IUCN suggestions regarding the components of IPBES work programme (2014 - 2018)

IPBES-3 from 12 to 17 January 2015 (Bonn, Germany)

The second IPBES plenary in Dec 2013 in Antalya approved an ambitious work programme for 2014–2018, with many components of the work programme scheduled to begin in 2014, summarized in IPBES/2/17. This document provides suggestions from IUCN regarding key considerations for the IPBES process as it addresses each of these components. It is intended to be modular, so that IUCN suggestions on each IPBES work programme component can stand alone and be utilized in their own right.

The basis for these suggestions is derived from two resolutions from the fifth IUCN World Conservation Congress in Jeju in 2012: WCC-2012-RES-117 "Operationalization of the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES)" and WCC-2012-RES-118 "A significant role for IUCN in the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES)". Building from these, the documents which follow were compiled through consultation with the relevant components of the IUCN Membership, Commissions, and Secretariat.

The components of the IPBES work programme are as follows:

Mechanism	Deliverable		Meeting	URL
Task force on capacity building	1(a)	Priority capacity-building-needs to implement the Platform's work programme matched with resources through catalysing financial and in-kind support	21–23 May 2014, Norway; 15–21 Sep 2014, Brazil	http://www.ipbes.net/work-programme/objective-1/45-work-programme/451-deliverable-1ab.html
	1(b)	Capacities needed to implement the Platform's work programme developed		

Mechanism	Deliverable		Meeting	URL
Task force on indigenous and local knowledge systems	1(c)	Procedures, approaches and participatory processes for working with indigenous and local knowledge systems	16–20 Jun 2014, France	http://www.ipbes.net/work-programme/objective-1/45-work-programme/453-deliverable-1c.html
Task force on knowledge and data	1(d)	Priority knowledge and data needs for policymaking addressed through catalysing efforts to generate new knowledge and networking	3–6 Jun 2014, Republic of Korea	http://www.ipbes.net/work-programme/objective-1/45-work-programme/454-deliverable-1d.html
Expert group on guide to assessments	2(a)	Guide on production and integration of assessments from and across all scales	13–16 Aug 2014, Kenya	www.ipbes.net/work-programme/objective-2/45-work-programme/455-deliverable-2a.html
Expert groups to scope regional and sub-regional assessments	2(b)	Regional/subregional assessments on biodiversity and ecosystem services	18–22 Aug 2014, Kenya	http://www.ipbes.net/work-programme/objective-2/45-work-programme/456-deliverable-2b.html
None yet	2(c)	Global assessment on biodiversity and ecosystem services	None yet	http://www.ipbes.net/work-programme/objective-2/45-work-programme/457-deliverable-2c.html
Assessment on pollination and pollinators associated with food production	3(a)	Fast-track thematic assessment of pollinators, pollination and food production	30 Jun–4 Jul 2014, Germany	http://www.ipbes.net/work-programme/objective-3/45-work-programme/458-deliverable-3a.html
Expert group to scope thematic assessment of land degradation and restoration	3(b)(i)	Thematic assessment on land degradation and restoration	8–12 Sep 2014, China	http://www.ipbes.net/work-programme/objective-3/45-work-programme/459-deliverable-3bi.html
None yet	3(b)(ii)	Thematic assessment on invasive alien species and their control	None yet	http://www.ipbes.net/work-programme/objective-3/45-work-programme/465-deliverable-3bii.html
None yet	3(b)(iii)	Thematic assessment on sustainable use and conservation of biodiversity and strengthening capacities and tools	None yet	http://www.ipbes.net/work-programme/objective-3/45-work-programme/466-deliverable-3biii.html
Methodological assessment on scenario analysis and modeling of biodiversity and ecosystem services	3(c)	Policy support tools and methodologies for scenario analysis and modelling of biodiversity and ecosystem services	28–30 Apr 2014, Germany; 27–31 Oct 2014, Netherlands; 9–15 Mar 2015, tbd; 27 Jul–2 Aug 2015, tbd	http://www.ipbes.net/work-programme/objective-3/45-work-programme/460-deliverable-3c.html

Mechanism	Deliverable		Meeting	URL
Expert group to scope methodological assessment on the conceptualization of values of biodiversity and nature's benefits to people	3(d)	Policy support tools and methodologies regarding the diverse conceptualization of values of biodiversity and nature's benefits to people including ecosystem services	2–5 Jul 2014, Germany; 8–12 Sep 2014, Germany	http://www.ipbes.net/work-programme/objective-3/45-work-programme/461-deliverable-3d.html
Task force on knowledge and data (as above)	4(a)	Catalogue of relevant assessments	3–6 Jun 2014, Republic of Korea (as above)	http://www.ipbes.net/work-programme/objective-4/45-work-programme/462-deliverable-4a.html
	4(b)	Development of an information and data management plan		http://www.ipbes.net/work-programme/objective-4/45-work-programme/463-deliverable-4b.html
Expert group on catalogue of policy support tools and methodologies	4(c)	Catalogue of policy support tools and methodologies	6–8 May 2014, Germany; 13–15 Aug 2014, Kenya	http://www.ipbes.net/work-programme/objective-4/45-work-programme/464-deliverable-4c.html
Bureau & MEP	4(d)	Set of communication, outreach and engagement strategies, products and processes	None	http://www.ipbes.net/work-programme/objective-4/45-work-programme/467-deliverable-4d.html
Bureau & MEP	4(e)	Reviews of the effectiveness of guidance, procedures, methods and approaches to inform future development of the Platform	None	http://www.ipbes.net/work-programme/objective-4/45-work-programme/468-deliverable-4e.html

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IUCN suggestions for the IPBES task force on capacity building

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IPBES/2/17, Annex I, pages 54–55:

1(a) Priority capacity-building needs to implement the Platform's work programme matched with resources through catalysing financial and in-kind support. The Platform's functions include the mandate to identify and prioritize capacity-building needs clearly linked to achieving the Platform's work programme. Such needs will be identified based on submissions and scoping of Platform deliverables with the support of the task force on capacity-building described in deliverable 1 (b). The Platform is furthermore mandated to provide a forum with conventional and potential sources of funding. It is envisaged that the forum would advise the Plenary on the identification of priority capacity-building needs and the acceptance of financial and in-kind support. The forum would also oversee the requested web-based matchmaking facility in accordance with requests received.17 It is envisaged that the deliverable will contribute to achieving Aichi Biodiversity Target 20, on mobilization of financial resources to implement the Strategic Plan for Biodiversity 2020.

1(b) Capacities needed to implement the Platform's work programme developed. The Platform's functions include the mandate to provide capacity-building and to integrate capacity-building into its activities. Capacity-building activities will address the priority needs identified under deliverable 1 (a). Activities would include technical assistance, training workshops, fellowship and exchange programmes and support for the evolution of national, subregional and regional science-policy networks, platforms and centres of excellence, including where appropriate consideration of indigenous knowledge systems. These activities would constitute an integrated part of the processes for delivering the assessment, data management and policy support tools set out in other deliverables of the work programme. Capacity-building would be supported through and build on a geographically widespread network of institutions and initiatives. The deliverable responds to requests received, and it is envisaged that it will contribute to achieving a range of Aichi Biodiversity Targets as addressed within the Platform's work programme, including in particular Target 19, on improving the knowledge base.

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1) IUCN convenes a number of existing tools and mechanisms for capacity building for biodiversity and ecosystem services, and calls on the IPBES capacity building taskforce to highlight, build from, synergize with, strengthen, and mobilize funding towards these. They include:
   a. The entire work programme of the IUCN Commission on Education and Communication.
   b. The Red List Training programme, run by IUCN and its Species Survival Commission, designed to build capacity in use of the IUCN Red List Categories and Criteria. This includes a formal online training course "Assessing Species' Extinction Risk Using IUCN Red List Methodology", hosted by the Conservation Training platform.
   c. The Training courses offered by the IUCN Species Survival Commission's Conservation Breeding Specialist Group. The general purpose of these is to expand knowledge and build capacity in species conservation planning and intensive population management skills and tools. The primary aim is to provide this service to the conservation community, both in situ and ex situ, to facilitate more effective species conservation. All topics and principles covered are presented within an integrated conservation planning (One Plan approach) framework.
   d. IUCN's Global Protected Area Programme (GPAP) which implements projects like BIOPAMA with the Joint Research Centre (JRC) of the European Commission, and.in coordination with the IUCN World Commission on Protected Area's (WCPA) Capacity Development Programme.
   e. In the short term, the IUCN World Parks Congress (Sydney, 11–19 Nov 2014) includes a Cross-Cutting Theme on Capacity Development, which has been developing a framework for capacity development and mapping the numerous existing contributions towards this. The next World Conservation Congress (Hawai'i, 1–10 Sep 2016) may have similar focus.
   f. The IUCN WANI (Water and Nature Initiative) has developed a Water and Nature Toolkit series to support learning on how to mainstream an ecosystems approach in water resource management. It builds on practical case studies to show how key principles of sustainable water management are implemented in river basins, with current toolkits covering the management of flows, governance, economics and incentives, and adaptation to climate change. In addition, the BRIDGE (Building River Dialogue and Governance) Project aims to build water governance capacities through

learning, demonstration, leadership, and consensus-building, in particular in transboundary river basins.

  g. The IUCN Library and Publications Unit ensure availability of the ~7,500 monographs, books, and reports (as well as ~275 periodicals) delivered through IUCN over the Union's 66 year history.

2) IUCN emphasizes the importance of engagement of young professionals into supporting the science-policy interface. Towards this, the Union maintains a number of young professional networks, and recommends that the IPBES capacity building taskforce to highlight, build from, synergize with, strengthen, and mobilize funding towards these. They include:

  a. The IUCN-wide Task Force on Intergenerational Partnership for Sustainability to which all Commissions' Young Professionals' groups, as well as some IUCN Member staff and Secretariat staff, belong.

  b. The IUCN Commission on Education and Communication's Young Professionals Network.

  c. The IUCN Commission on Environmental, Economic, and Social Policy's Emerging Leaders Network.

  d. The IUCN World Commission on Protected Area's Young Professional's Group.

  a. In the short term, the IUCN World Parks Congress (Sydney, 11–19 Nov 2014) includes a Stream on Inspiring a New Generation. The key young peoples' legacy will be the "Young Peoples' Pact for People, Parks and Planet". This will be an action document for young people, developed by young people at the Congress, to share information, knowledge and activities but also to create accountability for action and change.

  e. The IUCN Environmental Law Centre's Fellowship and Internship Programmes.

3) Beyond the IUCN Commissions and Secretariat, there are many existing capacity building and training mechanisms in conservation and sustainability. A useful role for IPBES could be to maintain a catalogue of such mechanisms, documenting their key characteristics (e.g., location, language, thematic focus, educational level, cost). In IUCN's view, some of the most effective of these from through the IUCN Membership include:

  a. The Conservation Leadership Programme, a partnership between BirdLife International, Conservation International, Fauna & Flora International, Wildlife Conservation Society, which provides grants, training (including production of training materials on biodiversity and ecosystem services), internships and mentoring to conservationists early in their career. The Conservation Leadership Programme maintains an alumni network of >2,500 professionals who began their careers with support from the programme.

  b. The Durrell Conservation Academy.

  c. Emerging Wildlife Conservation Leaders (EWCL) training addresses a long-standing need for capable leaders in the conservation field who are equipped with a full arsenal of skills to launch well-rounded and successful conservation campaigns and build successful leadership careers in the wildlife conservation profession.

  d. The ERT Conservation conferences on "Capacity for Conservation", of which the first took place in Colombia in 2013 and a second is planned for May 2015 in Kenya.

  e. NatureServe's biodiversity data Training opportunities.

  f. The Smithsonian-Mason School of Conservation.

  g. The Wildlife Conservation Society's Graduate Scholarship Program.

4) Similarly, IUCN would like to highlight a number of key mechanisms, over and above specific training programmes, of particular importance for capacity building with respect to biodiversity and ecosystem services:

  a. Student conferences, such as the Student Conference in Conservation Science, convened annually in Cambridge, Australia, Beijing, Bangalore, New York, and Hungary.

  b. Open-access journals, as documented in the Directory of Open Access Journals, and journals which make their content open access for developing countries.

  c. Electronic dissemination of the professional literature of policy and practice in biodiversity and ecosystem services. For example, IUCN publishes ~100 authoritative reports and monographs annually, all freely available online from the IUCN Library. Similarly, the IUCN Environmental Law Centre works with FAO and UNEP to maintain ECOLEX, the world's largest catalogue of environmental law documentation.

d. Data on biodiversity and ecosystem services should be freely and electronically available for non-commercial uses. For example, all of the data underpinning the flagship knowledge products mobilized through IUCN and its Commissions, Members, and partners are freely and electronically available, through Integrated Biodiversity Assessment Tool for Research & Conservation Planning, as well as directly through the portals of the IUCN Red List of Threatened Species, Protected Planet. These data are also available for commercial use through Integrated Biodiversity Assessment Tool for Business, according to the IUCN "Policy for Commercial Use of IUCN Biodiversity Data".

5) Moreover, IUCN would like to highlight a capacity building initiative linked to the assessment on land degradation and restoration. Together with the World Resources Institute, IUCN has developed and applied the Restoration Opportunities Assessment Methodology (ROAM) in Ghana, Mexico, Guatemala, Rwanda and Uganda – working with, and therefore building the capacity of, national government agency and NGOs in its application. Each assessment involves an iterative determination of possible geo-spatial extent of various restoration interventions, an economic assessment of their costs and benefits, the potential for carbon sequestration, an assessment of the policy and institutional constraints / opportunities and indicative options for financing emerging restoration strategies.

6) IUCN comments on "Draft key priority capacity building needs under IPBES", in response to the request for comments posted 17:03pm on Tuesday 9 September with a deadline of Saturday 13 September:

a. IUCN requests broad outreach and realistic deadlines for calls for comments issued by IPBES, to ensure true legitimacy of such consultation. Not only was the capacity building needs document posted with just three working days for comment, but also no notification of its circulation reached IUCN and many other stakeholders through official notification. Such unrealistic timelines for review risk severe alienation among stakeholders; this risk would become even more severe if claims were to be made that the document had undergone legitimate stakeholder review.

b. IUCN is looking forward to comment the revised document. The current document is a table which would benefit greatly from incorporation of a legend. It could serve as a useful basis for prioritization of key capacity building needs, not currently reflected in the document.

IBPES/2/17, Annex II, pages 65–66:

Terms of reference for the task force on capacity-building
A. Purpose
1. The purpose of the task force on capacity-building is to support the achievement of deliverables 1 (a) and 1 (b) of the work programme, under which priority capacity-building needs to implement the Platform's work programme are matched with resources through catalysing financial and in-kind support and capacities needed to implement the work programme are developed.
B. Responsibilities of the task force
2. The responsibilities of the task force are as follows:
(a) To develop modalities for identifying, monitoring and evaluating capacity-building needs relating to the Platform's mandate and programme of work, and promote their implementation in a consistent and comparative manner;
(b) To propose a process for systematic national self-assessment of capacity needs in the context of the Platform, when requested by Governments, working with the secretariat to implement such a process if and when agreed;
(c) To provide a draft list of priority capacity-building needs and an indication of associated financing gaps and available sources of funding;
(d) To periodically analyse the extent to which priority capacity-building needs identified by the Platform have been addressed and the role that the Platform has played in that process and to identify gaps and recommend ways in which such gaps could be addressed;
(e) To support the organization of the forum with conventional and potential sources of funding, in giving advice on the agenda and format of the meeting, participation, and how identified capacity-building needs and opportunities should be presented;
(f) To advise on the implementation of a "matchmaking" facility to help to match available technical and financial resources with priority capacity-building needs, seeking and taking advice from the forum as appropriate;
(g) To propose means that could be developed for effectively integrating identified capacity-building needs into the policies and programmes of development assistance processes, seeking advice from the forum as appropriate;
(h) To develop a proposal for fellowship exchange and training programmes;

(i) To support the building of the institutional capacity needed to implement the work programme, particularly with respect to regional and subregional assessments;

(j) To assist in addressing the prioritized capacity-building needs agreed by the Plenary, drawing on resources made available through the Platform's trust fund or provided through additional financial and in-kind support;

(k) To liaise as necessary with the task force on knowledge and data and the task force on indigenous and local knowledge so as to ensure that capacity-building related to those issues is addressed in a consistent manner.

C. Membership of the task force

3. The task force will comprise two Bureau members and three members of the Multidisciplinary Expert Panel, between them covering the five United Nations regions, and up to 20 additional experts on capacity-building, selected according to the rules of procedure.

4. At the discretion of the chair of the task force and following consultation with the Bureau, a limited number of individual experts on capacity-building may also be invited to participate in the task force as resource persons.

D. Modus operandi

5. The task force will be chaired by members of the Bureau and will consist of experts on capacity-building selected in accordance with the rules of procedure. The task force will work through face-to-face meetings, web-based meetings and other electronic interaction. Products of the task force will be reviewed by the Bureau in consultation with the Multidisciplinary Expert Panel and forwarded to the Plenary for consideration. The task force will facilitate collaboration with existing initiatives.

6. In carrying out its work, the task force will also:

(a) Ensure that all its activities draw effectively on existing experience, complementing and building upon existing initiatives;

(b) Advise on strategic partnerships that could help to deliver improved capacity-building and facilitate other activities that have the same effect;

(c) Encourage the direct involvement of its members, as well as that of other relevant organizations, in capacity-building activities that address priority needs agreed upon by the Plenary.

IUCN suggestions for the IPBES task force on indigenous and local knowledge systems

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IPBES/2/17, Annex I, page 55:

1(c) Procedures, approaches and participatory processes for working with indigenous and local knowledge systems. The importance of indigenous and local knowledge to the conservation and sustainable use of ecosystems has been acknowledged in the Platform's Operating Principles, as well as in Article 8 (j) of the Convention on Biological Diversity and Aichi Biodiversity Target 18. The Platform will promote a meaningful and active engagement with indigenous and local knowledge holders in all relevant aspects of its work. Under the lead of the Multidisciplinary Expert Panel in consultation with the Bureau, a task force for the period for the work programme 2014–2018 will facilitate a roster and network of experts to support the Platform's work, a number of global dialogue workshops of indigenous and local knowledge experts, a review of regional case studies to inform the Platform's procedures for and approaches to working with indigenous and local knowledge, and the delivery of a preliminary and final set of procedures and approaches for working with indigenous and local knowledge systems. The task force will also establish a participatory mechanism for indigenous and local knowledge systems to be established under the Platform, oriented to facilitate the linkages between indigenous and local communities and scientists and to strengthen the quality of indigenous peoples' participation in the development of the deliverables of the Platform. The activities under this deliverable will be backstopped by the capacity-building activities called for in deliverable 1 (b), such as the suggested fellowship programme. This deliverable will, together with deliverable 1 (d), constitute a coherent approach to working with different knowledge systems across scales. The deliverable responds to requests received. It is envisaged that the deliverable will contribute to achieving Aichi Biodiversity Target 18, on traditional knowledge.

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1) IUCN convenes substantial expertise in indigenous and local knowledge on biodiversity and ecosystem services, notably through:
   a. The IUCN Commission on Environmental, Economic, and Social Policy.
   b. The work of the IUCN Social Policy Unit, specifically in regards to Indigenous and Traditional Peoples and Bio-Cultural Diversity.
2) Many issues have been already suggested as relevant to the integration of ILK in policy and practice for the conservation and sustainable use of biodiversity. ILK is best understood in the socio-cultural contexts where it is generated and operates, therefore the approach of undertaking regional reviews is fundamental; generally elements that can be taken into account for reviews and further understanding of the role of ILK are the following:
   a. Substantive issues of ILK related to conservation and sustainable use of ecosystems that can be studied and documented. Ethnoscientists have been working in this area with knowledge holders in many parts of the world and there is already a considerable body of knowledge. Relevant areas of research are for example:
      i. Plant taxononomies;
      ii. Knowledge of succession of ecosystems, for example in the case of fire management and "forest cultivation" systems;
      iii. Interactions between animal and plant communities, for example in the case of grazing across landscapes and different ecosystems;
      iv. Climate-related knowledge, for example for meteorological predictions; research done with Arctic peoples has been very productive in this area;
      v. Knowledge about population dynamics of certain species of economic and cultural importance – for hunting, fishing, cultural practices, etc;
      vi. Knowledge related to pest management.
   b. Key areas of application of ILK where its relevance and functionality can be better understood. This includes for example:
      i. Climate change adaptation. Research has been done already for example on traditional forest-related knowledge for adaptation. Water management, especially in drylands; understanding of variability and

prediction, understanding of species' adaptation, management of ecological storeys in altitudinal ranges, are some of the important areas in this field.

  ii. Human health: one of the areas where ILK remains relevant and in some contexts of primary importance is traditional medicine – medicinal plants and animals, maintenance of dietary diversity and nutrition based on biodiversity, etc. Health considerations are a powerful driver for the conservation and sustainable use of certain plan and animal communities in many cases.

  iii. Development (including change) in production systems for adaptation to a variety of conditions – for example integrating ILK in promotion of agroforestry systems; development of approaches to fisheries management through the articulation of ILK and modern techniques; ILK in eco-friendly, small scale agriculture; transition from traditional hunting to community-based wildlife management; etc.

  iv. Conservation: traditional knowledge for tracking is for example being applied to landscape assessments and management; community mapping is a rich tool for eliciting the application of ILK to protected area management.

 c. Processes for development, transmission and preservation of ILK. It is well known that in many cultures ILK is disappearing or eroding due to many factors, but in other situations the functionality of ILK keeps it vital and dynamic. Some researchers have focused on these issues but they remain areas where much more research is needed. It includes for example:

  i. Processes of intergenerational transmission – how ILK is passed to new generations and how functional the transmission systems are in the presence of "disruptors" such as schooling, the media and cultural change;

  ii. Processes of knowledge generation and elaboration that can help maintain links between ecosystem-related practices, knowledge holders and repositories and facilitate dissemination and access – such as links between ILK-holders and scientists, multiple-knowledge libraries, support to knowledge systematization, new types of institutes and centres, etc.

 d. Opportunities and processes for interaction of knowledge systems and application of ILK to policy and practice, such as those being explored in the IPBES platform.

3) Networks and initiatives. There are many networks and initiatives working on ILK issues and surely they have been already identified by the task force, including:

 a. One key hub for this is the UN University, which established a TK Institute several years go and has published important work.

 b. For all the four areas of research described above, the work done in the Artic is very relevant; it has allowed the creation of a large network of academic institutions, indigenous institutions and knowledge holders, individual researchers, and national and regional policy and implementation institutions, for example in the context of the Arctic Council.

 c. Regarding the links between knowledge and value systems, some networks have been established that research on topics such as sacred sites and spiritual values of places and species. Given the strong connection between knowledge and values in traditional societies, these networks are certainly relevant in this field.

 d. Many institutions and groups focus on the interface between ethnosciences and ecosystem management – for example through applied ethnobotany projects or in the context of research and policy advice. This is the case if the Society of Ethnobiology, for example, that is an important hub in this field.

4) Issues for consideration. A problem today is that despite the significant progress in discussing ILK issues in the environmental context internationally, such as in the CBD and other contexts, it is still often difficult to have open and constructive discussions on the use of ILK for environmental purposes in part due to the problems related to

misappropriation of ILK for commercial uses and the reactions it has generated. There are opportunities to better address some of the problems in the IPBES context, since generally the researchers are aware of the problem and there is interest in clarifying the issues. Some of the implications are, for example:

a. The problem of misappropriation has generated a defensive response in the form of the right of knowledge holders to secrecy, resistance to share or communicate knowledge, not to allow research about it, etc. This is understandable but in many cases has become a real obstacle to research and documentation. Overcoming this requires putting into practice robust and credible safeguards for avoiding misappropriation and ensuring full respect for ILK and its holders, and clarification of the difference between commercial uses for private benefits, related with access to ILK associated with genetic resources, and non-commercial environmental uses for public benefits.

b. Many policy frameworks have been created to deal with the issues of misappropriation and misuse of ILK, and it is important to be aware of them and to promote and support their application – such as the CBD Code of Ethical Conduct, the principles of the Society of Ethnobiology, and many frameworks that have been collected and used in the ABS process of development of the Nagoya protocol and national legislation. The Nagoya Protocol establishes conditions to use traditional knowledge associated with genetic resources.

c. There is some confusion in relation to the levels of knowledge and science – awareness, familiarity, knowledge, science – that makes the dialogue between knowledge systems difficult. In any society the knowledge held by people has elements of science and elements of common knowledge that doesn't have the status of science; not all the knowledge that comes from tradition is scientific, just as it happens with the knowledge in modern societies where not all of it is scientific.

d. A problem linked to this is "validation". Some approaches propose that ILK doesn't require validation or verification (as in formal science) because it is already validated by cultural practices, and because it's culturally-relevant. While there is an element of true in this statement, it introduces an element of relativism that negates the value of scientific methods for ILK in particular in relation to generalizations. This is exemplified by traditional medical knowledge – where there are some cases of traditional knowledge that have undergone validation (like Chinese and Ayurvedic medicines), while in other cases it is not considered necessary. While validation may or should remain culture-based, for productive dialogue knowledge systems have to understand mutually the validation or verification procedures and parameters. Furthermore, it is important to recognize that scientific knowledge always is improving by validation and verification. There is still much work to do in this field.

e. It is important to study ILK in contexts, areas of application, processes, uses, etc., as suggested in a previous section, and not in abstract (although some questions can be less contextual, for example about taxonomies). ILK analysis needs to start from understanding its roots and applications within traditional worldview, not from examining its general scientific values in an abstract mode.

IUCN suggestions for the IPBES task force on knowledge and data

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IPBES/2/17, Annex I, page 55–56, 59:

1(d) Priority knowledge and data needs for policymaking addressed through catalysing efforts to generate new knowledge and networking. The Platform's functions include a mandate to identify and prioritize key scientific information needed for policymakers at appropriate scales. Furthermore, the Platform is to catalyse efforts to generate new knowledge in dialogue with scientific organizations, policymakers and funding organizations, while not directly undertaking new research. The Platform will also facilitate access to knowledge and data needed, e.g., for the production of assessments and the use of tools and methodologies in support of policy formulation and implementation. It will furthermore provide guidance on how to manage and present knowledge and data, e.g., from and for different scales and sectors. The generation, access to and management of knowledge and data would be supported through and build on a thematically widespread network of institutions and relevant initiatives such as initiatives to provide indigenous and local knowledge and citizen science initiatives. Capacity-building for knowledge and data management would be supported through deliverable 1 (b). The deliverable responds to requests received. It is envisaged that the deliverable will contribute to achieving Aichi Biodiversity Target 19, on improving the knowledge base.

4(a) Catalogue of relevant assessments. The Platform's functions include the mandate to maintain a catalogue of relevant past, ongoing and planned assessments. The already established online Platform catalogue of assessments will be maintained and further developed by the secretariat under the auspices of the Multidisciplinary Expert Panel and the Bureau. The catalogue will provide the basis for periodic critical reviews of the assessment landscape and lessons learned. It will facilitate the identification of inputs to the thematic, regional and global assessments, support knowledge exchange and help avoid duplication of efforts. Periodic reviews of lessons learned and captured in the catalogue will inform the Platform's processes. The catalogue will be a source of information for deliverable 1 (d), on knowledge and data management, deliverable 2 (a), the guide on assessments, the assessments under deliverables 2 (b) and 2 (c) and the deliverables under objective 3. The catalogue will support capacity-building activities under deliverable 1 (b), including by facilitating contact and knowledge exchange among assessment practitioners, and provide information for deliverable 4 (d), on the review of the effectiveness of the Platform. The deliverable responds to requests received. It is envisaged that the deliverable will contribute to achieving Aichi Biodiversity Target 19, on improving the knowledge base.

4(b) Development of an information and data management plan. Ensuring that data and information used in the development of the Platform's assessments is available beyond the initial assessment is critical for the future of the Platform's activities. The creation of a catalogue of relevant assessments, policy support tools and methodologies is one component of an information management system. The secretariat, working with the Bureau, should develop an information management plan, in close coordination with and building on current international initiatives, that supports the Platform's work and will be implemented to support future assessments.

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1) IUCN would like to highlight the essential importance of investing in existing civil society networks on biodiversity and ecosystem services for knowledge generation. This is particularly critical given the broad extent and long timeframes over which biodiversity and ecosystem services are distributed. While academic and public sector institutions also play important roles in knowledge generation for biodiversity and ecosystem services, these are generally local or national in extent, and operate over short time scales (typically 3–5 years, in alignment with PhD projects and academic grants, and with political electoral cycles, respectively). By contrast, many civil society institutions have the breadth of geographic scope, stability over time, and cost efficiency and agility to deliver knowledge generation on biodiversity and ecosystem services at necessary scales. The importance of accessibility of these existing knowledge products is fundamental to the purpose of the IPBES task force on knowledge and data. Among these, IUCN would particularly emphasize:
   a. The efforts of the IUCN Commissions in mobilizing authoritative knowledge products:
      i. IUCN Red List of Threatened Species (mobilized by IUCN and its Species Survival Commission and Red List Partnership), including

the Global Invasive Species Database, and the subsequent process of Species Conservation Planning in generating Action Plans.

    ii. IUCN Red List of Ecosystems (mobilized by IUCN and its Commission on Ecosystem Management).

    iii. Key Biodiversity Areas (mobilized by IUCN, its Species Survival Commission and World Commission on Protected Areas, and its Members such as BirdLife International).

    iv. Protected Planet (mobilized by IUCN and its World Commission on Protected Areas and the UNEP World Conservation Monitoring Centre).

b. Key knowledge generation programmes through non-governmental institutions and other agencies, among which IUCN highlights the activities of the following IUCN Red List Partners:

    i. BirdLife International's Data Zone (in maintaining assessments of extinction risk for birds, Important Bird Areas, and other key datasets).

    ii. Conservation International's Science + Innovation investments in maintenance of the Biodiversity Assessment Unit.

    iii. Kew Royal Botanic Gardens' maintenance of the Sampled Red List for plants, and many other datasets important for biodiversity and ecosystem services.

    iv. The work of Microsoft Research's Computational Ecology and Environmental Science in Mapping Threats to Biodiversity.

    v. NatureServe (in maintaining assessments of biodiversity risk for Western Hemisphere species and ecosystems, and other key datasets).

    vi. The Sapienza University of Rome's maintenance of the Global Mammal Assessment data.

    vii. Texas A&M University's programme in Applied Biodiversity Science.

    viii. Wildscreen's maintenance of the Arkive platform of digital imagery of species.

    ix. The Zoological Society of London's work in maintaining the Sampled Red List for animals and National Red List portal (which disseminates documentation of the risk of species extirpation from individual countries, for 76 individual countries), as well as the Living Planet Index (population time series database) with the World Wildlife Fund.

c. The rapidly emerging role for citizen science for biodiversity and ecosystem services, with programmes like eBird and iNaturalist already delivering important contributions to knowledge generation, complementary to and often in productive partnership with the kind of institutional networks described above.

2) IUCN also recommends that the IPBES Taskforce on knowledge and data recognize the danger posed by 'parasitic data aggregators', proliferating on the internet, purporting to provide biodiversity decision-support. These redistribute the kind of knowledge products discussed in (1) above, but put nothing back in terms of actually mobilizing data, and thereby actually directly undermine knowledge generation for biodiversity and ecosystem services, as the currency and quality of the underlying data progressively languish.

    By contrast, many legitimate data portals do exist, providing access to knowledge through the agencies and institutions mentioned above, in which knowledge product data is aggregated and mobilized in order to support biodiversity decision-making. The Integrated Biodiversity Assessment Tool for Research & Conservation Planning is a good example.

3) More generally, it is important to recognize the unique data-gathering capability through provided by the IUCN Commissions, with their in-built safeguards of quality, currency, etc. This capability has been built up over decades, and has tremendous brand recognition and user-loyalty. Such capacity cannot be created overnight – indeed, it requires many decades – and IPBES must work to strengthen and build from it, not jeopardise it.

IUCN maintains a number of mechanisms directly relevant to the work of the IPBES taskforce on knowledge and data, including:
   a. The IUCN Commission on Education and Communication's Specialty Group for Knowledge Management.
   b. The IUCN Science & Knowledge Unit.
   c. The 'Water Infrastructure Solutions from Ecosystem Services Underpinning Climate Resilient Policies and Programmes' (WISE-UP to Climate) project is aims to demonstrate natural infrastructure as a 'nature-based solution' for climate change adaptation and sustainable development. It develops knowledge on how to use portfolios of built water infrastructure (eg. dams, levees, irrigation channels) and natural infrastructure (eg. wetlands, floodplains, watersheds) for poverty reduction, water-energy-food security, biodiversity conservation, and climate resilience. Specifically, WISE-UP is generating data on the hydrology and economics of natural water infrastructure (ecosystem services) in river basins and novel modelling and analytical tools for assessment of trade-offs. This may also relate to the deliverables on 'scenario analysis and modelling' and on 'conceptualisation of values of biodiversity and nature's benefits to people'.
   d. Launched in 2012, the Knowledge and Tools for Forest Landscape Restoration project (Know-for-FLR) aims to increase the pace and scale of forest landscape restoration around the world by: i) equipping policy-makers and organizations with the knowledge and tools necessary to implement forest landscape restoration; and ii) ensuring that practitioners have access to the knowledge they need to implement forest landscape restoration. Through Know-for-FLR, IUCN will also develop decision-support tools to make this knowledge accessible and useful – and work to build capacity to use knowledge to implement forest landscape restoration on-the-ground.

IPBES/2/17, Annex III, pages 66–67:

Terms of reference for the task force on knowledge and data
A. Purpose
The purpose of the task force on knowledge and data is to support achievement of deliverables 1 (d) and 4 (b) of the work programme, under which priority knowledge and data needs for policymaking are addressed through catalysing efforts to generate new knowledge and networking and an information and data management plan is developed and implemented.
B. Responsibilities of the task force
The responsibilities of the task force are as follows:
(a) To develop a data and information management plan that identifies the best means of addressing the data and information needs of the Platform's work programme;
(b) To support the secretariat in overseeing the management of the data, information and knowledge used in developing Platform products so as to ensure their long-term availability;
(c) To identify opportunities for increasing access to existing data, information and knowledge so as to ensure their availability to support the work of the Platform;
(d) To advise on the indicators and metrics to be used in Platform products and on the standards necessary for capturing and managing associated data;
(e) To support the Bureau and the Multidisciplinary Expert Panel in reviewing the knowledge needs and gaps identified through Platform scoping processes and assessments and to catalyse the generation of new knowledge and data;
(f) To support the Bureau and the Multidisciplinary Expert Panel in convening dialogues with scientific organizations, policymakers and funding organizations and in undertaking other activities to address those needs identified in the work programme;
(g) To liaise as necessary with the task force on capacity-building and the task force on indigenous and local knowledge so as to ensure that issues concerning knowledge and data are covered in a consistent manner.
C. Membership of the task force
The task force will comprise two Bureau members and three members of the Multidisciplinary Expert Panel, between them covering the five United Nations regions, and up to 20 additional experts on knowledge and data management, selected according to the rules of procedure.
At the discretion of the chair of the task force following consultation with the Bureau, a limited number of individual experts on knowledge and data management may be invited to participate in the task force as resource persons.

D. Modus operandi
The task force will be chaired by members of the Bureau and will consist of experts on knowledge and data management selected in accordance with the rules of procedure. The task force will work through face-to-face meetings, web-based meetings and other electronic interactions. Products of the task force will be reviewed by the Bureau in consultation with the Multidisciplinary Expert Panel and forwarded to the Plenary for consideration. The task force will facilitate collaboration with existing initiatives.
In carrying out its work, the task force will also:
(a) Ensure that all its activities draw effectively on existing experience, complementing and building upon existing initiatives;
(b) Advise on strategic partnerships that could help to deliver improved access to data, information and knowledge, and facilitate other activities that have the same effect;
(c) Encourage the direct involvement of its members, as well as that of other relevant organizations, in capacity-building activities that address priority needs agreed upon by the Plenary.

IUCN suggestions for the IPBES expert group on guide to assessments

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IPBES/2/17, Annex I, page 56:

2(a) Guide on production and integration of assessments from and across all scales. The Platform's operating principles call for ensuring the full use of national, subregional and regional assessments and knowledge, as appropriate, including by ensuring a bottom-up approach. The Platform's functions include the mandate to catalyse support for subregional and national assessments, as appropriate. Members of the Multidisciplinary Expert Panel would, with the support of a group of experts such as from the existing Sub-Global Assessment Network, develop a guide for the production and integration of assessments across scales from the local level to the global level. The guide to be developed will address practical, procedural, conceptual and thematic aspects for undertaking an assessment, taking into account different visions, approaches and knowledge systems. It will draw on the conceptual framework and relevant Platform procedures. It will identify the need for harmonized approaches to data and feedback to deliverable 1 (d) and thematic issues (based on requests received, among other things), so as to allow for the aggregation and disaggregation of data and knowledge across scales. Training in the use of the guide would be provided through deliverable 1 (b). The deliverable responds to requests received. It is envisaged that the deliverable will contribute to achieving Aichi Biodiversity Target 19, on improving the knowledge base.

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1) IUCN recommends structuring the relationship between global and regional/subregional assessment according to the spatial scale of at which a given issue operates. All regional/subregional assessments will of course be led and implemented by experts from within the region in question. However, how these relate to global assessment processes should be determined according to the spatial scale of any given specific issue. To give some specific examples from assessment processes for the flagship knowledge products mobilized through IUCN:

   a. For the IUCN Red List of Threatened Species (a flagship knowledge product mobilized for 50 years through IUCN and its Species Survival Commission and Red List Partnership) and the new IUCN Red List of Ecosystems (mobilized through IUCN and its Commission on Ecosystem Management), which assess risk of loss of species and ecosystem components of biodiversity respectively, global assessments necessarily follow clear global standards, categories, and criteria. Supplementing these, IUCN produces "Guidelines for Application of IUCN Red List Criteria at Regional and National Levels", guided by a National Red List Working Group, as well as extensive, demand-driven capacity-building materials and processes. So, for Red List assessments, global and subglobal assessments are connected but not necessarily identical (except for species/ecosystems wholly restricted to a given region/country).

   b. By contrast, for the assessment of protected areas, convened through IUCN and its World Commission on Protected Areas and UNEP's World Conservation Monitoring Centre as the Protected Planet knowledge product, and for the assessment of sites contributing significantly to the global persistence of biodiversity (the Key Biodiversity Areas knowledge product), assessments are carried out at subglobal levels (typically national) following global standards (although many countries also identify sites contributing significantly to the national persistence of biodiversity, using lower thresholds). So, for Protected Planet and Key Biodiversity Area assessment, global and subglobal assessments are identical.

   This issue is particularly relevant to paragraph 26 of the draft "Guidance document for scoping of IPBES deliverable 2 b on regional and subregional assessments".

IUCN submitted these comments to the IPBES secretariat on 3 July 2014, in response to the IPBES consultation on "Guidance document for scoping of IPBES deliverable 2 b on regional and subregional assessments".

IUCN suggestions for the IPBES expert groups to scope regional and sub-regional assessments

> **IPBES/2/17**, Annex I, page 56:
>
> 2(b) Regional/subregional assessments on biodiversity and ecosystem services. The Platform's functions include the mandate to perform regular and timely assessments of knowledge on biodiversity and ecosystem services and their interlinkages at the regional and, subregional levels. The Platform will prepare a set of regional and subregional assessments established through a regionally based scoping process. The overall scope will be to assess the status and trends regarding such knowledge, the impact of biodiversity and ecosystem services on human well-being and the effectiveness of responses, including the Strategic Plan and its Aichi Biodiversity Targets and the national biodiversity strategies and action plans developed under the Convention on Biological Diversity. The assessments will identify the need for capacity, knowledge and policy support tools. They will draw on financial and in-kind contributions facilitated under deliverable 1 (a), capacity-building activities under deliverable 1 (b) and contributions from indigenous, local and other types of knowledge provided through deliverables 1 (c) and 1 (d). The assessments will build on the guide in deliverable 2 (a) and the thematic and methodological deliverables in objective 3. The deliverable responds to requests received. It is envisaged that deliverable 2 (b) will provide critical input to a global assessment (2 (c)) and contribute to implementation and achievement of the Aichi Biodiversity Targets in general.

1) Given the great variation around the world in biodiversity, the factors driving its loss, capacity for responding to this loss, and the benefits which people derive from its conservation and sustainable use, IUCN sees the regional and subregional assessments as very important components of the IPBES 2014–2018 work programme.

   However, implementation of the regional/subregional assessment processes must be conducted through strategic partnerships which strengthen existing institutions and mechanisms. This is an operating principle for IPBES, but must also be implemented scrupulously, such that consultation of existing institutions, networks, and mechanisms (such as the IUCN Regional and National Committees, IUCN Regional Offices and the regional mechanisms of the IUCN Commissions) reveals that these demonstrably perceive IPBES as building from and amplifying their existing work, and filling gaps, rather than duplicating effort or competing with such existing regional/subregional mechanisms. IPBES has not yet developed such procedures for review of its value, but these should be explicitly anticipated in the document.

   This issue is particularly relevant to paragraphs 23 and 24 of the draft "Note on deliverable 2b which presents assessment options and rationale for five regional scoping reports".

2) IUCN recommends explicit budget allocation to support to policy, knowledge generation, and capacity building at regional and subregional levels. IUCN is very concerned that more than two-thirds of the budget for the IPBES 2014–2018 work programme has been allocated to objectives 2 and 3. The deliverables for these two objectives are assessments, just one of the four functions of IPBES. Given the importance of support to policy, knowledge generation, and capacity building at regional and subregional levels, IUCN would like to see transparent, explicit allocation of budget to these three functions, with budget allocations to each of the four functions varying according to the given regional/subregional context but overall set at broadly comparable levels.

   Furthermore, although the challenges posed by knowledge gaps and capacity building are recognized throughout the document, there is no mention of developing strategies for addressing them. But the challenge is larger than simply identifying knowledge gaps and building capacity for performing assessments for IPBES. IUCN believes that knowledge generation and capacity building need to be addressed strategically, by asking questions such as: How will knowledge gaps be filled? What is the minimum amount of data required to adequately inform policy? How can the scientific community be mobilized to generate it? How much technical capacity exists

and where is it most needed? What are the best methods or techniques to fill capacity gaps globally?

Recognizing knowledge gaps and calling for increased capacity are just the first step, and we believe that IPBES could make a key contribution in helping these issued move forward successfully. We would like to encourage the inclusion of these topics at the highest level of the scoping process (paragraph 13). We do not expect IPBES to resolve these problems within the timeframe of current assessments, but there is a unique opportunity to devise concrete targets and strategies for filling knowledge and capacity gaps through joint, globally coordinated efforts.

That the current IPBES budget is insufficient to deliver all four functions emphasises the importance of strategic partnerships to deliver in-kind support, as highlighted in point (1) above.

These issues are particularly relevant to paragraphs 22 and 25 of the draft "Note on deliverable 2b which presents assessment options and rationale for five regional scoping reports".

3) IUCN recommends establishment of regional and subregional assessments based on needs, not on wall-to-wall subdivision of the planet. Discussion as to what "regional" and "subregional" units should be has so far focused on the development of geographically tessellating sets of regions, with similar sets of subregions nesting perfectly within them. This may be academically pleasing, but fails to recognize that the spatial extent and scale of regional and subregional issues of biodiversity and ecosystem services varies enormously, and will never be properly addressed through predetermination of units. Rather, IUCN recommends calling for submission of relevant regional and subregional issues, and establishing regional and subregional in response to this demand. To give two recent examples of how such a process might work:

   a. At the fifth World Conservation Congress in Jeju in 2012, IUCN member governments and NGOs passed resolution WCC-2012-Res-028 "Conservation of the East Asian-Australasian Flyway and its threatened waterbirds, with particular reference to the Yellow Sea". This resolution was greatly facilitated by the upfront production of a regional assessment of the issue, the "IUCN situation analysis on East and Southeast Asian intertidal habitats, with particular reference to the Yellow Sea (including the Bohai Sea)".

   b. Another resolution from the fifth World Conservation Congress in Jeju in 2012 was WCC-2012-RES-022 "Supporting regional initiatives to conserve mammal diversity in West and Central Africa". This resolution has in turn stimulated a process of regional assessment, yielding a draft "IUCN situation analysis on terrestrial and freshwater fauna in West and Central Africa", which is currently undergoing consultation and review before publication.

   This issue is particularly relevant to annex 1 of the draft "Note on deliverable 2b which presents assessment options and rationale for five regional scoping reports".

4) IUCN also recommends structuring the relationship between global and regional/subregional assessment according to the spatial scale of at which a given issue operates. All regional/subregional assessments will of course be led and implemented by experts from within the region in question. However, how these relate to global assessment processes should be determined according to the spatial scale of any given specific issue. To give some specific examples from assessment processes for the flagship knowledge products mobilized through IUCN:

   a. For The IUCN Red List of Threatened Species (a flagship knowledge product mobilized for 50 years through IUCN and its Species Survival Commission and Red List Partnership) and the new Red List of Ecosystems (mobilized through IUCN and its Commission on Ecosystem Management), which assess risk of loss of species and ecosystem components of biodiversity respectively, global assessments necessarily follow clear global standards, categories, and criteria. Supplementing these, IUCN produces "Guidelines for Application of IUCN Red List Criteria at Regional and National Levels", guided by a National Red List Working Group, as well as extensive, demand-

driven capacity-building materials and processes. So, for Red List assessments, global and subglobal assessments are connected but not necessarily identical (except for species/ecosystems wholly restricted to a given region/country).

b. By contrast, for the assessment of protected areas, convened through IUCN and its World Commission on Protected Areas and UNEP's World Conservation Monitoring Centre as the Protected Planet knowledge product, and for the assessment of sites contributing significantly to the global persistence of biodiversity (the Key Biodiversity Areas knowledge product), assessments are carried out at subglobal levels (typically national) following global standards (although many countries also identify sites contributing significantly to the national persistence of biodiversity, using lower thresholds). So, for Protected Planet and Key Biodiversity Area assessment, global and subglobal assessments are identical.

This issue is particularly relevant to paragraph 23 of the draft "Note on deliverable 2b which presents assessment options and rationale for five regional scoping reports".

IUCN submitted these comments to the IPBES secretariat on 3 October 2014, in response to the IPBES consultation on the draft "Note on deliverable 2b which presents assessment options and rationale for five regional scoping reports".

IUCN suggestions for the IPBES assessment on pollination and pollinators associated with food production

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IPBES/2/17, Annex I, page 57:

3(a) One fast-track thematic assessment of pollinators, pollination and food production. The scope of this assessment will cover changes in animal pollination as a regulating ecosystem service that underpins food production and its contribution to gene flows and restoration of ecosystems. It will address the role of native and exotic pollinators, the status of and trends in pollinators and pollination networks and services, drivers of change, the impact on human well-being and food production of pollination declines and deficits and the effectiveness of responses to pollination declines and deficits. The assessment is required for enhancing policy responses to declines and deficits in pollination. The assessment represents an early deliverable by the Platform that will identify policy-relevant findings for decision-making in government, the private sector and civil society. It will also help demonstrate how an essential ecosystem service contributes to the post-2015 development agenda. The deliverable responds to requests received. It is anticipated that the deliverable will contribute to Aichi Biodiversity Target 14 on safeguarding and restoring ecosystems that provide essential services.

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1) IUCN urges that the IPBES assessment of pollination and pollinators associated with food production recognize existing assessment of extinction risk of pollinator species, and help to catalyze such work for as-yet-unassessed species, for the IUCN Red List of Threatened Species. Mechanisms of particular importance within IUCN for advancing these assessments of extinction risk are:
   a. The IUCN Species Survival Commission's Bumblebee Specialist Group, which is maintained in collaboration with the Xerces Society. The Specialist Group has been making progress on assessments in Europe and the Americas. For Europe, assessments for all bumblebee species are published on the Red List documenting that 24% are threatened with extinction (see "Bad news for Europe's bumblebees"). Meanwhile, new Red List assessments for North American bumblebee species show that one third of these species fall into threatened or near threatened category. Threats include diseases from managed bees, habitat loss and degradation, wide scale insecticide use, and climate change. For the rest of the world, the information is limited, but basic indications are provided in Table 1 of Williams & Osborne (2009) Apidologie.
   b. The IUCN Species Survival Commission's Butterfly Specialist Group, also a joint initiative with the Xerces Society. Global assessment has not yet been completed for butterflies but we have evidence of broad scale declines across Europe and North America (where we have ample data). "The State of the UK's Butterflies 2011" showed that in the UK 72% of butterfly species decreased in abundance over 10 years and 54% decreased in distribution at the UK level. Overall three-quarters of UK butterflies showed a 10-year decrease in either their distribution or population levels. The abundance of common, 'garden' butterflies dropped by 24% over 10 years. In North America 17 percent of butterflies are at risk of extinction. Beyond those ranked by NatureServe we are now seeing many common widespread species that are declining across their range. Monarch butterflies have declined from around a billion individuals to around 33 million in less than 20 years. Threats include habitat loss, insecticide use and climate change.
   c. The Sampled Red List approach to assessments for megadiverse groups for the IUCN Red List of Threatened Species, organized by the Zoological Society of London, which supports butterfly Red List assessments.
   d. The IUCN Species Survival Commission's Invertebrate Conservation Sub-Committee, which advises on all invertebrate-related issues.
2) IPBES support for assessment of extinction risk is important not just for first baseline assessments, but also for repeat assessments to enable measurement of changing extinction risk over time. The Red List Index (Butchart et al. 2004 PLoS Biol, Butchart et al. 2007 PLoS ONE) is widely used as an indicator of progress towards biodiversity

targets, notably for the Convention on Biological Diversity's Aichi Target 12 (see, e.g., pages 49–51 in the draft Global Biodiversity Outlook 4). One innovation recently led by the IUCN Red List Partnership has been to develop a Red List Index specifically for pollinators, as an indicator towards Aichi Target 14 regarding pollination ecosystem services. This currently focuses on bird and mammal pollinators, but as Red List assessments are undertaken and repeated for bees and other invertebrate pollinators, there is great potential to include these key data into such an indicator.

3) The IUCN Commission on Ecosystem Management and IUCN Species Survival Commission have convened a joint taskforce to undertake a Worldwide Integrated Assessment of the impact of systemic pesticides on biodiversity and ecosystems (see "Systemic pesticides pose global threat to biodiversity and ecosystem services"). This research is in the process of being published as a special issue of "Environmental Science and Pollution Research". Seven papers (of eight) of this assessment are now published in the journal's "Online First Articles" (Bijleveld van Lexmond *et al.* 2014 Env Sci Poll Res, Bonmatin *et al.* 2014 Env Sci Poll Res, Chagnon *et al.* 2014 Env Sci Poll Res, Gibbons *et al.* 2014 Env Sci Poll Res, Pisa *et al.* 2104 Env Sci Poll Res, Simon-Delso *et al.* 2014 Env Sci Poll Res, Lorenzo Furlan et al. 2014 Env Sci Poll Res) and the remainder will be published very soon. The taskforce has also published a review on neonicotinoids, bee disorders and the sustainability of pollinator services (van der Sluijs *et al.* 2013 Curr Op Env Sust).

IPBES/2/17, Annex V, pages 68–71:

Initial scoping for the fast-track thematic assessment of pollination and pollinators associated with food production

I. Introduction

1. Recognizing that it would be necessary to move forward with the work programme for 2014−2018 following its approval by the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services at its second session, the Bureau and the Multidisciplinary Expert Panel agreed to prepare, for consideration by the Plenary at that session, a number of initial scoping documents based on the prioritization of requests, suggestions and inputs put to the Platform and the deliverables set out in the draft work programme (IPBES/2/2). The present note sets out the initial scoping for the agreed fast-track thematic assessment of pollination and food production. It was developed in accordance with the draft procedures for the preparation of the Platform's deliverables (IPBES/2/9, annex), which were subsequently adopted, as amended by the Plenary (see decision IPBES-2/3).

II. Scope, rationale, utility and assumptions

A. Scope

2. The objective of the proposed fast-track thematic assessment of pollination, pollination networks and pollinators associated with food production is to assess changes in pollination as a regulating ecosystem service of importance for food production in the context of its role in supporting a good quality of life and biodiversity maintenance. The emphasis will be on the role of native and exotic pollinators, the status of and trends in pollinator diversity and the impact of exotic pollinators, pollination systems and population changes, including indigenous and local knowledge perspectives. Furthermore the assessment will encompass drivers of change, impacts on human well-being of pollination declines and deficits, management options to mitigate pollination declines and deficits, the effectiveness of responses to pollination declines and deficits, and effective policy responses to address declines and restore pollination functions as a basis for the provision of food and a good quality of life. The assessment will be conducted in a transparent way and involve relevant stakeholders from the start.

B. Rationale

3. An assessment of the kind proposed is required as a means of facilitating the enhancement of understanding of pollination from a wide range of perspectives, including indigenous and local knowledge systems, focusing on management options and policy responses to declines and deficits in pollination as an essential regulating ecosystem service underpinning food production and human well-being. The worldwide economic value of the pollination service provided by insect pollinators alone – mainly bees – has been estimated at an annual value in 2005 of €153 billion ($217 billion) for the main crops that feed the world. This amounts to 9.5 per cent of the total value of the world's agricultural food production. The value of the service provided by pollinators other than bees has not yet been quantified. Although it is not possible to estimate a monetary value, pollination is also very important for the production of local crops and wild foods that are important for indigenous and local communities. Furthermore, honey production by pollinator bees is another source of income and/or nutrition for those communities. There are reported disruptions to pollinator systems and evidence of pollinator declines for every continent with the exception of Antarctica. The consequences of these declines could be reduced crop and wild food yields and/or quality and a parallel decline in natural plant communities.

C. Utility

4. The proposed assessment will take into account all knowledge systems, with the aim of identifying management options and policy-relevant findings for decision-making by Governments, indigenous and local communities, the private sector and civil society in a rapidly changing field and contribute to the implementation of Aichi Biodiversity Target 14 of the Convention on Biological Diversity; demonstrate and allow for the continued review of how an essential and vulnerable ecosystem service contributes to the post-2015 development agenda; and represent an early deliverable of the Platform that highlights how the Platform can contribute to efforts to protect biodiversity and promote sustainable development.

D. Assumptions

5. The proposed assessment will be based on existing scientific literature and indigenous and local knowledge, and draw on the work of existing institutions such as the Food and Agriculture Organization of the United Nations (FAO), through its work on global action on pollination services for sustainable agriculture, the Global Biodiversity Information Facility, the ALARM ("Assessing large-scale risks to biodiversity with tested methods"), the "Status and trends of European pollinators" project, the African Pollinator Initiative, the Indigenous Peoples' Pollinators Initiative of the Indigenous Partnership for Agrobiodiversity and Food Sovereignty, and the work of the Natural Capital Project, including its InVEST ("Integrated Valuation of Environmental Services and Trade-offs") modelling software for mapping and valuing ecosystem services, as well as many initiatives at the regional and national levels.

III. Chapter outline

6. It is contemplated that the results of the fast-track thematic assessment will be presented in a six-chapter report, as set out below:

7. A summary for policymakers, as set out in the procedures for the preparation of the Platform's deliverables, will be prepared. The preparation of other possible products, such as technical reports, databases, software and management tools will also be considered.

8. Chapter 1 will include a brief review of the diversity of pollinators and pollination systems and their role in supporting food production specifically and human well-being and biodiversity maintenance more generally. It will assess the status of and trends in the biological elements and functions that interact to provide pollination services. The assessment will include the role of native and exotic pollinators, including insects and other invertebrates, bats and other mammals, birds, reptiles and other vertebrates. It will moreover take into account the role of multiple factors across spatial scales, such as plant community functional composition, pollinator diversity and specificity, climatic seasonality and fluctuations, landscape structure linked to processes of dispersal, and mobility. The assessment will include indigenous and local knowledge perspectives on pollinators and pollination systems and their benefits to those knowledge holders, as well as trade-offs between pollination processes and services and possible connections with disservices.

9. Chapter 2 will assess the drivers of change of pollinators, pollination networks and pollination services, especially those of importance for food production, including local crops, wild food plants and honey. It will include an assessment of indirect drivers of change, including trade and policies in areas such as agriculture and spatial planning. It will also assess direct drivers of change in pollination, including the risk posed by climate change, invasive species and diseases, land-use changes, changing agricultural practices, and the use of chemicals including fungicides and insecticides. The consequences of the cultivation of genetically modified plants for pollinators, pollination networks and pollination services and food production, including honey, will be assessed.

10. Chapter 3 will assess the state of and trends in pollinators, pollination networks and pollination services as keystone ecological processes and services in both human managed and natural terrestrial ecosystems. It will focus on the contribution of pollination by various pollinator populations to human well-being, based on the role of pollination in maintaining agricultural and natural biological diversity and in safeguarding communities that depend for their livelihood security on the use of natural resources, including for medicinal use. Consideration will be given to existing indigenous and local knowledge about pollinators, pollination networks and pollination services and how they contribute to the way of life of indigenous and local communities, and more generally to living in harmony with Mother Earth. Emphasis will be placed on the essential role of pollination in contributing to food security, including with regard to the quality, stability and availability of food as well as its role in income generation from the local to the global scale. The chapter will assess how the pollination deficit can be defined and what areas and agricultural systems are prone to pollination deficits and declines. It will also include information about the perception of indigenous and local communities about this deficit.

11. Chapter 4 will assess economic methodologies for determining the value of pollination for food production and the economic impacts of declines in food-relevant pollinator populations. It will assess the extent to which the current estimates of the economic value of pollination for food production reflect the contributions of pollination to food security and development as identified in chapter 3. It will also assess methodologies and approaches for undertaking such valuations at the national and local levels.

12. Chapter 5 will assess non-economic valuation, with special emphasis on the experience of indigenous and local communities, of impacts of the decline of diversity and/or populations of pollinators. Management and mitigation options as appropriate to different visions, approaches and knowledge systems will also be assessed.

13. Chapter 6 will assess responses to risks associated with the degradation of pollination services and opportunities to restore and strengthen those services. Experience in the use of tools and

methodologies for mapping, modelling and analysing options for action will be assessed based on existing work by actors such as FAO, including by assessing how ecological uncertainties can be managed and research and monitoring needs met. The existing experiences recorded by other knowledge systems will be incorporated into this chapter, contributing to the identification of management and policy options. The chapter will furthermore assess how an understanding of pollination declines and deficits can help advance practices and policies, particularly for land-use management, horticulture and agriculture, including through innovative approaches such as ecologically intensified agriculture as well as those used by indigenous and local communities. The assessment of response options will include considerations of policy trade-offs.

IUCN suggestions for the IPBES expert group to scope thematic assessment of land degradation and restoration

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IPBES/2/17, Annex I, pages 57–58:

3(b)(i) Land degradation and restoration. The scope of this assessment on land degradation and restoration would cover the global status of and trends in land degradation, by region, and land cover type; the effect of degradation on biodiversity values, ecosystem services and human well-being; and the state of knowledge, by region and land cover type, of ecosystem restoration extent and options. The assessment would enhance the knowledge base for policies for addressing land degradation, desertification and the restoration of degraded land. It is anticipated that the deliverable would contribute to the implementation of the 10-year strategic plan and framework (2008–2018) of the United Nations Convention to Combat Desertification and Aichi Biodiversity Targets 14 and 15 on safeguarding and restoring ecosystems that provide essential services.

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1) IUCN convenes six major mechanisms of direct relevance to the IPBES thematic assessment of land degradation and restoration:
   a. The IUCN Commission on Ecosystem Management's Ecosystem Restoration Thematic Group, which works in close partnership with the Society for Ecological Restoration, an IUCN Member institution) and its Global Restoration Network and Community Restoration Network. The commission's Dryland Working Group has traditionally has been engaged in the UNCCD debates and is likely to become more active in profiling dryland ecosystems and their specific risk factors for desertification, land degradation and drought (the central concerns of the UNCCD). This will link to the commission's work on the Red List of Ecosystems, and the Global Dryland Initiative (see below) will work with the group to increase emphasis on the assessment of risk of ecosystem collapse in drylands, which has to date been handicapped by data deficiency.
   b. The IUCN Species Survival Commission's Reintroduction Specialist Group maintains extensive resources for components of the ecological restoration process related to species reintroduction, including "Guidelines for Reintroductions and Other Conservation Translocations", the journal "Reintroduction News" and the Global Re-introduction Perspective series.
   c. The IUCN World Commission on Environmental Law's Specialist Group on the Sustainable Use of Soils and Desertification investigates international and national legal aspects of land degradation and desertification and works closely with many countries on reform of legislation to improve the management of land degradation and desertification problems, as well as in improving the use of ecosystem services as indicators of land degradation.
   d. The IUCN World Commission on Protected Areas publishes a Best Practice Protected Areas Guidelines, which includes "Ecological Restoration for Protected Areas - Principles, Guidelines and Best Practices".
   e. The IUCN Ecosystem Management Programme's Global Dryland Initiative, which runs a strategic priority on "Dryland Ecosystem Restoration and Sustainable Land Management", and which maintains IUCN's Observer role in the UNCCD Science-Policy Interface. The Global Drylands Initiative's focal areas are: i) global assessment of the extent of land degradation (desertification) and sustainable land management (particularly in rangelands); ii) scaling up factors in sustainable dryland management (with an emphasis on governance of communal resources); iii) the World Initiative for Sustainable Pastoralism – a global knowledge network gathering evidence to influence policy in support of sustainable pastoralist rangelands management; and iv) identification of appropriate investment pathways for sustainable dryland management and for communal governance of dryland resources.
   f. The IUCN Forest Conservation Programme's Forest Landscape Restoration work towards implementing the Bonn Challenge to restore 150 million

hectares of degraded and deforested lands by 2020, which represents IUCN's role in the [Global Partnership on Forest and Landscape Restoration](). [The Bonn Challenge]() is designed as an implementation platform to help close the gap between international and national commitments that are already made and delivery on the ground; already ten countries have aligned their commitments with the platform, exceeding 55 million ha.

[IPBES/2/16/Add.2]():

Initial scoping for the thematic assessment of land degradation and restoration

I. Introduction
Recognizing that it would be necessary to move forward with the work programme for 2014 – 2018 following its approval by the Plenary of the Intergovernmental Science - Policy Platform for Biodiversity and Ecosystem Services at its second session, the Bureau and the Multidisciplinary Expert Panel agreed to prepare, for consideration by the Plenary at that session, a number of initial scoping documents based on the prioritization of requests, suggestions and inputs put to the Platform and the deliverables set out in the draft work programme (IPBES/2/2). The present note sets out the initial scoping for a proposed thematic assessment on land degradation and restoration. It has been developed in accordance with the draft procedures for the preparation of the Platform's deliverables (IPBES/2/9).

II. Scope, rationale, utility and assumptions
A.Scope
The objective of the proposed assessment of land degradation and restoration is to assess methodologies for assessing and categorizing land degradation ; the global status of, trends in and drivers of land degradation, by region and land cover type, taking account of various knowledge and value systems; the effect of land degradation on biodiversity values, ecosystem services and human well - being; and the state of knowledge of measures to mitigate degradation and restore or recover biodiversity and ecosystem services, by region and land cover type.

B.Rationale
Land degradation is defined for the purposes of the present note as a long - term decline in biodiversity or ecosystem function or loss of ecosystem services from which land cannot recover unaided. It is a major environmental problem and all continents with permanent human settlement are affected by it in different forms and on various scales. This was acknowledged at the United Nations Conference on Sustainable Development (Rio+20), at which participants stated that they would strive to achieve a land – degradation - neutral world in the context of sustainable development.

Land degradation will remain an important global issue for the twenty – first century because of its adverse impact on agricultural production, biodiversity and quality of life. It is estimated to be responsible for global economic losses of between $50 billion and $400 billion each year. At least 40 per cent of the African continent's land is degraded. Land degradation is particularly serious and urgent in drylands (where it is called — desertification, affecting 33 per cent of the earth's terrestrial surface). Here, the lively hoods of over one billion people depend on its mitigation, as the land is their main source of food.

The multiplicity of forms and causes of degradation makes it a complex issue, a factor that has thus far put a brake on its being taken into consideration, although there have been various efforts to systematize this complexity. Assessments need to be sensitive to context and diverse knowledge systems and must be carried out at comparable and relevant scales to maintain credibility with key stakeholders. They also need to address potential benefits of ecosystem services recovery and future sustainable land management practices.

Techniques and strategies to address land degradation exist or are being developed for some, but not all, situations; the proposed assessment will therefore need to identify important knowledge gaps and ways of addressing them. Assessments of the global extent of and trends in land degradation, built up from a compatible series of regional assessments, and of the range of available mitigation and remediation tools as well as the relevant policy context, need to be made consistently for informed decision - making. Policymakers are the main requesters of knowledge on possible synergies and the identification of solutions for short – and medium - term implementation.

C. Utility
If undertaken, the proposed assessment will: deliver a rigorous scale - sensitive appraisal of the categories of land degradation; assess the global status and drivers of degradation, contextualized using various knowledge systems; assess the significance of degradation for biodiversity and ecosystem services provide a review of options for remediation, mitigation and recovery of degraded land; identify policy - relevant findings for decision-making and adaptive management by Governments, indigenous and local communities, the private sector and civil society; and create a framework for embedding a systems approach into land degradation monitoring and response systems and the policy decision - making process. By including Indigenous and local knowledge, and being sensitive to scale and biome, the assessment will support the development of policy support tools:

(a) For achieving Aichi Biodiversity Target 15, which establishes that by 2020 at least 15 per cent of degraded ecosystems must be restored;
(b) For contributing to climate change mitigation and adaptation;
(c) For combatting desertification;
(d) For addressing the Rio+20 aim of a land-degradation-neutral world.

D. Assumptions

8. The assessment will be based on the current scientific literature, drawing on the work of institutions such as the Convention on Biological Diversity, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa and the Global Environment Facility. A key focus will be dryland degradation. The Convention on Biological Diversity, with its programme of work on the biological diversity of dry and sub - humid lands, and the Convention on Desertification, are the main multilateral environmental agreements focusing on dry and sub - humid lands. A number of the Aichi Biodiversity Targets of the Convention on Biological Diversity cover drylands and have clear links to matters of concern to the Convention on Desertification (e.g. objective 2 of the 2008 – 2018 strategic plan and framework of the Convention on Desertification, — to improve the condition of affected ecosystems). Two international scientific conferences held under the auspices of the Convention on Desertification have already rallied the scientific community. The eleventh session of the Conference of the Parties to the Convention, held in September 2013, will also shape the scope of the assessment. The assessment of land degradation and restoration will also draw on the FAO Global Soil Partnership and the Global Soil Biodiversity Initiative. Indigenous and local knowledge systems will contribute through the existing literature, as well as through dialogue workshops and community - based work sessions.

III. Chapter outline

It is contemplated that the results of the thematic assessment will be presented in an eight chapter report, as set out below.

Chapter 1. Introduction to the concepts of land degradation and options for mitigation and remediation of land degradation for various regions and biomes:
(a) The concept of land degradation;
(b) Categories of land degradation;
(c) Land degradation as an ecological phenomenon, including the role of soil biodiversity;
(d) Impacts of land degradation on biodiversity and ecosystem services;
(e) The context - dependency of concepts of land degradation and its impacts, taking account of various knowledge and value systems;
(f) The scale - dependency (in time and space) of land degradation and its impacts;
(g) Approaches to restoration, mitigation and remediation for biodiversity and ecosystem services;
(h) Policy context of land degradation assessed in the report.

Chapter 2. Overview and assessment of methodologies for monitoring land degradation and its impacts in
Various regions, biomes and scales and in the context of various knowledge and value systems:
(a) Methodologies for monitoring land degradation and its impacts;
(b) Methodologies for characterizing diverse economic and social impacts (e.g. cultural, psycho - social and shared spiritual and aesthetic benefits) of land degradation and ecosystem service loss;
(c) Methodologies to allow comparison of results carried out in different biomes, and socio -economic contexts and at varying scales.

Chapter 3. Global assessment of the status of trends in and drivers of land degradation, broken down by region and biome type and contextualized for scale and different knowledge and value systems:
(a) Overview of scale (large vs. fine scale) and contextual factors in monitoring land degradation;
(b) Extent, trends and drivers, where possible, of land degradation;
(c) Integration of assessment of land degradation with indigenous and local knowledge.

Chapter 4. Global assessment of the significance of land degradation for biodiversity and ecosystem services, broken down by region and biome type and contextualized scale and various knowledge and value systems:
(a) Overview of scale and contextual factors in assessing impacts as in chapter 3; (b) Extent, trends and drivers of land degradation and ecosystem service loss; (c) Assessment of negative or positive thresholds beyond which recovery is either not possible or can be considered successful; (d) Integration of assessment of land degradation impacts and recovery of biodiversity and ecosystem services with indigenous and local knowledge.

Chapter 5. Introduction to the concepts of land restoration, remediation and mitigation for various regions and biomes:
(a) The concept of land restoration, remediation and mitigation for various knowledge and value systems ;
(b) Approaches to restoration, mitigation and remediation for biodiversity and ecosystem services;
(c) Categories of land restoration, remediation and mitigation;
(d) Impacts of land restoration, remediation and mitigation on biodiversity and ecosystem services;
(e) The scale - dependency (in time and space) of land restoration, remediation and mitigation

and its impacts.

Chapter 6. Global assessment of recovery measures for degraded land, including assessment of the installed capacity for land restoration, in various regions and biomes:

(a) Assessment of areal extent, trends and policy context with regard to lands under active management aimed at

Mitigating or remedying land degradation;

(b) Overview of options for recovery of degraded land, including biodiversity restoration and ecosystem services recovery and indigenous and traditional practices regarding biodiversity and ecosystem services management;

(c) Overview of options for achieving a land – degradation - neutral world;

(d) Scenarios and models to help evaluate the potential for restoration, the role of biodiversity in restoration and the effects of restoration on a range of ecosystem services, such as those related to the water cycle and carbon balance, feedback effects on regional climate and control of aerosols;

(e) Identification of policy - relevant findings to support decision – making by Governments, indigenous and local communities, the private sector and civil society.

Chapter 7. Appraisal of case studies of positive and negative impacts of land degradation and recovery efforts on economies and on human health and well – being and identification of policy -relevant findings for decision – making by Governments, indigenous and local communities, the private sector and civil society.

Chapter 8. Creating a framework for embedding a holistic systems approach in appraisals and policy – and decision - making processes. Deliverables would include a conceptual framework, a typology of tools, methodologies and an assessment of factors that impede and facilitate the embedding of an ecosystems approach in various types of appraisals .

IUCN suggestions for the IPBES thematic assessment on invasive alien species and their control

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1) The IUCN Species Survival Commission's Invasive Species Specialist Group (ISSG) is a leading provider of global invasive alien species information. The ISSG has offered its services in a strategic partnership to the Technical Support Unit for this assessment (as documented in IPBES/2/17, Annex VII, page 76). The ISSG, in early 2000 developed the first online resource, the Global Invasive Species Database (GISD), focused on the impacts of invasive alien species on native species and natural areas. The extensive archives of the ISSG built over a decade and the GISD are a significant and key resource for such an assessment. Additionally, the ISSG can offer the following resources to the implementation of the IPBES invasive species assessment:
   a. Knowledge from a global network of scientific invasive alien species experts that form the ISSG, with support from the IUCN Invasive Species Programme. ISSG maintains Aliens: the Invasive Species Bulletin, and numerous other Publications, as well as the Aliens-L listserv.
   b. Resources focused on the impacts of invasive alien species on native/endemic species, and on ecosystems, with a special focus on protected areas and other areas of high biodiversity values including islands. Resources include the ISSG's Island Biodiversity and Invasive Species Database (IBIS); and the Database of Island Invasive Species Eradications (DIISE) and the Threatened Islands Database (TIB) developed by ISSG's partners.
2) The IUCN Commission on Ecosystem Management maintains an Ecosystems and Invasive Species Thematic Group. The Thematic Group's overarching goal is the implementation of "An effective ecosystem approach to adaptive invasive species legislation, governance, policy, management and restoration, which develops functioning and resilient ecosystems, that enhances biodiversity, its services, human well-being, health, livelihoods and food security, incorporating indigenous and local communities."
   a. The group has established a Background Information Sheet linking the group's Four-Year Action Plan (2013-2016) to the CBD Aichi Targets, Ramsar Convention, Biofouling Convention, Nagoya Protocol, and IPBES.
   b. The Action Plan has been incorporated into the Strategic Plan for the Pacific (2014–2020).
   c. New projects are in the process of being developed across Asia utilising the Four-Year Plan as Guidelines for the development of new projects which will then become Case Studies of Best Practice.
   d. The group will host a workshop at the November 2014 World Parks Congress on building synergies with indigenous and local knowledge systems, for publication in an international journal.
3) Regarding the IPBES Initial Scoping Document for the Thematic Assessment of Invasive Alien Species and their Control:
   a. Paragraphs 2 and 4, add mention of human well-being and livelihoods.
   b. Paragraph 3, add reference to Aichi Target 18.
   c. Paragraphs 5 and 6, add mention of food security and production.
   d. Paragraph 6, add mention of legislation as well as policies.

> e. Paragraph 7, add mention of the IUCN/CEM Thematic Group Ecosystems and Invasive Species.
> f. Paragraph 14, ensure that Chapter 5 includes information on all conventions which have a connection to this thematic assessment.

IPBES/2/16/Add.3

Initial scoping for the thematic assessment of invasive alien species and their control

I. Introduction

1. Recognizing that it would be necessary to move forward with the work programme for 2014 – 2018 following its approval by the Plenary of the Intergovernmental Science - Policy Platform for Biodiversity and Ecosystem Services at its second session, the Bureau and the Multidisciplinary Expert Panel agreed to prepare, for consideration by the Plenary at that session, a number of initial scoping documents based on the prioritization of requests, suggestions and inputs put to the Platform and the deliverables set out in the draft work programme
(IPBES/2/2). The present note sets out the initial scoping for a proposed thematic assessment of invasive alien species and their control. It has been developed in accordance with the draft procedures for the preparation of the Platform's deliverables (IPBES/2/9).

II. Scope, rationale, utility and assumptions

A. Scope

2. The objective of the proposed thematic assessment of invasive alien species and their control is to assess the global diversity of invasive alien species that affect biodiversity and ecosystems services; the extent of the threat posed by such species to various categories of biodiversity and ecosystems services, including impacts on agrobiodiversity and food, health and livelihood security; the major pathways for and drivers of the introduction and spread of invasive alien species, between and within countries; the global status of and trends in the impacts of invasive alien species and associated management interventions by region and subregion, taking into account various knowledge and value systems; and the adequacy of awareness of the extent of invasive alien species and their impacts and the effectiveness of current international, national and subnational biosecurity and control measures and associated policy options that could be employed to prevent, eradicate and control invasive alien species.

B. Rationale

3.The proposed assessment responds directly to Aichi Biodiversity Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment. "it will also contribute to the achievement of Aichit targets 5, 11, 12 and 17. Invasive alien species are acknowledged as major drivers of species extinctions globally; they degrade habitats and have serious impacts on protected areas around the world.

4. Invasive alien species, which include a vast, and rapidly increasing, range of mainly non –native terrestrial and freshwater and marine aquatic vertebrates, invertebrates, plants and disease organisms, constitute one of the most serious, rapidly growing and hard-to-address threats to biodiversity, ecosystem services and food, health and livelihood security. For many countries, invasive alien species are seen as a more serious threat than climate change. Invasive alien species have been responsible for the extinction of native plants and animals, degradation of rare and threatened ecosystems and ecological communities, crop failure and declining agricultural productivity, loss of cultivar and animal breed diversity and damage to property, infrastructure, native fisheries, tourism and outdoor recreation. The threats to native biodiversity from marine invasive alien species, either from deliberate or accidental introductions (e.g. in contaminated ballast water or as encrusting organisms on ships), are increasingly serious and very poorly understood.

5. A high percentage of globally and locally threatened species and ecosystems are at risk owing to competition with or predation or infection by invasive alien species. Whereas pollution and land degradation can be directly reduced, most invasive alien species constitute "living pollution" that will progressively get worse if no action is taken. The cost in loss to biodiversity and human well-being due to invasive alien species, including alien mammals, birds, reptiles, amphibians, fishes, crabs, molluscs, insects, echinoderms, terrestrial and water weeds, seaweeds and a vast array of plant and animal infectious and zoonotic diseases, is difficult to measure. Worldwide, it has been estimated that the cost of damage from invasive alien species exceeds $1.4 trillion, amounting to 5 per cent of the global economy; in the United States of America, the cost alone have been estimated at $120 billion, with over 100 million acres, the size of California being affected, while in Europe the economic losses have been estimated at over €12.5 billion per year. The impacts on oceanic islands are even more serious, with a majority of all extinctions of mammals, birds, amphibians, reptiles, land crabs, land snails and insects being directly or indirectly the result of invasive alien species. The economic, environmental and social costs of the use of pesticides to control invasive alien species are also a major cause of the loss of biodiversity and environmental pollution and are a threat to human health.

C. Utility

6.The rapidly growing threat that invasive alien species pose to biodiversity, sustainable development and human well-being are generally poorly quantified and poorly understood by policymakers. The proposed assessment, if undertaken, will raise awareness of the nature and seriousness of the threat posed by invasive alien species; identify policies that are required at the international level and by Governments, the private sector and civil society to help stop the spread of, eradicate or control the impacts of invasive alien species; and represent an early deliverable of the Platform that highlights how it can add value to policy formulation to address the biodiversity crisis.

D.Assumptions

7. The proposed assessment will be based on existing scientific literature and national assessments and will draw on the work of existing institutions and networks such as the International Union for Conservation of Nature/Species Survival Commission (IUCN/SSC) Invasive Species Specialist Group, the IUCN Invasive Species Initiative, BirdLife International's Invasive Alien Species Programme, CAB International, the Global Invasive Alien Species Information Partnership (an initiative supported by the secretariat of the Convention on Biological Diversity), the Food and Agriculture Organization of the United Nations, especially its agriculture, aquaculture and forestry divisions, and other relevant international and regional expert bodies. It will also endeavour to assess the regional status of invasive alien species by building synergies with indigenous and local knowledge systems, as local communities of farmers, hunters, fishers and other local experts may have the best time depth knowledge of the history, pathways, changing impacts and the effectiveness of efforts to manage invasive alien species.

III. Chapter outline

8.It is contemplated that the results of the thematic assessment will be presented in a six-chapter report, as set out below.

9. Chapter 1. Introduction to the concepts of invasive alien species, including:

(a) The current and future risks they pose;

(b) Their diversity, origins, means and pathways of introduction and spread, ecology, seriousness of their impacts;

(c) The need for awareness and appropriate pre - and post -border biosecurity policies to respond to their impacts and spread;

(d) Methodologies and information systems to monitor their extent, spread and impact.

10. Chapter 2. Overview of the types of invasive alien species, their means and history of spread and the types of impacts, broken down by region, that they have on biodiversity, ecosystem services and human well-

being. Major taxonomic groups to be covered include:

(a) Vertebrates (e.g., rats, mice, possums, mongooses, cats, goats, deer, pigs, horses, cattle, camels, foxes, rabbits, monkeys, snakes, lizards, turtles, toads and frogs, birds and fish);

(b) Invertebrates (e.g., ants, mosquitoes, flies, wasps, aphids, beetles, termites, cockroaches, locusts, moths, crabs, snails, slugs and other molluscs, flatworms), especially colonial organisms such as ants and wasps and mosquito vectors of disease that seem to be extending their ranges;

(c) Plants (e.g., trees, shrubs, vines, grasses, herbs, seaweeds and algae);

(d) Diseases and microorganisms (e.g., fungi, viruses, bacteria, cyanobacteria, protozoa, coral diseases, plankton, parasites).

11. Other issues to be covered in chapter 2 include:

(a) A real extent of and trends in loss of biodiversity and ecosystem services, land degradation and loss of food and livelihood security due to invasive alien species in all regions and subregions;

(b) Assessment of thresholds and scale of change (both positive and negative), including the recent arrival of new invasive alien species;

(c) Reconciliation of existing information with indigenous and local knowledge.

12. Chapter 3. Global assessment of the direct and indirect drivers responsible for the increasing number and impacts of invasive alien species. This will be a critical analysis that will include:

(a) An assessment of indirect drivers of change such as the increased movement of commodities and other materials by sea, air and land transport, trade and agricultural policies, including increasing monoculture and plantation forestry of potentially invasive species, and the spread of species valued by local communities for firewood and other purposes;

(b) Climate change, which in several regions of the world is expected to increase the rate and impacts of invasions;

(c) Inadequateawareness and international and national biosecurity procedures, including an assessment of direct drivers leading to the increasing dominance of invasive alien species such as land-use change and degradation, which favour invasion, and pesticide use.

13. Chapter 4. Global assessment of the environmental, economic and social costs of invasive alien species; with particular focus on their impact on biodiversity and ecosystem services, including IPBES/2/16/Add.3

4. non-economic values,e.g.,cultural, social and shared, recreational, scientific, spiritual and aesthetic. This would include global and regional case studies of impacts of invasive alien species on biodiversity, ecosystem services and food, health and livelihood security and policy options.

14. Chapter 5. Review of institutional arrangements, options and existing programmes, including their effectiveness, for global, national and local management of invasive alien species, including both pre-

border and border approaches to strengthening biosecurity and building awareness of invasive alien species issues. This will be based on assessing best practices and the effectiveness of existing programmes to address risks, including national quarantine measures. The chapter will also consider and analyse the options for:

(a) Preventing the international and intranational spread of invasive alien species, including the possible role of the Convention on Biological Diversity;

(b) Eradicating or managing invasive alien species once they are present, including control options such as precision application of pesticides, baits and biological control and other best practices.

15. Potential trade-offs and options for policy responses in relevant sectors and implications of inaction would also be assessed. This would include a comprehensive analysis of relatively common risks related to the absence of relevant policies for controlling invasive alien species such as a lack of customs controls, the lack of a precautionary approach to tourism and similar matters.

16. Chapter 6. Creating or strengthening existing networks and national capacities for global awareness-raising, early warning systems on the diversity and seriousness of the impacts of invasive alien species on biodiversity and rapid response strategies, with specific emphasis on strengthening international and intergovernmental networks and strategies and procedures for forecasting , preventing the spread of invasive alien species and eradicating and controlling them in order to conserve biodiversity as a basis for promoting human well-being.

IUCN suggestions for the IPBES thematic assessment on sustainable use and conservation of biodiversity and strengthening capacities and tools

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IPBES/2/17, Annex I, page 58:

3(b)(iii) Sustainable use and conservation of biodiversity and strengthening capacities and tools. The scope of this assessment on sustainable use is to assess the ecological, economic, social and cultural importance, conservation status and drivers of change of, mainly, harvested and traded biodiversity-related products and wild species. It will also assess the potential of the sustainable use of biodiversity for the enhancement of livelihoods of indigenous peoples and local communities, including the role of traditional governance and institutions. It will identify guidelines, methods and tools and promote best practices, including both modern technologies and indigenous and local knowledge, for sustainable management and harvesting. The assessment will contribute to identification of related knowledge gaps and better technologies, including in respect of indigenous and local knowledge. It will also contribute to the development of policy support tools and methodologies, to enhancing sustainable management schemes (including the establishment and management of harvest quotas), to aiding compliance and enforcement measures, and to addressing capacity-building needs in countries of origin. It is anticipated that the assessment will contribute to the Convention on International Trade in Endangered Species of Wild Fauna and Flora and the Convention on Biological Diversity, in particular Aichi Biodiversity Targets 3, 4, 6, 7, 12 and 18.

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1) Numerous IUCN mechanisms convene networks and deliver knowledge that can support the IPBES assessment on sustainable use. These include:
    a. The IUCN Commission of Education and Communication convenes substantial expertise into consumer behaviour and managing demand.
    b. The IUCN Commission on Environmental, Economic, and Social Policy and IUCN Species Survival Commission jointly convene the Sustainable Use and Livelihoods Specialist Group. This generates the "SULiNews" newsletter and numerous other Resources, and could support IPBES assessment of sustainable use with respect to conservation status, drivers of change, harvest and trade, and benefit sharing for local communities. In addition, the IUCN Red List of Threatened Species can contribute key information regarding drivers of species extinction risk.
    c. The IUCN Commission on Environmental, Economic, and Social Policy's Theme on Sustainable Livelihoods and the IUCN Economics Unit work together in developing the concept for a Human Dependency on Nature Framework, as a knowledge product to provide assessment of human dependency on nature. They also address economic and social issues interrelated with sustainable use, biodiversity conservation, and economic externalities affecting the conservation status of biodiversity.
    d. The IUCN Commission on Ecosystem Management convenes an Ecosystem Services Thematic Group (in collaboration with the Ecosystem Services partnership) and a Fisheries Expert Group. Members of the former have also developed the Verified Conservation Areas Platform (including a registry, a standard, and a toolkit) to enable conservation areas, managed for the sustainable use of nature, to be visible, accountable and marketable. The commission also works on strategies for payments for ecosystem services such as trade-offs, green taxes, and benefits for indigenous and local communities, as well as taking on the challenge of developing a Red List of Ecosystems.
    e. Protected Areas Categories System, documented in the "Guidelines for Applying Protected Area Management Categories". For sustainable use, Category V "Protected Landscape/Seascape" and Category VI "Protected Area with Sustainable Use of Natural Resources" are particularly important.
    f. Numerous IUCN Member organizations run initiatives related to sustainable use. Examples include The Nature Conservancy (e.g., Valuing nature for assessing economic values of ecosystem services and evaluating trade-offs; InVEST for mapping and valuing the goods and services from nature that

sustain and fulfil human life; the biodiversity and ecosystem services trends and conditions assessment tool; and various GIS tools and TICs) and the World Business Council for Sustainable Development (e.g., Eco4Biz – ecosystem services and biodiversity tools to support business decision making).

g. Numerous IUCN Programmes run initiatives related to the sustainable use of ecosystems, notably the IUCN Ecosystem Management Programme, the IUCN Forest Conservation Programme, the IUCN Water Programme, and the IUCN Marine and Polar Programme. The latter also collaborates with the IUCN Global Protected Areas Programme in running the protected areas component of the "Blue Solutions" project.

2) In addition, IUCN works closely with TRAFFIC, a strategic alliance between IUCN and WWF. TRAFFIC, founded in 1976, has been at the cutting edge of efforts to promote the conditions whereby legal wildlife trade is managed sustainably, to protect endangered species, and to prevent illegal wildlife trade—conserving biodiversity while continuing to make a significant contribution to meeting human needs. TRAFFIC's considerable reputation, credibility and influence are built on its carefully researched, reliable knowledge, its sound and impartial analysis of wildlife trade issues, its awareness of the wider socio-economic setting, its strategic approach to catalysing change and its wide experience of assisting the practical application of solutions. TRAFFIC's programmes focussing on sustainability comprise:

a. Fisheries. TRAFFIC research has highlighted threats to fisheries species ranging from abalone to sharks and eels, with a particular focus on high value and/or highly threatened taxa. Work centres on promoting responsible use and conservation of aquatic species through research and advice to governments and international agreements on how to strengthen fisheries management, trade controls, monitoring, identify species at risk of overexploitation and how to identify and reduce fisheries products from illegal, unreported and unregulated (IUU) fisheries which undermine efforts towards responsible management, trade and consumption.

b. Forestry. Illegal logging and timber trade disrupts forest ecology, carbon storage potential and benefits derived from the forest. Poor forest governance robs governments of revenue, communities of their livelihoods and countries of a valuable resource. TRAFFIC supports multi-stakeholder efforts to strengthen the design of national timber "legality frameworks" for timber harvest and trade, and to identify and stop illegal timber trade flows and to move towards sustainable forest management, and legal and sustainable trade. TRAFFIC uses the WWF/TRAFFIC common legality framework toolkit to conduct trainings on forest and timber trade legality to governments, industry, NGOs and other stakeholders to ensure good governance and sustainable timber trade.

c. Pets and fashion. Wild animals are often kept as pets or for display and their products processed in many forms for use in fashion, household decorations and other items. TRAFFIC is developing best practice approaches to ensuring that this trade meets the legality, and transparency requirements of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

d. Wild meat. Growing human populations and an increased "appetite" for the meat of wild species and medicines and tonics containing animal products in urban areas is undermining conservation, sustainable resource management and in some cases local food security. TRAFFIC provided significant input to the CBD's and CITES Working Groups on Bushmeat, assisted in the preparation of the recommendations on bushmeat that were adopted at CBD CoP12 and continues to support use of strategies and tools at national and regional levels to strengthen trade monitoring; encouraging stronger enforcement to reduce illegal trade; and supporting uptake of sustainable management practices where harvest is legal.

e. Medicinal and aromatic plants. Medicinal and aromatic plants are a critical source of ingredients for traditional medicines, pharmaceuticals, food, cosmetics and other products. They are also a critical source of income for

rural communities, and many are threatened due to overharvest and trade, land-use changes, and other factors. TRAFFIC promotes the uptake of the best-practice framework for sustainable wild-harvesting and trade in medicinal and aromatic plants – the FairWild Standard - by the private sector, governments and inter-governmental institutions, to support conservation, healthcare and livelihoods. TRAFFIC has provided input to the Convention on Biological Diversity's Global Strategy for Plant Conservation on issues related to sustainable use of plants, helped develop the FairWild Standard to support efforts to ensure wild plants are managed, harvested and traded sustainably, contributed to developing a body of knowledge on Biodiversity and Human Health, and partnered with WHO, IUCN and WWF in an update of the Guidelines on Conservation of Medicinal Plants.

f.   For many years, TRAFFIC has provided expert advice, information and assistance towards decision-makers in support of the further development and implementation of CITES and the CBD. TRAFFIC has contributed to the Global Biodiversity Outlook, Global Environmental Outlook, and is a partner of the Biodiversity Indicators Partnership, a global initiative to develop and promote indicators further for the consistent monitoring and assessment of biodiversity.

IUCN suggestions for the IPBES methodological assessment on scenario analysis and modeling of biodiversity and ecosystem services

> **IPBES/2/17**, Annex I, page 58:
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> 3(c) Policy support tools and methodologies for scenario analysis and modelling of biodiversity and ecosystem services based on a fast-track assessment and a guide (by August 2015). The fast-track assessment of methodologies for scenario analysis and modelling of biodiversity and ecosystem services is important for guiding the use of such methodologies in all work under the Platform to ensure the policy relevance of its deliverables. Scenarios and models, including those based on participatory methods, have been identified as policy support tools and methodologies that can help decision makers to identify development pathways with undesirable risks and impacts on human well-being and to envisage alternative pathways that would attain the goal of conserving and sustainably using biodiversity. Based on the findings of the methodological assessment, this deliverable will result in an evolving guide, followed by efforts as directed by the Plenary to promote methods for the use of different types of knowledge and catalyse the development of databases, geospatial data, and tools and methodologies for scenario analysis and modelling. The deliverable responds to requests received. It is anticipated that the deliverable would contribute to the Aichi Biodiversity Targets as a whole.

1) IUCN urges that scenario analysis and modelling to be guided through the IPBES methodological assessment be policy relevant by recommending that such scenarios start by recognizing societally-agreed targets for preventing biodiversity loss and maintaining ecosystem services, and working backwards from there to identify decision pathways necessary to reach these targets. The 20 Aichi Targets of the Convention on Biological Diversity's Strategic Plan provide an excellent starting point for such scenario analysis and modelling. Powerful techniques have now been developed to support such backcast approaches (Moss *et al.* 2010 Nature), and were used to provide Representative Concentration Pathways in the contribution of the Intergovernmental Panel on Climate Change's Working Group III to its Fifth Assessment Report, "Climate Change 2014: Mitigation of Climate Change".

> **IPBES/2/17**, Annex VI, pages 72–75:
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> **Initial scoping for the fast-track methodological assessment of scenarios and modelling of biodiversity and ecosystem services**
> **I. Introduction**
> 1. Recognizing that it would be necessary to move forward with the programme of work for 2014–2018 following its approval by the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services at its second session, the Bureau and the Multidisciplinary Expert Panel agreed to prepare, for consideration by the Plenary at that session, a number of initial scoping documents based on the prioritization of requests, suggestions and inputs put to the Platform and the deliverables set out in the draft programme of work (IPBES/2/2). The present note sets out the initial scoping for the agreed fast-track methodological assessment of scenarios and modelling of biodiversity and ecosystem services. It was developed in accordance with the draft procedures for the preparation of the Platform's deliverables (IPBES/2/9, annex), which were subsequently adopted, as amended by the Plenary (see decision IPBES-2/3).
> **II. Scope, rationale and assumptions**
> **A. Scope**
> 2. The objective of the proposed fast-track assessment of scenarios and modelling of biodiversity and nature's benefits to people, including ecosystem services, is to establish the foundations for the use of scenarios and models in activities under the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services in order to provide insights into the impacts of plausible future socioeconomic development pathways and policy options on biodiversity and nature's benefits to people, including ecosystem services, and to help evaluate actions that can be taken to protect them in terrestrial, inland water and marine ecosystems. These foundations will be used to provide guidance on evaluating alternative policy options using scenarios and models, including multiple drivers in assessments of future impacts, identifying criteria by which the quality of scenarios and models can be evaluated, ensuring comparability of regional and global policies, including input from stakeholders at various levels, implementing capacity-building mechanisms to promote the development, use and interpretation

of scenarios and models by a wide range of policymakers and stakeholders, and communicating outcomes of scenario and model analyses to policymakers and other stakeholders. The first phase of the assessment, to be completed by the end of 2015, will focus on assessing various approaches to the development and use of scenarios and models.

B. Rationale

3. The rationale for this deliverable is outlined in detail in the report of an international science workshop on assessments for an intergovernmental science-policy platform on biodiversity and ecosystem services that was held in Tokyo from 25 to 29 July 2011 (UNEP/IPBES.MI/1/INF/12). In brief, the goals of using scenarios and models in assessments of biodiversity and nature's benefits to people, including ecosystem services, are to better understand and synthesize a broad range of observations, to alert decision makers to undesirable future impacts of global changes such as habitat loss and degradation, invasive alien species, overexploitation, climate change and pollution, to provide decision support for developing adaptive management strategies and to explore the implications of alternative social-ecological development pathways and policy options. One of the key objectives in using scenarios and models is to move away from the current reactive mode of decision-making in which society responds to the degradation of biodiversity and nature's benefits to people in an uncoordinated, piecemeal fashion to a proactive mode in which society anticipates change and thereby minimizes adverse impacts and capitalizes on important opportunities through thoughtful adaptation and mitigation strategies.

4. Recent and forthcoming global environmental assessments (see references) have examined past trends in and the current status and future trajectories of biodiversity and ecosystem services. Assessments of status and trends are typically well understood by policymakers and stakeholders because they rely heavily on the analysis of observations. Looking into the future is more complex because it relies on coupling scenarios of future socioeconomic development with models of the impacts of global change on biodiversity and ecosystem function. Scenarios and models are typically explicitly or implicitly built on four main components:

(a) Scenarios of socioeconomic development (e.g., population growth, economic growth, per capita food consumption, greenhouse gas emissions) and policy options (e.g., reducing carbon emissions from deforestation and forest degradation, subsidies for bioenergy, et cetera);

(b) Models projecting changes in direct drivers of biodiversity and ecosystem function (e.g., land use change, fishing pressure, climate change, invasive alien species, nitrogen deposition);

(c) Models assessing the impacts of drivers on biodiversity (e.g., species extinctions, changes in species abundance and shifts in ranges of species, species groups or biomes);

(d) Models assessing the impacts of drivers and changes in biodiversity on ecosystem services (e.g., ecosystem productivity, control of water flow and quality, ecosystem carbon storage, cultural values).

5. These elements generally correspond to the structure of the conceptual framework developed for the Platform, and the figure below illustrates how scenarios and models are typically coupled to provide projections of future trajectories of biodiversity, ecosystem services and human well-being. Elements can range from highly quantitative (e.g., econometric models of socioeconomic development) to qualitative (e.g., prospective scenarios of development based on expert-stakeholder dialogues (Coreau and others, 2009)).

6. Considerable preparation and thought is required to structure scenarios and modelling activities for the Platform to ensure that comparisons can be made across assessments, especially important when comparing regional and global projections, and that a standard of high quality is maintained in all assessment activities. In addition, a number of significant knowledge gaps remain that must be filled to enable better quantification of uncertainty, to incorporate institutions and governance in scenarios, to account for the plurality of conceptualizations across knowledge systems, including feedbacks between the multiple interactions between the natural world and human societies (see figure) and to increase the policy relevance of scenarios and modelling assessments (Leadley and others, 2010, De Groot and others, 2010). The assessment, guidance, promotion and catalysing activities in this deliverable are intended to provide a basis for such preparation at the very start of the Platform's operation so that all activities relying on scenarios and models are built on a solid foundation.

7. This deliverable responds to requests, inputs and suggestions from France, Mexico, the International Council for Science and the United Nations Environment Programme (UNEP).

C. Assumptions

8. All phases of this deliverable will build on scenarios and modelling experiences under other global, regional and national environmental assessments. Particular attention will be paid to the most recent developments in socioeconomic scenarios and models used in global assessments, for example the "shared socioeconomic pathway" and "shared policy assumption" scenarios used by working group III of the Intergovernmental Panel on Climate Change in preparing its contribution (due out in 2014) to the Panel's fifth assessment report and the Convention on Biological Diversity Global Biodiversity Outlook 4 (due out in 2014), as well as regional and national assessments such as the national ecosystem assessments.

9. To improve the involvement of decision makers and a variety of knowledge holders in the process, there will be a focus on participatory methods (Coreau and others, 2009), "backcasting" methods that work backwards from agreed-upon future goals and other methods that reinforce the science-policy and science-stakeholders dialogue.

10. Particular attention will be paid to collaborating with observation networks and data holders as data is critical for developing, parameterizing and validating scenarios and models. The availability of adequate data is often a limiting factor in model development and use.

11. Particular attention will also be paid to the integration of biodiversity scenarios across spatial scales of relevance to multiple types of decisions, including closer involvement of stakeholders in the definition, development and use of scenarios, and stronger consideration and integration of the multiple dimensions of biodiversity and ecosystem services in scenarios and models. This is particularly important for the Panel because assessment activities will start with regional and subregional scale assessments, which must be both pertinent at national levels and sufficiently coherent across regions to provide the building blocks for a global assessment.

12. The scenarios and modelling assessment and follow-up activities will provide an unprecedented opportunity to capitalize on the synergies between the Intergovernmental Panel on Climate Change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. The Platform will also work closely with other bodies involved in global environmental assessment such as UNEP, including its programme on the economics of ecosystem services and biodiversity, and the International Union for Conservation of Nature. In addition, there is a broad scientific community that can be mobilized and involved in the development of these methodologies. This deliverable will therefore require substantial mobilization of resources outside of the Platform's remit and close collaboration with such international research programmes as Future Earth, funders of international research such as the Belmont Forum and the scientific communities involved in assessments undertaken by the Intergovernmental Panel on Climate Change, the Convention on Biological Diversity, the Food and Agriculture Organization of the United Nations and UNEP.

III. Chapter outline

13. It is contemplated that the results of the assessment will be presented in a 10-chapter report, as set out below:

Chapter 1. Overview of socioeconomic scenarios and models and critical review of their use in previous biodiversity and ecosystem assessments

Chapter 2. Scenarios of the indirect drivers of change in biodiversity and nature's benefits to people including ecosystem services

Chapter 3. Models of direct drivers of change in biodiversity, ecosystem function and nature's benefits to people, including ecosystem services

Chapter 4: Models of the impacts of drivers on biodiversity and nature's benefits to people, including ecosystem services

Chapter 5. Examining the feedbacks between biodiversity, nature's benefits to people, good quality of life, institutions and governance, and using scenarios and models

Chapter 6. Compatibility and comparison of scenarios and models, including a discussion of how the use of a core set of socioeconomic scenarios and models can be combined with the use of multiple scenarios and models. This chapter would also include a discussion on how to address the issue of multiple spatial and temporal scales with scenarios and models

Chapter 7. Building capacity for the development, use and interpretation of scenarios and models, including through the use of participatory and "backcasting" methods

Chapter 8. Scenarios and models as currently used in decision-making and communication

Chapter 9. Guidelines for improving the broader use of scenarios and models for decision support

Chapter 10. Guide for the use of scenarios and models in assessments and other activities of the Panel

IUCN suggestions for the IPBES expert group to scope methodological assessment on the conceptualization of values of biodiversity and nature's benefits to people

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IPBES/2/17, Annex I, page 58–59:

3(d) Policy support tools and methodologies regarding the diverse conceptualization of values of biodiversity and nature's benefits to people including ecosystem services based on an assessment and a guide. The assessment of tools and methodologies regarding multiple values of biodiversity to human societies is important for guiding the use of such methodologies in all work under the Platform. Different valuation methodologies will be evaluated according to different visions, approaches and knowledge systems and their policy relevance based on the diverse conceptualization of values of biodiversity and nature's benefits to people including provisioning, regulating and cultural services. Policy support tools guide decision-making by taking into account the multiple values of nature and its benefits, including biodiversity and ecosystem services, and identifying synergies and trade-offs between various possible development pathways, including new tool development for intrinsic, existence and bequest values. This deliverable will result in a guide. As directed by the Plenary, this deliverable will promote and catalyse the further development of tools and methodologies on these issues. The deliverable responds to requests received. It is anticipated that the deliverable will contribute to Strategic Goal A, in particular Target 2, of the Aichi Biodiversity Targets, on integration of biodiversity values.

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1) A number of components of IUCN mobilize expertise on the conceptualization of values of biodiversity and nature's benefits to people. These include:
   a. Many of the components of the IUCN Commission on Environmental, Economic, and Social Policy.
   b. The Sustainable Use and Livelihoods Specialist Group (SULi), a joint mechanism of the IUCN Commission on Environmental, Economic, and Social Policy and IUCN Species Survival Commission. SULi is in the process of establishing a working group on Modelling for Sustainability, with the remit to:
      i. Act as forum to develop methodological and conceptual insights by contrasting case study models;
      ii. Act as a networking center to foster: access to people with technical expertise for communities needing assistance; socioecological system approaches to pressing global development challenges; and capacity building in modeling skills;
      iii. Engage in model developments to integrate local socioeconomic and cultural aspects in socioecological systems by fostering interactions between individuals of all relevant disciplines.
   c. The IUCN World Commission on Environmental Law's Ethics Specialist Group.
   d. The IUCN Global Economics and Social Science Programme, including the Economics Unit, the Global Gender Office, and the Social Policy Unit.
   e. The Environment and Gender Index monitors government progress toward gender equality and women's empowerment in the environmental arena. The index provides the first quantitative data on governments' performance translating the gender and environment mandates in the three Rio Conventions and CEDAW into national policy and planning. The resulting information will help policymakers, civil society, and others evaluate progress and identify where the gaps lie in achieving gender equality in the environmental context.
   f. The Human Dependency on Nature Framework. The main goal of the framework is to provide policy makers from the development, environment and other sectors with an independent assessment of the degree to which natural ecosystems and wild resources contribute to the needs of rural and coastal communities as a proportion of total household income. The framework aims to improve the sustainable management of natural resources to better meet local needs and help target national development and conservation policies.

IUCN suggestions for the IPBES expert group on catalogue of policy support tools and methodologies

4(c) Catalogue of policy support tools and methodologies. A wide range of tools and methodologies are relevant to the Platform and Platform-related activities. An online catalogue of policy support tools and methodologies, including various visions, approaches and knowledge systems, will be established to facilitate easy access by decision makers to tools and methodologies promoted by the Platform. Guidance will be developed on how the customization and further development of policy support tools and methodologies could be promoted and catalysed. The catalogue and guidance will be an important source of information for deliverable 1 (d) on knowledge and data management, the assessments in deliverable 2 (b) and 2 (c) and the deliverables under objective 3. It will be used to support capacity-building activities under deliverable 1 (b), including by facilitating contact between assessment practitioners and supporting knowledge exchange, and might also provide information useful for deliverable 4 (e) on the review of the effectiveness of the Platform. The deliverable responds to requests received. It is envisaged that the deliverable will contribute to achieving Strategic Goal A of the Aichi Biodiversity Targets.

1) The "Guide" and "Catalogue" should respond to user needs. What are the specific needs of policy-makers – in particular those from sectors which constitute the drivers of loss of biodiversity and ecosystem services (e.g., energy, industry, agriculture, transport) – that may arise in different countries, contexts and issues, to which this deliverable is responding? It would be very useful to assess the needs of policy makers through interviews and surveys, to ensure that the "Guide" and "Catalogue" are build to serve real needs. It may be that policy-makers consider a "Catalogue" as being too rigid; maybe a more flexible mechanism such as a typology would be more useful.

2) The process outlined does not appear to include any provision for stakeholder review of the "Guide". This is deeply disconcerting. Both the "Guide" and the "Catalogue" it supports must be demonstrably useful both to those institutions who provide and maintain policy support tools and methodologies, and those who demand and use them. If either of these fail, IPBES objective 4(c) will fail, and along with one of IPBES' four functions, "to support policy formulation and implementation". The time schedule for development of the "Guide" should be amended to allow for an open process of stakeholder peer-review.

3) Characterization of policy-support tools and mechanisms can usefully be organized across the following contexts: geographical (e.g., regional, global) and administrative (e.g., provincial, national) level of application; focus according to species taxonomy (e.g., birds, plants), biome classification (e.g., tropical rainforests, coral reefs), and ecosystem service classes (e.g., provisioning, cultural); socio-economic context of application (e.g., lower-income countries, upper middle-income countries); and history of use (e.g., date launched, breadth of application).
   By contrast, while the IPBES conceptual framework has many strengths, its components are not useful in providing categorization of policy support tools and methodologies. By definition all policy-support tools and methodologies address multiple components of the conceptual framework: they aim to support decisions (indirect drivers, component A) which advance responses and reduce threats (direct drivers, component B) to the maintenance of biodiversity (nature, component C), the services it provides to people (nature's benefits, component D), and thence human wellbeing (good quality of life, component E).

4) If individual tools are going to be highlighted in the "Guide", then this inclusion needs to be supported by clear criteria for inclusion, as well as by explicit documentation of all other tools and methodologies assessed as less appropriate for inclusion against the same criteria. A much better approach would be simply to concentrate on types of policy-support tools and methodologies, and thus to leave documentation of individual tools to the "Catalogue".

5) IUCN considers the identification of families of tools and methodologies to be helpful, and recommends the following specific identification of families for "public discussion, involvement, and participatory process", "selection and design of policy instruments", "implementation, outreach and enforcement", "capacity building" for policy, and "social learning, innovation and adaptive governance". IUCN insists that assembling data and knowledge and assessments and evaluations – are not policy-support tools or methodologies, but rather important processes which should underpin the entire policy cycle. Indeed, they are recognized as such as the first and second functions for IPBES overall: knowledge generation and assessments, respectively. UNEP/IPBES.MI/2/9, Appendix 1, paragraph1(d) mandates IPBES's role in policy support as "identifying policy-relevant tools and methodologies, such as those arising from assessments" – in other words, assessments should drive policy support, but are not equal to it. Policy support ceases to have any meaning if defined so broadly as to include every function of the science-policy interface. It is clear that in practice, very few policy-makers use knowledge generation or assessments directly – hence the importance of a specific policy-support function.

6) Regarding "public discussion, involvement, and participatory process", IUCN convenes targeted thematic conferences to deliver policy influence and impact into specific issues of biodiversity and ecosystem services. These include:
    a. The IUCN Commission on Environmental, Economic, and Social Policy's conference on "Sharing Power: a New Vision for Development", convened in Whakatane, New Zealand in January 2011.
    b. The IUCN World Parks Congress, convened by the IUCN World Commission on Protected Areas once every ten years since 1962: the sixth will be convened in Sydney, Australia in November 2014.

7) Regarding "selection and design of policy instruments", in partnership with BirdLife International, Conservation International, and the UNEP World Conservation Monitoring Centre, IUCN maintains an Integrated Biodiversity Assessment Tool for Research and Conservation Planning as a tool for dynamic policy support, combining data from the IUCN Red List of Threatened Species, Key Biodiversity Areas, and Protected Planet to support decision-making around the reduction of biodiversity risk. A sister tool, the Integrated Biodiversity Assessment Tool for Business, runs in parallel to support decision-making in the private sector.

8) Regarding "implementation, outreach and enforcement", IUCN works through the Biodiversity Indicators Partnership to generate indicators of progress towards the 20 Aichi Targets of the Convention on Biological Diversity's Strategic Plan through repeat assessments over time for the IUCN Red List of Threatened Species, Key Biodiversity Areas, and Protected Planet knowledge products. Of the 55 indicators mobilized in support of the draft Fourth Global Biodiversity Outlook, one-third are generated from the knowledge products mobilized through IUCN. IUCN also works with NatureServe in support of visualization of a Biodiversity Indicators Dashboard.

9) Regarding "capacity building" for policy, IUCN produces large numbers of static policy support tools, in the form of policy guidelines and briefs, all available electronically through the IUCN Library. These include but are not restricted to:
    a. Many Resources produced by the IUCN Commission on Education and Communication.
    b. The IUCN Commission on Environmental, Economic, and Social Policy's Briefing Notes, Occasional Papers, "Members newsletter", "Policy Matters" journal, and numerous other Publications.
    c. The IUCN Commission on Ecosystem Management's "Ecosystem Management Series", "Ecosystem News" newsletter, and numerous other Publications.
    d. The IUCN Species Survival Commission's Policies, Guidelines, and Standards in Species Conservation and Management, Occasional Papers, Species Action Plans, Specialist Publications, "Species e-Bulletin" newsletter, "Species" journal, and numerous other Publications.
    e. The IUCN World Commission on Environmental Law's "Online Papers" and the "Environmental Law Programme Publications" series.
    f. The IUCN World Commission on Protected Areas' "Best Practice Protected Areas Guidelines" series, "Arguments for Protection" series, Factsheets,

"Protected Planet News" newsletter, "Parks" journal, and numerous other Publications.

    g.   Numerous Conservation Action Tools, spanning Assessment and Monitoring, Conservation Management, Conservation Policy, Education and Awareness Raising, and Programme Management.

    h.   Numerous national and regional policy support tools produced by the IUCN National and Regional Committees and Regional Offices.

10) Regarding "social learning, innovation and adaptive governance", the following IUCN mechanisms are particularly worth highlighting:

    a.   The IUCN Union Development Group, which supports the IUCN Membership in convening the quadrennial World Conservation Congress, at which the four-year IUCN Programme is debated and approved, along with numerous Resolutions and Recommendations. It also supports the IUCN Council which gives rulings on policy and determines complementary policy guidelines between sessions of Congress, and adopts and publicizes statements on important issues concerning the objectives of IUCN.

    b.   The IUCN Global Policy Unit, which maintains all 1,193 Resolutions and Recommendations approved since IUCN's First General Assembly in 1948, in a searchable electronic online database, the IUCN Recommendations and Resolutions Platform, as well as maintaining IUCN Policy Statements and Position Papers, and documenting all IUCN Interventions at the United Nations through the IUCN United Nations Permanent Observer Mission in New York, USA.

11) Maintenance of the "Catalogue". The responsibility for approval of the inclusion of policy-support tools and methodologies in the "Catalogue" should lie with the IPBES Plenary, with IPBES Member governments and other stakeholders invited to contribute proposals of tools and methodologies, with associated examples and resources, to be considered for inclusion in the "Catalogue".

IUCN suggestions for the IPBES expert group on set of communication, outreach and engagement Strategies, products and processes

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IPBES/2/17, Annex I, page 59:

4(d) Set of communication, outreach and engagement strategies, products and processes. This deliverable will focus on the further development and implementation of the communication strategy referred to in decision IPBES-2/9. Processes such as e-conferences and other ways and means to implement the stakeholder engagement strategy will be developed and applied throughout the work programme. Similarly, a set of outreach processes and products for presenting Platform deliverables, activities and findings to different targeted audiences will be developed. The set of outreach products will be based on all relevant Platform deliverables, activities and findings. The development of such products will involve cooperation with a broad set of partners and stakeholders. Stakeholder engagement, including through the Platform website and other means, will be used to raise awareness, to catalyse knowledge generation, to support capacity-building and to inform policymaking in the public and private sectors and civil society. The deliverable responds to requests received. It is envisaged that the deliverable will contribute to Aichi Biodiversity Target 1 on awareness-raising.

IUCN comments in response to consultation on "Revised draft stakeholder engagement strategy" submitted to IPBES secretariat on 03 October 2014.

Given that the engagement of relevant stakeholders in IPBES is a founding principle of the platform (UNEP/IPBES.MI/2/9 Appendix I Para 1), IUCN sees the Stakeholder Engagement Strategy as very important component of the IPBES operational modalities.

IUCN appreciates the opportunity to comment on "Revised draft Stakeholder Engagement Strategy", and does so on the basis of two resolutions from the fifth World Conservation Congress in Jeju in 2012: WCC-2012-RES-117 "Operationalization of the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES)" and WCC-2012-RES-118 "A significant role for IUCN in the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES)".

In addition, IUCN has made an offer, published in IPBES/2/17 Annex VII "Confirmed in-kind contributions [...]", to collaborate as a strategic partner with IPBES in contributing towards a Technical Support Unit for implementation of the Stakeholder Engagement Strategy. IPBES has not yet responded to this offer; we hope that such a response will be forthcoming soon.

IUCN hopes that IPBES will consider addressing the following issues in the document:

1) A clear Stakeholder Engagement Strategy is of critical importance to IPBES functions policy support, capacity building and knowledge generation.
   a) As the stakeholder role in the assessment function of the platform may be more easily pin-pointed (incentives, disincentives, empowering…), engaging stakeholders in the three other functions of IPBES seems less obvious while as crucial to ensure its inclusiveness and transparency. It may require much more investment and interaction between the IPBES governing body and the stakeholder constituencies to be successful. In order to do so, the revised Stakeholder engagement Strategy should address specifically each function of the platform.
2) Reinstate Annex II from IPBES/2/13 to the revised draft Stakeholder Engagement Strategy.
   a) The annex is a table of indicative elements for a Stakeholder Engagement Implementation Plan developed and agreed by stakeholders who participated in the drafting of the first proposal. As the work programme is already approved and ongoing, it is important that the revised document builds from existing efforts by IUCN and ICSU to develop the initial draft strategy over 2013, in response to the request from the first IPBES plenary, and becomes more operational by integrating an implementation plan to the Stakeholder strategy. This table could usefully be revised by the secretariat to align with

the various new material incorporated in the revised draft Stakeholder Engagement Strategy.

    b) IUCN considers that substantial work has already been undertaken with relevant stakeholders and networks to make progress on a stakeholder engagement plan. A draft implementation plan should be annexed to the revised Stakeholder Engagement Strategy with critical dates of engagement according to each function of the platform.

    c) Furthermore, as all stakeholders don't need to be engaged at the same time and considering that some stakeholders may only fulfil engagement effort on a short period of time, a draft phase-out of engagement for various types of stakeholders should be include, along with a budget estimate.

    d) IUCN considers that engagement activities should be adequately funded and regrets that the current levels of resources are inadequate.

    e) Financial support to participants in physical meetings might be needed and web developments for community management might be necessary. IUCN is committed to contribute in this regard by assigning staff resources to support stakeholder engagement and hopes that this effort would be emulated by others.

3) Amend the sentence and replace "implementation" by "engagement", page 1, line 45.

4) Add more transparency to the process by getting external reviewers to conduct the survey of the effectiveness/efficiency of stakeholder engagement mentioned on page 2, line 48.

5) Revise options for governance of the Stakeholder Engagement Strategy. Page 5, line 35, amend "A third option would be to build [...]".

    a) IUCN is convinced that capacity could be enhanced by building strategic partnerships with interested organisations that can offer in-kind support to the governance body to oversee the development and operation of the Stakeholder Engagement Strategy. Nevertheless, this should not be seen as a separate option to governance of the Stakeholder Engagement Strategy but should be seen as an essential complement to both governing options.

    b) IUCN supports option 2, reflecting stakeholders' proposal during the drafting of the first Stakeholder Engagement Strategy to ensure a governance process equally shared by governments, stakeholders and IPBES secretariat.

6) Mandate clarity and consistency for timeline and circulation of requests of comments.

    a) IUCN insists on the need of realistic deadlines to calls for comments issued by IPBES, to ensure true legitimacy of the consultation process and would like to draw the attention of IPBES on the call for comments on "Annex: Draft key priority capacity building needs under IPBES".

    b) On Friday 12 Sep 2014, it was brought to the attention of IUCN that a report of the IPBES task force on capacity building's meeting, 21-23 May, was posted on the IPBES website on the evening of Tuesday 9 Sep 2014, with a request for comments on this important document by Saturday 13 Sep 2014.

    c) Many stakeholders, including IUCN, did not receive the solicitation. As IUCN has been involved in building capacity for the science-policy interface for biodiversity and ecosystem services for 65 years, it has much to contribute to this important process in general.

    d) A request for turnaround of comments on such a document within just three working days is untenable for IUCN, and, we suspect, for most constituencies. Such unrealistic timelines for review risk severe alienation among stakeholders; this risk would become even more severe if claims were to be made that the document had undergone legitimate stakeholder review.

7) In addition to the points above, IUCN also enthusiastically commends the comments regarding the IPBES Stakeholder Engagement Strategy developed at the second Pan-European Stakeholder Consultation (Basel, 22-23 Sep 2014).