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**Plenary meeting to determine modalities and institutional arrangements for an intergovernmental science-policy platform on biodiversity and ecosystem services
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**Consideration of the modalities and institutional arrangements for an intergovernmental science-policy platform on biodiversity and ecosystem services:
work programme of the platform**

Options for implementing the policy support function of the intergovernmental science-policy platform on biodiversity and ecosystem services

Note by the secretariat

The annex to the present note sets out a report by the secretariat on options for implementing the policy support function of the intergovernmental science-policy platform on biodiversity and ecosystem services. The report is presented in the annex in English only and, apart from the executive summary, without formal editing. The executive summary, in the six official languages of the United Nations, is presented in document UNEP/IPBES.MI/1/INF/. The report has been produced by the secretariat in collaboration with the United Nations Educational, Scientific and Cultural Organization, the United Nations Development Programme, the United Nations Environment Programme World Conservation Monitoring Centre and the Food and Agriculture Organization of the United Nations.

* UNEP/IPBES.MI/1/1.

Options for implementing the policy support function of the intergovernmental science-policy platform on biodiversity and ecosystem services

Executive summary

1. A range of international processes, initiatives and approaches exist with the aim of supporting policymaking and policy implementation in respect of biodiversity and ecosystem services. One possible categorization of such efforts could be as follows:

- (a) Assessments;
- (b) Models, scenarios and other forecasting techniques;
- (c) Risk analyses, cost benefit analyses and valuation and accounting methods;
- (d) Indicators;
- (e) Information sharing, networking, mapping and knowledge platforms.

2. Despite such efforts, a number of gaps remain in the advancement of policies relating to biodiversity and ecosystem services. The most critical areas that need to be addressed by renewed policy formulation and implementation efforts for biodiversity and ecosystem services are outlined in the Strategic Plan for Biodiversity 2011–2020, including its Aichi Biodiversity Targets, and the Millennium Development Goals. There is in particular a need to demonstrate the role of ecosystem services in enhancing human well-being as it relates to health, material needs, social relations and security.

3. There are a number of options for the policy support element of the work programme of the intergovernmental science-policy platform on biodiversity and ecosystem services. It could include work on a broad range of policy supportive tools and methodologies or it could focus on a narrower range of measures. If the narrower approach is chosen some possible areas of focus might be:

- (a) New and emerging tools or tools that are particularly suitable for wider replication;
- (b) Conceptual frameworks, economic instruments and knowledge-based policy support tools such as focused synthesis reports from assessments;
- (c) Indicators, quantitative models, monitoring systems, scenarios and indicators that can help advance understanding of the relevance of biodiversity and ecosystem services to current and future human wellbeing.

4. A useful first step might be for the platform to identify and initiate an assessment of the range of existing policy-relevant tools and methodologies as a basis for determining the scope of the policy support function of the platform.

5. There are a number of options for implementing the policy support function of the platform. For example, depending on the scope of work, the function could be performed, with the support of the secretariat and through partnerships, directly by the plenary or, alternatively, by a separate policy support working group and/or ad-hoc expert groups established by the plenary.

6. The policy support functions may benefit from being designed in a way that is mutually supportive of the knowledge generation, assessment and capacity-building functions of the platform. For example:

- (a) The identification of policy-relevant tools and methodologies could be incorporated into the platform's global and sub-global assessments to identify and assess the availability and effectiveness of current and emerging policy-relevant tools and methodologies, as well as how easily they can be replicated;
- (b) Ad-hoc expert groups, the secretariat or both could promote and catalyse the further development of the identified policy-relevant tools and methodologies, perhaps working with existing groups of tool developers. The plenary could also outsource tool and methodology development by issuing general or targeted invitations to donors, partners and other institutions;
- (c) Decision maker access to identified policy-relevant tools and methodologies could be facilitated by assigning an existing knowledge management platform or the secretariat with the development of a knowledge management platform for all functions of the intergovernmental science-policy platform on biodiversity and ecosystem services.

7. The plenary may also wish to give attention to the modalities for how the policy support element of the programme of work might relate to other bodies of relevance, in particular the scientific and technical bodies of conventions of relevance to biodiversity and ecosystem services.

I. Introduction

8. The Busan outcome states that IPBES: ‘should support policy formulation and implementation by identifying policy-relevant tools and methodologies, such as those arising from assessments, to enable decision makers to gain access to those tools and methodologies, and, where necessary, to promote and catalyze their further development.’ The current paper provides some background information and some considerations of how IPBES could perform the task set out in the Busan outcome.

9. Biodiversity policies and efforts for mainstreaming of biodiversity into sectoral policies and strategies have not addressed the underlying drivers of biodiversity loss adequately. Lack of mainstreaming is due to the inherent inertia towards cooperation across the institutional silos of a sectionalized society, the complexity and fragmentation of environmental institutions, weak national institutional capacities, the failure of political processes and markets to understand the value of ecosystem services, and the demanding trade-offs between different interests and concerns in society.

10. However, new opportunities for enhanced biodiversity and ecosystem services policies and mainstreaming are emerging. The toolbox of policy-relevant tools and methodologies for identifying win-win situations and informed trade-offs is constantly evolving. Increasingly, the world is coming to grips with an understanding of how biodiversity contributes to human wellbeing through ecosystem services - as it relates to health, material needs, social relations and security –intra- and inter-generationally. IPBES can play a key role in advancing this toolbox, help with making it available to policymakers, and facilitate ways of enhancing their capacity to utilize the tools it contains. IPBES can also help with furthering cooperation across sectors, and capitalize on ongoing initiatives where the “one UN” initiative is but one example.

11. Furthermore, IPBES can capitalize on the developments in the area of information and communication technologies, knowledge management, social and biological science, monitoring, modeling and forecasting which are improving the ability of society at all levels to identify risks associated with biodiversity loss and opportunities provided by ecosystem services.

12. A number of previous IPBES documents provide relevant information to the establishment of a structure and work programme which can advance the policy support function of IPBES as it relates to policy-relevant tools and methodologies. The current note brings out some of the key salient point of these documents. In particular the information presented in part 2 and 3 below includes many excerpts from the IPBES Gap Analysis, presented to the second ad hoc intergovernmental and multi-stakeholder meeting on IPBES in Nairobi, October 20091 .

A. Overview of ongoing activities and categories of policy support relevant to IPBES

13. At present, there are a number of international processes and initiatives in place aimed at supporting policy making and implementation. The institutional landscape is constantly evolving through formulation of strategies, policies and plans and the development and use of legal, regulatory and economic instruments (see table 1).

Command-and-control Regulations	Direct provision by Governments	Engaging the public and the private sectors	Using markets	Creating markets
Standards Bans Permits and quotas Zoning Liability Legal redress	Environmental infrastructure Eco-industrial zones or parks National parks, protected areas and recreation facilities	Public participation Decentralization Information disclosure Eco-labelling Voluntary	Removing perverse subsidies Environmental taxes and charges User charges Deposit-refund systems Targeted subsidies	Property rights Tradeable permits and rights Offset programmes Green procurement Environmental investment funds Seed funds and

1 UNEP/IPBES/2/INF/1.

2 From table 10.1 of the Fourth Global Environment Outlook (GEO4), UNEP, 2007.

Flexible regulation	Ecosystem rehabilitation	agreements Public-private partnerships	Self-monitoring (such as ISO 14000)	incentives Payment for ecosystem services
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14. One of the main messages emerging from the experiences gained over the last few decades is that no single policy instrument or group of policy instruments will work alone. A combination of regulatory, economic and information instruments has often been shown to be the most effective approach. This calls for regular reviews of international, national and local integrated strategic approaches. An important contribution of IPBES could be to keep under review, draw upon and synthesize lessons learned from existing work. IPBES, as intergovernmental platform, will be well placed to help raise awareness of policy makers about the wide range of policy tools and methodologies available to address biodiversity conservation and sustainable use and opportunities to combine them to achieve maximum social, economic and environmental benefits.

15. IPBES may want to pay special attention to how the understanding of the relationship between biodiversity and human well being can be advanced, such as through the further evolution of conceptual approaches. In doing so it may want to build on the conceptual frameworks of the Millennium Ecosystem Assessment, and the Global Environment Outlook, which both have a strong Human Well-being focus and strive towards developing a framework which is:

- (a) Universally applicable (to various scales in time and space and across different science and policy processes);
- (b) Built on and able to integrate existing concepts, perspectives and approaches so that it reflects current biodiversity challenges and the linkages among them;
- (c) Able to integrate human (social and economic) and biodiversity and ecosystem services considerations and reflect their contribution to development in an objective, value- and ideology-neutral manner;
- (d) Policy-relevant and intuitively easy to grasp and communicate, while at the same time being scientifically relevant and able to support and aggregate complex information about dynamics society-environment interactions.

16. In performing its work IPBES may want to pay particular attention the fact that parties to the CBD have now embarked on the development of national and regional targets, using the 2011-2020 Strategic Plan and its Aichi targets as a flexible framework. Efforts also include the review, revision and update of **the national biodiversity strategies and action plans (NBSAPs)** in line with the Strategic Plan as a means of integrating biodiversity targets into national development and poverty reduction policies and strategies, national accounting, as appropriate, economic sectors and spatial planning processes, by Government and the private sector at all levels.

17. A prime vehicle for addressing biodiversity loss is the obligation under the CBD to develop **national biodiversity strategies and action plans (NBSAPs)**, and equivalent plans under other conventions and intergovernmental processes. These strategies can be used as processes for addressing international commitments, safeguarding the national natural capital, bringing different policy sectors and stakeholders together, identifying opportunities for synergies with other plans and policies, and setting out the directions for further development of national measures such as legislation, economic instruments and technological innovation.

18. IPBES may also want to see its work in the wider context of integrating biodiversity into the broader national planning processes. Environmental sustainability is, for example, one of the five principles that guide the development of United Nations Development Assistance Frameworks (UNDAFs) by UN Country Teams (UNCTs). Consequently, and responding to demands from UNCTs, a Task Team under UN Development Group (UNDG) co-chaired by UNDP and UNEP in 2009 prepared a Guidance Note on Mainstreaming Environmental Sustainability into Country Assessments and the UNDAF. A complementing Guidance Note on Integrating Climate Change Concerns in Country Assessments and the UNDAF has been finalized in 2010. The purpose of these guidance notes is to enable UNCTs to help countries identify their needs in the field of climate change and environment and to reflect countries' priorities in these areas in the overall assistance of the UN.

19. Sector integration of conservation and sustainable use of biodiversity and ecosystem services also involve a range of tools and methodologies. These may be specific to the sectors in question such as for food and agriculture, fisheries, forestry, health, trade, transport, energy and culture. A wide range of such tools and approaches are relevant for sustainable intensification of crop production,

increased sustainable livestock production, sustainable management and use of fisheries and aquaculture resources and sustainable management of forests and trees.

20. Overarching efforts on biodiversity and ecosystem services can also be supported through initiatives aimed at bridging traditionally separated policy domains. A prime example of such efforts is the Poverty-Environment Initiative (PEI) jointly managed by the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). The PEI is a global UN programme that helps countries to integrate poverty-environment linkages into national and sub-national development planning, from policymaking to budgeting, implementation and monitoring. A resource developed under the guidance of the Facility is the handbook “Mainstreaming poverty-environment linkages into national development planning: a handbook for practitioners”.³

21. Given their technical nature IPBES may want to pay particular attention to the compartment of the toolbox which contain economic instruments (see also table 2). The analysis presented by The Economics of Ecosystems and Biodiversity (TEEB) highlights existing and emerging the following solutions suitable for wider replication:

- (a) Rewarding benefits through payments and markets;
- (b) Reforming environmentally harmful subsidies;
- (c) Addressing losses through regulation and pricing;
- (d) Adding value through protected areas;
- (e) Investing in ecological infrastructure.

22. IPBES may finally want to pay particular attention also to the compartment of the toolbox which contains knowledge-based policy support tools and methodologies. These have evolved over the years due to efforts by many epistemic communities and institutions and tend to focus on the science side of the science-policy interface. The tools can be grouped or categorizes in several ways, but a clear cut categorization is often difficult as many tools are hybrids between different categories of methodologies. The categories described below are therefore not meant as a classification of tools, but more an attempt to present the wide array of available knowledge based policy support tools and methodologies in a somewhat orderly manner.

1. Assessments

23. Assessments can take many forms and shapes and are broadly speaking a practice through which science is brought to bear on the decision making process through a process of two-way interaction between the scientific and policy communities. Assessments are often categorized according to their scope, scale and process. The influence of an assessment is dependant both on the relevance of its findings and the scientific credibility and political legitimacy of its process. Manuals, guidelines, standards and legislation have been developed for such tools and methodologies which include the following commonly used approaches:

(a) *Environmental impacts assessments (EIA)* are processes of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals or projects prior to major decisions being taken and commitments are made. Many countries have put in place EIA legislation, they are covered by several international treaties and the International Organization for Standardization (ISO) Standard 14011 covers EIA and includes key steps for carrying out the assessment;

(b) *Strategic environmental assessment (SEA)* is a systematic approach to incorporating environmental considerations into policies, plans, and programmes. SEA comprises two main types: sectoral SEA (applied when many new projects fall within one sector) and regional SEA (applied when broad **economic development** is planned within one **region**). SEAs are conducted at a higher level decision-making than an EIA and before more specific EIAs are undertaken. Information on the environmental impact of a plan can flow downwards through the tiers of decision making and be used in an EIA at a later stage. Some countries and regions have SEA legislation in place;

(c) *Rapid environmental assessments* are carried out immediately after a disaster or conflict in order to assess the extent of damage to ecosystems and the environment and to identify urgent environmental risks. The aim is to ensure that the environment is fully integrated in the subsequent reconstruction and development agenda. Such assessments are often undertaken with support from the international community;

(d) *Integrated environmental assessments* are interdisciplinary and social processes, aimed at identification, analysis and appraisal of all relevant natural and human processes and their interactions which determine both the current and future state of environmental quality, and resources, on appropriate spatial and temporal scales, thus facilitating the framing and implementation of policies and strategies. Such assessments are applied to complex systems such as a region, a nation or an ecosystem, including trans-boundary ecosystems;

(e) *International scientific ecosystem assessments* have evolved over the past decades and are characterized by deliberately designed and formalized international processes of interaction between scientific expertise and policymakers, with the view to ensure scientific credibility, relevance and political legitimacy. Key features are careful scoping processes, selection of experts based on merits, in-depth scientific and government peer review and procedures for endorsement and acceptance of assessment findings.

24. Recent global assessments of biodiversity and ecosystem services have all assessed policy relevant tools and methodologies in their response sections. Findings to this effect can be found in amongst others the Millennium Ecosystem Assessment (MA), the 4th Global Environment Outlook (GEO4), the IPCC 4th assessment report (AR4), the International Assessment of Agricultural Science and Technology for Development (IAASTD), the Assessment of Assessments of the Regular Process for the Global Reporting and Assessment of the Marine Environment (AoA), the Comprehensive Assessment of Water Management in Agriculture (CAWMA), the 3rd Global Biodiversity Outlook (GBO3), the 2010 Forest Resources Assessment (FRA), the State of the World Fisheries, the State of the World Genetic Resources for Food and Agriculture, the Global International Waters Assessment (GIWA), and the global Assessment of Peatlands, Biodiversity and Climate Change.

25. Ongoing initiatives, such as the follow-up processes to the MA in general and the publication of the MA methodology manual⁴ in particular, have focused on the development of tools and mechanisms that facilitate the interpretation of scientific findings in terms of their significance for policy. Similar sub-global activities are being developed under the GEO process with reports being produced at national, city, regional, sub-regional level supported by the "Training manual on IEA-GEO"⁵. These initiatives also often focus on making policy relevant tools and methodologies, including assessment available at sub-global levels of governance i.e. at local, national and regional level.

26. Such initiatives also include efforts to provide knowledge and advice on how best to mainstream biodiversity issues into other sectors. A prime example is The Economics of Ecosystems and Biodiversity (TEEB) study. The reports have been released, but TEEB is also engaged in working with countries wishing to initiate TEEB studies of their own natural capital, and with the business sector. The range of communications activities and outreach events underway includes the Bank of Natural Capital, a website designed to communicate the TEEB Study findings to citizens⁶.

2. Models scenarios, and other forecasting techniques

27. Models, scenarios and other forecasting techniques are often used as a basis for assessments, but can also be applied independently in support of policy-making (see for instance Chapter 6 of the IEA-GEO Manual: Scenario development and analysis⁷). Models are essentially a simplified representation of how a system works, developed so as to improve understanding of the system itself, and to aid understanding of how different factors affect the behaviour of the system.

28. A wide range of processes, actors, organisations, networks and products are currently involved in assessing biodiversity impacts using models and scenarios. These range from response to the ad hoc requests of specific assessment processes, to models developed by groups of organizations (e.g. InVEST by the University of Stanford and others; GLOBIO developed by the Netherlands Environmental Assessment Agency, UNEP-WCMC and GRID Arendal). One of the most widely used models of biodiversity in the science-policy interface is GLOBIO, which is based on response relationships between species abundance and five anthropogenic pressures.

29. Scenarios are plausible and often simplified descriptions of how the future may develop, based on a coherent and internally consistent set of assumptions about key driving forces and relationships, typically developed through the joint involvement of decision-makers and scientific experts. Scenarios are used as a means of presenting anticipated outcomes of different types of policy action so as to

4 www.unep-wcmc.org/ecosystems-and-human-wellbeing_553.html

5 www.unep.org/IEACP/iea/training/manual/

6 <http://bankofnaturalcapital.com>

7 www.unep.org/IEACP/iea/training/manual/

assist policy-makers in making choices, or at least helping them to understanding the potential implications of different decisions. Scenarios are informed by scientific research and opinion, and are increasingly used as a means of presenting the outcomes of research meaningfully. They do not attempt to predict the future but instead are designed to indicate what science can and cannot say about the future consequences of alternative plausible choices that might be taken in the coming years. They help to address uncertainty in complex systems.

30. Scenarios may be classified into three different types⁸, which can be characterised as:

- (a) baseline trend scenarios (predictive scenarios), which assume that current trends will continue in the future, and may include policy variants based on near-future decision alternatives;
- (b) normative scenarios (pathway or vision scenarios), which describe a desirable future or set a specific goal for the future and explore possible ways to reach that goal; and
- (c) explorative scenarios (forecasting or descriptive scenarios), which work the other way around, and are created to forecast the effect of specified measures (policies) on future development and conditions.

31. In addition there are a growing number of other forecasting techniques and initiatives aimed at exploring the likely significance and relevance of emerging issues relating to biodiversity and ecosystem services. Important tools of science-policy interfaces for dealing with emerging issues of concern are horizon scanning processes⁹, which involve the systematic examination of potential threats, opportunities and likely future developments which are at the margins of current thinking and planning (potentially including the use of scenarios), and futures techniques, by which the results of horizon scanning exercises are further explored.

3. Risk analysis, cost benefit analysis and valuation and accounting methods

32. A number of tools have been developed aimed at identifying risks, risk management and valuation techniques and accounting tools. For example, a System of Economic Environmental Accounting (SEEA) has been developed, covering land, water, environmental expenditures and social issues in monetary and physical terms, and adopted by some countries. However, an upgrade of the UN SEEA manual (2003) is urgently needed to catalyze progress on measurement and incorporate ecosystem services into national accounts. An SEEA for Water was however updated in 2010¹⁰.

33. The Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services (WAVES) is working towards integrating the economic value of ecosystems into national income accounts as a means to communicating its importance to Ministries of Finance, planning agencies, and other key decision-makers. The Partnership is the World Bank's response to the call to action by the MA which identified the systemic under-valuation of ecosystem services as one of the main causes of ecosystem degradation and biodiversity loss. The Bank is working in collaboration with the United Nations Environment Program, selected countries, and other national and international organizations and NGOs. The initiative will build on related projects such as TEEB, the Poverty-Environment Initiative, and the Interim Reduced Emissions from Deforestation and Forest Degradation Partnership as well as other programs supporting ecosystem-based adaptation. The initiative will also build working linkages with UNEP's Green Economy Initiative.

34. A recent report BSR's Ecosystem Services, Tools & Markets Working Group¹¹ includes a comparative test among 7 different tools for identifying, assessing, and valuing Ecosystem Services. The test has been undertaken together with tool developers and partners such as the U.S. Bureau of Land Management and the U.S. Geological Survey. An excerpt of the description in the report of these tools is presented in table 2. The tools combine web-based features, models and scenarios. However, none of the tools readily mesh with key existing corporate processes and thus do not appear to be ready for immediate, widespread, off-the-shelf business application without considerable effort and cost. Looking forward, the report concludes that ecosystem services concepts and tools will continue to mature, though the arena will likely become crowded and confusing as new tools are developed. At the same time, policy initiatives and stakeholder pressure to consider ecosystem services impacts are growing.

8 Börjeson, L. *et al.* 2006. Scenario types and techniques – towards a user's guide. *Futures* 34, 723-739.

9 See for example <http://horizonscanning.defra.gov.uk/>

10 see <http://unstats.un.org/unsd/envaccounting/seeaw.asp>

11 See www.bsr.org/en/our-work/working-groups/ecosystem-services-tools-markets.

Table 2. Selection of ecosystem service tools¹²

Tool	Description	Developers and websites
ARIES (AR tificial I ntelligence for Ecosystem Services)	“ARIES is a web-based technology offered to users worldwide to assist rapid ecosystem service assessment and valuation. Its purpose is to make environmental decisions easier and more effective. ARIES helps discover, understand, and quantify environmental assets and what factors influence their values, in a geographical area and according to needs and priorities set by its users. ARIES can accommodate a range of different use scenarios, including spatial assessments and economic valuations of ecosystem services, optimization of payment schemes for ecosystem services, and spatial policy planning.”	University of Vermont’s Gund Institute and Ecoinformatics Collaboratory (United States) Basque Centre for Climate Change (Spain) Conservation International (United States) Earth Economics (United States) Instituto de Ecologia (Mexico) www.ariesonline.org/
InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs)	“InVEST is designed to help local, regional, and national decision-makers incorporate ecosystem services into a range of policy and planning contexts for terrestrial, freshwater, and marine ecosystems, including spatial planning, strategic environmental assessments, and environmental impact assessments. InVEST models are based on production functions that define how an ecosystem’s structure and function affect the flows and values of ecosystem services. The models account for both service supply (e.g., living habitats as buffers for storm waves) and the location and activities of people who benefit from services e.g., location of people and infrastructure potentially affected by coastal storms). Since data are often scarce, the first version of InVEST offers relatively simple models with few input requirements. These models are best suited for identifying patterns in the provision and value of ecosystem services. With validation, these models can also provide useful estimates of the magnitude and value of services provided.”	The Natural Capital Project, including: Stanford University (United States) University of Minnesota WWF (World Wildlife Fund) The Nature Conservancy www.naturalcapitalproject.org/
EcoAIM (Ecological Asset Inventory and Management)	A new tool “to (1) inventory ecological services and help in making decisions regarding development, transactions, and ecological restoration; (2) develop specific estimates of ecosystem services in a geographically relevant context, and (3) offer the means for evaluating tradeoffs of ecosystem services resulting from different land or resource management decisions.”	Exponent http://conference.ifas.ufl.edu/aces/Presentations/Wednesday/Coyote-B-E/PM/Yes/0135%20P%20Booth.pdf
EcoMetrix	“An environmental measurement and modeling tool that supports sustainable infrastructure, restoration projects, and enterprise-level program decision-making. EcoMetrix models and quantifies changes within an ecosystem, enabling users to evaluate the positive or negative effects of different scenarios and alternative designs on ecosystem services.”	Parametrix www.parametrix.com/cap/nat/_ecosystems_ecometrix.html
ESR (Ecosystem Services Review)	“A structured methodology for corporate managers to proactively develop strategies for managing business risks and opportunities arising from their company’s dependence and impact on ecosystems.”	World Resources Institute (WRI) Meridian Institute World Business Council on Sustainable Development (WBCSD) www.wri.org/project/ecosystem-services-review
ESValue	“A strategic decision support tool that integrates scientific and economic information to show the impact and value of alternative environmental management strategies on ecosystem services. The objective of the tool is to integrate existing information and expert opinion with stakeholder values to efficiently and effectively identify the key site-specific ecological effects and resulting change in economic value for different management strategies.”	Cardno ENTRIX www.entrix.com/

¹² The information in this table is drawn from the report “New Business Decision-Making Aids in an Era of Complexity, Scrutiny, and Uncertainty Tools for Identifying, Assessing, and Valuing Ecosystem Services” prepared by BSR’s Ecosystem Services, Tools & Markets Working Group, May 2011. The report includes a comparative test among tools developed in cooperation with tool developers and the U.S. Bureau of Land Management (BLM) and the U.S. Geological Survey (USGS).

4. Indicators

35. Indicators are increasingly being used to inform policy processes, whether as part of assessment processes, or independently. Their use is closely related to the increased use of quantitative targets in setting policy, and the use of indicators to assess progress in meeting those targets, as well as more widely in communicating biodiversity and ecosystem services concerns through the media.

36. Many of the international policy processes have established strategic plans and work programmes with targets relating to biodiversity, and these require appropriate indicators to track progress in their achievement. The Strategic Plan for Biodiversity, including the Aichi Biodiversity Targets, for the 2011-2020 period will also serve as the overarching framework for further indicator work the Ad Hoc Technical Expert Group (AHTEG) on Indicators for Strategic Plan. A recent report by UNEP-WCMC with IUCN and ECNC, commissioned by UK Defra in support of the CBD AHTEG on Indicators for the Strategic Plan reviews the experience and constraints for the development of indicators for the previous CBD Strategic Plan (2002-2010) at national and regional levels, and provides recommendations for assessment and reporting of the Aichi Targets for 2020 agreed at CBD COP10.13

37. Particularly noteworthy are the efforts made in the context of assessing progress in achieving the CBD target of significant reduction in the rate of biodiversity loss by 2010. Following an Ad hoc Technical Expert Group, CBD COP called on UNEP-WCMC to support the CBD Secretariat in reporting on progress, and this led to the formation of the 2010 Biodiversity Indicators Partnership.14

38. The 2010 Biodiversity Indicators Partnership is a collaboration between the many organizations and agencies developing global biodiversity indicators. Funded in part by the GEF and in part by the organizations and agencies themselves, the objectives of the partnership are to facilitate and promote: generation of information on biodiversity trends which is useful to decision makers; improved global biodiversity indicators; better links with biodiversity initiatives at the regional and national levels to enable capacity building and improve the delivery of the biodiversity indicators. The BIP Secretariat has lately provided guidance on the development and use of indicators in national target setting and NBSAP enhancement.

39. There are also many processes for developing indicators at the regional level. This includes efforts under the European Environment Agency and the "Latin American and Caribbean Initiative for Sustainable Development" (ILAC), created in 2002 by the LAC Forum of Ministers of the Environment. ILAC has 6 thematic areas, biodiversity being one of them. Each thematic area has associated a set of core indicators that enable measuring progress towards the established goal.

40. Indicators can relate to different stages in the interaction between ecosystems and people, and can also be applied at a range of scales. Indicators of ecosystem change can include landscape indicators and taxon-specific ones. Monitoring related to such indicators forms a way to utilize citizen-science knowledge (monitoring schemes based on volunteers' efforts). Such approaches may also serve as an effective avenue for informing the public and facilitate on the ground adaptive management of ecosystems.

5. Information sharing, networking, mapping and knowledge platforms

41. The rapid development in information and communication technologies offers opportunities for the development of web-based knowledge platforms. The evolution of semantically-aware search engines will increasingly make it possible to combine and compare data from different sources. This will make it easier to aggregate data through virtual, dynamic, system-based and interactive platforms which process and analyse data and information, and cultivate and facilitate dialogue among policy makers and experts. Such tools would as referred to above also give decision-makers easy access to assessment findings, technical briefs, tools and best practices. Geo-referenced information can be presented in the form of interactive maps which can be a form of model output used to visually present the results of intended or current policies in terms of biodiversity protection to decision makers.

42. An example of tools already being developed which IPBES could build on is the Climate Change Knowledge Portal¹⁵ developed by the World Bank. This is a multi-partner effort to:

(a) Provide a common platform to quickly access, synthesize and analyze good quality climate and climate-related information;

13 www.bipindicators.net/LinkClick.aspx?fileticket=2SmbtuLEOgM%3d&tabid=224

14 See www.bipindicators.net

15 <http://sdwebx.worldbank.org/climateportal/>

- (b) Support the integration of climate change adaptation into development activities;
- (c) Screen for climate-related vulnerability at local, national and regional levels.

43. A tool which assists governments in addressing their commitments is the TEMATEA16 which is frequently cited as a policy support tool in CBD and other decisions. This web-based tool groups commitments across MEAs in accordance with issue based modules as well as a cross-modular functional approach. A more recent initiative is InforMEA17. Yet another tool which also includes information on national law is the ECOLEX database, which provides the most comprehensive, global source of information on environmental law. ECOLEX is operated jointly by FAO, IUCN and UNEP. Such platforms however need to be supported by networks of information providers which also are prepared to ensure the quality of information available. Furthermore, such platforms may need to be supported also through training. The platforms can also greatly benefit from experiences gained in such training sessions in terms of their further evolution.

B. Remaining gaps and needs

44. The gap analysis presented to the second ad hoc intergovernmental and multi-stakeholder meeting on IPBES in October 2009¹⁸ found that a wide range of science-policy interfaces of varying types, sizes and purposes already exist for the many multilateral environmental agreements and other bodies relating to biodiversity and ecosystem services at all levels. Between them they have, to a certain extent, enriched decision-making and raised awareness of biodiversity and ecosystem services among the environmental community. However, decisions taken are not necessarily informed by the best available knowledge because:

- (a) Knowledge is often not presented in the form of clear policy alternatives that systematically outline the implications of policy options under detailed framing assumptions and provide better guidance in policy implications;
- (b) There is far more focus on identifying issues and formulating policies with regard to multilateral environmental agreements at the global level than on supporting policy implementation and policy evaluation, particularly at the national and local levels of governance;
- (c) Integrated quantitative models, scenarios and indicators that will aid understanding of not only biodiversity and ecosystem services, but also the relevance of biodiversity and ecosystem services to human well-being are still not fully developed;
- (d) No regular periodic multi-level assessment process exists that provides the conceptual and institutional framework which coherently gathers, reviews, synthesizes, communicates and monitors information and tracks changes in biodiversity and ecosystem services and their consequences for human well-being at the global, regional and national levels and on the interrelation across these levels.

45. There is as demonstrated in part 2 above an array of policy-relevant tools and methodologies which are available to decision-makers tasked with protecting biodiversity and ecosystem services. These tools are constantly evolving. Tools which may be evolving in one domain may if they are successful be mimicked in other areas. IPBES is in itself an example of such mimicry which at least in some aspects can be said to be inspired by the role the Intergovernmental panel on Climate Change (IPCC) is playing in the advancement of the global warming agenda. Tools and methods are constantly improved amongst others through widened application and customization to local social and ecological conditions.

46. The escalating loss of biodiversity and degradation ecosystem services is in itself creating a demand for innovation and more effective tools and methodologies. Tools and methodologies are in particular needed in order to:

- (a) Identify the value of biodiversity, raise awareness of such values, integrate them into national and local development and poverty reduction strategies and planning processes, and incorporated them into national accounting and reporting systems (target 1 and 2);
- (b) Develop incentives for conservation and sustainable use of biodiversity and remove or reduce harmful incentives, including subsidies and establish processes for keeping production and consumption within ecological limits (target 3 and 4);

16 <http://www.tematea.org/>

17 <http://informea.org/>

18 UNEP/IPBES/2/INF/1.

(c) Advance sustainable agriculture, forestry, and fisheries, halt the loss and degradation of natural habitats such as forests and coral reefs, bring pollution, including from excess nutrients to levels that are not detrimental to ecosystem function and control invasive alien species and their pathways (target 5, 6, 7, 8, and 9);

(d) Establish, connect and manage protected areas, prevent extinction of known threatened species and improve their conservation status, and maintain genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species (target 11, 12 and 13);

(e) Restore and safeguard ecosystems that provide essential services, including services related to water, carbon stocks, climate change mitigation and adaptation and combating desertification, and those contributing to health, livelihoods and well-being, and advance the fair and equitable sharing of benefits arising from their utilization;

(f) Implement effective, participatory and updated national biodiversity strategy and action plan, respect the traditional knowledge, innovations and practices of indigenous and local communities, improve and share knowledge, science and technologies relating to biodiversity, and mobilize financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 (target 17, 18, 19 and 20).

47. IPBES will need to consider how it best can play its envisaged role in a policy field crowded with actors at all levels. These actors are organically interacting in nested processes which incrementally evolve the available response measures for the protection of biodiversity and ecosystem services. Science, and in particular social sciences, can help address the need for tools and methodologies for multi-sectoral cooperation at all scales and across scales. Similarly, there is a need for tools and methodologies which present policy alternatives and policy-mixes supported by considerations of the assumptions and implications of such options.

48. There is in particular a need to demonstrate how ecosystem services can contribute to development and poverty alleviation and how loss of biodiversity represents a risk to society, especially for the poor and vulnerable. Science can help develop more integrated quantitative models, monitoring systems, scenarios and indicators that will aid understanding of not only biodiversity and ecosystem services, but also the relevance of biodiversity and ecosystem services to human wellbeing.

49. Finally, IPBES may also need to consider how it can contribute to the innovation and up-take of new tools and methodologies as well as to existing ones which are particularly suitable for wider replication and or up-scaling.

C. Potential options for implementing the policy support function of IPBES

50. Most international environmental assessments cover response measures in their scope which include assessment of policy-relevant tools and methodologies. In addition resources such as guidebooks, manuals, training courses and best practice kits have been developed to promote specific tools and methodologies. Increasingly, such resources are available on web-based platforms.

51. The policy support tasks of IPBES as identified in the Busan outcome include the following main tasks:

(a) Identify policy-relevant tools and methodologies, such as those arising from assessments, to enable decision makers to gain access to those tools and methodologies;

(b) Where necessary, to promote and catalyze the further development of the identified policy-relevant tools and methodologies

52. In identifying how IPBES should perform this policy-support function, a first task might be to consider the scope or range of policy-relevant tools and methodologies that might be relevant to address.

53. Secondly, consideration will be needed on how IPBES might best perform its functions including by identifying the roles and responsibilities of the IPBES plenary, its subsidiaries, its secretariat and its partners, at all scales. Part of this consideration is also to identify the work programme elements for undertaking its policy support function, keeping in mind how they may help provide support to - and benefit from - the programme elements for performing the other functions.

1. Possible scope of the policy-relevant tools and methodologies being considered by IPBES

54. Given the wide array of evolving policy-relevant tools and methodologies, different scales of application and the broad specter of entities involved in their development, consideration will be

needed on whether IPBES' focus should be broad, or whether it should focus its attention on a more narrow range of measures.

55. A possible narrowed down focus could be to concentrate on new and emerging tools or tools which are particularly suitable for wider replication. Alternatively, IPBES may also want to focus on specific groups of tools, such as conceptual frameworks, economic instruments and knowledge-based policy support tools identified in part 2. The scope could also be narrowed down further by focusing on tools such as data and indicators and/or the quantitative models, monitoring systems, scenarios and indicators that will advance the understanding of the relevance of biodiversity and ecosystem services to current and future human wellbeing. Particular emphasis could be given to the tools identified in point 2.3 and 2.4. A narrowed down thematic focus could also serve as a first step in a sequenced approach.

56. One way of approaching the matter could be for IPBES to initiate an assessment – either in the form of a separate assessment or as part of a larger assessment - of existing policy-relevant tools and methodologies. Such an assessment could also be tasked with identifying the scope of and possible sequenced scope for the policy support function of IPBES. An analysis of the uptake of science information by policymakers and of which tools and methodologies are most useful for policy makers could also be addressed in this way. Such an approach may also help identify and recommend further options for how IPBES could best perform and improve on its own functions in the area of assessment, knowledge generation, policy support and capacity building.

2. Possible options and programme elements for performing the policy support function of IPBES

57. In considering the options for performing the policy-support functions of IPBES, attention might be given to options ranging from rather ambitious and comprehensive solutions to lighter and more incremental approaches.

Identifying policy-relevant tools and methodologies

58. The responsibility for identifying the policy-relevant tools and methodologies could be performed directly by the IPBES plenary with the support of the secretariat and through partnerships. Alternatively a separate policy-support working group or committee under the plenary could be established to perform the function with the support of the secretariat and by working with partners.

59. Options for performing the identification function include:

(a) A light approach to performing the identification function would be for IPBES plenary to direct the global and sub-global assessments to identify and assess the availability, effectiveness and replicability of current and emerging policy-relevant tools and methodologies. Identification of tools and methodologies through assessments could be the only means by which IPBES conducts its task;

(b) The Busan outcome, however, indicates that assessments are one way of identifying such measures and that IPBES could go beyond assessment in identifying such measures. The assessment approach could therefore be complemented by a rapid assessment and/or a horizon-scanning process. The process could be multi-scaled and designed to draw on an upwelling of information from national and regional level. Methodologies and procedures for such process may need to be developed upon proposal from the secretariat and approved by the IPBES plenary. Such an approach would in particular be of importance if the scope focused on new and emerging or promising measures which may be suitable for wider application. A supporting network of tool developers and tool analysts could be established;

(c) The IPBES plenary could regularly invite countries, partners and/or the international community at large to report on interesting developments regarding policy-relevant tools and methodologies.

60. The IPBES work programme could include results to reflect the options identified under point a, b, and c above. Partners would include in particular institutions referred to in part 2 above. The work-programme element would be complemented by capacity building outlined in point 4 above and in the Information Document prepared for this meeting on capacity building.

Promote and catalyze the further development of the identified policy-relevant tools and methodologies

61. The responsibility for identifying the need for the further development of the identified policy-relevant tools and methodologies could be performed directly by the IPBES plenary, or alternatively by a separate policy-support working group or committee under the plenary, with the support of the secretariat and by working with partners.

62. Options for performing the identification function include:

(a) Establishing processes that develops, tests and or customizes policy-relevant tools and methodologies. Such a process could be undertaken by ad-hoc expert groups and or the secretariat which involve existing groups of tool developers. The TOR for such ad-hoc groups could be developed upon proposal by the secretariat for approval by the IPBES plenary.

(b) Outsourcing tool and methodology development, testing and customization by issuing general or targeted invitations to donors, partners or other existing institutions to take action as requested by the plenary and report back on progress made and lessons learned.

(c) Considering the role of IPBES in assessing how the policy relevant tools and methodologies which have been identified for further development are assisting policy makers, including the extent to which they are applied, their effectiveness and the context and conditions for their effective use. This role could be built into the assessment function of IPBES.

63. The work-programme could include expected accomplishments to reflect the options identified under point a, and b above. Indicators of achievements could be linked to number of tools and methodologies developed, tested or customized. Outputs could be in the form of issued reports and or web-communications. Partners could include particular institutions referred to in part 2 above. The work programme element would be complemented by capacity building outlined in point 4 above and in information document 4 on capacity building.

Enable decision makers to gain access to identified policy-relevant tools and methodologies

64. The responsibility for enabling decision makers to gain access to identified policy-relevant tools and methodologies could be overseen by the IPBES plenary, or alternatively by a separate policy-support working group or task force under the plenary, but the function could mainly be performed by the secretariat through working in cooperation with partners.

65. Options for performing the identification function include:

(a) The IPBES plenary could request an existing knowledge management platform such as, TEMATEA, InforMEA, ECOLEX or the planned UNEP-live to take on the responsibility of enabling decision makers to gain access to identified policy-relevant tools and methodologies.

(b) The IPBES plenary could task the secretariat with developing a knowledge management platform for all IPBES functions which in addition to providing information relevant to the assessment function and knowledge generation function also would enable decision makers to gain access to identified policy-relevant tools and methodologies. A network of information providers and a system of agreements with them would have to be developed and approved by the IPBES plenary.

(c) The IPBES could regularly issue general or targeted invitations to donors, partners or other existing institutions for enabling decision makers to gain access to identified policy-relevant tools and methodologies and report back on progress made and lessons learned

66. The work programme could include results to reflect the relevant options identified under point a, b, and c above. Partners would include in particular institutions referred to in part 2 above, and the work programme would be complemented by capacity building outlined in point 4 above and in the Information Document on capacity building.

3. Relationship with other work programme areas of IPBES and other relevant initiatives in the related field

Relationship with the capacity building work programme

67. IPBES would as identified in the Busan outcome need to - as addressed in the Information Document on capacity building – integrate capacity building into the policy support function. This would include ensuring the participation of government representatives and experts in the processes established for performing this function.

68. IPBES may also need to identify capacity building needs as it relates the innovation and up-take of new tools and methodologies as well as to existing ones which are particularly suitable for wider replication and or up-scaling. Furthermore it may need to consider capacity needs related to the enabling of decision makers to gain access to policy-relevant tools and methodologies. Capacity needs related to the ability to make use of the tools and for tool development and customization of such tools to local ecological, economic and social conditions could also be addressed. Capacity needs could be addressed programmatically by IPBES, but also by the IPBES plenary issuing general or targeted invitations to donors, partners or other existing institutions to take action and report back on progress made and lessons learned.

Relationship with the knowledge generation work programme

69. IPBES may under the knowledge generation programme want to give particular attention to how it can help stimulate the scientific communities to engage in development of policy-relevant tools and methodologies. As mentioned under point 3, the science community could for example be invited to address the need for tools and methodologies for multi-sectoral cooperation at all scales and across scales. Similarly, there is a need for tools and methodologies which present policy alternatives and policy-mixes supported by considerations of the assumptions and implications of such options. Also, science can help develop more integrated quantitative models, monitoring systems, scenarios and indicators that will aid understanding of not only biodiversity and ecosystem services, but also the relevance of biodiversity and ecosystem services to human wellbeing.

70. The science community also have a role to play in assessing how the policy relevant tools and methodologies which have been identified for further development are assisting policy makers, including the extent to which they are applied, their effectiveness and the context and conditions for their effective use.

71. The IPBES plenary could task the secretariat with developing a knowledge management platform for all IPBES functions. So in addition to be a platform for IPBES policy support function also could also serve as a platform for knowledge generation, assessments, and capacity building. Such a platform could help galvanize partnerships especially among the knowledge generating partners.

Relationship with assessment work programme

72. Global, sub-global and thematic assessments under IPBES can play a major role identifying and assessing the availability, effectiveness and replicability of current and emerging policy-relevant tools and methodologies. Assessments could also as alluded to in point 4.1 help scope IPBES own policy-support function. This implies that IPBES in carrying out its assessment function simultaneously can carry out at least in part its policy-support function.

73. In practical terms, IPBES could in its assessment scoping and endorsement processes pay particular attention to identifying and assessing policy-relevant tools and methodologies which present policy alternatives and policy-mixes supported by considerations of the assumptions and implications of such options. The function of assessing how the policy relevant tools and methodologies which have been identified for further development are assisting policy makers could be built into the assessment programme in support of the policy-support function of IPBES.

74. Possible activities in the area of horizon-scanning and tool and methodology development referred to in section 4 could be made available to the assessment processes. The assessment processes could also be used to verify the scientific rigor of such findings, to do comparative analysis and to communicate new tool-developments to policy bodies at multiple scales through its assessment processes and findings.

Relationship with other relevant initiatives

75. IPBES plenary may in particular want to give attention to the modalities for how it relates to other bodies of relevance to its policy support function and work-programme. In particular the IPBES may want to establish a structured working relationship with the scientific subsidiary bodies of the Conventions. Such a working arrangement could build on the function of IPBES to respond amongst others to requests from other intergovernmental bodies. It could take the form of reporting to these bodies on tools and methodologies identified and seeking their views on tools and methodologies that may need further analysis or development. It could be structured in the form of a standing agenda item of the IPBES plenary and supported as necessary by any subsidiaries, work-processes and secretariat.

76. Another relationship that the IPBES plenary may wish to consider is with leading tool developers or initiatives, such as the Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services (WAVES), the TEEB network, and the network of Sub-Global Assessments. Other relevant partners could be the tools developers listed in table 1. IPBES may also want to work with IPCC, GEO and other international assessments in performing its policy-support function. Furthermore, a number of the other institutions referenced under point 2 could be interesting partners for IPBES.

77. The working relationships with tool developers or practitioners could be through formal agreements, or alternatively, IPBES may invite existing initiatives to undertake work and report back to the plenary on progress made.

C. Conclusions and next steps

78. At present, there are a number of international processes and initiatives in place aimed at supporting policy making and implementation through assessments, tool development, ensuring the availability of tools and training. The toolbox contains a wide range policy relevant tools and methodologies which have evolved over the years due to efforts by many individuals and institutions. IPBES will need to consider how it best can play its envisaged policy support role in a policy field crowded with actors at all levels. This wide number of actors is however also a resource for IPBES and the plenary may wish to pay particular attention to how it can help grow the capacities that it will need to draw on.

79. IPBES may want to give particular attention to the mutual supportive nature of its main functions as they relate to knowledge generation, assessment, policy support and capacity building. For instance, IPBES could in carrying out its assessment function simultaneously also carry out at least in part its policy support function. IPBES can also identify how to strengthen capacities as they relate to the innovation and uptake of new tools and methodologies as well as to existing ones which are particularly suitable for wider replication and or up-scaling. IPBES may under the knowledge generation programme want to give particular attention to how it can help stimulate the scientific communities to engage in development of policy-relevant tools and methodologies.

80. The actors involved in the support function for biodiversity and ecosystem services are organically interacting in nested processes which incrementally evolve into the available response measures for the protection of biodiversity and ecosystem services. Science, including social sciences, can help address the need for identification and development of policy-relevant tools and methodologies. The IPBES plenary may wish to consider how to establish an effective working relationship with the leading tool developers or initiatives.

81. Finally, the plenary may in particular want to give attention to the modalities for how it relates to other bodies of relevance to its work-programme related to its policy support function. In particular the IPBES may want to establish a structured working relationship the scientific and technical bodies of the other biodiversity related conventions.
