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**Plenary of the Intergovernmental Science-Policy
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Item 4 of the provisional agenda*

**Report of the Executive Secretary on the implementation
of the work programme 2014–2018****Update on the work of the task force on knowledge and data
(deliverables 1 (d) and 4 (b))****Note by the secretariat**

1. In part II of its decision IPBES-2/5, on the work programme for the period 2014–2018, the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services established a task force on knowledge and data for the period 2014–2018. The terms of reference for the task force are set out in annex III to the decision. The primary purpose of the task force is the implementation of deliverables 1 (d) and 4 (b) of the work programme for the period 2014–2018.
2. In its decision IPBES-3/1, the Plenary approved the data and information management plan for 2015 prepared by the task force, set out in annex II to the decision, and requested the Secretariat to submit to the Plenary, for information, data and information management plans for each ongoing assessment and to develop data and information management plans in the context of any scoping process or report. The Plenary also noted the progress made by the task force on knowledge and data in the development of a knowledge and data strategy and requested that information about the strategy be reported to the Plenary at its fourth session.
3. In accordance with decision IPBES-3/1 the task force, supported by its technical support unit, has worked with the expert groups involved in assessments and in scoping possible future assessments to develop a framework for data and information management to be used for each assessment. It has also further refined the knowledge and data strategy and developed a data and information management plan for the continued delivery of the strategy in 2016.
4. The annex to the present note provides information on the above. It is presented without formal editing.

* IPBES/4/1

Annex

I. Membership of the task force and technical support unit

1. Membership of the task force and information on its selection was presented to the third session of the Plenary in IPBES/3/INF/3.
2. In 2014, the IPBES Bureau, in consultation with the MEP, accepted the offer made by the Republic of Korea to host a technical support unit (TSU) for deliverables 1d and 4b at the National Institute of Ecology (NIE) in Seochon, Republic of Korea. A memorandum of understanding was signed on 8 October 2014, between the Ministry of Environment of the Republic of Korea (MOE), the National Institute of Ecology (NIE) and UNEP.
3. The technical support unit reached full capacity in 2015, and is composed of the following staff members:
 - Taewoo Yi, Ph.D. Environmental Microbiology, TSU Leader, NIE
 - Haejin Bae, Ph.D. Horticultural Sciences, TSU member, NIE
 - HyeJin Kim, Ed.M. International Education Policy, TSU member, NIE
 - Sarah Kim, M.SSc. Translation and Interpreting, TSU member, NIE

II. Overview of progress

4. The second meeting of the knowledge and data task force was held in Bonn, Germany on 20-23 April 2015, as a joint meeting with the two other task forces of IPBES. The task force updated and further developed its main deliverables. In addition, the three task forces discussed areas of cross-deliverable collaboration. Main outcomes from this meeting included:
 - (a) Development by the task force of guidelines on knowledge, information and data, as Section IV of the IPBES Guide to Assessments (deliverable 2a), including guidance for all assessments on developing a data and information management plan;
 - (b) Clarification of cross-cutting issues and opportunities for strategic collaboration with the task forces on capacity building, and indigenous and local knowledge systems;
 - (c) Development by the task force of a draft list of indicators for IPBES assessments.
5. The task force supported by its technical support unit made good progress in addressing the data and information management plan that was approved by Plenary for 2015 (Appendix I). Four of the eight activities in the 2015 plan have been completed. The remainder are on-going, and on course for delivery in 2016.
6. A subset of the task force on knowledge and data, called management committee, was formed at the joint task force meeting in April 2015. The technical support unit has convened monthly teleconference of this committee, and teleconferences or e-conference of the entire task force throughout the year.
 - (a) The members of the management committee include representatives from the Bureau (one of the two co-chairs), MEP (one MEP member of the task force), task force (one member), Secretariat (one staff), and the technical support unit.
 - (b) The management committee and task force teleconference meetings are designed to exchange information on progress made, and to provide advice to the TSU on activities to be performed in the context of the tasks to be delivered.
 - (c) The technical support unit has been drafting and distributing monthly updates (newsletter) to the task force members on progress made.
7. Members of the task force or of the technical support unit attended the first author meetings of the land degradation and restoration assessment, and of the regional assessments, as well as the third author meeting of the scenarios and models assessment, to provide advice and seek input on access to knowledge, information and data, global data sources, the draft list of indicators, and on guidelines on literature and data repository.

8. As part of its commitment to supporting all IPBES assessments, the task force has developed a summary list of knowledge and information functions that IPBES will require, with an indication on how these will be met (Appendix IV). These will continue to be developed in 2016.

III. Data and information management Plan: progress in 2015 and proposed activities in 2016

9. The task force worked on its deliverables under the Plenary approved data and information management plan for 2015 (Appendix I). The aim of the plan in 2016 (Appendix II) is to build on the knowledge foundations of the Platform that were put in place in 2015, under the guidance of the Strategy (Appendix III).

10. To build on the progress made in 2015, a fresh set of objectives will be addressed in 2016 (Appendix II). These will be guided by the Strategic Plan for the task force presented in IPBES/3/4 and updated below in Appendix III. In particular, there will be increased focus in 2016 on building support for assessments (e.g. the functions in Appendix IV), and on collaboration with the task force on capacity building, focusing on curriculum development, and with the task force on indigenous and local knowledge, focusing on extending sound management of knowledge, information and data and on further developing indigenous and local knowledge guidelines.

11. Progress in implementing key activities in the data and information management plan of 2015, included the following (Appendix I):

(a) *Activities 1- 2: Developing data and metadata guideline and handling knowledge gaps and uncertainty.* The knowledge and data task force has been entrusted with ensuring the quality of IPBES assessments, by developing standards and guidelines. The task force has provided guidelines on knowledge, information, and data on the production and integration of assessment guide from and across all scales (deliverable 2a), specifically with revisions of Chapter 8 on Data, of Chapter 9 on Knowledge gaps, and of Chapter 10 on Biodiversity and ecosystem services indicators. A draft set of indicators has been proposed by the task force and presented and discussed at all first author meetings, for use in assessments currently under way (Appendix V).

(b) *Activity 3: Developing a proposal for a discovery and access platform.* This “platform” is a “toolbox” consisting of various functions to be met by infrastructure, software, and networks. A draft proposal is under development based on input received from other deliverables, and in particular the regional assessments and land degradation assessment. Its main components would include several functions related to data (access, repository, interface and management), and several components related to literature (access; repository, interface and management), as needs emerge from on-going work. They would englobe in a coherent package some of the activities described below. See Appendix IV.

(c) *Activity 4: Providing access to primary literature for Platform experts.* The TSU, advised by the task force, designed and conducted a survey to estimate the level of IPBES experts’ needs in terms of access to primary scientific literature behind publishers’ paywalls, because there was a lack of clarity on the nature and extent of the problem. All current IPBES experts were surveyed using an online tool. About one third responded. Only 36% of respondents had access to all the literature they require, and 19% had no access at all to the journals of the major publishers (Elsevier, Wiley-Blackwell, Springer-Kluwer, Science, and Nature). Addressing this access issue will be a top priority in 2016. Next steps include negotiating with Research4Life and other universities/institutes for potential access arrangements through their library system.

(d) *Activity 5: Establishing strategic partnerships.* It is the responsibility of the task force to identify key strategic partners for long-term collaboration in related to date and knowledge. The knowledge and data task force, in consultation with the Bureau, has identified several strategic partners in this area, who are represented by a resource person, on the task force. These are: Future Earth, GEO BON (Group on Earth Observations Biodiversity Observing Network), BIP (Biodiversity Indicators Partnership) and GBIF (Global Biodiversity Information Facility). Strategic partnerships may be established with these partners if necessary, and additional partners may be added as work progresses.

(e) *Activity 6: Revise data and information management plan for 2016 based on developments in 2015.* In 2016, the task force will convene the first Dialogue workshop to catalyze the generation of new knowledge in order to fill gaps identified through IPBES assessments. This will be done in collaboration in with the science community, indigenous and local knowledge experts and holders, and potential funders. It will also be done in collaboration with the two other task forces. This workshop is listed as activity 6 in Appendix II.

(f) *Activity 7: Develop a data and information management framework for IPBES assessments.* This framework was drafted and included in the IPBES Guide for Assessments in time for the Regional assessment first author meetings in June-September 2015, to provide all assessment teams with guidance on how to plan for long term access to their knowledge, information and data. Additional needs having emerged, a suite of functions is now under development to better address the needs of all IPBES assessments (see Appendix IV).

IV. Further development of the knowledge, information and data Strategy

12. The knowledge, information, and data Strategy of 2015-2018 has been further refined and streamlined and an update is provided, as requested by IPBES-3 (see Appendix III). The Strategy is the over-arching guide for the IPBES knowledge, information and data developments, and will be delivered through successive data and information management Plans (see Appendices I, II, and IV).

13. Access to knowledge, information and data for IPBES assessments. The task force is working on providing ready access to knowledge, information and data needed for IPBES assessments. In collaboration with partner organizations with expertise in this area, a system is being developed where authors can request and find knowledge, information and data related resources for assessments. Arrangements are being made with organizations regarding, in particular, work on indicators and associated data in the context of regional and thematic assessments.

14. Repository of resources and products of IPBES assessments. The task force is exploring options for a long term repository of literature and knowledge, information and data resources used for and produced out of IPBES assessments, in collaboration with partnering organizations with expertise in this area, for replicability and transparency of assessments. In the interim period, IPBES Office365 share drive will be used as a temporary repository. To support author collaboration and consistent literature management, the Mendeley team version software was purchased. In October 2015, the Mendeley literature management software was distributed for use to all authors in all IPBES assessments by chapter group. See also Appendix IV.

15. Internal portal and workplace for task delivery and assessment support. The technical support unit has set up the Office365 internal portal for web-based information sharing, communication and collaboration on task delivery. The site has been set up to operate an ad hoc group per main task of the task force, for effective continuous support to IPBES assessments. Ad hoc groups will be formed by the members of the knowledge and data task force and other relevant experts in the IPBES Platform.

Appendix I	Report on progress made in 2015 with the data and information management Plan
Appendix II	Data and information management Plan 2016
Appendix III	IPBES Knowledge, information and data Strategy
Appendix IV	Knowledge, information and data functions for IPBES assessments
Appendix V	A draft shortlist of indicators for IPBES regional assessments

Appendix I

Report on progress made in 2015 with implementing the data and information management plan

Activities	Proposed completion date	Progress Report
1. Developing data and metadata guidelines	June 2015	Completed. Guidelines for data and metadata, metrics and indicators, were drafted and included in the IPBES Guide for Assessments in time for the Regional assessment first author meetings in June-September 2015
2. Providing methodological principles for handling knowledge gaps and uncertainty	June 2015	Completed. Methodological principles for handling knowledge gaps and uncertainty were drafted and included in the IPBES Guide for Assessments in time for the Regional assessment first author meetings in June-September 2015
3. Developing a proposal for a discovery and access platform for sustainable knowledge, information, and data.	November 2015	Ongoing
4. Providing ready access to primary research literature for all Platform experts	November 2015	Ongoing
5. Establishing agreements with key strategic partners regarding knowledge, information and data	November 2015	Ongoing
6. Revise data and information management plan for 2016 based on developments in 2015	November 2015	Completed
Additional activity added by the third session of the Plenary (2015)		
7. Develop a data and information management plans for each ongoing assessment and in the context of any scoping process or report	June 2015	Completed. Data and information management plan included in the IPBES Guide for Assessments. Additional work in progress in the context of each on-going assessment

Appendix II

Data and Information Management Plan 2016: Activities and deliverables.

These activities will continue to build towards the knowledge and data Strategy.

Activities	Proposed completion date	Notes
1. Developing a proposal for a discovery and access platform for sustainable knowledge, information, and data.	Mid 2016	Continued from 2015
2. Providing ready access to primary research literature for all Platform experts.	Mid 2016	Continued from 2015. The proposed solution is to gain access for IPBES experts through Research4Life where possible, and seek case by case solutions where this is not viable
3. Establishing agreements with key strategic partners regarding knowledge, information and data	Mid 2016	Continued from 2015. Establish formal agreements as necessary with key IPBES partners
4. Build knowledge, information and data functions to further support IPBES assessments	End 2016	The functions and the process of delivering them are delineated in Appendix IV
5. Conduct the first Dialogue workshop	End 2016	In collaboration with partner organizations and task forces, the first Dialogue workshop will be held in 2016 to catalyze the generation of new knowledge
6. Provide guidance on data guidelines, uncertainty and handling knowledge gaps	End 2016	Provide expertise to assessment teams as needed
7. Update Guide for assessment	End 2016	Update as necessary as new methods emerge and experience accumulate
8. Develop standardized workflows	End 2016	The task force will develop standardized workflows to provide access to interoperable data by means of distributed computing interfaces which will streamline IPBES assessments and facilitate intra-regional, inter-regional and sub-regional comparisons
9. Develop policies for open access to IPBES knowledge resources	Mid 2016	The task force will develop policies and tools to govern the Open Science culture of the Platform which will lead to significant advances in data integration, analysis and interpretation. The open science approach promotes the generation of knowledge through collaboration based on free and open access to knowledge, information and data. Open science therefore ensures that the work of all the researchers and stakeholders involved is fully recognized and properly attributed. This approach means a significant cultural change in the ways in which science is done and scientific results and underlying data are shared publicly by authors, journals and research organizations and thus made relevant to society
10. Revise and update data and information management plan for 2017	End 2016	The updated Plan will continue to build towards the Strategy (Appendix III)

Appendix III

Knowledge, Information and Data (KID) Strategy

This Appendix contains the revised Strategy for IPBES knowledge, information and data, condensed and updated from the version presented at the third session of the Plenary (Annex I, IPBES/3/INF/3). Below are outlined the vision, purpose and principles of the Strategy, followed by the strategic priorities, which are further developed in Fig. 1. The strategy will be delivered by successive annual data and information management Plans (e.g. Appendix II).

1. **Vision:** *The generation and curation of new knowledge by IPBES that is integrated across scales, disciplines, knowledge systems and institutions.*
2. **Purpose of the Strategy:** to guide the task force in delivering its mandate to identify and prioritise key scientific knowledge needed for policymakers, facilitate access to KID, provide guidance on how to manage and present KID, to advise on custodianship of the platform's KID and catalyse efforts to generate new knowledge.
3. **Principles:** The principles that guide the implementation of the Strategy are: quality and security (to ensure the longevity and integrity of IPBES KID); accessibility (to ensure free and open access to IPBES deliverables); *knowledge through partnerships (to foster necessary relationships and collaboration on the basis of the work programme); and integrating diverse disciplines and knowledge systems* (because IPBES will need to draw not only on diverse scientific disciplines, but also on knowledge systems not founded on science, such as indigenous knowledge).
4. **Strategic priorities:** There are four strategic priorities that will be addressed through the Strategy:
 - (i) *Planning:* the Strategy will be driven by an annual planning cycle overseen by the KID Management Committee and administered by the TSU. Annual Data and Information Management Plans will be drawn up to complete the deliverables.
 - (ii) *Foundations:* The foundations for integrated and accessible KID are a secure long term repository; guidelines and principles; a web portal to give access; and a community of practice that is familiar with the resources and how to use them.
 - (iii) *Services:* Knowledge services and tools will need to be provided to IPBES experts and policy makers to ensure live access to materials and ensure interoperability of outputs.
 - (iv) *Cultural change:* A culture of open access, interdisciplinarity and knowledge sharing across IPBES will be catalysed.

These strategic priorities, the likely timelines for intensity of focus, and their respective stakeholders, are shown below in Fig. 1, which has been updated from Annex II in IPBES/3/INF/3.

Fig. 1 Proposed IPBES Knowledge, Information and Data strategic priorities, which will be delivered through successive data and information management Plans (DIMPs). See successive DIMPs for annual deliverables.

Strategic priority	Focus area	2015		2016		2017		Stakeholders
Planning	Design	Intense	Intense	Low	Low	Low	Low	IPBES Plenary Bureau
	Management structure	Intense	Low	Low	Low	Low	Low	
Foundations	Repository	Intense	Intense	Intense	Intense	Low	Low	IPBES Experts Policy-makers TSU
	Standards for diverse knowledge systems	Low	Intense	Medium	Medium	Medium	Medium	MEP TSU IPBES Experts ILK Task Force
	Portal	Low	Intense	Intense	Intense	Medium	Medium	Policy-makers MEP IPBES Experts
	Capacity-building	Low	Medium	Medium	Medium	Medium	Medium	IPBES Experts Capacity-building Task force
Services	Research journal access	Intense	Intense	Intense	Intense	Low	Low	IPBES Experts
	Analysis tools	Low	Low	Low	Low	Intense	Intense	IPBES Experts Policy-makers
	Standardized assessment workflows	Low	Low	Medium	Medium	Low	Low	
Cultural change	Open Science	Low	Low	Medium	Medium	Medium	Medium	IPBES Plenary
	Interdisciplinarity	Medium	Medium	Medium	Medium	Medium	Medium	IPBES Experts Policy-makers ILK Task Force

Key:

	Low activity		Medium activity		Intense activity
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Appendix IV

Knowledge, information and data related functions for IPBES assessments

This table summarises the activities of the task force regarding data and literature undertaken in 2015, and to be continued, according to functions. There are 4 functions related to data (access, repository, interface, and management), and four functions related to literature.

Functions	Implementation Plan
Data	
ACCESS: Provide links to holders of Indicators and Indicator data sources	To be accessible via web interface. Link routed temporarily through Microsoft Office365, provided by the IPBES Secretariat
REPOSITORY: Store assessments, data sets and information used in assessments	To be accessible via IPBES web site. Link routed temporarily through Microsoft Office365, provided by the IPBES Secretariat
INTERFACE: Online forum for knowledge, information and data related questions and answers on assessments; eventually, data visualization and analysis.	Link routed temporarily through Microsoft Office365, provided by the IPBES Secretariat
MANAGEMENT: Request for data, maintain and update datasets and other resources used in systematic way	Each assessment TSU to handle inquiries and update resources in Microsoft Office365. Knowledge and data TSU to manage overall information flow and sharing, making it transparent and public within IPBES.
Literature	
ACCESS: Access to paywall literature to IPBES experts without access.	Proposed Research4Life partnership. Possible institutional hosting for some authors. Mendeley may be used for literature sharing within chapter groups.
REPOSITORY: Store pdfs of literature for sharing and annotation by chapter authors	Mendeley software adopted for this purpose. Literature can be stored in the long-term repository for all assessment inputs and outputs.
INTERFACE: Organize literature to show graphically how it supports/challenges assumptions	Functions may be delivered by modifying facilities in Microsoft Office365.
MANAGEMENT: Generate lists of references used in assessments that can be publicly shared.	To be generated by Mendeley and shared on IPBES web interface. It can be used as temporary repository while work is progressing, and a long-term repository can be used to store/freeze literature per draft order. (Some refer to this function as a “repository”, not to be confused with the data repository above.)

Appendix V:

Draft shortlist of indicators for IPBES regional assessments

This table presents the draft shortlist of indicators which has been presented and is being considered by all regional assessments

Column 2 corresponds to the chapters of the regional assessments:

Chapter 2: Nature's benefits to people and quality of life; Chapter 3: Status, trends and future dynamics of biodiversity and ecosystems underpinning nature's benefits to people; Chapter 4: Direct and indirect drivers of change in the context of different perspectives of quality of life; Chapter 6: Options for governance, institutional arrangements and private and public decision-making across scales and sectors.

Name	Chapter of regional assessments	Aichi Target (AT)	Provider	Note
Ratification status of the Nagoya protocol	2	AT 16	Convention on Biological Diversity (CBD)	The objective of the Nagoya Protocol is the fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity.
Ocean Health Index	2	AT 14	University of California in Santa Barbara (UCSB)	Combines key ecological, economic, and social elements of the ocean's health. Not all aspects are equally usable.
Red List Index	2, 3	AT 12, 14	International Union for Conservation of Nature (IUCN)	Regional RLIs can be calculated either by disaggregating the global indices, or by repeatedly assessing extinction risk at the regional scale. In addition, they can be disaggregated by functional groups such as pollinating species.
Wetland Extent Trends Index	3	AT5	United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) / Ramsar	The Index enables the rate of loss of wetlands to be estimated, providing an indication of the status of wetlands globally and regionally
Protected area management effectiveness	3	AT 11	UNEP-WCMC	This global database can be used to report at national, regional and global levels and consists of individual assessments of management effectiveness.
Coverage of protected areas	3	AT 11	UNEP-WCMC	Quantifies reserve coverage by ecoregion

Name	Chapter of regional assessments	Aichi Target (AT)	Provider	Note
Species Habitat Index	3, 4	AT 5, 12	Group on Earth Observations Biodiversity Observation Network (GEO BON) / Map Of Life (MOL)	Captures availability and trends in suitable habitats for species using remote sensing, occurrence data and habitat need information.
Species Protection Index	3, 6	AT 11	GEO BON / MOL	Captures status and trends in species protected area coverage based on suitable habitat.
Trends in numbers of invasive alien species Introduction events	4	AT 9	IUCN Invasive Species Specialist Group (ISSG)	In current form addresses only islands, but all regions have islands and an indicator addressing mainland may become available soon.
Marine Trophic Index	4	AT 6	University of British Columbia (UBC), Sea Around Us	The index is available for the EEZs of every coastal country in the world and for all currently defined LMEs.
Nitrogen Surplus	4	AT8	Planbureau voor de Leefomgeving (PBL) Netherlands	The annual soil nutrient budget includes the N and P inputs and outputs for 0.5 by 0.5 degree grid cells. It expresses the pressure of N on the environment, mainly by agricultural production.
Water Footprint	4	AT4	Joint Research Center (JRC)	A multidimensional indicator, showing water consumption volumes by source and polluted volumes by type of pollution; all components are specified geographically and temporally, as a volumetric measure of water consumption and pollution.
Index of Linguistic Diversity	6	AT 18	Terralingua	A measure of status and trends in the world's linguistic diversity
Species Distribution Information Index	6	AT 19	GEO BON / MOL/GBIF	Captures status and trends in coverage of mobilized species occurrence information for variety of taxa
Marine stewardship council certified fishery tonnage and improvements	6	AT 6	Marine Stewardship Council (MSC)	An indicator produced using green weight catch data collected by MSC-accredited third party certification companies. Some catch data is available from individual fishery reports hosted on the MSC website.
Area of forest under sustainable management certification	6	AT 7	Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC)	The data for this indicator originate from the global FSC Certificate Database which can also be filtered by country or region as well as the PEFC database.