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Third ad hoc intergovernmental and multi-stakeholder meeting on an intergovernmental science-policy platform on biodiversity and ecosystem services
Busan, Republic of Korea, 7–11 June 2010
Item 3 of the provisional agenda*

Consideration of whether to establish an intergovernmental science-policy platform on biodiversity and ecosystem services

Intergovernmental science-policy platform on biodiversity and ecosystem services science-agenda workshop held in Shepherdstown, United States of America, from 4 to 6 May 2010

Note by the secretariat

The annex to the present note contains the facilitator's report for the intergovernmental science-policy platform on biodiversity and ecosystem services science-agenda workshop, held in Shepherdstown, West Virginia, United States of America from 4 to 6 May 2010. It was submitted by the Government of the United States of America. The summary is presented as received and has not been formally edited.

* UNEP/IPBES/3/1.

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Annex

Facilitator's Report for the IPBES Science-Agenda Workshop
Shepherdstown, West Virginia, USA
4 – 6 May 2010

EXECUTIVE SUMMARY

This report is a compilation of views expressed by the participants of the technical expert workshop hosted in Shepherdstown, West Virginia, 4 - 6 May 2010. The aim of the workshop was to exchange ideas and facilitate an open discussion on the scope, functions, and science agenda for an intergovernmental platform on biodiversity and ecosystem services. This is a facilitator's report and does not reflect a consensus view, nor are the views attributed to participants or their organizations or Governments.

The United States Government through the Department of the Interior, United States Geological Survey and the Department of State sponsored a science-focused workshop to exchange ideas and facilitate an open discussion on the scale, scope, functions and science agenda for the proposed Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Twenty-two scientists from five regions of the world covering a wide range of ecological, biological, and social disciplines participated in the workshop. Participants did not attempt to reach consensus on issues and outcomes, rather this report reflects a summary of the major discussion points. Participants discussed whether a proposed IPBES, much like the IPCC, needs to address a large overarching question, such as "Do we face a biodiversity crisis, and how is this relevant to human well-being?"

To that end, the value of IPBES was considered to be both in what it would do and what it could catalyze at all levels for science, policy, action and capacity building. The identified priority functions for an IPBES were: 1) generate regular assessments on status and trends of biodiversity and ecosystems services, as well contrasts among alternative future scenarios, 2) provide reviews of the science of biodiversity and ecosystem services assessments, and 3) identify emerging issues for biodiversity and ecosystem services together with possible responses to these issues. Nested within these priorities is the need for further evidence on the links between biodiversity and ecosystem services, a common understanding of metrics to be used for assessments, a benchmark of the status of biodiversity and ecosystem services, and the development of tools that will allow integrated comparisons among alternative future scenarios.

IPBES would build upon and utilize existing assessments and information; once developed, an effective IPBES would make access to information and data used in assessments simple and transparent. Further, IPBES would work across global and regional scales, and could help catalyze countries' ability to assess biodiversity and ecosystem services, and ensuring tight connections to human populations that host, use and benefit from biodiversity. IPBES should have scientific independence, i.e. to have a governance structure separate from, but responsive to, governments and UN bodies. IPBES could help catalyze the science community to participate and advance biodiversity and ecosystem services science, including interdisciplinary research on socio-ecological

systems. IPBES could also help catalyze and, if appropriate, perform capacity building efforts that rely on non-traditional approaches, such as engaging young scholars in various parts of the IPBES work in an attempt to build long term collaborations. Finally, IPBES would benefit from a structure that allows for a continuous interaction between scientists and policy-makers across multiple spatial scales, to help assure that assessments are integrated across all disciplines and these assessments provide linkages to human well-being.

The long term vision for a proposed IPBES to be successful would include outputs such as regular, timely assessments, user friendly and easily accessible links to data and information under a single access point, quantification of uncertainty in forecasts of changes, and teasing out the most relevant indicators for policy-makers and decisions. The ultimate outcomes of an IPBES would allow for better management of the global commons and better local management for global interest, empower scientists to raise new and emerging issues, make available continuous knowledge support for informed decision-making, and provide a bridge between traditional and non-traditional knowledge bases.

The workshop participants felt that an IPBES that delivers these results is in fact possible, that the global scientific community can be appropriately organized to provide its contribution to the science-policy interface and that such a process would have significant value-added for both the science and policy communities.

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INTRODUCTION

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The meeting was attended by 22 scientists from five regions of the world covering a wide range of scientific disciplines, including *inter alia,* marine biology, bio-physics, systems ecology, vegetation and plant ecology, ornithology, aquatic science, conservation biology, ecosystem services, socio-economics, complex social-ecological systems, and science-policy interface.

The first day of the workshop consisted of overview presentations on the background and history of the IPBES concept and process, followed by general discussion of the potential value, functions, scale, and elements of successful dialogue between science and policy if an IPBES were established. Dr. Andrew Stott of the United Kingdom presented on previous assessment efforts and the process that led to the current intergovernmental discussions of whether to establish an IPBES, including outlining considerations for the IPBES-3 meeting to take place in Busan, Korea from 7 – 11 June 2010. Mr. Jerry Harrison from UNEP-WCMC presented the findings from the gap analysis conducted to inform the second intergovernmental IPBES meeting in Nairobi, Kenya.

Following the overview presentations, there was general discussion on several issues on Day 1 in an effort to demonstrate the value and potential workability of an IPBES.

Value of an IPBES

Participants asked themselves the questions, what is the value added of an IPBES and how do we tease out its specific niche in light of its potentially large portfolio? The value of an IPBES is both in **what it does** itself and **what it catalyzes** for science, policy change, action, and capacity-building. There was a sense from the group that an IPBES is in fact possible, that the global science community can be appropriately organized to provide its contribution to the science-policy interface, and an IPBES would have significant value-added for the science and policy communities as well as for other stakeholders. If the IPBES works and provides the expected added value, it will be about helping us all make better decisions for the long-term benefit of humanity, biodiversity and ecosystem services. It was noted that it is important to build a firm foundation for IPBES as not all the science impacts of IPBES will have immediate impacts. It was generally agreed that so far we do not have a global mechanism with the necessary authority, legitimacy and credibility in issues on biodiversity and ecosystem services, which would give policy makers the appropriate platform for decision making.

With respect to **what it does**, there remains a strong argument and need for doing regular routine assessments on the status and trends of biodiversity and ecosystem services, and

analyze them in a Drivers-Pressures-States-Impacts-Responses (DPSIR) framework so as to capture the impact of ecosystem change on human well being and to assess effects of policy or management responses on humans, biodiversity, and ecosystem services. This will provide the potential evidence base **to catalyze** countries and regions to do what they do better with respect to management and governance. Relevant knowledge integrating biodiversity, ecosystem services and impacts on human well-being may also help avert tipping points that could be a consequence of ecosystem change, by having a better understanding of the integrated system. While one single country's information and assessment will not necessarily demonstrate global drivers and scenarios, the collaboration of several can give insights for the future of biodiversity and ecosystem services. An IPBES could also provide efficiencies by developing coordinated reports on common issues and by streamlining responses to emerging issues.

There was a sense that an IPBES could play a role in overall advancement of science-- in particular policy-relevant research – thus driving the science agenda. An IPBES can be a mechanism that would help scientists develop and use consistent frameworks and scalable metrics that are available to the research communities worldwide. Further, IPBES could provide a platform for truly integrated approaches that combine, biological, natural, social and other sciences to further understand causes and consequences of changes in biodiversity and ecosystem services. The creation of a structure with a mandate from governments would help leverage activity from their own institutions and promote an internationally compatible research agenda. It has the potential to **catalyze** new science and new findings that would be helpful for policy makers, managers and other stakeholders.

Interface Options – Scale, Scope and Functions

A number of different interface examples were highlighted by the participants, at national and international scales. For example, the idea of establishing one single access point for knowledge on biodiversity and ecosystem services, drawing on experience from all sectors, while retaining complete scientific independence (potentially a more sophisticated clearing house mechanism approach – a global portal). This type of interface would be credible, legitimate and relevant to all sectors, ideally a simple structure with little bureaucracy, and would provide one credible and coordinated access point to the national and regional information about biodiversity and ecosystem services.

Through the discussion of interface options, varying views emerged on scale, scope and function of an IPBES.

Scale

The scale at which IPBES should operate is very important. It was noted that at this point in time, biodiversity science needs regular assessments both at national and international levels and that the global community needs to see and understand the very different views of what biodiversity means, including local needs and perspectives. While an IPBES would not do national assessments per se, it has the potential **to catalyze** and provide examples and possible approaches on how national assessments could be done, i.e. by facilitating

capacity building in countries with a lack of capacity to carry out national assessments. Participants suggested that national assessments are fundamental for regional and global assessments carried out by IPBES. It should arrange for the identification of national best practices and facilitate distribution and access for countries with undeveloped capabilities.

While recognizing that there is global interest in local impacts, some workshop participants noted that biodiversity is a very local-oriented science and drivers of change in biodiversity and ecosystem services, as well as the impact of this change on human well-being, are not the same in all countries and regions. Despite this, locally generated knowledge must be capable of being captured and aggregated at the global level, to ensure smaller scale patterns are identified and integrated into a larger scale picture. There are gaps between knowledge in biodiversity and ecosystem services in certain countries and regions, and therefore if we want to look at these issues from a global scale, these gaps and discrepancies need to be addressed, and capacity building in these countries and regions is important.

Some participants suggested that an IPBES could build on national assessments and execute mostly global and sub-global assessments, while acknowledging that many countries have different methods, so there is a need to identify which are transferable and can inform a global assessment. Standardizing and mainstreaming assessment methods are crucial components for a functioning IPBES. National assessments are part of the essential knowledge base for global and sub-global assessments, again raising the critical issue of capacity-building in order for national assessments to be conducted in a way that is consistent and based upon internationally agreed metrics and methodologies.

Scope

There was recognition from participants that the scope of an IPBES should be broadened to include not only natural sciences but also social and economic sciences, noting that an integrated approach in terms of socio-ecological systems is needed to recognize the impact of changes in biodiversity and ecosystem services on human well-being.

Throughout discussions of the scope of an IPBES emerged the issue that its scope should include both biodiversity and ecosystem services, and explicit assessment of the links between ecosystem services and biodiversity, where ecosystem services provide a means to understand the relationships between biodiversity and human well-being. Some participants noted that IPBES with broad scope would be useful, recognizing that while some countries are interested in biodiversity others are more interested in its functional expression through ecosystem services. Clarifying the essential linkages between biodiversity and ecosystem services and in turn how these services are linked to human well-being and how social drivers affect biodiversity and ecosystem services, would be an important function for the scientific component of an IPBES.

If the focus includes ecosystem services, the client base is immediately expanded (e.g., UNCLOS, CITES, forests, fisheries, WTO, agriculture, as well as conservation bodies). Assessments and analytical tools could then encompass all these various decisions being made on biodiversity and ecosystem services. An IPBES could provide an avenue to assess

particular sectors under biosphere change specifically. Participants indicated a need for an IPBES to respond to the priorities of the relevant Conventions with independent scientific advice, but not take away from existing subsidiary bodies, which would in fact be the key recipients of the advice. It would improve the quality of the scientific information that is feeding into the Conventions.

Function

Participants recognized that IPBES should NOT be an advocacy-driven institution and should not be policy prescriptive, nor should it serve to promote particular policies; IPBES should not tell us what to do, but rather inform us of the current status of biodiversity and ecosystem services, building possible futures under different scenarios and providing society and policy makers with analytical tools to assess the consequences of these scenarios on a range of societal sectors. The primary role of science in the policy process is to inform policy makers and guide policy, not determine it. Matching scientific research to the decision needs of policy makers involves getting the right science done, while asking the right outcome oriented science questions. There was also some concern expressed that IPBES should not be about directly influencing behavior change, which would be second-guessing the science implications and stepping beyond its mandate. A more appropriate element for the science agenda would be understanding behavior change, in particular, understanding how behavior changes will or will not impact biodiversity and ecosystem services; and in turn, how policy or management changes affect human behavior (and thus the effectiveness of policy or management). There were others who noted that assessing relative effectiveness of solutions/strategies is in fact science (a social science).

Many participants suggested that one of the functions of an IPBES should be to conduct both regular assessments and quick/responsive assessments, which should assess what is changing, what is driving change and how to modify outcomes of this change. Other participants suggested broadening the remit, noting the disconnect between what is said at the global level and what is done at the local level. While there is a need for doing status and trends assessments, there should also be room for an IPBES to respond to specific queries and to provide early warnings. Capacity to be flexible and address issues as they emerge is very important, both for scientists, policy makers and other stakeholders.

There was also recognition among some participants that we do not know enough about biodiversity and ecosystem functions and services, so therefore an IPBES should map out what we do know about biodiversity (i.e., status, trends and future), and map out ecosystem services (i.e., status, trends and future), and explore the relationship between them. Identifying what we do not know, and assessing the state of the science surrounding biodiversity and ecosystem services, could be part of an IPBES agenda and would help catalyze research in the scientific community.

There was also a sense among the participants that we need to gain international agreement on measurement and methodologies, and agreement on what type of outputs and metrics should be provided by an IPBES. Standardization of methods or methodological frameworks is fundamental in order to conduct appropriate and thorough assessments. In

particular a Quality Assurance/Quality Control framework is critical for an IPBES to properly function.

Dynamics of science-policy interface

A lesson learned from the Millennium Ecosystem Assessment (MA) is the order in which the 'questions' to be addressed by an IPBES should be posed. In some interfaces, the policy group helps define questions to the science group by expressing its knowledge needs. The MA worked the other way around, making it difficult to reach the policy audience with its outputs. The ideal situation is to have policy pull rather than science push. However, there is acknowledgment that policy makers have a different perspective than scientists, thus a science-policy dialogue is necessary to help shape the questions. If both scientists and policy makers get together to do horizon-scanning, it becomes a joint effort to frame the questions and assessment cycle. Essentially, the effective incorporation of research, science and technology into policy advice is conditional on who defines the policy problem and how the problem is defined. Having scientists involved in framing the policy problem closes the end-user/science provider gap. The best examples of working science-policy interfaces are those that provide a continual interaction between science and policy throughout the entire process. Whatever format is finally agreed, it is important that the process of science transfer is seamless in order to ensure the products of scientific assessments are delivered to the policy process in a timely and useable form.

Additionally, it is not just about delivering the science. Knowing WHY the science is not being communicated and understanding the consequences of the policy decisions are both critical. There is a need to understand what is driving behavior, and build this into the assessment. There is also a need to build in a continuous communication plan which would help provide constant feedback to the public, decision makers and other stakeholders. The lack of a constructive and functioning science- policy interface in the MA process was recognized.

Lessons learned from the IPCC

There was additional discussion among the participants regarding drawing on lessons learned from the Intergovernmental Panel on Climate Change (IPCC). It was noted that the IPCC is not mainly generating new knowledge (in the sense that it does not generally undertake primary research), but it provides a structure to pull the knowledge together. The IPCC has a well-developed assessment network that can mobilize scientists to do particular research, and it aids scientists because it helps them structure their research so that it can be incorporated into the climate policy processes. Biodiversity science does not have this mechanism. It could benefit from creating a strong network of scientists building on the numerous but scattered existing specialist networks and catalyzing well structured assessments that go beyond the relatively rapid and ad hoc processes that characterize most biodiversity assessments, and be coherent and well targeted to the most important questions about the fate of biodiversity and condition of ecosystem services.

"Scenarios" have been a very successful element of the IPCC, and are needed for biodiversity and ecosystem service assessments. However, scenarios development and

synthesis will be more complex since there is a much broader range of types of models and of measures of biodiversity than is the case for climate models. For biodiversity, we need a strong review of existing information for a better understanding of the state of biodiversity at a global scale. It is important to be strategic about how scientists effectively engage in dialogue with policy makers to receive feedback on what type of scenarios would be the most helpful. For example, MA scenarios could have better answered the needs of policy-makers if they had been driven by the 'clients' themselves, rather than dominantly by scientists. An additional strength of IPCC is the rigorous questioning of the science by policy-makers – if the IPCC science stands up at the global scale, this is a good result and the clients 'buy-in' to the science. In contrast to IPCC, an IPBES will depend on reliable national assessments, which in turn requires capacity at the national level to perform assessments, which may not always exist.

Success of IPCC is around the verifiability of its methodologies and databases, a base-level of accuracy around simple metrics (e.g., atmospheric temperature and gas levels) and the use of sophisticated, calibrated and standardized measuring systems and apparatus. This is far more difficult to achieve with biodiversity, since standardized metrics are not consistently applied and agreed by all users. This is partly due to a gap in the science-policy interface landscape at the international level, which an IPBES in conjunction with GEO-BON (Group on Earth Observations Biodiversity Observation Network) could aim to fill, and partly due to the nature of the biodiversity issue. Because biodiversity and climate change have very different characteristics, an IPBES should be inspired by, but not merely attempt to duplicate, the IPCC model.

The Vision and How to Get There

The discussion on Day 2 of the workshop was framed by considering the question, "Where do we see ourselves 10 years from now if an IPBES is successfully set up and implemented?" From this discussion a series of ideal outcomes were highlighted by the group and these included:

- Biodiversity and ecosystem service knowledge is generated and reported routinely;
- The way in which we gather data, secure it, and access it is through open access data-sharing portals;
- There are fewer, bigger, more-widely supported and freely available data sets;
- Open access and efficient use of existing data are commonplace, linking data to web-based map services, making us better equipped to use existing knowledge;
- We will have reached a point where we better know what the possible metrics are and what we are trying to measuring, e.g., there is international agreement on the metrics;
- National and regional monitoring frameworks are in place for ongoing measurement of biodiversity and ecosystem services condition to inform status and trend trajectories;
- Socio-economic scenarios are developed which better illustrate the understanding of impacts on global biodiversity and consequences for human well-being;
- Biodiversity and ecosystem services research is better integrated with social science and policy analysis;

- There will be a better integrated view of biodiversity and ecosystem services with all drivers of change considered, which will result in identification of leverage points to make a difference in policy and reduce redundancies;
- IPBES and IPCC will be working closely together and complementing each other's scenarios;
- We will have information about what kinds of biodiversity change at different spatial scales and under different conditions will threaten human well-being, e.g., what are the thresholds?;
- We will have a one-stop shop where clients can ask questions, get useful answers and receive early-warnings;
- At the national level, IPBES is catalyzing strengthened capacity to carry-out assessments and biodiversity and ecosystem services research;
- We will see governments, other stakeholders and the public begin to change behavior as a consequence of information from IPBES;
- There will be increased networking and cooperation within the relevant conventions, leading to better implementation; and
- IPBES is recognized as the authority for giving advice on the issues it has been asked for advice on.

The above 'ideal outcomes' discussion was followed by break-out sessions during which participants worked to identify the specific key functions of an IPBES that would help achieve these outcomes. These functions were then cross referenced and grouped against the possible functional categories listed under the UNEP papers (available at www.ipbes.net): generating knowledge; assessing knowledge; using knowledge; and capacity building. A summary of the key discussion points is outlined below. The full richness and specificity of the discussion can be found in **Annex A.**

Knowledge generation

The break-out group suggested the following elements for the knowledge generation, i.e., by catalyzing research, function of an IPBES:

1. Specific research topics
    a. Explicit links between biodiversity, ecosystem functioning, and ecosystem services
    b. Tipping points/thresholds
    c. Scenarios
    d. Socio-ecological systems
    e. Tools and protocols to measure status and trends
    f. Indicators
    g. Measures and system interoperability
    h. Bringing national knowledge systems into a global setting
2. Knowledge gaps that determine future research strategies to inform policy
3. Data generation and access
    a. Generation
    b. Archiving/curating
    c. Securing

d. Providing Open access

Some key questions to consider regarding knowledge generation:

- Is knowledge generation done in a parallel process to the assessments? Or is it a phased process?
- Is the first phase of knowledge generation to establish assessment frameworks and metrics, and then phase in the assessments?

The full discussion which followed highlighted several additional points for the knowledge generation function, including building better models to explain, and where possible predict, biodiversity change and its consequences for human well-being. Reporting on the state of the science would help address the research needs for the assessment process.

IPBES has the potential for creating both indirect and direct knowledge generation. Through an indirect route, an IPBES would identify knowledge gaps and needs. A direct route would identify critical issues, outline the models needed to address them and indicate the conditions necessary for the models to succeed. Knowledge generation would not actually be funded by an IPBES under either route; rather IPBES would outline the needs, stimulate the scientific community to respond and facilitate the commissioning of work.

IPBES will identify knowledge gaps and will catalyze knowledge generation by ensuring there are specific and general research needs identified, and it will then be up to funding agencies to finance such research. For example, the IPCC does not fund the running of climate models; rather, these are funded by respective agencies. What IPCC does is directly coordinate some key elements of assessments, and provide stimulus and direction to take certain action (i.e., setting up climate databases to do scenario runs). IPCC provides an interface that drives advancement in models, setting higher and higher standards to advance the scientific knowledge and capacity.

IPBES would have additional direct parallels to the IPCC. There is a need to build global observations based around stable monitoring locations, coordinate interoperability and standardization of measurements, to starting at local scales and building up to global. From the scenario standpoint, IPBES should look more to regional and sub-regional scales that would provide information to global and large regional scales. Scenarios at regional and sub-regional scales could be more relevant to local decision-making. This must however be based on appropriate national assessments.

Additionally, if an IPBES was to function like an IPCC, the information it would assemble and analyze would all be all contained in one entity. However, if it is a body that integrates information from multiple sources, it would be useful to state this as a potential function (i.e. creation of integrated information systems that provide access to data and information generated in assessment reports). IPBES should not be precluded from utilizing outputs from other bodies (e.g., other MEAs, NGOs, independent data warehouses).

Scale and timing of Assessments

Although previous assessments such as the Millennium Ecosystem Assessment (MA) may be able to provide baseline information, none of the previous assessments has done a sufficiently good job of bringing together the relevant scientific communities across the world and to creating a good science- policy interface. However there was also recognition that an IPBES should build upon previous and future assessments, such as those done by the MA, FAO, Global Biodiversity Outlook (GBO), UNEP Assessment of Assessments and others. Further, IPBES should link with processes, such as GEO-BON, GBIF and others to develop processes, monitoring and data guidelines to provide coordination of data.

IPBES would cover the entire Drivers, Pressures, States, Impacts, Response (DPSIR) framework and assessments would include identification of vulnerability and tipping points which would help drive toward input for forecasting and scenarios. The assessment would include identification of behavior change and policy success (although metrics would be needed to perform this work). Integrated approaches that build from status and trends analyses toward models and scenarios will be necessary to cover the entire science network. Framework and metrics for performing assessments should be consistent across nations and scaleable.

IPBES could also provide timely assessments or early warnings that may uncover new indicators or approaches to understanding changes in biodiversity and ecosystem services and their consequences for human well-being. Additionally, there might not be a need to strictly define assessment, but allow response to thematic issues through specific topical assessments to meet the needs of the policy makers. Furthermore, an IPBES should allow for early warnings from the scientific community.

The discussion centered on the need to provide integrated assessments at the global and regional scale, provide approaches for and coordinate results from national and local assessments, and allow scaling up and down among, but also across, a variety of assessments. If properly done, national and local assessments should be a component of and provide the raw material for regional and global assessments.

Finally there was a broad discussion that IPBES should provide an assessment of the science of biodiversity and ecosystem services, which would provide a component that is different than what IPCC provides. The IPBES could be an authority for science advice.

Another key component of assessing science would be how IPBES would handle grey literature and access to data provided through grey literature. Clear understanding and approaches of how grey literature is handled will be important to provide defendable scientific approaches.

Policy tools

Ultimately the entire mandate of IPBES is to inform policy; therefore, what is the critical function in order for it to do so and have a constructive dialogue with policymakers in order to improve the science- policy interface?

IPBES should provide an opportunity for dialogue between science, decision makers, and other stakeholders providing information that can be applied at almost every level as 'decision support' and tools that apply to different spatial scales. The dialogue should also occur in the definition of questions, the design of the assessments, and the implementation of outcomes. Local and national decision-making could be executed in light of international repercussions, making better use of local resources for their constituencies, while also taking into account impacts elsewhere.

The break-out group on this issue presented the following outline on how IPBES could best address the policy tools function:

Steps
1. Generate assessments
1. Disseminate results
2. Dialogue to support implementation decisions (implementation stage – between users of the information and who pulled the information together)
3. Post-implementation evaluation
4. Feedback into assessments and research

Tools
1. Analysis that would allow for decision-making trade-offs and scenarios – analyze tradeoffs, multi-sectoral, feasibility, efficiency, uncertainty
2. Workshops
3. Sharing data: documents, websites, databases, tweeters, expert committees (i.e., multiple layers and forms by which it communicates to different audiences)
4. User-friendly tools, such as decision support systems, that could be used by decision-makers / models/demonstration sites

Capacity building

The break-out group presented the idea of establishing a working group under the IPBES specifically on the issue of capacity building. It was suggested that this working group could do the following:

1. Facilitate & Catalyze:
    a. Support from existing programs (monitoring, data management, funding agencies, development agencies)
    b. National capacity for engagement in establishing science-policy interface, assessments and associated science
2. Identify Critical Gaps in capacity building (could be in particular identified through knowledge gaps)
    a. Mapping capacity building needs
    b. Provides financial support for scientists from developing countries to participate in assessments

Questions were raised as to whether it is IPBES helping an existing program focus on capacity building topics that are priorities, or if it is an existing program which gives

IPBES support/funding? During the discussion session on this function, participants suggested a differentiation between what the IPBES would **do** versus what it would **catalyze** with respect to capacity building.

DO:
- Training programs, workshops, webinars
- Facilitate outreach and communication
- Help build capacity through assessments
- Engage young scholars and scientists
- Involve local scientists in assessments
- Joint research projects providing long-term benefits for all involved, and helping to steer research and research strategies and build capacity of those involved

CATALYZE:
- IPBES to catalyze funding around programs it determines as priority
- Build capacity in indirect ways, through national agencies, catalyzing research and funding, etc.

Looking to IPCC as an example, the IPCC does not do any explicit capacity building. However, it does select authors from certain regions to participate in research and assessments, and in this regard, catalyzes capacity building. The IPCC also provides funding to scientists in developing countries to come to meetings, but this does not build their knowledge capacity *per se*. Some of the best examples of long-term capacity building rely on creation of long-term collaborative approaches through hosting of students and others in labs, and creation of projects in which all scientists participate.

Because of the nature of the problems some participants felt that success of IPBES is more dependent on capacity building in developing countries than is the case with IPCC

Cross-cutting issues, review of efficacy and a return to value-added

In addition, a number of other functions were identified that did not naturally fit in the above categories. Several of these could be described as cross-cutting in nature across all of the four functional categories above:

- Monitoring, including linking to existing monitoring programs
- Outreach and communication
- Provision of guidance
- Identification of the clients (e.g., Conventions, Governments)
- Links with other science-policy interfaces (IPCC, fisheries, Oceans and Law of the Sea 'Assessment of Assessments', agriculture)

There was also a suggestion that there needs to be a built-in formal review of efficacy of the IPBES; not on the science (as this would be done by peer-review and by the QA/QC processes of the platform), but rather, on the platform itself. While it is difficult to quantify efficacy or suggest methods for such a review until it is clear what an IPBES looks like and what it is trying to address, there should be a commitment when it is established and a defined timeframe by when efficacy will be reviewed and a description of what such a review would look like.

Following the discussion of potential functions, the group reflected back on the value added if an IPBES is established, focusing on the different value-added elements to both science and policy decisions. With respect to the **science**, an IPBES could provide a research focus for the science community, motivation to scientists, direction for science funding bodies, flagging of emerging issues for research, and mobilization and engagement of scientists who are not currently contributing to global level assessments. With respect to **policy**-making, an IPBES could lead to better management decisions for biodiversity and ecosystem services, reduce uncertainty of decision-making, shift focus to the human dimension and the impacts of change in biodiversity and ecosystem services on human well-being, enable mainstreaming of biodiversity and ecosystem services into different sectors, increase and improve the knowledge base including integration of socio-economic and traditional knowledge, streamline and ensure efficient and timely responses to emerging issues, focus capacity building where it is most needed, reduce redundancy and improve efficiency, increase synergy among multilateral environmental agreements, build on the existing landscape of specialist networks, and create a wider appreciation of the interaction between biodiversity and ecosystem services and their link to human well-being.

Do the proposed functions produce outputs and outcomes that will lead us to where we want to be in 10 years?

Outputs and outcomes will be important for IPBES to be successful. Outputs are generally tangible products, while outcomes although less tangible, should connotate long-term changes in policy, management strategies, behavior, and ultimately increase sustainability of our societies.

Tangible outputs could include:

- assessments at global and regional level of status and trends of biodiversity and ecosystem services, which would include levels of uncertainties
- developing and advising on appropriate monitoring designs (e.g., where, what and when to sample, how frequently, etc.)
- simple measures at all levels of trends in biodiversity in a wide range of sectors (species, habitat, ecosystem levels)
- assembling data and information under one access point
- development of scenarios that include probabilistic approaches to improve forecasting
- delivering knowledge about risks in change
- teasing out the most relevant indicators for policy-makers and decisions
- responding to requests from Conventions on thematic topics
- linking outputs with targets – tailoring data generated in reports to track existing targets

Ultimate outcomes of IPBES could include:

- halt of loss/degradation of biodiversity & ecosystem services
- better management of the global commons and better local management for global interest
- empowerment of scientists to raise new and emerging issues
- strengthened capacity of scientists and governments to make and use assessments
- making available continuous knowledge support for informed decision-making
- improving human well-being
- better integration of biodiversity and ecosystem services into development schemes
- identification of mechanisms (such as markets) that can help biodiversity loss
- creation of awareness, public support, willingness to act, and capacity to act
- strengthened fragmented and uncoordinated science-policy interface
- provision of bridges between traditional and non-traditional knowledge bases
- demonstration of the benefits of ecosystem services and how they have been maintained

To further provide outcomes that have impact there was a discussion about how IPBES and biodiversity and ecosystem services can address or link to human well-being and which would allow us to achieve some of the ideas generated as part of the 10 year vision exercise. One approach to making linkages to human well-being would be to use scenarios to look at specific policy-relevant mitigation and adaptation responses and clearly identifying probabilistic approaches to assessments. Given that society must manage changes in biodiversity and ecosystem service, IPBES can help the global scientific community deliver to society, supportive information to increase understanding of risks, a key component of addressing 10-year vision statements.

IPBES and the social and natural sciences

IPBES can provide a platform for integrating social and natural sciences. IPBES would provide an inclusive view of ecosystem health, including human health. Further, the IPBES could be used to help inform the assessment of, and the move towards, the Millennium Development Goals and other goals for development in the future. IPBES should recognize that there are non-market issues that are important in thinking about ecosystem services. For example, tracking of natural and social capital is not straightforward in existing accounting systems. Accounting would need to include changes in value of natural stocks and the flow of services and could be used, in conjunction with economic valuation, to support more effective decision-making. Often, in decisions on natural capital and biodiversity, sense of place and independence, reflect aspects of cultures and well-being that are not necessarily economically accountable. By including all non market-based approaches and providing information on the supply and demand of ecosystem services, the term ecosystem services could be more amenable to use by a broader global community and in more diverse contexts, such as human well-being.

Specific functions that IPBES could provide with respect to social sciences include:

- Contributions of and from TEEB to an IPBES

- Explore how biodiversity change impacts the value and variation in value in the delivery of ecosystem services and products (forest, fisheries, agriculture, health (human, animal & plant)
- Investigation of ecosystem health – how to define and quantify, and link back to flow of services on one hand and of biodiversity on the other?
- Risk assessments, including updates on the risks of new technologies.
- Assessment of the relationship between measures of human well-being and relationship to biodiversity and ecosystem services

In many instance the links to human well-being and health are clear, however this is not always the case for linkages to poverty alleviation. Additional elements of an IPBES to consider in order to achieve success in this regard, include:

- Making a difference in local management and development decisions where biodiversity is under pressure
- Assessing provisioning ecosystem services, noting that this is a potential way to re-distribute wealth through ecological compensation as a mechanism for poverty alleviation, which could protect the environment and improve livelihoods
- Determining how tightly the link would be to actual Conventions or the MDGs
- Seeking better understanding of the relationship between biodiversity and provisioning services (e.g., loss of biodiversity is sometimes associated with increase in wealth) and the related time-scale issues
- The need for full-cost accounting related to changes in biodiversity and ecosystem services
- Provision of evidence at the local scale that conservation work can reduce poverty
- Advancing sound data and monitoring tools to evaluate the trade-offs and MDGs
- Assessing success and failure of provisioning ecosystem services and understanding the demand for all ecosystem services
- Identifying vulnerability to change in biosphere and risks to human well-being

Indicators and metrics

The participants recognized that a large, rich discussion on indicators that revolve around an IPBES would facilitate a number of high level indicators and assure data on these indicators is of high quality. However, given the large number of indicators developed by many conventions and other multi-lateral agreements, IPBES should build on the existing base and not look for a perfect but elusive suite of indicators. What IPBES does require though is assurance that underpinning each indicator are a few relevant, simple to apply, easily transferable and inexpensive measures that enable indicators to be meaningful and useful.

Priorities for an IPBES – What is the minimum an IPBES should do?

The participants of IPBES science workshop engaged in a prioritization exercise, recognizing that the potential portfolio for an IPBES is vast. Noting that many of the priority topics are nested and dependent on one another in order to be executed, the list below is an ordering of potential priority functions for an IPBES.

Topics in Priority Order (highest first)
Status and trends & regular assessments
Review of the science of biodiversity and ecosystem services
Emerging issues
Specific assessments as mandated by governments/clients
Policy relevant scenarios and analysis of trade-offs
Ability to respond to thematic issues
Measuring biodiversity and ecosystem services to report on status and trends
Identification of knowledge gaps
Global scientific consensus on state of science and common understanding of metrics
Strengthening countries abilities to carry out national assessments
Disseminating information to stakeholders
Cataloguing issues which need/rely on biodiversity and ecosystem services

A first step is always that we need to understand biodiversity status and trends. The priority topics also recognize that capacity building is a cross-cutting function throughout all these items, and the need for capacity building for assessments in developing countries was highlighted in particular. It was suggested that the issue of what IPBES would do, and when it does it, may require a phased and nested approach. In order to develop status and trends and regular assessments (the top priority), some participants believed that development of a scientific consensus on common metrics and definitions must be done first. Several of these priorities will lead into one another, or are first required before the next function.

Underlying all these issues is the need to produce a benchmark which can be used for future work and provide a simple way to update information regularly. The first global assessment undertaken by IPBES should be regarded as the benchmark for the status of global biodiversity and ecosystem services.

Summary of key points

Much like IPCC, which asked a big overarching question, "Do we face a climate problem?," IPBES needs a similar over-arching question, such as, "Do we face a biodiversity crisis?"

An IPBES should function in such a way that it provides or catalyzes:

- Regular, timely, easy to use standard assessments
- Specific assessments on emerging issues
- Early warnings

- A continuous interaction between policy-makers and scientists
- The opportunity for an independent science community to participate and advance science, including interdisciplinary research on socio-ecological systems
- Assess the state of biodiversity and ecosystem services science
- Use of non-traditional approaches to capacity building that rely on long-term collaborations
- Capacity-building efforts among existing organizations and in developing countries
- Building upon, recognizing and utilizing existing assessments and information
- Making access to information and data used for assessments simple and transparent
- Using standard and agreed metrics of biodiversity and ecosystem services within agreed monitoring designs
- Assuring assessments are integrated across all disciplines and provide linkages to human well-being.

This workshop focused, as much as possible on the science agenda for IPBES. Participants intentionally did not discuss governance or structural issues surrounding IPBES, but recognize that the function of IPBES is intertwined with the form.

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Facilitator's Report compiled and edited by Kelly Milton and Doug Beard with review by all workshop participants.

Annex 1 – Verbatim Reports from Flipcharts

Assessments Break-out Group

A. Assessments of Biodiversity & Ecosystem Services

DPSIR spectrum
Interdisciplinary
Multi-scale (do/support)
Status and Trends
Scenarios models forecasts

From Sticky Notes Exercise:

Coordinate:
-population of the agreed upon assessment framework with information
-compilation and interpretation of information
-science and policy reviews.

Undertakes integrated assessments on Biodiversity & Ecosystem Services (B & ES) linking physical and social sciences

Undertake a global assessment of B & ES, status and trends and scenarios by 2015.

Synthesis of state of B & ES at subregional – global level

Co-ordinate global & sub-global assessments of B & ES

Coordinate & integrate sub-regional & local assessments into global summary & translate global results to local scales.

Assessment of condition/status of global B & ES

IPBES would coordinate model – date intercomparisons to benchmark models of species extinctions, habitat loss, and shifts in species & biome distribution.

Regular synthetic global integrated assessments
- interdisciplinary
- drivers/pressures/states/impacts/responses
- scenarios & what is

B. Specific elements proactive/reactive thematic assessments

IPBES would coordinate multi-model analyses of key B & ES "tipping-points", e.g. coral reef bleaching and degradation

Provide estimates of vulnerabilities of biosphere function to biodiversity loss/change

Show success story

Prepare policy summaries of scientific assessments

IPBES would stimulate the development of new types of Integrated Assessment & Models (IAMS) that provide much clearer analyses of policy options than the current SRES or RCP socio-economic scenarios of the IPCC

IPBES would coordinate global & sub-global model intercomparisons for

- species extinctions
- loss of habitat
- shifts in species & biome distributions

Promote assessments of relative success of policy and technical intervention on the maintenance of B & ES

Rapid synthesis of state of our knowledge on new and emerging issues/targeted assessments

Preliminary assessments of emerging environmental changes (changes in the biosphere impacting human well-being).

Respond to specific requests for scientific assessments on particular themes (e.g. biofuels) from convention bodies.

Build a network of scientists & willing to respond with timely advice on selected topic for urgent/emerging issues.

IPBES will commission (perhaps undertake?) preliminary assessments of emerging issues at regional and international scales.

Assessment of behavior/decisions of policy makers

C. Framework & standards multi-scale, DPSIR spectrum

Provide guidance, standards and stimulate sub-global assessments.

Provide metrics for determining B & ES change

Develop a spatially nested assessment strategy that permits multi-scale status & trends analyses of B & ES (coarse to fine-filter).

IPBES will establish a minimum reporting framework for the state of B & ES (it should, however, draw on other assessment processes).

Develop a framework for guiding a global assessment on B & ES.

Develop a framework and mechanisms of assessing dynamics and distribution of B & ES at multiple scales.

Ensure that assessment methodologies & frameworks at different spatial scales are standardized (would not necessarily do it itself – not paid staff).

Develop frameworks and metrics for standardized reporting of B & ES status and trends

Ensure B & ES measures are standardized or comparable (would not do it itself) not paid staff

Establish consensus metrics on metrics for measuring biodiversity.

IPBES will draw on efforts to develop consistent, nationally or regionally owned data collection processes (e.g. IUCN, species, ecosystems, state).

IPBES to ensure that all nations undertake/participate in a point of time baseline evaluation of its essential biodiversity, once global agreement is reached on which measures to use.

Identify and implement a standard set of monitoring and indicators and metrics for biodiversity, ecosystems services and human well being.

D. Assessment of assessments, tracking & integrating other assessment/monitoring

Keep track of existing assessment landscape

Identify the need for, and catalyzing the implementation of sub-global assessments; build on and coordinate with the MA & follow-up

Implement integrated assessments, making better access and more efficient use of existing scientific data/knowledge

Assess existing biodiversity status and trend assessment and existing EG & S assessment (as mandated & appropriate given government and client requests).

Facilitate access to data and information from relevant assessments and sources

E. Process issues (needs more work?)

Make first assessment voluntary base

Put together international working groups to synthesize available data

IPBES will have biodiversity data and analyzed information databases with other relevant MEA's and agencies (e.g. DIVERSITAS, GEO-BON, WCMC, GBIF) to capture all available biodiversity information to inform assessments.

Through collaboration with GEO-BON develop and implement a set of standard measures enabling a comprehensive global assessment.

Knowledge Access and Generation – Break-out Group? Or Full Workshop? [Confusing title…]

Grouping 1

Generate models of the biosphere that include feedbacks due to human behavior – to improve predictive capacity

Foster multiple-scale, long-term research on consequences of diversity change on human well-being

Develop tools for scaling information on B & ES that join local to regional to global studies

ID minimum set of indicators to be monitored at national scale

The first action of an IPBES workplan should be to review and confirm a set of scientifically defensible indicators and measures that will enable accurate, standardized and globally consistent measurements of B & ES status and trends

Where direct measures of some elements of biodiversity are not available, then research is directed to search for appropriate, robust surrogates and proxies with transparent confidence intervals applied.

Promote research on thresholds and tipping points critical for biodiversity change and human well-being

Place research on B & ES in the context of managing coupled human and natural systems for ecological and socioeconomic sustainability

Promote research on complex socio-ecological systems to foster integrated understanding

Grouping 1a

IPBES to drive a research agenda that seeks to establish the explicit links between measured biodiversity at places, and the (few relevant) ecosystem services that can be identified to "flow" from those places

Assessment of science (predictive understanding) of links between biodiversity, ecosystem services and livelihoods

Assess the scientific evidence for the link between biodiversity and sustainable provisioning of ecosystem services

Provide oversight and coordination of other international bodies and initiatives setting protocols for measuring and monitoring biodiversity and ecosystem services

Provide unbiased assessments of the role and value of rare species for ecosystem functions

Assess how biodiversity relates to ecosystem services and human well-being
Facilitate information dissemination on case studies involving biodiversity, biological traits, and timing (phrenology) and ecosystem services

One-stop shopping for information and data on contributions of biodiversity and biological traits to ecosystem services

Facilitate efforts to establish links between B & ES (both directions; current linkages are weak and poorly known)

Review and synthesize knowledge and knowledge gaps on biodiversity and ecosystem service linkages

IPBES would facilitate analyses of relationships between biodiversity, ecosystem services and human well-being through data analyses and scenario development

Catalyze new integrative work in identifying links between biodiversity, ecosystem services, and livelihoods

IPBES sets regional research agendas on biodiversity and ecosystem services

Grouping 2
Develop science needs summary as a result of assessment gaps and communicate to scientific community to stimulate funding for work

Promotes policy relevant research based on assessment of need (including influencing funding bodies)

Support the development of biodiversity research strategies and coordination across countries/regions when appropriate

IPBES will highlight gaps in knowledge during assessments that will catalyze work in the broader scientific community

Identify critical knowledge gaps and promote an agenda for research to address those gaps

Use assessments of assessments to identify knowledge gaps

IPBES will prioritize assessments and research needs to inform governments on how they might best distribute research funding for B & ES

Grouping 3
Collaboration and task sharing with other activities (GBIF, EOL)

Facilitate development of shared and open access to database on status and trends indicators

Allow easy access to biodiversity data, especially developing countries

IPBES will initiate a global review intended to gain access to all relevant national databases regarding biodiversity and ecosystem services with the view to developing protocols for data standards, data warehousing and security, and open access to data for analysis/reanalysis and use in global assessments.

Support efforts on data availability and accessibility

Others
Constrain the scenarios landscape using best information of current and future trends
Timely answers to questions emerging from policy progress

Provides a better insight into human behavior related to management of biodiversity and ecosystem services

Identify precisely the direct and indirect drivers impacting biotic systems and their capacity to sustainably deliver ecosystem services

Develop tool to remotely predict threats to biodiversity and ecosystem services and networks to ensure receipt of early warnings

Supporting Policy Formulation and Implementation – Break-out Group
Grouping A1
Promote the integration of assessment information into government policy-making processes (A1 and A2)

Disseminate assessment findings to appropriate stakeholders

Provide information to policy-makers and mangers on new discoveries of issues or solution with regards to B & ES

Communicate about uncertainties

Report in ways that are meaningful to national and international policy … i.e., in terms of impacts on output, employment, as well as biophysically

Work closely with client groups in definition and development of products

Pre and Post assessment evaluation of policy options and measures

Grouping A2
See item 1 in grouping A1

IPBES would strengthen the dialogue between scientists, policy makers, and other stakeholders concerning the meaning of uncertainty, especially in scenarios and policy options for dealing w/ uncertainties

Promote active exchange between local/national/global stakeholders and scientists to better incorporate needs into research and reports

Grouping A3
Review policy options for "mainstreaming" biodiversity and ecosystem services in national planning

Support evaluation of performance against targets

Grouping A4
Develop practical adaptive management frameworks for sustaining biodiversity and ecosystem services in face of climate change

Grouping B1
Develop framework to project scenario-based output to aid in policy-making both nationally and internationally

Assess socio-economic trade-offs between biodiversity and ecosystem services and development needs

IPBES would strengthen the dialog between scientists, policy makers, and other stakeholders concerning the use of scenarios in developing adaptive management strategies

Develop scenarios at different scales, including economic/social costs/benefits for different biodiversity and ecosystem services conservation options

Grouping B2
Convene workshops to share assessment results and discuss policy implications w/ decision makers (i.e., science to policy) translation among countries

Grouping B3
IPBES to form a visible scientific expert committee to advice on the "raw material" (selection of metrics, design of maintaining programs, security, and access of data)
Information sharing on tools and best practices for policy and management

Put in place network of websites with relevant national/subnational information on biodiversity and ecosystem services

Develop an international accounting program system for natural capital (or Biological Diversity) comparable to the international database used for agriculture by FAO
Develop internet site with basic facts for analyzing B & ES (services and tools to do assessments)

Grouping B4
Conduct demonstration projects illustrating how assessment information informs policy change and document results in terms of likely changes in biodiversity, ecosystems services, and human well-being

Develop guidance for national natural capital accounting

Building Capacity – Break-out Group

Encourage countries to support their scientists in assessing and monitoring the state and trends of biodiversity and ecosystem services (forever)

Facilitate existing program … e.g., GBIF, EOL

Get support of other programs

Ensure design of IPBES structures and processes … maximizes engagement and capacities of developing country scientists

Facilitate the collaboration and communication between B & ES researchers and social scientists and policy makers

Promote/catalyze assessments at the national level

Contribute to strategy and enhanced coordination of capacity building …e .g., science (international assistance), policy (Interdisciplinary)

IPBES should establish a working group to address capacity building

IPBES will catalyze national capacity to engage in B & ES science and reporting by creating a demand for such products at national levels

Identifies and develops mechanisms for addressing capacity gaps in assessing/managing biodiversity and ecosystem services

Identify critical gaps in capacity in science policy interface at all levels and promote coordinated efforts amongst relevant bodies to address those gaps

Map capacity building needs

Set up training programs for scientists from developing countries, building on existing activities (sharing experiences)

Financial support to scientists from development countries for engagement

Governance/Strategy/Outreach/Communication – Break-out Group

Identify Roles

Recognize/understand current institutional landscape and assign roles and responsibilities accordingly

Identify those organisms, processes, communities and landscapes that play keystone roles in providing ecosystem services

Integrate information on biodiversity change from multiple sources (e.g., CDC, OIE, UNEP, FAO, World Bank, etc.)

Promote Links with Monitoring Programs

IPBES should facilitate the establishment of a global monitoring program

Support collaboration and cooperation on monitoring worldwide and contribute to development of monitoring strategies

Promote coordination among international and national research and monitoring and assessment programs

IPBES to ensure the most cost-effective and meaningful monitoring designs are developed and assessed and put in place at national and local levels to act as the "raw material" generators for aggregation to global assessments.

Guidance and Outreach

Develop/promote framework, methodology, vocabulary, and guidelines, etc.

Develop effective and innovative tools for communication and engagement

Include policy makers, stakeholders, and public in communication and outreach

Make promotional materials and good examples

IPBES will ensure that all measures used to determine biodiversity status and trends are simple, easy to apply and use, inexpensive yet informative. These must be internationally agreed and peer reviewed for applicability, relevant and cost-effective … which is of particular importance for developing nations.

Facilitate operation of a multi-scale nested network of interface mechanisms form national to regional to global scales

Ensure that IPBES assessment processes are interdisciplinary and open to civil society, academia, and governments to engage

Assessment Add-Ons and Other Comments

Assessment Add-Ons

Respond to requests for assessments of particular phenomena by MEAs and IGOs

Develop clear links to other assessment processes

Develop new tools for optimizing or negotiating trade-offs for maintaining ecosystem service delivery

Review scale effects in costs-benefits of B & ES conservation and policy options to address these

Assess past, current, and future impacts of international conventions on biodiversity, ecosystem services, livelihood

Others

IPBES will draw on existing intergovernmental assessment processes (e.g., IUCN, MA) to inform on its own questions and support other international assessments (e.g., IPCC)

Provide assessments of benefits of the costs/benefits of addressing/controlling alien invasive species

Establish a functioning governing body linked to decision makers from member countries that both poses issues for assessments and vets suggestions from other assessments