**IPBES workshop to catalyse further
development of scenarios
including using the Nature Futures Framework**
Task force on scenarios and models
under the 2030 IPBES rolling work programme
South Africa, 14-16 November 2022

IPBES/TF/SCN/WSP/2022/2/5

Report of the IPBES workshop to catalyse the further development of scenarios including using the Nature Futures Framework (South Africa, 14-16 November 2022)

Outline

DISCLAIMER

The Plenary, as part of the workplan of the task force on scenarios and models for the intersessional period 2022-23, authorized a workshop to catalyse the further development of scenarios and models for future IPBES assessments, including using the Nature Futures Framework. The workshop took place between 14 and 16 November 2022 in South Africa and was hosted by the University of the Witwatersrand and PBL Netherlands Environmental Assessment Agency.

This report was prepared by the technical support unit on scenarios and models and reviewed by the task force and all workshop participants. It has not been reviewed, endorsed or approved by the IPBES Plenary.

Executive summary

This document presents the findings of the workshop that was held between 14 and 16 November 2022 in Acornhoek, South Africa. The workshop was organized by the IPBES task force on scenarios and models in the context of the implementation of objective 4 (b) of the IPBES 2030 rolling work programme. The workshop was hosted by the University of the Witwatersrand and PBL Netherlands Environmental Assessment Agency.

The objectives of the workshop were:

- To catalyse further development of scenarios and models for future IPBES assessments, including by testing the Nature Futures Framework (NFF), a flexible tool to support the development of scenarios and models of desirable futures for people, nature and Mother Earth[1], and discussing its limits and opportunities.

- To collect additional feedback on the methodological guidance for using the Nature Futures Framework, including potential challenges involved in its application, and

- To further catalyse the development of qualitative and quantitative case studies that would be available for the nexus and transformative change assessments.

Throughout the three days of the workshop, it was acknowledged that the NFF is a useful tool that provides an opportunity to explicitly consider different outcomes based on different value perspectives. Such a tool is effective for research, developing grant proposals, preparing educational material and also to facilitate policy processes engaging local, national and regional government ministries. Examples were shared and discussed, providing insight into how the NFF could be operationalised at various scales.

Overall, there was enthusiasm from participants to take on the NFF in their own work and develop new case studies or re-evaluate existing ones. Specific feedback was brought forward to improve the methodological guidance, such as to include information on trade-offs and synergies and better connect to policy processes.

Workshop participants suggested the following relevant follow-up activities:

- Improving the NFF methodological guidance by the task force, using the feedback provided during the workshop and comments already received from governments;

- Catalysing the support of an NFF community of practice where experiences can be shared to further operationalise the NFF;

- Creating a directory for NFF documents, materials and resources to be used for future assessments, case studies, resources for conferences or educational materials;

- Linking the NFF more closely to IPCC assessments and global processes such as the Convention on Biological Diversity by taking into account the Kunming-Montreal Global Biodiversity Framework in new work on scenarios and models;

- Exploring opportunities for events, webinars or symposia to present the NFF locally, nationally and at CBD/UNFCCC meetings, bringing together communities outside the context of IPBES.

---

[1] Though not repeated every time throughout the present document after "Nature Futures Framework", it is understood that any mention of the framework implicitly includes this subtitle.

Introduction

In decision IPBES-7/1, the Plenary of IPBES established the task force on scenarios and models for the implementation of objective 4 (b) of the rolling work programme up to 2030, to support policy through advanced work on scenarios and models of biodiversity and ecosystem functions and services.

In order to catalyse the further development of scenarios and models for future IPBES assessments, the former IPBES expert group on scenarios and models and the current IPBES task force on scenarios and models developed the Nature Futures Framework, a flexible tool to support the development of scenarios and models of desirable futures for people, nature and Mother Earth[2], and related methodological guidance. In decision IPBES-9/2, the Plenary approved the workplan of the task force on scenarios and models of biodiversity and ecosystem services for the intersessional period 2022–2023, including a workshop to catalyse the further development of scenarios and models for future IPBES assessments, including by using the Nature Futures Framework.

The workshop was organised by the task force on scenarios and models from 14 to 16 November 2022 at the Wits Rural Facility in South Africa. The workshop was hosted by the University of the Witwatersrand and PBL Netherlands Environmental Assessment Agency.

This report was prepared by the technical support unit on scenarios and models and reviewed by the task force and all workshop participants.

I. Objectives

The workshop objectives were:

1. To catalyse further development of scenarios and models for future IPBES assessments, including by testing the Nature Futures Framework and discussing its limits and opportunities.

2. To collect additional feedback on the methodological guidance for using the Nature Futures Framework, including potential challenges involved in its application, and

3. To further catalyse the development of qualitative and quantitative case studies that would be available for the nexus and transformative change assessments.

II. Organization and main outcomes

The workshop was held at the Wits Rural Facility of the University of Witwatersrand in South Africa between 14 and 16 November 2022. The agenda of the workshop is set out in appendix I. The list of participants is provided in appendix II.

The first day of the workshop started with a welcome from Carolyn Lundquist, on behalf of both co-chairs of the task force, followed by opening remarks on behalf of the host of the workshop, the University of the Witwatersrand, by Laura Pereira. Hereafter a welcome was provided by Barney Kgope, a representative from the Department of Forestry, Fisheries and the Environment (DFFE) of South Africa. He acknowledged the importance of the workshop and stressed that South Africa was happy to host it. He also emphasised the importance of the workshop location (near Kruger National Park, a key biodiversity area). A brief overview of the development of the Nature Futures Framework (NFF) was given by Shizuka Hashimoto on behalf of the co-chairs. Subsequently, a number of case studies were presented on the use of scenarios and models in completed and ongoing/planned IPBES assessments, followed by breakout group discussions and a plenary discussion. The breakout groups covered how the NFF can be applied at various scales, which gaps exist regarding its implementation and how this work could feed into ongoing and future IPBES assessments.

The second day of the workshop started with a presentation by Carolyn Lundquist on behalf of the co-chairs of the task force to introduce the methodological guidance, followed by a Q&A session. Hereafter, breakout group discussions were held on the elements of the methodological guidance (common and specific features; developing narratives; indicators and modelling). This was followed by a plenary report back from the breakout groups and a moment of reflection during an afternoon walk.

---

[2] Though not repeated every time throughout the present document after "Nature Futures Framework", it is understood that any mention of the framework implicitly includes this subtitle.

The third and last day of the workshop started with a field trip to Kruger Park. After this, a plenary session was held with presentations on linking the NFF with broader scenarios, initiatives and major policy processes. This was followed by breakout groups and plenary reports back on:

- The role of the NFF in the Convention on Biological Diversity (CBD)
- How to operationalize and apply the NFF at the National level
- How to link the NFF and other global scenarios

The workshop was closed by Carolyn Lundquist with a discussion and agreement on the next steps.

The main outcomes of the workshop can be summarised as follows:

- An improved understanding of the NFF by participants, which catalysed interest in implementing and applying the NFF in ongoing and future research, and in addition motivated participants to use the NFF in education materials.

- Presentations on current and ongoing work, including work in IPBES assessments, highlighted the important role of scenarios, and in particular the NFF. The presentations and discussions provided insight in how the NFF could be operationalised at various scales (sub-national; national/regional; global) and in various ways (qualitatively or quantitatively);

- Feedback was received on the methodological guidance. This will be elaborated on by the task force, along with feedback from governments, and feed into a revised version of the methodological guidance that will be presented as an information document to the IPBES Plenary at IPBES-10. Specific feedback on the methodological guidance included:

- Highlight equity and justice in the context of the NFF, with much more inclusive language;
- Include text on trade-offs, which tend to be masked where policy decisions are skewed towards a certain value perspective;
- Ensure consistency in the use of definitions and concepts through a glossary as part of the methodological guidance;
- Provide a better explanation of the two possible visual representations of the NFF triangles, one being two-dimensional (2D), and the other three-dimensional (3D). A better explanation of the trade-offs and synergies is also needed, focusing on the fact that the NFF perspectives aim to be mutually reinforcing rather than competing;
- Explicitly include temporal scales and showcase how to measure progress (setting goals and targets);
- Restructure the methodological guidance (included boxes and case study tools) so that there are better linkages between the components and case study examples;
- Clearly define what the NFF can and cannot do;
- Connect (indicators) to policy processes in relation to the CBD and IPBES conceptual framework so parties can understand how to apply them in their own reporting mechanisms;

- Participants expressed the need to set up an NFF community of practice where experiences can be shared, events can be organized to further develop and operationalise the NFF and a further catalysation of scenarios and models can take place;

- It was acknowledged that future work should better articulate and clarify the linkages between climate change and biodiversity, for instance through more collaboration between the IPCC and IPBES scenario experts.

III. Overview of general discussions and presentations

A. Use of scenarios and models in previous and ongoing IPBES assessments (day 1)

The following case studies were presented:

i. Invasive Alien Species (Garry Peterson)
ii. Values (Lelani Mannetti)
iii. Sustainable Use of Wild Species (Mary Gasalla)

iv.   Nexus (Paula Harrison)
v.   Transformative Change (Lynne Shannon)
vi.   Business and Biodiversity (Bonnie Myers, online)

Appendix III provides details of these presentations. After the case study presentations, breakout groups were formed for the sub-national, national/regional and the global scale. In each break-out group, pitches were held to kick-start discussions:

1) Sub-national:

- Urban resilience (Lelani Mannetti)
- Built environment (Miho Kamei)
- Urban Nature Futures Framework (Perrine Hamel)
- Socioeconomic and environmental scenarios (Ramon Pichs Madruga)
- Biosphere Futures (Garry Peterson)

2) National / regional:

- BIONEXT (Soile Oinonen)
- Green infrastructure planning (Katalin Török)
- PANCES scenarios (Shizuka Hashimoto)
- European and local scenarios (Henrique Pereira)
- Scenarios using the NFF on indigenous honey (Denise Margaret Matias)
- WildE project rewilding scenarios and BIOAGORA (catalysing policy relevant scenario development in Europe) (Lluís Brotons)

3) Global / intercontinental:

- NFF-EBV analysis for Kunming-Montreal Global Biodiversity Framework (HyeJin Kim)
- Legacy landscapes (Katrin Böhning-Gaese)
- Mapping SSPs/RCPs onto the Nature Futures Framework (Peter Alexander)
- NFF and High Seas (Lynne Shannon)
- Global scenarios (Fabrice DeClerck)

The pitches served as inspiration for further discussions in the breakout groups. The following points were highlighted by the breakout groups (Table):

	Group 1: Sub-national	*Group 2: National / regional*	*Group 3: Global / intercontinental*
How can further NFF related work be catalysed?	- Develop a database of NFF work; - Map other scenarios onto the NFF (e.g., SSPs); - Document use cases that capture scenario development to implementation	- Map existing or newly created scenarios on the NFF - Host national/regional events, such as modellers' workshops - Focus on some geographical regions that are currently lacking in capacity - Develop new projections based on the NFF - There is need to focus on freshwater ecosystems as these can be transboundary - Marine ecosystems with focus on small island developing states and archipelagic states need to be focused on	- Provide a clear connection between the climate change agenda and the NFF - Connect with business on how to implement the NFF - Identify mechanisms to measure progress for global biodiversity conservation - Use the NFF to see how governance systems can be reshaped towards the envisioned futures - Provide guidance on how each country can implement the NFF at country level (as opposed to global recommendations) -Identify data gaps, using the NFF as a guide

How can current gaps be addressed?	- Address the lack of future scenarios for urban and marine-landscapes - Highlight the interconnection between scales - Provide indicators - Convey the added value of NFF in light of existing local/sub-national frameworks	- Bring in various perspectives, such as indigenous and local knowledge (ILK) - Focus on geographic gaps, such as small island states and African nations - Highlight the effects of different policies that are based on the three NFF perspectives	- Geographical indicators - Map and coordinate different mixes of the NFF perspectives; NFF can provide various policy options based on the NFF perspectives.
How can this work feed into ongoing and planned assessments?	Not discussed	- With the help of umbrella projects that bring together various IPBES and non-IPBES related research - Nexus and transformative change assessments have some overlap in terms of scenarios - both could use NFF for future visions	- Transformative change assessment: utilise the NFF and its illustrative narratives; incorporate ILK and indicators - Business and biodiversity assessment: use case studies such as 'blue economy' and translate them to NFF perspectives; identify trade-offs

B.   Feedback on the draft methodological guidance (day 2)

An introduction to the methodological guidance was given by Carolyn Lundquist. The presentation covered the timeline for the second external review round of the NFF and its methodological guidance, highlighting some of the main review comments received by governments along with future opportunities to refine the NFF, including this workshop and the upcoming ILK dialogue in February 2023. It was also highlighted in the presentation that the aim of the NFF is to bring positive outcomes for nature into scenarios, as this is lacking in the widely used SSPs. Further points highlighted were the current gaps in indicators, the challenges for modelling socio-ecological feedbacks and utilising ILK in models, and the importance of common and specific features to inform scenario development.

Breakout group discussions were then held on the following methodological guidance elements:

- Common and specific features
- Developing narratives
- Indicators
- Modelling
- Linking across narratives and models

The groups collected feedback on the methodological guidance across the different sections, and how to make the guidance more useful to the NFF practitioner community. The main findings from the breakout groups were (Table):

How can the NFF be further improved?	What are the biggest limitations for the NFF?	What is missing from the NFF methodological guidance?
- Provide clear and consistent definitions of concepts and have an understandable language - using a glossary - Link the NFF to global processes (such as CBD) to define targets, common features and indicators - Provide databases and case-study	- Participation is crucial to increase legitimacy and ensure just procedures but remains a challenge at large scales - Ensure that power relations are addressed in the process and narratives do not reinforce current dominant views; make space for marginalised voices throughout	- Guidelines on how to use common and specific features; clear definition and differences of the features - Rapid urbanisation needs to be accounted for in narratives and scenarios - Multiple targets, goals and

repositories that can help users develop narratives, use indicators or simply learn from other examples

- Explicitly consider the different purposes of scenarios (e.g., exploratory, target seeking)

- Use indicators and models as a way to measure the sustainability and justness of the inside of the NFF triangle

-The triangle should be viewed as a slice from the 3D projection from Time (T) = 0. The centre of the triangle represents the best case scenario where all 3 corners of the NFF are in equilibrium.

- Provide a closer link between indicators and common and specific features

- Provide a matrix of weighted indicators that can be applied across various scales

- Focus the questions on why to do NFF modelling, rather than on how to do it

- Highlight that what makes the NFF unique is that it does not have a single goal, thus leaving space for plurality

- Describe which meaningful outcomes (qualitative) can be modified to be integrated into models (quantitative)

- Highlight that the NFF can be used as a shared learning interface that focuses on pluralism | the process

- The scalability of the Nature as Culture / One with nature corner remains a challenge

- Identify all relevant stakeholders and connect multiple scales

- Allow for complexity in developing narratives and enable experimentation

- Scale down indicators and contextualise models from the global to local level and *vice versa*

- Move towards quantitative (modelling) approaches while some indicators remain hard to quantify

- Translating the goals to targets remains complex but having commonly agreed ones would streamline work

- Showcase how to model using the three perspectives both as outcomes as well as interventions to current processes

- Modelling socio-ecological feedback loops remains challenging | common features and pathways to achieve them

- Indicators based on local/indigenous values and knowledge

- Ways to addressing trade-offs through indicators

- Limitations of what can and cannot be done by the NFF (including limitations of current models in representing NFF scenarios)

- Elements/figures that showcase the linkages between different modelling components

- Baseline/past data is missing as reference point for scenarios and models

- Better alignment with the IPBES Values Assessment, IPBES conceptual framework and CBD

- An explanation on what the user can expect from the NFF - what can and cannot be done using the NFF

- Better articulation and more inclusive language on equity, justice and recognition |

C.   Catalysation of NFF across regions (day 3)

Two presentations were held on linking the NFF with broader scenarios initiatives:

- Linking nature futures to policy processes (Hyejin Kim)
- Conserving biodiversity in times of change (Claudia Munera)

The presentations showed how the NFF could be connected to work under the Convention on Biological Diversity (CBD) and other large intergovernmental processes as well as how to link biodiversity and climate change issues in country-level planning with the potential use of the NFF.

The Q&A discussion that followed highlighted the need to link and embed the NFF in larger intergovernmental processes, such as the CBD, indicating, however, that the NFF provides the

opportunity to bring in different classification for scenarios - beyond focusing on socioeconomic development and environmental change.

The Q&A discussion was followed by breakout groups and plenary reports back on:

- The role of NFF in the CBD
- How to operationalize and apply the NFF at the national level
- How to link the NFF and other global scenarios, focussing on the SSP/RCP/SPA climate scenario framework

The following points were highlighted by the breakout groups (Table):

Group 1: The role of NFF in the CBD	Group 2: How to operationalize and apply the NFF at the national level	Group 3: How to link between NFF and other global climate scenarios
- There are important synergies between the goals and targets of the CBD and the NFF (perspectives); and the NFF increases capacity to think between and across goals - The NFF can provide policy mixes and actions/interventions/targets that ensure CBD targets are measurable and meaningful - The NFF can be used to explore and explicitly describe the overall vision of 'people living in harmony with nature'; and help identify multiple pathways with diverse options on how to achieve this vision - The NFF can be useful for climate change-biodiversity nexus relevant multilateral environmental agreements - The NFF can be used to communicate different values to non-conservation communities and help recognise the importance of integrating different values - NFF-based narratives, scenarios and models could provide input for policy negotiations	- Link NFF to different stages of the policy cycle - The NFF can encourage bottom-up decision-making and the integration of various governmental bodies through the commonality of considering policies from multiple value perspectives - Many countries still focus on economic prosperity, which could be linked to the Nature for Society perspective highlighting nature-based growth, however, the trade-offs need to be considered - The NFF can be used as a tool to educate the next generation of decision-makers to think in more pluralistic terms, as well as to challenge short-sighted decision-making - The NFF could provide a lens to retrospectively review policies and identify which policies worked and which ones did not - The NFF could help address the policy gap across national policies to local level, to incorporate multiple values and objectives in climate change or biodiversity plans (e.g., NDCs) - Begin work on the scale of narratives, not scenarios, which could involve a large number of stakeholders and could be provided as an overall guide for policies - language here is very important - To kickstart, set up communities of practice, practitioner networks and databases of applications	- Map existing scenarios onto the NFF or contextualise them in terms of, e.g., outcomes to fit the NFF, e.g., link SSPs with NFF through a matrix; extend next generation of SSPs with more input from NFF thinking - Link should focus on bridging the gap between global scenarios currently in use that are largely focussed on climate (e.g., not including biodiversity, no value plurality) and the NFF - Closer collaboration and learning between IPBES and IPCC scenarios and models communities - Work closely with the integrated assessment modelling community to model aspects outside conventional socioeconomic variables and challenge usual model assumptions, e.g., on how the economy and trade work - Use current and future SSP-RCP scenarios to define what is outside the NFF triangle (i.e., futures that should be avoided). - Scenarios need to be more solution-oriented and transformative; the climate scenarios community can learn a lot from engaging with the NFF

Group 1: The role of NFF in the CBD	Group 2: How to operationalize and apply the NFF at the national level	Group 3: How to link between NFF and other global climate scenarios
		- Important to identify short- and long-term objectives, scenarios on how to achieve these and rank priorities - Ongoing, iterative collaborations between climate and biodiversity scenarios and modelling communities can help to address many gaps over the short- to long-term, especially around target-seeking scenarios.

IV.   Next steps

The workshop provided a good opportunity to bring practitioners together, enhance understanding of the NFF, share examples and collect feedback on how to improve its methodological guidance.

The task force was grateful for the engagement of the participants. It was acknowledged that the personal setting of the meeting enabled participants to learn from each other. Participants highlighted the importance of having different age groups and career stages represented at the workshop, which allowed for a diversity of perspectives.

The NFF was acknowledged as a useful and inclusive tool that provides an opportunity to explicitly consider different outcomes based on different value perspectives. Such a tool is effective for research, for education and to facilitate policy processes engaging different actors. Overall, there was enthusiasm from participants to take on the NFF in their own work and develop new case studies or even apply it to existing studies to re-evaluate outcomes.

It was agreed that there is a need for better articulation and clarity on the linkages between climate change and biodiversity, and with this, a more active collaboration between IPCC and IPBES scenarios and models experts.

The workshop participants identified the following relevant follow-up activities:

-   Improving the NFF methodological guidance by the task force, using the feedback provided during the workshop and comments already received from governments

-   Catalysing the support of an NFF community of practice where experiences can be shared to further operationalise the NFF

-   Creating a directory for NFF documents, materials and resources to be used for future assessments, case studies, resources for conferences or educational materials

-   Exploring opportunities for events, webinars or symposia to present the NFF locally, nationally and at CBD/UNFCCC meetings, bringing together communities outside the context of IPBES

-   Linking the NFF more closely to global processes such as those under the CBD and IPCC assessments by taking into account the Kunming-Montreal Global Biodiversity Framework in new work on scenarios and models.

V.   Closing session

Closing remarks were given by Carolyn Lundquist on behalf of the co-chairs of the task force on scenarios and models. The co-chairs thanked all participants for an inspiring meeting and for their constructive input.

Acknowledgement

Appendix I - Agenda

Day 1 - Monday 14 November 2022, 9:00-18:00

Time (minutes)	Agenda Item

9:00-10:30
1 hr 30 min
	1. Plenary – Opening
	• Welcome
	• Objectives of the workshop and programme
	• Ice breaker
	• Introduction for participants
	   ○ The task force and work done
	   ○ NFF triangle exercise

10:30-11:00 30 min	**2. Plenary – Use of scenarios and models in previous and ongoing IPBES assessments- what are the gaps and where can work catalysing new scenarios fit in?** • Case study presentations for completed assessments with lessons learned
11:00-11:30 30 min	**Break**
11:30-12:30 1 hr	**3. Plenary – Use of scenarios and models in previous and ongoing IPBES assessments- what are the gaps and where can work catalysing new scenarios fit in? (Continued)** • Case study presentations for ongoing/planned assessments • Plenary discussion on how scenarios are being used in assessments and gaps
12:30-13:30 1 hr	**Lunch Break**

13:30-15:00
1 hr 30 min
	4. Break out groups – Completed, ongoing and upcoming scenarios case studies relevant for the NFF and IPBES assessments
	• Split in 2-3 parallel groups: Articulating the NFF; translating existing scenarios and models results into the NFF; developing new scenarios using the NFF; adapting and developing new models to better address the needs for using the NFF
	   ○ Presentations by participants on exemplars of interpreting existing work through the NFF;
	   ○ Presentations by participants on exemplars of developing new work using the NFF
	• Breakout group discussion on gaps and synergies with other ongoing work

15:00-15:30 30 min	**Break**
15:30-16:30 1 hr	**5. Plenary report back** • Collection of feedback from each breakout group • Plenary discussion on how scenarios and models using the NFF can be catalysed through ongoing projects, addressing gaps in previous assessments and results feeding into ongoing assessments
16:30-17:30 1 hr	**6. Guided walk** Downtime and group picture
17:30-18:00 30 min	**7. Plenary** Closure of day 1
18:00 onwards	**Social dinner** Braai / welcome drinks

Day 2 - Tuesday 15 November 2022, 9:00-18:00

Time (minutes)	Agenda Item
9:00-9:30 30 min	**1. Plenary – Methodological guidance review** • Presentation on the draft methodological guidance
9:30-11:30 2 hr	**2. Breakout groups** Collect feedback on the methodological guidance for using the Nature Futures Framework, including potential challenges involved in its application. Groups to discuss changes to sections of the methodological guidance and address comments. Breakout groups on: • Common and specific features • Developing narratives • Indicators • Modelling *Including working coffee break*
11:30-12:30 1 hr	**3. Plenary report back** Exchange across groups
12:30-13:30 30 min	**Lunch Break**
13:30-16:30 3 hr	**4. Breakout groups (continued)** Continued feedback on the methodological guidance, suggestions for modification or additions *Including working coffee break*
16:30-17:30 1 hr	**5. Afternoon walk** Reflection on feedback on the methodological guidance
17:30-18:00 30 min	**6. Plenary** Closure of day 2

Day 3 - Wednesday 16 November 2022, 6:00-18:00

Time (minutes)	Agenda Item
06:00-11:00 5 hr	**1. Field trip** Game drive
11:30-12:30 1 hr	**Lunch Break (early lunch)**
12:30-14:30 2 hr	**2. Plenary – Linking the NFF with broader scenarios initiatives e.g. SSPs/RCPs, and major policy processes e.g. CBD across scales** Invited presentations on: IPCC - IPBES alignment on scenarios, linking the NFF with climate change initiatives/communities and policy processes - relevance/importance/challenges in developing and using the NFF scenarios
14:30-16:00 1 hr 30 min	**3. Breakout groups** (potential topics, to be decided by participants:) • climate-biodiversity scenarios collaboration, • NFF projects/application for ongoing assessments, • NFF use in policy processes across scales *Including working coffee break*
16:00-17:30 1 hr 30 min	**4. Plenary report back** • Collection of feedback from each breakout group • Discussion on catalyzation of scenarios and models using the NFF across regions • Next steps
17:30-	**5. Closing plenary** Workshop closure with dinner

Appendix II - List of participants

MEMBERS OF THE TASK FORCE	
Douglas Beard (*apologies*)	Member of the Bureau; United States Geological Survey, USA
Abbasov, Rovshan (*apologies*)	Member of the MEP; Department of Geography and Environment, Khazar University, Azerbaijan
Shizuka Hashimoto	Task force co-chair; member of the MEP; University of Tokyo, Japan
Carolyn Lundquist	Task force co-chair; member of the MEP; National Institute of Water and Atmospheric Research, New Zealand, USA
Lilibeth Acosta-Michlik (*apologies*)	Global Green Growth Institute, Seoul, Republic of Korea
Khaled Allam Ahmed (*apologies*)	Nature Conservation Sector, Ministry of Environment, Egypt
Laura Bosch Pereira	Centre for Complex Systems in Transition, Stellenbosch University, South Africa and Stockholm Resilience Centre, Stockholm University, Sweden
William Cheung (*apologies*)	Institute for the Oceans and Fisheries, The University of British Columbia, Canada
Mekuria Argaw Denboba	Addis Ababa University, Ethiopia
Ana Paula Dutra de Aguiar (*apologies*)	Instituto Nacional de Pesquisas Espaciais (INPE), Brazil
Maria Gasalla	Universidade de Sao Paulo, Brazil
Paula Harrison	Centre for Ecology & Hydrology, UK
Sathyapalan Jyothis	National Institute of Panchayati Raj, India
Sylvia Karlsson-Vinkhuyzen (*apologies*)	Wageningen University, the Netherlands
Paul Leadley (*apologies*)	Universite Paris-Sud, France
Claudia Munera-Roldan	Australian National University, Colombia
Henrique Pereira	German Centre for Integrative Biodiversity Research (iDiv) Martin Luther University Halle-Wittenberg, Germany
María Gabriela Palomo	CONICET Laboratory of Coastal Ecosystems and Malacology, Argentine Museum of Natural Sciences, Argentina
Garry Peterson	Stockholm Resilience Centre, Stockholm University, Sweden
Ramon Pichs Madruga	Centre for World Economy Studies (CIEM), Cuba
Ali Kerem Saysel	Boğaziçi University Institute of Environmental Sciences, Turkey
Dandan Yu	Nanjing Institute of Environmental Sciences (NIES), Ministry of Ecology and Environment (MEE) of China
Carlos Zambrana Torrelio (*apologies*)	George Mason University, USA
América Paz Durán (*apologies*)	Task force fellow; Instituto de Ecología y Biodiversidad, Santiago, Universidad de Chile
Ghassen Halouani	Task force fellow; Galway-Mayo Institute of Technology, IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer), France
HyeJin Kim	Task force fellow; German Centre for Integrative Biodiversity Research (iDiv), Germany

Jan Kuiper (*apologies*)	Task force fellow; Stockholm Resilience Centre, Stockholm University, the Netherlands
Brian Miller	Task force fellow; United States Geological Survey, USA

NOMINATED PARTICIPANTS

Shehu Akintola	Lagos State University, Nigeria
Peter Alexander	University of Edinburgh, UK
Rafael Almeida Magris (*apologies*)	Chico Mendes Institute for Biodiversity Conservation, Brazil
Katrin Böhning-Gaese	Senckenberg Biodiversity and Climate Research Centre and Goethe University Frankfurt, Germany
Lluís Brotons	CSIC, Spain
Rajarshi Dasgupta	Institute for Global Environmental Strategies (IGES), Japan, India
Kathryn Davies	Tufts University, USA, New Zealand
Fabrice DeClerck	EAT, France, Belgium
Ana Carolina Dias (*apologies*)	V2V Global Partnership, University of Waterloo, Brazil
Mariteuw Chimere Diaw (*apologies*)	African Model Forests Network (AMFN) Secretariat, Cameroon
Erle Ellis (*apologies*)	University of Maryland, Baltimore County, USA
Perrine Hamel	Nanyang Technological University, Singapore, France
Rob Hendriks (*apologies*)	Ministry of Agriculture Nature and Food Quality, the Netherlands
Miho Kamei	Institute for Global Environmental Strategies (IGES), Japan
Lelani Mannetti	Georgia State University, USA, Namibia
Denise Margaret Matias	University for Sustainable Development Eberswalde, Germany, Philippines
Ryan Mohammed	Williams College, Trinidad and Tobago
Kanembwa Mukoma	Forestry Department, Zambia
Gertrude Ngenda	University of Zambia (UNZA) - Institute for Economic and Social Research (INESOR), Zambia
Soile Oinonen	Finnish Environment Institute, Finland
Alejandro Ordonez	Aarhus University, Denmark, Colombia
Kamal Kumar Rai (*apologies*)	Indigenous Knowledge and Peoples Network Society for Wetland Biodiversity Conservation Nepal in Federation of Kirat Indigenous, Nepal
Bendjedid Rachad Sanoussi (*apologies*)	Global Landscapes Forum, Benin
Lynne Shannon	University of Cape Town, South Africa
Ewi Stephanie Lamma (*apologies*)	Development Associate International, Cameroon
Katalin Török	Centre for Ecological Research (MTA ÖK), Hungary
Madhu Verma (*apologies*)	World Resources Institute, India

SECRETARIAT

Technical Support Unit

Caroline Dankers	Technical support unit for scenarios and models
Csaba Földesi	Technical support unit for scenarios and models
Machteld Schoolenberg	Head of technical support unit for scenarios and models

Appendix III - Case study presentations

This appendix provides a summary of the case study presentations and the resulting discussions/insights.

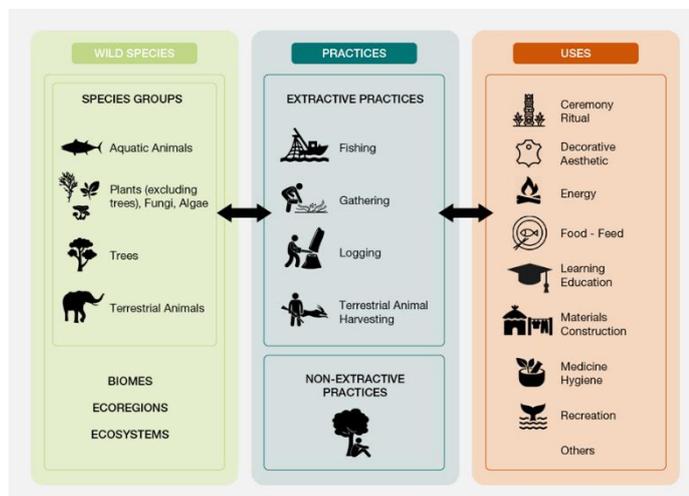Invasive Alien Species Assessment (IAS) (Garry Peterson)

The presenter explained that invasive species are a main driver of biodiversity loss and are largely missing in quantitative scenarios. He elaborated that novel steps have been taken to identify global drivers of invasive species and a total of 16 scenarios were qualitatively developed and compared to Shared Socioeconomic Pathways (SSPs). The presenter added that the main conclusion was that key drivers that affect invasive species are not explicitly found in SSPs. An example given was that biosecurity policies are not correlated with the SSPs. Also, volume and patterns of trade within a country, aspects that are important for invasive species, are not well represented in SSPs. The presenter concluded that understanding the future of biological invasions would require analysing how technological innovation, urbanization, wealth inequality, social stability, biosecurity and sustainability policies need to be considered and that the SSPs miss some of these issues.

Values Assessment (Lelani Mannetti)

The presenter introduced the IPBES Values Assessment and explained that the assessment focused on the diverse conceptualizations of the multiple values of nature. She explained that, in particular, chapter 5 looked at diverse values of nature and how they could be leveraged for transformative change. The archetypes from the IPBES Global Assessment were used in chapter 5, in addition to a number of other assessment criteria (Chapter 5 - The role of diverse values of nature in visioning and transforming towards just and sustainable futures). The presenter explained that some main gaps identified in this assessment included the lack of a clear acknowledgement or recognition of who was responsible for creating the nature futures and who could potentially benefit.

Sustainable Use Assessment (Mary Gasalla)

The presenter explained that the Assessment of the Sustainable Use of Wild Species enabled a better understanding of what sustainable use actually is. The assessment covered practices including fishing, gathering, logging, terrestrial animal harvesting and non-extractive practices. The presenter added that it was difficult to find scenarios for sustainable use, in particular targets or futures for different practices.

Diverse uses of wild species and associated practices

The key knowledge gaps identified were:
- Scenarios of practices beyond fishing and logging
- Cultural aspects and their inclusion in scenarios
- The integration of sustainable use into more general sustainability scenarios beyond biodiversity loss.
- Socio-ecological aspects

Nexus assessment (Paula Harrison)

The presenter explained that the assessment involves interlinkages among biodiversity, water, food and health (including climate change), with a focus on biodiversity and nature's contributions to people, to inform the development of policies and actions. Opportunities, synergies and trade-offs between nexus elements will be highlighted in terms of broadly defined social, economic, and environmental impacts, as well as thresholds, feedback and resilience in nexus linkages. The presenter added that it will assess and synthesise diverse types of knowledge (including indigenous and local knowledge), be global in scope (highlighting and interpreting regional and subregional similarities and differences), and will include terrestrial, freshwater and marine systems. The assessment has 7 chapters and a summary for policymakers. The presenter remarked that the following scenarios and models applications will be useful for several chapters in the nexus assessment:

· Chapter 3:
  ● Integrated scenario and modelling studies that cover nexus interlinkages and their response to direct and indirect drivers of change
  ● Studies that focus on 2050 to link to the 2050 Vision for Biodiversity (and 2030 to link to the SDGs), but longer timeframes can be considered
  ● Focus on sustainable (positive) futures, e.g., by utilising the Nature Futures Framework
· Chapters 4, 5 & 6:
  ● Scenario and modelling studies focused on pathways and response options

The assessment will consider all types of scenarios and models, but the use of the NFF is welcomed where appropriate.

A discussion was held on how the audience can get involved, one way would be to ask participants to help review the chapters as part of the external review of the first order draft and look at earlier studies done, especially local scale case studies. The technical support unit and task force will follow up on this.

Transformative change assessment (Lynne Shannon)

The presenter explained the objectives of the assessment, which are to document how transformative change occurs, identify the obstacles to transformation, explore the options for action, identify which factors can be leveraged, consider direct and indirect drivers and account for the diversity of societal values and behaviours that underpin the indirect drivers. The five chapters are:

- Chapter 1: Transformative change and a sustainable world
- Chapter 2: Visions of a sustainable world for nature and people
- Chapter 3: How transformative change occurs
- Chapter 4: Overcoming the challenges of achieving transformative change towards a sustainable world; and
- Chapter 5: Realizing a sustainable world for nature and people: transformative strategies, actions and roles for all

Business and biodiversity assessment (Bonnie Myers, online)

The presenter explained the scope of the assessment:
- The assessment will strengthen the knowledge base to support efforts by business to achieve the 2050 Vision for Biodiversity and the objectives of the Convention on Biological Diversity
- The assessment will categorize the dependencies and impacts of business and financial institutions on biodiversity and nature's contributions to people

The presenter introduced the chapters:
- Chapter 1: Setting the scene

- Chapter 2: How does business depend on biodiversity?
- Chapter 3: How does business impact biodiversity?
- Chapter 4: Approaches for measurement of business dependencies and impacts on biodiversity
- Chapter 5: Businesses as key actors of change: options for action by business
- Chapter 6: Creating an enabling environment for business - options for actions by Governments, the financial sector and civil society

The presenter added that a call for the nomination of experts was open at the time of the meeting, with expertise being sought from academia, business and industry, government, and civil society. A discussion was held on connections between assessments, taking into consideration plural valuation approaches for businesses and thinking of moving to multiple versus single currency evaluations. The mention of trade-offs and types of business will ensure assessment experts can help build the typologies.