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**Update on the progress of the methodological assessment on
scenarios analysis and modelling of biodiversity and ecosystem
services (deliverable 3 (c))****Note by the Secretariat**

In section IV of decision IPBES-2/5, the Plenary of the Intergovernmental Platform on Biodiversity and Ecosystem Services approved the undertaking of a fast-track methodological assessment on scenario analysis and modelling of biodiversity and ecosystem services, for consideration by the Plenary at its fourth session, based on an initial scoping report (decision IPBES-2/5, annex VI). The assessment 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, the 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 to catalyse the development of databases, geospatial data and tools and methodologies for scenario analysis and modelling. The assessment is being developed by a group of experts in accordance with the institutional arrangements for the implementation of the work programme (decision IPBES-2/5, annex I) and with the procedures for the preparation of the Platform's deliverables (decision IPBES-2/3). The annex to the present note, which has not been formally edited, provides information on the composition and progress of work of the expert group.

Annex

I. Composition of the expert group

A. Dedicated MEP and Bureau members

1. In accordance with the rules of procedure for preparing Platform reports, the following Multidisciplinary Expert Panel (MEP) and Bureau members are overseeing the report, ensuring that it is prepared in accordance with agreed procedures:

Paul Leadley (MEP member)

Carlos Joly (MEP member)

Calistus Akosim (MEP member)

Robert Watson (Bureau member)

Jay Ram Adhikari (Bureau member)

B. Selection of experts

2. For the purpose of delivering this assessment, an expert group was established according to the rules and procedures of IPBES. The selection process was performed by members of the Multidisciplinary Expert Panel, with advice from Bureau members, together reviewing all nominations that had been submitted, based on examination of nomination templates and curriculum vitae for each nominee. Selections were made on the basis of excellence and relevance of candidates' expertise with respect to relevant areas of the work programme. Once selected on merit, further selection was focused on balancing disciplinary, regional and gender diversity, as well as sectorial aspects (i.e. 80 per cent of selected experts coming from governments and 20 per cent from non-governmental stakeholders). The Multidisciplinary Expert Panel (MEP), at its third meeting, made a pre-selection of 102 potential experts for this assessment, from an original list of 201 nominations, including suggestions for possible Co-Chairs and Coordinating Lead Authors. The Panel, then, met with the two Co-Chairs, once selected, in order to benefit from their knowledge of the scenario and modelling community, and finalised its selection of 84 Coordinating Lead Authors (CLAs), Lead Authors (LAs) and Review Editors (REs), based on the list of 102 pre-selected experts. The management meeting of MEP members with Co-Chairs also included the dedicated Bureau members and the technical support unit.

3. The final list of Co-Chairs, CLAs, LAs and REs is shown in annex III.

The overall geographic balance of the expected final group is as follows: 14 percent from Africa, 20 per cent from Asia-Pacific, 11 percent from Eastern Europe, 21 percent from Latin America and the Caribbean, and 33 percent from Western European and Others Group. The overall gender balance of the group is as follows: Male/Female: 77/23. The overall balance of the group with regard to the origin of nomination is as follows: Governments/Stakeholders: 80 per cent versus 20 per cent.

C. The technical support unit (TSU)

4. The IPBES Bureau, in consultation with the MEP, accepted the offer made by the Dutch Government to host a technical support unit for this assessment at PBL – Netherlands Environmental Assessment Agency. A Project Cooperation Agreement between UNEP and the Dutch Government (PBL-Netherlands Environmental Assessment Agency) has been signed.

5. The TSU commenced operation on June 1st, 2014 and its purpose is to provide support to the expert group of Deliverable 3(c). The TSU will (i) support the assessment process; (ii) organize consultation/meetings of experts; and (iii) verify completeness and comprehensiveness of the assessment. The members of the TSU are: Head: Prof. Rob Alkemade, Junior researcher: Tanya Lazarova, and Logistics manager: Thelma van den Brink and a vacancy to be filled shortly.

II. Progress towards preparation of the assessment report

A. Preparation of the zero order draft of the Deliverable 3(c) assessment report

6. During the period 5th May – 12th Oct 2014, the Co-Chairs, Contributing Lead Authors and Lead Authors worked by teleconferences and email to produce the zero order draft of the assessment report as a basis for the First authors meeting. This included three stages: 1) First, the Co-Chairs further developed the chapter outline based on the initial scoping report; 2) Second, the Co-Chairs worked with the Coordinating Lead Authors to produce a high-level chapter outline; 3) Third, the Lead Authors were included to produce an annotated chapter outline. The TSU supported the process of preparing the zero order draft by facilitating communication (e.g. organizing video conferences) and monitoring the progress of each chapter. The annotated outline served as the zero order draft.

B. First Authors Meeting

7. The First Authors Meeting convened on 27-31 October 2014 in Egmond aan Zee, the Netherlands. The technical support unit organized this meeting. There were 65 participants from over 40 countries: 2 Co-Chairs (who are also Coordinating Lead Authors of a chapter); 12 additional Coordinating Lead Authors; 45 Lead Authors. The meeting was also attended by dedicated Multidisciplinary Expert Panel and Bureau Members, and by the TSU.

8. Objectives and results of the meeting:

(a) **Experts** became acquainted with each other and were further familiarized with the IPBES work programme.

(b) **The zero order draft, which was prepared by Coordinating Lead Authors and Lead Authors in consultation with the Co-Chairs prior to the meeting, was presented, discussed and elaborated** further, for the purpose of producing additional material for the first order draft.

An important step made during the meeting was the formulation of the key messages of each individual chapter. Sections of each chapter were assigned to authors, based on their expertise. In response to a request from the experts, a glossary is being developed, for the purpose of establishing a common set of definitions for all chapters.

(c) **Gaps and redundancies across chapters were identified and resolved.** Potential overlaps between chapters were identified and, where necessary, a decision on the division of content between chapters was made in order to prevent duplication. Each chapter made progress towards identifying gaps in expertise, and compiling a list of potential Contributing Authors to fill these gaps.

(d) **Next steps for the preparation of the first order draft of the assessment report were defined.** Each chapter formulated a detailed writing plan for the period until the submission of the first order draft for external review by experts.

(e) **The progress on key issues such as dealing with file sharing, project management, communication, dealing with uncertainty and confidentiality, and other relevant issues, was discussed.**

Experts made individual decisions per chapter on the means of file sharing and communication between experts. The TSU offered file sharing facilities for use by experts.

Conclusion: The First Authors Meeting successfully achieved the envisioned objectives and provided a firm basis for the progress of the assessment.

C. Chapter outline

9. During the process of producing the zero order draft, some adaptations of the chapter outline of the Deliverable 3(c) assessment report originally approved at the 2nd IPBES Plenary (Annex VI to Decision IPBES-2/5), were made and reported to the 4th meeting of the MEP in July 2014. The changes did not suppress any items, but only consisted in re-allocating them to places which were seen as more appropriate. The main changes included replacement of chapter 10 ‘Guide for the use of scenarios and models in assessments and other activities of the Panel’ by a separate document, which will serve as an evolving guide, that integrates new development after the publication of the assessment report; and incorporation of the content of former Chapter 5 ‘Examining the feedbacks between biodiversity, nature’s benefits to people, good quality of life, institutions and governance, and using scenarios and models’ into other chapters in order to emphasize that these feedbacks are integral

parts of scenarios and models. The new revised version of the chapter outline is set out in annex I to this information document.

10. Following discussions at the First Authors Meeting on the new chapter outline, participants suggested that it would be more appropriate to reposition Chapter 5 ‘Using scenarios and models to inform decision-making in diverse policy, planning and management contexts’ immediately after Chapter 1, which would lead to a renumbering of all chapters (i.e. Chapter 5 became Chapter 2, and renumber all remaining chapters accordingly). This is yet to be fully agreed and implemented.

III. Links with other Deliverables

11. During the First Authors meeting, potential links with other deliverables were identified. A list of experts from deliverable 3(c) who also participate in other deliverables has been produced by the TSU to facilitate communication and discussion between deliverables. The TSU will facilitate this process, as necessary.

IV. Work plan and next steps

12. Several adjustments to the original planning were made at the First Authors Meeting. The dates of the Second and Third Authors Meetings were both postponed, in order to allow more time for the preparation of the report drafts, and the review phases. Following discussions with the participants, it was also decided that it would be more valuable if the Lead Authors attend the Second Authors Meeting, together with the Coordinating Lead Authors and Review Editors, rather than the Third Authors Meeting. The new adapted version of the planning is set out in annex II to this information document.

13. The next major steps for this assessment include:

(a) **Review of First Order Draft**

Guidelines for the organization of the review process were produced by the technical support unit, based on approved procedures for the preparation of the Platform’s deliverables (Annex to decision IPBES-2/3 in IPBES/2/17). They will be communicated to the Review Editors to establish a common procedure for the organization of the first external review.

(b) **Second and Third Authors Meetings**

(c) The locations for the second and third author meeting were selected with the intention of achieving a good regional balance. The Second Authors Meeting will be held in Argentina.

14. Steps after 2015

The methodological assessment is expected to pave the way for follow up work on scenarios and modelling to be carried out by a ‘task force’ like expert group. This group could be in charge of catalysing the use of existing models and scenarios for the future needs of IPBES, as well as catalyse the emergence of new ones. The assessment expert group will be working with MEP members on a proposal to be submitted for approval to the fourth session of the Plenary, on next steps regarding the scenario and modelling work of IPBES.

Annex I Chapter outline for the methodological assessment on scenarios and modelling

Chapter 1: Overview and vision

- The role of scenarios and models in projecting and assessing potential changes in biodiversity and nature's benefits to people, including ecosystem services (articulated within the context of the IPBES conceptual framework of interactions between the natural world and human societies).
- Envisaged importance of scenarios and models for decision-making in diverse policy, planning and management contexts.
- Defining and linking core components of scenario-analysis and modelling, addressing: indirect and direct drivers of change; impacts on biodiversity and ecosystem properties and processes; and consequences for nature's benefits to people.
- Embedding scenarios and models into participatory and adaptive policy development / implementation, planning and management.
- Rising to the challenge of integration, harmonization and capacity building across spatial and temporal scales, and across diverse value and decision-making contexts.
- Synopsis and structure of following chapters, emphasising strong inter-linkages, dependencies, and shared foci, between these.

Chapter 2: Building scenarios and models of [indirect and direct] drivers of change in biodiversity and ecosystems

- Overview of the distinction between, and importance of, indirect and direct drivers of change in biodiversity and ecosystems.
- Modelling plausible, or alternative, trajectories of indirect drivers through socioeconomic scenarios.
- Methods for developing plausible socioeconomic scenarios (e.g. storyline, probabilistic, back-casting, prospective approaches) and for incorporating input from relevant stakeholders and knowledge-holders.
- Aligning the design of scenarios with clear decision-making objectives in policy development, planning or management (links to Chapter 5).
- Lessons learnt from previous processes of scenario development and application at global scale (e.g. Millennium Ecosystem Assessment, Global Biodiversity Outlook, Global Environmental Outlook, Intergovernmental Panel on Climate Change) and at regional or local scale.
- Methods for modelling expected consequences of socioeconomic scenarios for direct drivers of change in biodiversity and ecosystems (e.g. climate, habitat modification, exploitation, invasive species, pollution) across terrestrial, freshwater and marine systems, and across scales.
- Coupling modelling of indirect and direct drivers of change, with potential feedback effects of changes in biodiversity and ecosystems on socioeconomic futures (links to Chapters 3 and 4), through integrated assessment models (IAMs) etc.
- Potential for cooperation and collaboration with ongoing scenario-analysis and IAM activities across other relevant initiatives (e.g. IPCC).
- Methods for assessing, and communicating, uncertainty in scenarios and models of indirect and direct drivers of change in biodiversity and ecosystems.
- Data needs for scenario and model development, and for ongoing evaluation and calibration (links to Chapter 8).

Chapter 3: Modelling impacts of drivers on biodiversity and ecosystem properties and processes

- Overview of the role and challenge of modelling potential impacts of changes in direct drivers (from Chapter 2 – climate, habitat modification, exploitation, invasive species, pollution etc) on biodiversity and ecosystem properties and processes.
- Aligning the design and implementation of impact modelling with clear decision-making objectives, by ensuring that models can adequately assess effects of potential policy and/or management interventions of interest at appropriate scales (links to Chapter 5), and by focusing

on biodiversity and/or ecosystem response variables most directly underpinning consequences for the particular benefits of nature valued in a given decision-making context (links to Chapter 4).

- Methods for modelling impacts of changes in direct drivers on biodiversity across multiple levels (e.g. population, species, community) and dimensions (e.g. composition, structure, function) of biological organisation, including correlative, process-based and hybrid modelling approaches.
- Methods for modelling impacts of changes in direct drivers on ecosystem properties and processes (e.g. biomass, primary production).
- Consideration of potential feedbacks between changes in biodiversity and ecosystem properties and processes, and the indirect and direct drivers of these changes (links to Chapters 2).
- Methods for assessing, and communicating, uncertainty in models of impacts of drivers on biodiversity and ecosystem properties and processes.
- Data needs for model development, and for ongoing evaluation and calibration (links to Chapter 8).

Chapter 4: Modelling consequences of change in biodiversity and ecosystems for nature's benefits to people

- Overview of the need to translate modelled biophysical changes in biodiversity and ecosystem properties and processes (from Chapter 3) into expected consequences for benefits to people, by incorporating consideration of relevant values that people place on, or derive from, nature.
- Recognition that different decision-making processes may require a focus on different types of material and non-material values (as defined by the IPBES Conceptual Framework) including: ecosystem goods and services (provisioning, regulating, cultural services), existence value, bequest value, and option value (links to IPBES Deliverable 3d – *Expert Group for scoping of a methodological assessment, and development of a guide, regarding diverse conceptualization of values of biodiversity and nature's benefits to people including ecosystem services*)
- Methods for modelling consequences of changes in biodiversity, and ecosystem properties and processes, for different types of benefits to people.
- Consideration of potential feedbacks between changes in nature's benefits to people, including ecosystem services, and the indirect and direct drivers of these changes, and therefore the potential need to accommodate these feedbacks in socioeconomic scenarios and IAMs (links to Chapters 2).
- Methods for assessing, and communicating, uncertainty in modelling of consequences of change in biodiversity and ecosystems for nature's benefits to people.
- Data needs for model development, and for ongoing evaluation and calibration (links to Chapter 8).

Chapter 5: Using scenarios and models to inform decision-making in diverse policy, planning and management contexts (*This chapter may be repositioned immediately after chapter 1*)

- Overview of policy, planning and management contexts in which scenarios and models projecting potential changes in biodiversity, ecosystems and nature's benefits can aid decision-making, across multiple scales.
- Lessons learnt from established methodological paradigms and frameworks that make strong use of scenarios and models in decision-making – e.g. “structured decision-making”, “ecological risk assessment”, “management strategy evaluation”.
- Aligning the design of scenarios and models – e.g. spatial scale, choice of response variables, types of policy or management interventions considered – with the particular needs and objectives of different decision-making processes (links to Chapter 2, 3 and 4).
- Strategies and methods for incorporating scenario-analysis and modelling into high-level policy development processes.
- Strategies, methods and decision-support tools for incorporating scenario-analysis and modelling into policy implementation, multi-objective planning and management decision-making processes.

- Potential for embedding, and integrating, modelling across all phases of the adaptive policy/planning/management cycle (links to IPBES Deliverable 4c – *Expert Group to develop a guide on and a catalogue of policy support tools and methodologies*).
- Dealing with, and communicating the implications of, uncertainty in scenarios and models employed in decision-making

Chapter 6: Linking and harmonizing scenarios and models across scales and domains

- Challenges and potential solutions for more closely linking, and encouraging two-way interactions (up-scaling and down-scaling) between, scenarios and models across different scales of assessment and decision-making – local, regional and global (links to IPBES Deliverable 2a – *Expert Group to develop a guide on production and integration of assessments from and across all scales*).
- Approaches to fostering harmonisation of scenarios and models between different regions, to maximise sharing of benefits from methodological advances across regions, and capacity for comparison and/or aggregation of results.
- Approaches to achieving closer coupling of independently developed models focusing on different dimensions and levels of biodiversity, or on different ecosystem properties and processes.
- Approaches to further coupling biodiversity and ecosystem modelling with models developed, or being developed, across other environmental, social and economic domains, including advances in IAMs.
- Methods for model inter-comparisons.

Chapter 7: Building capacity for developing, interpreting and using scenarios and models

- Understanding regional and cultural differences in perspectives on, and capacity for, scenario analysis and modelling (links to IPBES Deliverable 1a,b – *Task Force on capacity-building*)
- Improving regional and national access to standard data-sets and projections that are appropriately prepared and served globally (e.g. remote-sensing products, down-scaled climate projections)
- Improving access to, and usability of, software tools for scenario analysis, modelling and decision-support.
- Developing flexible and effective methods for incorporating local data and knowledge into scenario analysis and modelling (links to IPBES Deliverable 1c – *Task Force on indigenous and local knowledge systems*)
- Developing effective strategies and methods for mainstreaming scenarios and models into participatory assessment and decision-making processes across scales (local, regional, global), and across different policy, planning and management contexts.

Chapter 8: Improving the rigour and usefulness of scenarios and models through ongoing evaluation and refinement

- Overall vision and strategy for ensuring sustained ongoing improvement in the rigour and usefulness of scenarios and models of biodiversity, ecosystem properties and processes, and nature's benefits to people.
- Needs and priorities for acquisition of different types of data and knowledge across spatial and temporal scales, to inform and support the development, application and evaluation of scenarios and models (links to IPBES Deliverable 1d – *Task Force on knowledge and data*)
- Imperatives, and opportunities, for more closely linking initiatives in scenario analysis and modelling to parallel initiatives in biodiversity and ecosystem change observation at national, regional and global scale (e.g. GEO BON – the Group on Earth Observations Biodiversity Observation Network), thereby establishing a rigorous empirical foundation for ongoing model evaluation and calibration.
- Priority future directions in advancing the fundamental science underpinning development and application of scenarios and models.

Annex II Timetable for the methodological assessment on scenarios and modelling

Abbreviations: CCs (Co-Chairs); CLAs (Coordinating Lead Authors); LAs (Lead Authors); REs (Review Editors);

Writing and review
Meetings

2014	28-30 April	Management Committee meeting to scope the assessment, Bonn, Germany	Expert involvement
	19 June -17 Aug	Prepare draft overview and vision (chapter 1), to inform deliverables 2b and 4c	CCs
	5 May - 12 Oct	Prepare zero order draft of assessment report and guide for scenarios and models	CCs, CLAs, LAs
	25 Aug - 22 Sept	1 st Zero order draft (outline)	CCs, CLAs
	22 Sept - 12 Oct	2 nd Zero Order Draft (detailed outline +text)	CLAs, LAs
	27 - 31 October	First author meeting (CLAs & LAs), the Netherlands	CCs, CLAs, LAs
	1 Nov-5 Dec	Prepare first order draft assessment report and guide for scenarios and models	CCs, CLAs, LAs
	17 Nov – 19 Dec	Organizing first review	REs
	5 Dec - 5 Jan	Internal review by authors	CCs, CLAs, LAs
2015	12 Jan - 27 Feb	First review phase (for external review)	REs
	9-13 March	Second author meeting (Argentina)	CCs, CLAs, LAs, REs
	14 March-14 May	Prepare second draft assessment and guide continued; and first draft of the Summary for Policy Makers (SPM)	CCs, CLAs, LAs
	19 May – 15 July	Second review phase (draft assessment and guide, and the SPM)	REs
	29 June - 19 July	Prepare final draft assessment and guide; and final draft of the SPM	CCs, CLAs, LAs
	27 - 31 July	Third author meeting (location to be decided)	CCs, CLAs, REs
	3 Aug-20 Sep	Prepare final draft assessment and guide; and the SPM continued	CCs, CLAs, LAs
	20 October	Deadline for working documents for IPBES 4	
December 2015 or January 2016	IPBES 4th Plenary session		

Annex III List of experts contributing to the methodological assessment on scenarios and modelling

Assessment co- chairs

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