *witchweed* alone is causing annual maize losses estimated at US\$7billion (BBC News Viewpoint 2010). The economic impact is an estimated US\$157 billion annually in the United States and up to US\$1.4 trillion annually worldwide (BBC News Viewpoint 2010). The importance of this global problem can be noted from the designation by the CBD of Invasive Alien Species as the theme for the International Day on Biological Diversity in 2009. It was proclaimed to be “one of the greatest threats to biodiversity, and to the ecological and economic well-being of society and the planet” (CBD 2009b); this alongside the impact of habitat loss and degradation (UNESCO 2010b; Rands *et al.*, 2010). Some of the challenges that many countries face are the application of appropriate mechanisms to control the transfer of live biological material, ornamental plants and other plant based material as well as animals, across borders, and effectively maintain the integrity of their biodiversity. Policy advice and capacity-building in appropriate related fields is required.

In developing strategies for the sustainable exploitation of biological resources the role of traditional practitioners and use of traditional medicinal plants needs to be taken into account. Development of and training in propagation technologies for traditional medicinal plants, methods of inventoring these plants and their protection and conservation equally in terms of intellectual property and the need to ensure benefits sharing should be addressed. Many of the aforementioned situations involve transboundary reserves and shared resources between adjacent states. UNESCO has a role to play in facilitating exchange and collaboration between the various parties involved to provide the best solutions and to reach commonly agreed strategies for management and conservation (Bawa *et al.* 2010).

With the advent of new technologies especially in the field of biotechnology, issues of containment and safe release of modified plants have become a matter of concern in many countries, in particular, the question of their potential impact on biodiversity. In this context, there is an urgent imperative to maintain reservoirs of the local animal and plant as well as microbial gene pools.

The Statement and Recommendations from the UNESCO International Year of Biodiversity Science Policy Conference (UNESCO Headquarters, Paris, 25-29 January 2010) included the following additional key elements from a capacity-building perspective (UNESCO in press):

- for taxonomy, business as usual is not an option in the face of the grand challenges, with the great majority of species remaining undiscovered, most countries and areas lacking comprehensive biodiversity inventories, and a critical lack of relevant expertise and capacities in most biodiversity rich countries. Scaling-up and sustaining taxonomy is an imperative;
- so that conservation biogeography knowledge can most effectively inform policy-makers on scales, dynamics, and uncertainty surrounding biodiversity impacts from climate change and other anthropogenic forces, it should be used as a basis for producing tools for policy guidance, and explicit communication and interaction between policy-makers, scientists, educators, practitioners and local stakeholders enhanced;
- on issues related to gender and biodiversity, national capacities should be further developed to facilitate the understanding of the importance of including gender issues in biodiversity initiatives.

We believe that this expert advice should be taken into account while pursuing further reflection on the capacity-building function of IPBES.

Capacity-building for Biodiversity and Biotechnology as an Insurance for Mainstreaming the Biodiversity Agenda into Development: A Contribution of UNESCO to IPBES

The importance of biodiversity in the context of the emerging IPBES and the aspiration for UNESCO to play a lead role on it, on the one hand; and the strong and unequivocal support of the international community as a whole – developing and developed nations altogether – for actions aimed at strengthening the science-policy interface, on the other hand, will be the basis for collaborative capacity-building proposals between UNESCO and

relevant partners in the area of biodiversity in general and in the context of IPBES in particular.

Through the support of the governments and civil society to the biodiversity agenda and the Organization's global mandate, currently-available expertise and on-going relevant programmes activities, UNESCO shall support the IPBES process and enhance the equitable participation in the Platform of experts from developing as well as all other regions of the world. It shall also contribute to ensuring a geographically, epistemologically, disciplinarily as well as gender balance, with a particular focus on Africa.

UNESCO's involvement in IPBES will provide a strengthened enabling intergovernmental framework for the Platform. It will enhance the scientific credibility of the process, as UNESCO is the specialized agency of the UN system in charge of science. In light of its mandate in the area of culture, UNESCO will ensure that evaluations under IPBES also take into account cultural services and the influence of human factors on biodiversity.

In the future, an important resolution will be to determine what should be the scope of the capacity-building element of IPBES. Currently, capacity-building in the context of IPBES is seen as addressing the following functions: capacities for the engagement of knowledge holders and scientists; capacities to access, generate, use and disseminate information and knowledge; capacities for planning and policy; capacities for management and implementation; and capacities to monitor and evaluate.

In UNESCO's experience, the two main approaches pursued in the area of capacity-building (direct assistance vs. contributions to country-led strategies and programmes and strategies – UNEP 2010b) are not mutually exclusive. While the tendency may be towards country-led strategies and programmes, there are situations in which direct assistance is still required, namely, in the form of studies on the feasibility of planned interventions. Capacity-building is crucial for the purpose of effectively implementing not only development processes but also other processes, for example, the process of S&T development. In fact, there are capacity-building activities that precisely aim at filling the disconnect between 'science and tools development and the uptake of scientific findings in policy and implementation' (UNEP 2010b). One specific example is the area of planning and, more specifically, UNESCO-MAB and IOC's Programme in Marine Spatial Planning and relevant activities in relation to landscape-level planning.

At this stage, it is premature to assume what the focus of a capacity-building element of IPBES will be. As a description of capacity-building for the purpose of IPBES cannot be derived from what has been discussed thus far, it appears that a full-fledged discussion on capacity-building will be required to take place at the first IPBES Plenary. There is a need to maximize synergies between IPBES, the CBD and other processes in this area.

The discussions on which, if any, of the above-mentioned functions will be retained as part of a possible capacity-building element of IPBES are still open; therefore, this proposal should not prejudice the deliberations at the first IPBES Plenary meeting. Regardless, UNESCO, as the specialized agency of the UN in charge of science, education as well as culture, and as one of the proposed co-sponsors of IPBES, is best positioned to help with IPBES' capacity-building component, in particular, and in IPBES as a whole.

Endnotes

- ¹ This section of the paper relies on the report of the Director-General of UNESCO to the 185th session of the Executive Board of UNESCO on the Board's decision on UNESCO's participation in IYB (UNESCO, 2010c).
- ² <http://www.unep.org/iyb/>.
- ³ This section of the paper relies heavily on the Report of the third ad hoc intergovernmental and multi-stakeholder meeting on an intergovernmental science-policy platform on biodiversity and ecosystem services (UNEP 2010a) as summarized in a document entitled 'UNESCO and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)' (UNESCO, 2010d).

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