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AUTHORS

Meeting Co-Chairs: Albert S. van Jaarsveld , Kazuhiko Takeuchi,

Drafting Group Co-Chairs: Anantha Duraiappah, Harold Mooney,

Coordinating Lead Authors: Eduardo Brondizio, Thomas Elmqvist, Joyeeta Gupta, Paul Leadley, Harini Nagendra, Christine Padoch, Henrique Pereira, Charles Perrings, Belinda Reyers, Robert Scholes, Marje Spirenburg, Tetsukazu Yahara,

Lead Authors: Francisco Alpizar, Abwoli Y. Banana, Francisco de Assis Costa, Xuefeng Cui, Deddy Darmaedi, Bojie Fu, Alexandros Gasparatos, Yogesh Gokhale, Darek Gondor , Shizuka Hashimoto, Rashid Hassan, Robert Höft, Taku Kadoya, Eun-Shik Kim, Effah Kwana Antwi, Ryo Kohsaka, Tohru Nakshiuzuka, Daniel Niles, Ruth Oniang'o, German A. Palacio, Anne-Hélène Prieur-Richard, Shoko Sakai, Osamu Saito, Wataru Suzuki, Sheila Vergara, David Woiwode, Makiko Yashiro, Kentaro Yoshida,

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Executive Summary

1 Human action has transformed the biosphere, profoundly affecting its capacity to maintain its current productivity and provide for the resource demands of a growing human population. In short, humankind's very life support system is under threat. In the past decades we have learned how the richness, configuration and functioning of biota on the landscape results in benefits to society. These benefits, known as "ecosystem services", include some of the most basic and critical human needs. We have also learned that the earth's capacity to deliver these services has been diminished, and continues to diminish over time.

2 An enormous amount of information, key to understanding and addressing the complex challenges we face, is accumulating at an accelerating rate. Yet much of it is either inaccessible or incomprehensible to policymakers. This knowledge, if it is to be used effectively and provide guidance to policy makers, must to be systematically assessed and integrated with existing knowledge.

3 We must acknowledge, however, that in spite of the wealth of information at our disposal, our understanding of what is happening on Earth remains scattered, fragmented, and thus insufficient. We need information on the social drivers of observed biological and geophysical change, in order to better understand the choices we make, to achieve more desirable trajectories, and avoid detrimental regime shifts in social-ecological systems. The prime challenge for IPBES is to collate, integrate, assess and communicate the information in an effective way.

4 The complexity of the interaction between biodiversity, the functioning of ecosystems and the delivery of benefits essential for human well-being requires an assessment process with a clearly-defined scope, nature, and key components. Furthermore, the complexity demands a trans-disciplinary assessment approach, drawing on both formal scientific data and local observed knowledge. The purpose of this document is to provide suggestions on the scope and nature of IPBES assessments and the number and type of working groups needed to effectively carry out these assessments.

5 IPBES will provide periodic updates on the status and trend of biodiversity and ecosystem services and their relationship with human

well-being, thereby supporting several multilateral agreements and other policy processes. IPBES will achieve this through regular, harmonized and coordinated assessments at the sub-regional, regional and global levels. The integrated multi-scaled approach is a unique feature that helps to address how system changes or interventions at one-scale impacts outcomes at other scales.

6 In order to achieve this level of synthesis and integration a common and shared conceptual framework is required for all aspects and scales of the assessment. It provides the basis for a shared data system and a set of collective indicators that cut across all scales. This allows comparative studies over time and space, providing scientists and policymakers with deeper insights into the processes underlying observed trends, and a way to transfer lessons learned to other affected environments.

7 Much of the knowledge on biodiversity and ecosystem services is developed and observed at the local level, and is considered "tacit" – not formally recorded, shared and tested. The assessment process must be designed to capture these forms of knowledge in a credible manner in addition to the standard peer-reviewed scientifically based information that has formed the core of assessments to date.

8 IPBES needs to be nimble and flexible in order to accommodate the urgent and changing needs of policymakers at different levels. Two features of IPBES are proposed to address this need, supplementary to the regular global, regional and sub-regional integrated assessments. These are the thematic and preliminary assessments.

9 Thematic assessments would focus on the changes in biodiversity or ecosystem services associated with a particular feature of social systems, the global environment, or the interaction between the two.

10 Preliminary assessments would address new issues identified as having potentially significant implications for policy but for which data are not sufficient to support a full assessment. On the basis of the preliminary assessment, the policy community can decide if a more detailed thematic assessment is necessary, or if the issue needs coverage in one of the regular assessments.

11 Understanding how biodiversity and ecosystem services might change in the future under different policy frameworks is key for the design of

appropriate proactive policies. Scenarios provide such insights. IPBES must provide the framework and facilitate a process to establish a network of scenario modelling centres of excellence. Equally important is to develop an approach for transparently analyzing and communicating uncertainty in observations, interpretations and projections.

12 Six principles underlie the design for IPBES assessments. They are saliency (i.e. relevance to the needs of users); independence of the assessment process from manipulation by interest groups; credibility of the assessment, ensured by the rigour of the process and the quality of the participants; inclusiveness, promoted by a broad demographic, geographic, disciplinary and knowledge-system base; legitimacy, through being governed and tasked by an authorized and representative mechanism; and capacity to adapt its processes and structures on the basis of experience and changing needs.

13 Participating scientists from the international assessment community submit the following considerations for the first session of the IPBES plenary based on a workshop convened by the government of Japan and the government of South Africa and hosted by the United Nations University, 25-29 July 2011, Tokyo, Japan.

Consideration 1: Establish regional consultative groups

14 Establish regional consultative groups of relevant scientific, civil society and business-related organizations to collectively identify the key questions and processes for the IPBES global, regional and sub-regional assessments.

Consideration 2: Establish an independent review panel

15 Establish an independent review panel as a subsidiary body in UNEP/IPBES.MI/1/4, para 21. This panel comprises acknowledged experts from various disciplines, regions and relevant knowledge systems, nominated by governments, scientific organizations and other relevant stakeholders, selected by an independent science body such as the Inter-Academy Council (IAC), and approved by the plenary using established and accepted criteria (to be proposed and approved by the plenary).

Consideration 3: Establish a science panel

16 Establish a science panel comprising experienced and respected scientists from a broad range of disciplines and regions, nominated by scientific organizations, governments, and other relevant stakeholders, and selected by the Review Panel and approved by the plenary of IPBES as in UNEP/IPBES.MI/1/4, para 21.

Consideration 4: Capacity building

17 Integrate activities of the proposed permanent working group on capacity building into all working and sub-working groups on Assessments as proposed in this document.

Consideration 5: Development of a conceptual framework

18 The initial task of the science panel – in line with consideration 3 – is to prepare a trans-disciplinary conceptual framework reflective of multi-scale spatial and temporal dimensions and the interactions between biodiversity, ecosystem services and human well-being, and explain how such a conceptual framework needs to be applied to thematic, special and comprehensive assessments including at different scales (Duraiappah 2011).

Consideration 6: Establish a working group on assessments

19 Establish a permanent trans-disciplinary group of experts – known as the 'Working Group on Assessments' (ref to UNEP /IPBES/M1/1/2(27c))– who work on regional and sub-regional scales as well as at the global scale . Its function is to coordinate the multi-scale implementation of the assessments, and the validation and inclusion of LINKS (Local and Indigenous Knowledge Systems) as part of all of the assessment components.

Consideration 7: Duration and cycle of regular assessments

20 The global, regional and sub-regional assessments should be designed and implemented to take into consideration the funding and time constraints, science capacity and political reality.

21 **Three options are suggested as ways of timing sub-regional, regional and global assessments:**

Option 1: Regular assessments conducted sequentially beginning with regional and sub-regional assessments

22 Adopt an assessment cycle of 10 years beginning with a 1-year scoping study during which the conceptual framework is agreed. Regional and

sub-regional assessments are then conducted over the next 4-year period, culminating with regional and sub-regional synthesis reports in year 5. The global assessment begins in year 5 and continues until year 9. Synthesis reports are produced in year 10.

Option 2: Regular assessments conducted partly in parallel

23 This assessment cycle has a total duration of 8 years. It begins with a 1-year scoping study during which the conceptual framework is developed. Regional and sub-regional assessments are conducted over the next four years, producing regional and sub-regional synthesis reports in year 5. The global assessment begins in year 3 and continues until year 7 producing synthesis reports in year 8.

Option 3: Regular assessments conducted sequentially beginning with global assessment

24 Adopt an assessment cycle of 8 years beginning with a 1-year scoping study during which the conceptual framework is developed. The global or comprehensive assessment begins in year 2 and continues till year 6 and synthesis reports are produced in year 7. Regional and sub-regional assessments begin in year 5 and continue to year 9 with synthesis reports produced in year 10.

Consideration 8: Regional and sub-regional working groups

25 Establish regional and ad-hoc sub-regional working groups under the Assessment Working Group as suggested in UNEP/IPBES.MI/1/4, para 27c on an as-need basis. These working groups will be identified through a process developed by the science panel and approved by the plenary to ensure there is coordination and harmonization across scales and that each regional or sub-regional assessment has clear objectives and deliverables.

Consideration 9: The identification and assessment of thematic issues

26 Themes are identified by IPBES member governments and/or through the mechanisms provided by biodiversity and ecosystem service-related Multilateral Environmental Agreements. Thematic assessments will be carried out by an ad-hoc sub-working group created for each specific thematic assessment and will be dissolved upon the completion of the assessment.

Consideration 10: Identification and assessment of new issues

27 New issues are identified and selected by the science panel, endorsed by the executive committee/bureau, and reported upon to the plenary. Preliminary assessments will be carried out by the ad-hoc sub-working group on preliminary assessments.

Consideration 11: Joint sub-working group on data and indicators

28 A sub-working group on data and indicators to be formed under the Assessment Working Group, in collaboration with the knowledge generation working group (para 27a of document UNEP/IPBES.MI/1/4) with the purpose of considering the information sources available to the assessment process, making recommendations on their appropriate and common use, and communicating with data providers regarding the needs of the assessment.

Consideration 12: Global biodiversity and ecosystem services observation system

29 IPBES commissions GEO BON to develop a global biodiversity observation system, by networking existing biodiversity monitoring initiatives and developing new initiatives where needed.

Consideration 13: Joint technical working group on scenario models and uncertainty

30 Establish a joint sub-working group of the Assessment Working Group and the Knowledge Generation Working Group, in collaboration with the global change research programs.

Consideration 14: Self-review

31 The IPBES plenary should instruct the Independent review panel to design specific mechanisms for a review of the assessment process itself as recommended by the Busan outcome (UNEP/IPBES/3/3 Annex Para 8). These mechanisms should be different from the review process of the scientific outputs of the IPBES assessments.

1. Preamble

32 The representatives at this Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES) gathering have collectively agreed to embark on a process that will provide us with the vital information that we need in order to understand and respond to the enormous challenges we all face as humanity. Our biosphere has been fundamentally transformed and is impaired in its capacity to meet the resource demands of a growing human population – some 7 billion by 2011.

33 In short, our very life support system is under threat. Humans are everywhere partially or completely dependent on biotic systems to provide us with clean water and air, food, protection from floods, climate moderation, renewable energy, adaptive genetic systems, and inspiration from the wonders of our living world.

34 In the past decades we have learned how the richness, configuration and functioning of biota on the landscape results in benefits to society. These benefits, known as "ecosystem services", include some of the most basic and critical human needs. We have also learned that the earth's capacity to deliver these services has been diminished, and continues to diminish over time.

35 The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) offers us a mechanism through which we can pool the collective knowledge of scientists, policy makers and citizens of the world in order to develop effective responses to these challenges. The Busan outcomes propose that IPBES should become the pre-eminent and authoritative source of international assessment in the area of biodiversity and ecosystem services.

36 An enormous quantity of new knowledge has accumulated in recent years that is key to understanding the complexities we face. This knowledge, in conjunction with knowledge that we have not used effectively in the past, must be assessed and integrated in order to provide guidance for the future. This is one of the prime challenges for IPBES. We know that our understanding of what is happening to the biosphere is incomplete. We need information on the social drivers of these changes if we are to understand the choices available to us as we try to achieve more desirable outcomes.

37 For example, we know that by optimizing one particular ecosystem service, such as carbon sequestration, we affect or even preclude efforts to optimize others, such as water supply or food security. Further, short-term benefits of harvesting one service diminish the capacity of delivering services over the long run. We are now developing the tools to map service delivery across landscapes to provide estimates of ecosystem services under different management regimes. These new tools are essential to meet challenges.

38 As participating IPBES scientists we agree that it is important to understand and evaluate the status of our earth as a whole, in terms of biotic richness and ecosystem service delivery, for conservation purposes as well as improving the human condition. The 2020 biodiversity targets and the Millennium Development Goals have set goals for the preservation of the earth's biotic capital and the improvement of human well-being, respectively, and we need a way to measure progress made toward achieving these goals.

39 However, we have also agreed that without regional and local knowledge, we will not be able to deploy policies and interventions that effectively target these local levels. Thus we have embarked on a new journey of making assessments both globally and locally. This is not only a new path, but also a collective learning process that will call for patience and determination.

40 As we move forward we are faced with a world that is changing rapidly. The drivers of global change–globalization, population growth, inequitable affluence, climate change, land use change, and invasive species are increasing in momentum.

41 The science and policy community will be challenged as never before. For example, restoring ecosystems to their former state may no longer be an option; rather, we may have to consider how to manage systems for optimal ecosystem service delivery using novel species assemblages. We will be using scenario-building to give us views of possible biotic, ecosystem service and human development outcomes under a variety of drivers to guide us into the future.

42 In sum, the challenges for the future are enormous. However, IPBES gives us, albeit belatedly, a mechanism to work together smartly as an international community – scientists, decision makers, and holders of

local and indigenous knowledge – to craft options to protect and augment our life support system in a manner that will support a bright future for humanity.

43 We call on all actors to ensure that the new found momentum created by this important international initiative will stand all nations of the world in good stead; that our collective wisdom and drive will provide a future that is not only sustainable but will foster the full potential of humanity, fully capacitated by a rich and nurturing environment. This document will focus on the assessment component of IPBES and provide guidance on decisions the plenary intends to make on the assessment's nature, scope, timing, underlying principles, structural arrangements and its trans-disciplinary context.

44 The document uses the Busan outcome as a non-binding guideline and acknowledges that all final decisions will be made at the first and second sessions of the plenary meeting of the IPBES. This document also does not express a view on the priorities that IPBES should address during assessments or the specific questions that the platform should investigate. It is anticipated that these issues can best be decided on by the IPBES plenary.

2. Assessment landscape

45 Critically reviewing the evidence and literature has long been a feature of scientific practice, but the process of 'Scientific Assessment' in the sense intended by the IPBES is a relatively recent development. By 'assessment', IPBES specifically means a structured, focused process designed to act as an interface between the policy-making and research domains, in relation to a defined topic of societal relevance.

46 The function of an assessment is the translation of information between the science and policy domains, with minimum distortion and with appropriate filtering of unnecessary detail, while preserving essential information of high certainty.

47 These processes have the following features: they are multi-authored by contributors from relevant disciplines that have diverse geographical experiences or represent different schools of thought; they are transparent through the governance of the process, the selection of authors and reviewers; they follow a multi-stage, rigorous and documented review process and the material they assess is

evidence-based, tested and in the public domain. The entire process is designed to be highly consultative and inclusive.

48 The first such assessment was the Ozone Assessment, published in 1989. Many dozens of assessments have been published since then, in a wide range of fields (see UNEP/IPBES/3/INF/1 for a review of those relating to biodiversity and ecosystem services). The assessment process continues to be modified, customized and refined, but shows considerable convergence in the best practice followed (Ashe et al. 2010). The Intergovernmental Panel on Climate Change (IPCC), now engaged in its fifth assessment, is one of the best-known examples.

49 As a result of its political importance and prominence it has attracted much scrutiny, and has had to pay formal attention to issues such as review independence and openness, and prior declarations of vested interests. The Millennium Ecosystem Assessment, a prototype for IPBES, based much of its process on the IPCC, but was unable to establish an 'intergovernmental' status.

50 This weakened its pathway into those decision-making processes that hold national governments as its key stakeholders, but allowed it to be more experimental in its procedures, incorporating, for instance, better balances of gender, age and natural versus human sciences, the innovation of regional assessments and an openness to engage with traditional or local knowledge sources.

51 The need for assessments arises from several factors. First, the complexity of the issues at stake means that it is unlikely that a single person or discipline can address all the nuances in a credible fashion. Second, the technical detail is such that non-specialists would struggle to comprehend and evaluate the literature unaided. Third, science and technology is no longer seen as aloof from everyday concerns – it is often both a root cause of the problem, and a key part of the solution.

52 Science that is funded from the public purse is required to be relevant and well communicated, and even privately funded research is required to be accountable. Assessments are here to stay as an institution and an essential mode in which scientists operate for at least some portion of their careers.

53 Not all assessments have been unqualified successes, and much can be learned from those that fell short of the mark in some respect. The

Global Biodiversity Assessment published in 1995 had little impact, largely because it was purely science-driven rather than motivated by a clearly articulated need from the policy domain. The International Assessment of Agricultural Knowledge, Science and Technology for Development, published in 2008, lost support from one major stakeholder group, which undermined its effectiveness.

54 Initial assessments using a less representative authorship and review process (such as the Global Forest Resources Assessment, the Global Environmental Outlook and the Global Biodiversity Outlook) lack the required impact achieved by more open, rigorous and widely-supported assessments.

55 The three cardinal rules for a successful assessment (Cash et al. 2003, Mitchell et al. 2006) are: salience (i. e., relevance to a technically-complex issue of societal concern); legitimacy (formally requested by a properly-mandated authorizing environment); and credibility (conducted in a rigorous and transparent way by a representative range of acknowledged technical experts).

3. What guiding principles would IPBES need to effectively, efficiently and equitably deliver policy relevant knowledge?

56 IN this document we list the following six principles required for the effective, efficient and equitable design and implementation of IPBES:

Principle 1: Saliency

57 Assessments need to be policy relevant, addressing complex issues of societal concern.

Consideration 1: Establish regional consultative groups

58 Establish regional consultative groups of relevant scientific, civil society and business-related organizations to collectively identify the key questions and processes for the IPBES global, regional and sub-regional assessments.

59 These consultative groups will work in consultation with the science panel (see consideration 3) and the working group on assessments (see consideration 5) and report to the plenary through the Executive Committee and/or Bureau (depending on the decision of the plenary to establish one or both of these bodies).

Principle 2: Scientific credibility

60 The selection of authors is a key determinant for ensuring the credibility of assessments undertaken by IPBES. Authors should be selected based on their scientific expertise in their respective areas or recognized experience in their respective knowledge systems.

61 In accordance, authors nominated by governments, civil society, business and scientific organizations and selected by the science panel using established and accepted criteria proposed by the science panel in consultation with the science panel and approved by the plenary.

62 The scientific credibility of the assessments will also be determined by the rigour of the reviewing process and the independence of the reviewing process from the science production process.

63 In accordance, reviewers will be nominated by governments, civil society, business and scientific organizations and selected by the review panel using established and accepted criteria by the review panel in consultation with the science panel and approved by the plenary.

Consideration 2: Establish an independent review panel

64 Establish an independent review panel as a subsidiary body in UNEP/IPBES.MI/1/4, para 21. This panel comprises acknowledged experts from various disciplines, regions and relevant knowledge systems, nominated by governments, scientific organizations and other relevant stakeholders, selected by an independent science body such as the Inter-Academy Council (IAC) and or International Council for Science (ICSU), and approved by the plenary using established and accepted criteria (to be proposed and approved by the plenary).

65 The function of the review panel would include:

- Select members of the science panel, taking into account the balance of expertise, knowledge systems, geographical coverage and gender;
- Design established and accepted criteria for the assessment review in consultation with the science panel, and approved by the plenary

- Design and oversee a peer review process, with special attention to the scale at which assessment is conducted, as in UNEP/IPBES.MI/1/4, article 20(c)(iv);

- Design established and accepted criteria for the assessment review in consultation with the science panel, and approved by the plenary

- Selection of the review editors and expert reviewers for assessments using established and accepted criteria (see above);

- Recommend, review and appoint peer review editors and help settle disputes in the peer review process as in UNEP/IPBES.MI/1/4, article 20(c)(vi);

- Design established and accepted criteria for the assessment authorship in consultation with the science panel, and approved by the plenary

- Participate in an Editorial Committee in finalizing Technical Papers as in UNEP/IPBES.MI/1/4, article 20(c)(i)

- Oversee scientific quality of the platform's products as in UNEP/IPBES.MI/1/4, article 20(c)(ix);

- Participate in the response to possible errors arising in the platform's products as in UNEP/IPBES.MI/1/4, article 20(c)(x).

Principle 3: Scientific independence

66 Assessments done by IPBES must be independent of any political and/or special interest process. This will require making the actual process of designing, implementing and drawing up the key findings separate from any political and/or special interest processes.

67 A science panel made up of prominent scientists working in their own capacity as scientists and free of any institutional representation should oversee the assessment process. The Co-Chairs of such a committee will also be members of the executive board or bureau of the IPBES to ensure a two-way and efficient dialogue between the scientific and policy communities.

Consideration 3: Establish a science panel

68 Establish a science panel comprising experienced and respected scientists from a broad range of disciplines, and regions nominated by scientific organizations, governments, and other relevant stakeholders, selected by the Review Panel and approved by the plenary of IPBES as in UNEP/IPBES.MI/1/4, article 21.

69 The Science Panel shall be co-chaired by a natural and social scientist respectively and have at least two members selected for the experience and engagement with LINKS (Local and Indigenous Knowledge Systems). The function of the science panel would include:

- Select authors for assessments using established and accepted criteria designed by the review panel in consultation with the science panel, and approved by the plenary;
- Participate in an Editorial Board in finalizing Technical Papers as in UNEP/IPBES.MI/1/4, article 20(c)(i)
- Provide advice on scientific and technical aspects of the platform's programme of work as in UNEP/IPBES.MI/1/4, article 20(c)(ii);
- Provide advice/assistance on technical and/or scientific communication matters as in UNEP/IPBES.MI/1/4, article 20(c)(iii);
- Oversee scientific quality of the platform's products as in UNEP/IPBES.MI/1/4, article 20(c)(ix);
- Participate in the response to possible errors arising in the platform's products as in UNEP/IPBES.MI/1/4, article 20(c)(x);
- Provide guidance on cross-cutting scientific issues related to the platform's products as in UNEP/IPBES.MI/1/4, article 20(c)(xi);
- Undertake a scoping exercise in collaboration with the working group on assessments utilizing the experience of previous assessments (as detailed in UNEP/IPBES/3/INF/1), and prepare a comprehensive glossary of terms, a conceptual framework using and developing links between the elements suggested above, and explain how such a conceptual framework needs to

be applied to thematic, special and comprehensive assessments including at the different scales.

- Generate the list of core variables to be tracked in the multi-scale assessments, revise it over time, and specify which additional issues should be included in any assessment.

- Draw a defined set of criteria for assessments ensuring trans-disciplinary (natural and human sciences), knowledge systems, geographical, and gender balance, which will be reviewed by the review panel and endorsed by the plenary.

- Approve specific scientific procedures related to the conduct of assessments and other studies as in UNEP/IPBES.MI/1/4, article 20(c)(viii);

Principle 4: Trans-disciplinary, regional and gender balanced

70 The close inter-linkages among biodiversity, ecosystem services and human well-being suggest a need for a trans-disciplinary team of scientists working on the assessment in a single group using a comprehensive conceptual framework that draws on the various disciplines and knowledge systems.

71 It is also critical that assessment teams are drawn from the various regions of the world and not dominated by any one region. Experts in a specific region or area will produce the context-based findings necessary for successful policy relevant assessments. In addition, exchange of experts within and across regions will build capacity and encourage a two way knowledge transfer process in particular between developed and developing countries.

72 The science panel will develop a defined set of criteria for selecting authors ensuring trans-disciplinary (natural and human sciences), knowledge systems, geographical, and gender balance; reviewed by the review panel; and endorsed by the plenary.

Principle 5: Legitimacy

73 Assessments taken under the directions of an intergovernmental body will by default enjoy legitimacy among governments and to a certain extent among other relevant stakeholders. However, to improve acceptance IPBES assessment findings among other stakeholder constituencies, establishment of processes to include these

organizations in the whole assessment will increase the legitimacy of IPBES (see consideration 1).

Principle 6: Equity

74 Considering the IPBES agenda of exploring the biodiversity and ecosystem service linkages with human well-being, the assessment has a particular responsibility to ensure that scientific capacity for carrying out these assessments is developed in an equitable manner across the globe. The capacity building principle has already been identified by IPBES and a permanent working group for this purpose has been proposed. It is imperative that activities of the proposed working group on capacity building are fully integrated within the activities of all working groups related to assessments.

Consideration 4: Capacity building

75 Activities of the proposed permanent working group on capacity building be integrated into all working and sub-working groups on Assessments as proposed in this document.

4. How will IPBES assessments add value to the existing assessment landscape?

76 Given the proliferation of environmental assessments, the added values of IPBES are:

- Becoming the pre-eminent and authoritative source of international assessment in the area of biodiversity and ecosystem services, in direct support of the international treaties addressing these topics, including (but not limited to) the Convention on Biological Diversity (CBD), the Ramsar Convention on Wetlands, the Convention on Migratory Species (CMS), the International Treaty on Plant Genetic Resources for Food and Agriculture (IT PGRFA), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), thus reducing the need for multiple, partly overlapping assessments;

- Acting as a partner with established assessment bodies such as the Intergovernmental Panel on Climate Change (IPCC) to conduct joint assessments of overlapping topics such as the effects of climate change on biodiversity, and helping to develop assessment capabilities in support of bodies with a biodiversity

and ecosystem component such the UN Convention on Combating Desertification and the Convention Concerning the Protection of the World Cultural and Natural Heritage.

- Being responsive, efficient and swift but thorough source of restricted-scope assessments in the field of biodiversity and ecosystem services, as tasked by its governing structures.

- Developing the procedures, setting standards and providing capacity building support for regional, sub-regional, global, thematic and new issues assessments (with special emphasis on the multi-scale effects) as they relate to the issues of biodiversity and ecosystem services change and their impacts on human well-being.

5. What will be the scope of IPBES?

77 IPBES will provide periodic and regular updates on key biodiversity and ecosystem services elements critical for human well-being in support of relevant multilateral agreements and other policy instruments. IPBES will achieve this through regular, harmonised and coordinated sub-regional, regional and global assessments.

78 An effective assessment strategy within IPBES requires that the economic, social, ecological, biophysical drivers of change, as well as existing governance, are taken into account. Accordingly, an important priority for IPBES will be the development of a trans-disciplinary conceptual framework agreed upon by the stakeholders involved, which can then be applied to assessments at multiple scales and levels of governance. This will enable the integration of assessments from different regions and scales.

79 The main areas of IPBES assessment include biodiversity (in terms of the three levels of organization – structure, function and composition) and ecosystem service types (supporting, provisioning, regulating and cultural).

80 These are all studied in relation to human well-being (defined as security, basic material for a good life, health, social relations and freedom of choice and action). This view of human well-being may require further elaboration to include rights and access to constituents and determinants of human well-being in relation to different parts of

society (including gender, social exclusion, and youth issues) and social relations, including how these are influenced by changes in the delivery of and access to ecosystem services.

6. How will IPBES assessments accommodate multiple knowledge systems?

81 Paragraph 7/d of the Busan outcome states that in carrying out its work, the platform should: "recognize and respect the contribution of indigenous and local knowledge to the conservation and sustainable use of biodiversity and ecosystems." Developing guidelines on how to access, evaluate, document, and protect different forms of Local and Indigenous Knowledge Systems (LINKS) in a collaborative/participatory (dual evidence-based) fashion will positively contribute to IPBES assessments (see Box 1).

Box 1: LINKS
LINKS are transmitted through different means and sources ranging from oral history and local texts to reports, databases, and scientific publications (peer-reviewed and non-peer-reviewed). It is important to avoid confusing the terms 'LINKS' and 'grey literature'. The latter is too inclusive, and may refer to different forms of knowledge (informal and formal) ranging from government and agency reports, to reports from non-governmental sectors, and industry, databases, and Internet entries.

82 We promote an approach that recognizes that evidence is also generated outside academic systems and needs to be evaluated using a different protocol, i.e. a dual evidence based approach, see Box 2.

83 The fit between social and ecological systems at each scale and across different scales (Brondizio et al. 2009) needs to be considered empirically according to the geographical regions and ecosystems studied.

84 IPBES assessments will be conducted following a trans-disciplinary conceptual framework reflective of multi-scale spatial and temporal dimensions and the interactions between biodiversity, ecosystem services and human well-being in an adaptive manner.

Box 2. Dual Based Evidence

The dual evidence-based peer-review process takes into account that different criteria of validation should be applied to data and information originating from different knowledge systems. 'Dual evidence base' means that in the assessments, the different knowledge systems are viewed as generating equally valid evidence for interpreting change, trajectories and causal relationships. Although some forms of LINKS data/information can be validated by scientific methods (e.g., agro-diversity; species interactions) others are highly context-specific and difficult to generalize (e.g., traditional beliefs underlying management systems and/or institutional arrangements; knowledge pertaining to cultural ecosystems services). In those cases, it is important not to impose standard scientific criteria, such as replication and generalization and that validation is instead done through transparent and accepted methods, consistent and sensitive to the local and cultural context.

85 The conceptual framework should ensure analytical consistency across scales so that the different types of assessments accurately reflect the cross-scalar dimensions of the biodiversity/ecosystem services and human well-being phenomenon.

7. How will IPBES deliver a common science platform?

86 If IPBES is to provide a common science platform to be used by a range of stakeholders involved in the field of biodiversity, ecosystem services and human well-being, it will need to provide a harmonized framework with a set of common core variables.

Harmonization of conceptual frameworks, approaches and methods

87 Irrespective of the scales selected, some degree of standardization in approach across regional and sub-regional assessments is necessary. This facilitates comparisons across assessments, allows for collective regional understanding and scalability to the global levels. A **harmonized** assessment is one where frameworks, approaches, data and reporting are based on compatible protocols in order to ensure that data can be aggregated and interpreted at more scales than where data were collected.

88 The MA began the process of harmonizing multi-scale approaches to ecosystem service assessment by focusing on a shared conceptual framework. But it is necessary to move beyond frameworks towards sampling protocols that are standardized to some degree, to encourage data sharing or integrated modelling and reporting to truly achieve a degree of harmonization. There are several programmes currently working on developing such standards e.g. GEO BON, CBD, SGA-Network.

89 A well-coordinated assessment is also one where the timing of assessments, assessment activities and their funding are appropriate and structured to achieve well-defined outcomes. Furthermore, there needs to be agreement about criteria to be used for site selection of regional and sub-regional assessments if they are to be representative as well as relevant and useful to the entire global IPBES process.

90 A set of aligned assessments would increase the likelihood of information flow across scales. Other existing assessments such as the GEO, GBO, FRA should be harmonized with the IPBES global assessment process to avoid duplication and overlaps.

91 Regional assessments should themselves be able to determine the need for and assess the added value gained from incorporating new sub-regional assessments into any regional assessment process. Ongoing sub-regional assessments may be incorporated and may add considerable additional value and innovation to the entire assessment process.

Choice of core variables related to biodiversity, ecosystem services and human well-being to be addressed at different scales

92 The selection of core variables related to biodiversity, ecosystem services and human well-being is determined by their relevance at the global, regional and sub-regional scales.

93 The approach should leave sufficient room for capturing new and emergent issues related to global ecosystem services and biodiversity but keeps as a consistent core a set of ecosystem services and biodiversity issues which are assessed in a consistent way over time. The IPBES Science Panel should be charged to generate such a list of core variables, revise it over time, and specify which additional variables should be included in any assessment.

Consideration 5: Development of a conceptual framework

94 The initial task of the science panel – in line with consideration 3 – is to prepare a trans-disciplinary conceptual framework reflective of multi-scale spatial and temporal dimensions and the interactions between biodiversity, ecosystem services and human well-being, and explain how such a conceptual framework needs to be applied to thematic, special and comprehensive assessments including at different scales.

8. How will IPBES assessments be conducted?

95 In order to ensure a credible scientific process that generates legitimate results, IPBES requires a dedicated group of knowledge experts consistent with and suited to the scope of assessment.

Consideration 6: Establish a working group on assessments

96 Establish a permanent trans-disciplinary group of experts – known as the 'Working Group on Assessments' (ref to UNEP /IPBES/M1/1/2(27c))– who work on regional and sub-regional scales as well as at the global scale . Its function is to coordinate the multi-scale implementation of the assessments, and the validation and inclusion of LINKS (Local and Indigenous Knowledge Systems) as part of all of the assessment components.

9. How will IPBES advance its ability to provide regular and periodic updates of local to global changes in biodiversity, ecosystem services and human well-being?

97 Most assessments are focused on a single scale e.g. global (IPCC) or national and/or regional (SAMFA, UKNEA, JSSA). Multi-scale assessments are necessarily complex and have encountered difficulties in obtaining data and knowledge to move across scales (e.g. Wells et al. 2006). The assessments performed within IPBES will be multi-scale in order to ensure that IPBES meets its objectives:

- **Reporting**: For IPBES to be policy relevant it must report on biodiversity and ecosystem services at global as well as regional, and in some cases sub-regional, scales: (a) IPBES is global in mandate and purpose; (b) it must also be regional, as this is the scale at which ecosystem management and interventions are frequently required; and sometimes (c) it needs to work at sub-regional scales for policy or ecological reasons.

- **Assessing**: The ecological and social processes underpinning biodiversity and ecosystem services function over multiple scales from global (climate regulation) to local (some cultural and recreational services). Not only do services differ in the scales at which they function, but the drivers of changes, as well as the benefit flows from services may vary across space and time.

- **Responding**: A multi-scale approach is required to guide policymakers to identify appropriate responses for improving biodiversity, ecosystem services and human livelihoods. In addition, responses will have to be implemented at the management scale, which may be global in the context of MEAs, but in many cases responses will be implemented at the sub-regional scale out of practical considerations and policy imperatives.

98 We anticipate that the bulk of the work for IPBES will be done at the regional scale. If these assessments are to be useful to the global assessment and to meet IPBES requirements then there must be considerable harmonization between the regional and the global assessment. In addition, while there is not much said of the sub-regional assessments in the Busan outcome, these are likely to be finer-scale assessments.

99 These could be done at sub-national scales, e.g. municipality or perhaps at watershed or wetland scale. Although IPBES can assist national assessments in aligning protocols and procedures it is not an IPBES mandate to conduct assessments at a national scale. Sub-regional assessments may vary in scope but could be useful in (1) validating measures made by regional assessments, (2) assessing ecosystem services which do not function or cannot be observed at regional or global scales (e.g. pollination, some cultural values, some water quality components, etc.), (3) allowing for the better integration of local knowledge systems into ecosystem service trade-offs and human livelihood decisions, and 4) enhancing ecosystem service management, action and responsiveness at a local authority level.

100 If IPBES is to be a successful multi-scale assessment, it will require careful design and implementation in order to ensure that, where appropriate, data, approaches and knowledge generated at the sub-

regional and regional scales flow through to the global assessment and vice versa.

Optimizing multi-scale coordination and communication

101 Setting up a process ensuring a comprehensive and regular coordination between the assessments conducted at different scales will help create a forum to explore, recognize and deal with important feedbacks and processes that have impacts on scales well beyond those measured in sub-regional or regional assessments.

102 A bottom-up approach would be more sensitive to intra-regional variability and its implications for the understanding of regional patterns of ecosystem change. A top-down approach would be more sensitive to macro-level processes and patterns (Brondizio et al. 2009; Spierenburg et al. 2008).

103 The IPBES assessment process should consider building upon recently proposed frameworks, such as the Socio-Ecological Systems framework proposed by Ostrom (2009), which have mechanisms to integrate local level processes and institutional arrangements into cross-scale assessments.

104 It is important that regular regional, sub-regional and global assessments are conducted on a regular periodic timeline. Given the complexity of biodiversity and ecosystem services, the period between successive assessments should be on the order of 8-10 years. The actual time required to conduct a given assessment is on the order of 3-5 years, allowing sufficient opportunity for several review phases.

105 Although it is generally agreed that regional assessments should precede global assessments to allow unidirectional flow of information and knowledge, the degree of scheduled overlap between the regional assessments and global assessments will to a large degree determine the total assessment schedule duration.

Consideration 7: Duration and cycle of regular assessments.

106 The global, regional and sub-regional assessments should be designed and implemented taking into consideration the funding and time constraints, science capacity and political reality.

107 There are three options of designing the timing of the various sub-regional, regional and global assessments. These are:

Option 1: Regular assessments conducted sequentially beginning with regional and sub-regional assessments

108 Adopt an assessment cycle of 10 years beginning with a 1-year scoping study during which the conceptual framework is agreed. Regional and sub-regional assessments are then conducted over the next 4-year period, culminating with regional and sub-regional synthesis reports in year 6. The global assessment begins in year 5 and continues until year 9. Synthesis reports are produced in year 10.

Option 2: Regular assessments conducted partly in parallel

109 This assessment cycle has a total duration of 8 years. It begins with a 1-year scoping study during which the conceptual framework is developed. Regional and sub-regional assessments are conducted over the next four years, producing regional and sub-regional synthesis reports in year 6. The global assessment begins in year 3 and continues until year 7 producing synthesis reports in year 8.

Option 3: Regular assessments conducted sequentially beginning with global assessment

110 Adopt an assessment cycle of 10 years beginning with a 1-year scoping study during which the conceptual framework is developed. The global or comprehensive assessment begins in year 2 and continues till year 6 and synthesis reports are produced in year 7. Regional and sub-regional assessments begin in year 5 and continue to year 9 with synthesis reports produced in year 10.

Consideration 8: Regional and sub-regional working groups

111 Establish regional and sub-regional ad-hoc sub-working groups under the Assessment Working Group (27c) on an as-need basis. These working groups will be identified through a process developed by the science panel and approved by the plenary to ensure there is coordination and harmonisation across scales and that each regional or sub-regional assessment has clear objectives and deliverables.

10. How will IPBES respond to thematic issues and new emergent problems?

112 The need for accommodating thematic and new issues is derived from the dynamic nature of human-environmental interactions that

frequently lead to the emergence of novel societal or environmental issues. Consequently, the Busan meeting agreed that IPBES should undertake: 'thematic issues at appropriate scales and new topics identified by science'.

Thematic assessments

113 Thematic assessments would address either drivers or impacts of biodiversity and/or ecosystem services change that occur at multiple scales. Rather than focus on all biodiversity and/or ecosystem services change occurring at a particular geographical scale, such assessments would focus on the biodiversity changes associated with a particular feature of the social system, the global environment, or the interaction between the two. Examples include the effects of climate change on the distribution of species, the effects of trade on the dispersal of species, or the effects of new technologies on habitat.

114 Candidate thematic issues might be expected to have a number of characteristics:

- Not confined to any particular geographic region
- Potential significance for human well-being
- The lack of common understanding of the problem between the scientific and policy communities

115 Thematic issues are currently addressed in a highly fragmented way. Some attention was paid to the problem in the Millennium Assessment, but there has been no systematic evaluation of the consequences for global human, animal and plant health. This makes it imperative that thematic assessments should be chosen in a manner that is both complimentary to the regional, sub-regional and global assessments; and responds to policymakers' immediate demands.

Consideration 9: The identification and assessment of thematic issues

116 Themes are identified by IPBES member governments and/or through the mechanisms provided by biodiversity and ecosystem service-related Multilateral Environmental Agreements. Thematic assessments will be carried out by an ad-hoc sub-working group created for each

specific thematic assessment and will be dissolved upon the completion of the assessment.

117 Themes are selected, prioritized and sequenced for assessment by the IPBES executive board/bureau, taking into account advice from the science panel regarding the feasibility of assessment and the urgency and importance of the issue.

Preliminary assessments

118 Preliminary assessments of issues new to science would address aspects of biodiversity and ecosystem change that have been identified by scientists as having potentially significant implications for policy or human well-being, but for which the data are not sufficient to support a full assessment.

119 Preliminary assessments represent the first stage in a triage process designed to determine whether the issues identified are sufficiently important that they should be recommended for full assessment, further research or policy response. They might include either novel effects (e.g. emerging environmental trends), or effects that have been present for some time but whose significance has been newly discovered (e.g. ocean acidification).

120 They might, for example, be suggested by national horizon scanning activities, by UNEP's Division of Early Warning and Assessment, by the global change research programs or by scientific associations. The science panel in collaboration with the Executive board or Bureau will identify the topics for preliminary assessment and the assessment reports will be submitted to the Plenary.

Consideration 10: Identification and assessment of new issues

121 New issues are identified by and selected by the science panel and endorsed by the executive board/bureau and reported upon to the plenary. Preliminary assessments will be carried out by an ad-hoc sub-working group on preliminary assessments created for each .

11. How will IPBES support the further development and continuous improvement of coupled system indicators, consolidating essential data, information and knowledge?

122 In order to effectively support the continued improvement of use of knowledge, IPBES should establish the following:

1. a critical set of indicators,

2. appropriate accessibility to relevant data, and

3. mechanisms for handling different sources of data and information in the assessment process.

A set of critical indicators

123 While monitoring change in biodiversity has a rather long history with the development of a set of reasonably working and agreed upon indicators, there are still significant challenges when it comes to measuring and monitoring ecosystem services.

124 The first challenge revolves around the fact that ecosystem services are produced by an interconnected social-ecological system, rather than by ecosystems alone. It means that measuring ecological properties and functions alone will not provide an adequate picture of ecosystem service status and trends, but will need significant input of social and economic data.

125 Recognizing that ecosystem services represent benefits that are the products of connected social-ecological systems (SESs) is a significant departure from the current view of ecosystem services as the benefits produced by ecosystems only. This also means that there is a need for indicators that, in line with the conceptual framework, not only capture biodiversity and ecosystem services, but also capture benefits of services, changes in human well-being and effects of policy.

126 The second challenge relates to that ecosystems provide bundles of ecosystem services that interact with one another in a dependent and nonlinear fashion.

127 Decisions to enhance a particular ecosystem service can affect the type, magnitude, and mix of other services provided by that ecosystem and result in synergies or trade-offs. The current tendency to focus on individual ecosystem services is therefore problematic and makes it hard to understand the total ecosystem services consequences of a particular decision or development trajectory.

Consideration 11: Joint sub-working group on data and indicators

128 A sub-working group on data and indicators to be formed under the Assessment Working Group, in collaboration with the knowledge generation working group (see 27(a) of document UNEP/IPBES.MI/1/2) with the purpose of considering the information sources available to the assessment process, making recommendations on their appropriate and common use, and communicating with data providers regarding the needs of the assessment.

129 The sub-working group should collaborate with other conventions and data users, data suppliers and the funders of data collection actions in order to help create an efficient and effective flow of information. It can draw, for example, on the experience of the Biodiversity Indicator Partnership that is building the indicators linked to the CBD 2020 targets and/or other indicator processes working on the Millennium Development Goals.

130 The IPBES interest, in particular, is for a geographically- explicit and scalable set of indicators addressing key elements of the conceptual framework that are able to quantify the trade-offs and synergies among ecosystem services, within and between different temporal and spatial scales.

Accessibility to relevant data

131 In previous assessments of biodiversity (GBO) and ecosystem services (MA), primary sources of data have been national reports, published literature and global data, with sometimes considerable limitations, since data often were collected for a different purpose.

132 For global assessments, data availability in digital format is still somewhat limited and biased, with e.g. much less data for plants and invertebrates than for vertebrates, but much improved data availability for marine organisms and vascular plants. Data availability is much

more limited when it comes to social and economic aspects of biodiversity and ecosystem services.

133 These limitations of biodiversity data are in contrast to climate data for which temperature is being recorded automatically and continuously in thousands of monitoring points distributed over the world. GEO BON aims at developing a global biodiversity observation network linking existing biodiversity monitoring programs and fostering the establishment of monitoring programs to cover important gaps (spatial, taxonomic or other). GEO BON is triggering regional activities to network observations and promote new observations through growing activities of regional BONs.

134 For these purposes, a definition of geographic hierarchies at which data is collected and scaled up in a cost-effective manner will need to be developed. One approach is to build and expand the extensive monitoring initiatives, such as the Common Bird Indicator. In addition, some working groups of GEO BON have plans to set up "observation nodes" or "observation core sites" where time-series data of biodiversity and ecosystem changes will be obtained intensively at a particular site. GEO BON will also promote the open access and interoperability of biodiversity data across biodiversity repositories such as GBIF.

Mechanisms for handling different sources of data and information

135 To address the fact that both indicators and the data to populate indicators are scarce in many parts of the world, particularly in tropical developing countries with often very rich biodiversity, it is important that IPBES uses all sources of data and develop mechanisms, i.e. the dual evidence base (see box 1) to be able to handle in appropriate ways, data, indicators and information generated in different knowledge systems, including indigenous and local knowledge.

136 IPBES should consider the large body of literature (ranging from peer-reviewed, to databases, to reports, etc) on Local and Indigenous Knowledge Systems, particularly on ethno-ecology, ethno-botany, ethno-pharmacology, and ethno-biology in general, representing the richness of experiences in different societies and their landscapes.

137 There are many ongoing efforts to develop common language, protocols, and frameworks to collect, analyze and compare knowledge

about resource management systems in a cumulative and comparative fashion. For instance, the Institutional Analysis Development and the SES framework developed by Ostrom (2009) represent an effort to build upon the analysis of thousands of case studies and comparative interdisciplinary research.

Consideration 12: Global biodiversity and ecosystem services observation system

138 IPBES commissions GEO BON to develop a global biodiversity observation system, by networking existing biodiversity monitoring initiatives and developing new initiatives where needed.

139 IPBES may further ask GEO BON to contribute to, or facilitate through its contacts in GEO and elsewhere, the accessibility of LINKS, social and economic data related to biodiversity and ecosystem services (such as the benefits derived from them, the impacts on human wellbeing, and indicators of policy actions). Data pertaining to regime shifts, tipping points and the monitoring of change in the resilience of social - ecological systems (SESs) will be also required.

12. How will IPBES assess future policy choices for biodiversity, ecosystem services and human well-being?

140 Scenarios have played an important role in alerting the public and policy makers to potentially large-scale degradation of biodiversity and ecosystem services over the next few decades in a wide variety of systems. (MA 2005). For example, global and regional models forecast of widespread bleaching and degradation of tropical coral reefs taking place unless strong measures to reduce CO2 (Hoegh-Guldberg et al. 2008) were taken led the CBD to set protection of coral reefs as one of its highest priorities.

141 Scenarios of biodiversity and ecosystem services are based on qualitative and/or quantitative analysis of the dynamics of social-ecological systems into the future. All recent global assessments of biodiversity and ecosystem services have included scenarios periods that span times scales from the next several decades to the end of the 21st century (MA, GEO4, GBO2, GBO3).

142 Scenarios serve several important functions: to better understand and synthesize a broad range of observations; alert decision makers to possible undesirable impacts of global change; evaluate the future costs

and benefits of protection of biodiversity and ecosystem services; provide decision support for developing adaptive management strategies; and to explore alternative social-ecological development pathways (Pereira et al. 2010).

143 One of the key objectives is to move away from current reactive modes of decision making in which society responds to the degradation of biodiversity and ecosystem services in an uncoordinated, piecemeal approach, to a more proactive mode in which society anticipates change and thereby minimizes negatives impacts and capitalizes on important opportunities through management and policy choices.

144 In most cases, the development of environmental scenarios starts with the development of alternative socio-economic pathways, based on plausible, qualitative storylines. These storylines can be exploratory based on a range of uncertainties, or prospective based on visions of what to achieve, and rely on participatory processes with stakeholders.

145 In contrast, the new generation of IPCC scenarios (Moss et al. 2010) starts by defining targets for future radiative forcing levels, which are associated with representative concentration pathways (RCPs). The scenario teams then work back to the socio-economic scenarios, which might produce these RCPs, and forward to the climate change projections and climate change impacts.

146 A more policy oriented scenario approach has been suggested for IPBES. IPBES stakeholders will identify specific policy options to be evaluated and scenarios should provide quantitative and/or qualitative conditional prediction of the consequences of those options and scenario outcomes should allow policy-makers to evaluate the relative merits of mitigation, adaptation, and stabilization strategies (Perrings et.al 2011). One could therefore start by defining different target levels related to the 2020 targets of the CBD, and the ecological, social and economic outcomes could be examined at different scales, from global to national.

147 In terms of building scenarios according to the various spatial scales of the assessments, a number of approaches may be considered: develop global scenario then downscale the global scenarios to regional levels, develop global and regional scenarios in parallel, and develop regional scenario and then up-scale the regional scenarios to the global level.

148 Scenarios also need to consider how local social-ecological systems are shaped by their connections to other places. Complex socio-ecological systems possess critical thresholds, multiple drivers of change, and reciprocal feedbacks between social and ecological components (Carpenter et al. 2009).

149 Living with this complexity and change requires adaptive approaches to management and governance with decision-making under high degrees of uncertainty. As a reflection of local experiences, LINKS can contribute to the understanding of interactions between fast and slow drivers of social and ecological change and to identify appropriate operational scales for scenario building.

Consideration 13: Joint technical working group on scenario models and uncertainty

150 Establish a joint sub-working group of the Assessment Working Group and the Knowledge Generation Working Group, in collaboration with the global change research programs.

151 This joint working group's mandate is to identify and stimulate the development of suitable models for use in IPBES, stimulate inter-model comparison and validation against data. In addition, it is tasked with the definition and treatment of uncertainty and the exploration of ways to identify and quantify tipping points (including their certainty) in the context of scenarios.

152 Adopting a single-model approach was unavoidable in earlier assessments due to lack of models (MA, GEO4, GBO2), but this has now been abandoned in favour a synthesis of published research (GBO3, IPCC). The joint working group should adopt a multi-model approach to provide scenarios in IPBES. Furthermore, model-based scenarios need to be validated against observations and experimental data (Pereira et al. 2010).

153 Uncertainty is characterized and communicated by describing how much is known about a topic (i.e. the quality and nature of the evidence available) and the probability that a particular event will occur. Treatment of uncertainty has not been a strong point of assessments of biodiversity and ecosystem services, although substantial progress has been made over the last several years (see GBO3). The working group should develop a clear and transparent way of dealing and presenting

uncertainty especially those findings that will be used for decision support or closely scrutinized by the public.

13. How will IPBES assessments improve through assessments?

154 It is also important for the success of the long-term assessment process that there are mechanisms for self-reflection and a review of the process itself, including conceptual framework, modes of operation, cycle of reporting etc. Such self-reflection and review should be integrated in continuous way in the regional, sub-regional assessments and, global assessment and be undertaken at the beginning of each assessment cycle, building on experiences in the regional and sub-regional and global assessments.

Consideration 14: Self-review

155 The IPBES plenary should instruct the Independent review panel to design specific mechanisms for a review of the assessment process itself as recommended by the Busan outcome (UNEP/IPBES/3/3 Annex Para 8). These mechanisms should be different from the review process of the scientific outputs of the IPBES assessments.

14. How many working groups are proposed for implementing IPBES assessments?

156 The IPBES working document (UNEP/IPBES.IMI/1/4 (27)) mentions four working groups to implement the four work components of IPBES. However, a single working group will neither be effective nor efficient to oversee the implementation of the assessments module. The preceding discussion clearly highlights the complexity of the assessment component and the need for a range of knowledge assessors.

157 Moreover, some assessment activities are only required for a short period of time while others require longer gestation periods. There might be a trade-off between effectiveness and efficiency. Table 1 below provides an overview of sub-working groups that should allow IPBES deliver on its mandate on assessments (working group) as requested by the working document for the 1st session of the IPBES plenary meeting (UNEP/IPBES/IM1/4).

Table 1: Sub-working groups (SWG) proposed to develop the programme of work of the IPBES working group (WG) on assessments

Sub-working group	Time horizon	Nature	Link with Bodies	Composition
Global Assessment SWG		Permanent	Science panel (SP)	Knowledge experts from around the globe
Regional Assessments SWGs (number depending on number of assessments)	4 years	Ad-hoc	WG on Assessments	Knowledge experts from specific regions
Sub-regional Assessments SWG (sub-set of regional WGs). Number depending on number of sub-regional assessments	Depending on scope and complexity of sub-regional	Ad-hoc	WG on Assessments	Knowledge experts from specific regions
Data and indicators SWG		Permanent	WG on Assessments, WG on Knowledge Generation	Experts in data, indicators, modelling
Scenario SWG		Permanent	WG on Assessments, WG on Knowledge Generation	Experts in modelling and uncertainty
Preliminary Assessment	Depending on scope	Ad-hoc	WG on Assessments	Knowledge experts on new issues
Thematic WG	Depending on scope	Ad-hoc	WG on Assessments	Knowledge experts on thematic issues

15. How will the other work components of IPBES contribute to assessments?

159 This section provides some ideas of how the working group on assessment may work with the other IPBES components of work (Figure 1) and how the overall IPBES assessment working group structure may look like (Figure 2).

160 The Busan outcome identified three other key work components in addition to assessments. These are knowledge generation, capacity building and policy support. The success of IPBES will depend largely on how effective and efficient each work component performs but also on the degree of coherence and collaboration between the work components. For example, collaboration between the assessment working group and the capacity building-working group will be useful in facilitating the involvement of young scientists in assessment activities and acquire expertise through a learning by doing approach.

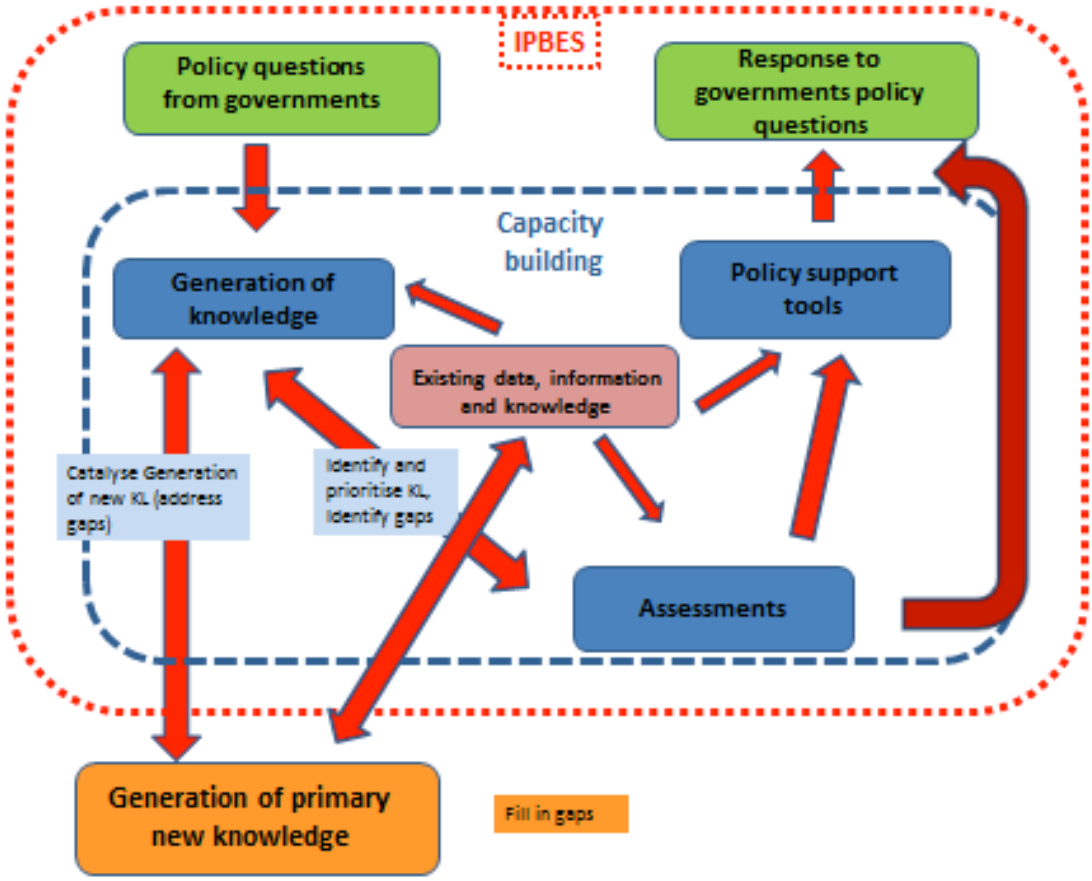
161 Similarly, policymakers often struggle to find ways to act on assessment findings. A joint activity by the assessment working group with the policy support working group could develop and or transfer tools and methodologies to countries and other relevant stakeholders to act on the findings of the assessment.

162 Similarly, it is equally important for the scientific research community to address the scientific gaps highlighted by the assessments. This can be enabled through close collaboration between the assessment group and the knowledge of generation group within IPBES. Informing the scientific research community of the gaps in knowledge the assessment fhighlights will go towards the facilitation of new research programs to plug those gaps. Figure 1 provides some initial ideas of possible collaborations across the different working groups of IPBES.

163 Capacity building is treated as an overarching and intrinsic element in all IPBES work components (see Figure 1). Therefore, capacity building in assessments will not be seen as a discrete exercise but is built into all assessment activities.

Figure 1: Conceptual diagram for the four functions of IPBES

164



165 The IPBES process is contained within the dotted red line.

166 The 4 functions of IPBES are represented by blue boxes, the capacity building (dotted blue box) being larger, and around the 3 other functions (Generation of knowledge, Policy support and Assessments), to acknowledge the fact that capacity needs to be built for all functions of IPBES.

167 The generation of knowledge working group works closely with the assessment working group in the following two ways:

168 1) working closely with the sub-working group on data and indicators to Identify and prioritize knowledge and gaps: This is illustrated by the arrow going from the generation of knowledge function to the assessment function.

169 2) working closely with the scenarios sub-working group to identify modeling capacity and modeling resources required to carry out scenario analysis.

170 The assessment function will deliver 5 types of assessments: global, regional, sub-regional, thematic and on new topics. In addition, it is necessary for the assessment function to undertake specific activities on data and indicators, and scenarios. These are described in more detail Figure 2 presenting the structure IPBES might have.

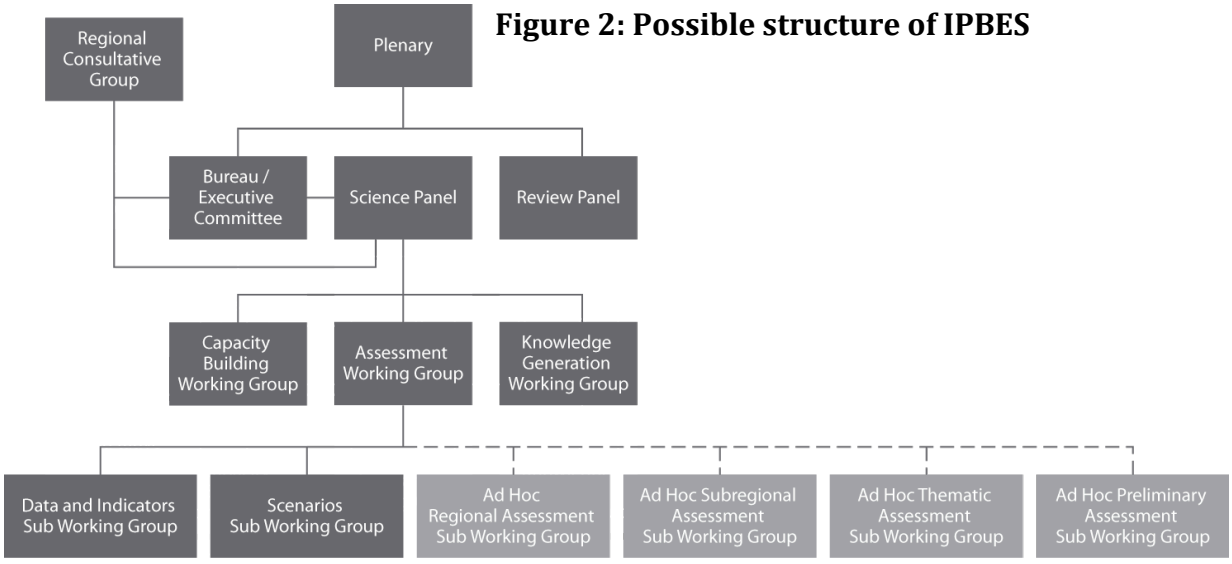


Figure 2: Possible structure of IPBES

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