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REPORT ON THE WORKSHOP 'NEXT STEPS IN DEVELOPING NATURE FUTURES'

Meeting of the expert group on Scenarios and Models of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

June 2018, the Hague, the Netherlands

Netherlands Environmental Assessment Agency

Report on the Workshop 'Next Steps in Developing Nature Futures'

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MAIN REPORT

1 Executive summary

The IPBES Technical Support Unit for Scenarios and Models, together with PBL Netherlands Environmental Assessment Agency and the Expert Group Co-Chairs, organised and hosted a workshop for the IPBES Expert Group on Scenarios and Models on the 'Next steps in developing nature futures' in the Hague in June 2018. The workshop paved the way for further scenario development tailored to IPBES needs using the nature futures approach. More specifically, the workshop focused on the development of a framework for formulating scenarios across scales based on the prior nature futures visioning process, and on identifying concrete tasks for engaging both the expert community and broader stakeholders in a participatory process.

The analysis of the visioning results identified three underlying perspectives on how people relate to nature, which could capture the wide range of views represented in the nature futures visions. These perspectives are: *nature for nature*, in which nature is regarded as having value in and of itself without human intervention, and the preservation of nature's functions is of primary importance; *nature for people*, in which nature is primarily valued for the interest of people, and which could lead to an optimisation of multiple uses of nature; and *nature as culture*, in which humans are perceived as an integral part of nature and its functions. These three perspectives form a continuum, or gradient, that is represented in a triangular nature futures framework, and which can be discussed across different scales and sectors. In order to build the scenarios on this framework of values, the experts recognised the importance of formulating scenarios that correspond to the extreme corners of the triangle, and of identifying the transformative changes that are required for each of them. These extremes would then serve as reference points. However, it would also be important to illustrate that these would not be the only possible manifestations of the three perspectives represented in the nature futures framework. The next steps for the elaboration of the scenarios were identified to be: the further unpacking of the triangular framework, the development of detailed storylines, the identification of qualitative and quantitative indicators, and the testing of the scenarios through modelling at various scales.

The main outputs of the workshop were (i) the organisation of working groups for the implementation of activities by experts in the coming years (Annex III), (ii) a timeline of activities and their interconnections across working groups (Annex IV), and (iii) a plan to draft a high-impact paper on the triangular framework developed during the workshop (Annex V). The planned work for the development of the nature futures scenarios requires activities beyond 2018 and up to 2021.

2 Introduction

The workshop took place from 25th to 28th June 2018 in the Hague, the Netherlands, organised and hosted by the Technical Support Unit of the IPBES Expert Group on Scenarios and Models hosted at PBL (Netherlands Environmental Assessment Agency) and the Expert Group Co-Chairs. In total, 26 experts participated in the workshop, including members of the expert group on scenarios and models, several additional biodiversity and ecosystem services modellers, representatives from the IPBES Task Force on capacity building, as well as representatives of the former IPBES MEP (See Annex I for final list of participants). The workshop paved the way forward for scenario development for IPBES through identifying an underlying framework for formulating storylines across scales, and through identifying concrete tasks for engaging both the expert community and broader stakeholders in a participatory process.

3 Aims and structure of the workshop

Aims

The expected outcomes of the workshop were:

- An analysis of overlaps and critical gaps within Auckland preliminary visions (Lundquist et al. (2017)[1], developed during "Visions for nature and nature's contributions to people for the 21st century" held from 4-8 September 2017 in Auckland) ensuring cross-sectoral and cross-scale relevance
- Detailed work plan for the path forward for scenario development for IPBES, including stakeholder engagement and modellers' working groups
- Development of a nature futures framework which builds on the refined positive visions usable in iterative cycles of stakeholder consultation, modelling and analysis

Structure

The workshop consisted of

i. Presentations elaborating on the activities of the expert group conducted to date
ii. Plenary discussions; and
iii. Breakout sessions in which the visions developed in the Auckland workshop were revisited to begin the formulation of a framework that encapsulated the diversity of the nature futures visions

The workshop followed an interactive and iterative process of breakout group discussions and plenary discussions. Speed talks were used as a kick-off for gathering a wide range of ideas from participants, followed by breakout groups to deepen and structure the discussions based on simultaneous editing of documents on google drive. Plenary sessions were held

[1] The full report can be found here: https://www.niwa.co.nz/coasts-and-oceans/research-projects/ipbes-nature-futures-workshop

intermittently to build consensus across groups. The final programme including changes made throughout the workshop is included in Annex II.
The participants of this workshop were composed of 62% male and 38% female experts, with 58% from Europe and Central Asia, 23% from Asia and the Pacific, 15% from the Americas, and an underrepresentation from Africa, with 4%.

Keywords used in the workshop

"Seeds" are innovative initiatives, practices and ideas that are present in the world today, but are not currently widespread or dominant (Bennett et al., 2016[2]; Lundquist et al., 2017[1]).

"Visions" are built on the different seed initiatives from which inspirational stories of sustainable, equitable futures can inspire us to move toward the values and ideals of a "good Anthropocene" (Bennett et al., 2016, Preiser et al., 2017[3]).

"Storylines" are qualitative narratives which provide the descriptive framework from which quantitative exploratory scenarios can be formulated (IPBES glossary[4]).

"Scenarios" are representations of possible futures for drivers of change in nature and nature's contributions to people (IPBES, 2016[5]), combining storylines with model projections and expert analysis.

[2] Bennett, E.M., Solan, M., Biggs, R., McPhearson, T., Norström, A.V., Olsson, P., Pereira, L., Peterson, G.D., Raudsepp-Hearne, C., Biermann, F. (2016) Bright spots: seeds of a good Anthropocene. Frontiers in Ecology and the Environment, 14(8): 441–448.
[3] Preiser, R., L. M. Pereira, and R. Biggs. 2017. Navigating alternative framings of human-environment interactions: variations on the theme of 'Finding Nemo.' Anthropocene 20:83-87. http://dx.doi.org/10.1016/j.ancene.2017.10.003
[4] Accessible from: https://www.ipbes.net/glossary
[5] IPBES (2016): The methodological assessment report on scenarios and models of biodiversity and ecosystem services. S. Ferrier, K. N. Ninan, P. Leadley, R. Alkemade, L. A. Acosta, H. R. Akçakaya, L. Brotons, W. W. L. Cheung, V. Christensen, K. A. Harhash, J. Kabubo-Mariara, C. Lundquist, M. Obersteiner, H. M. Pereira, G. Peterson, R. Pichs-Madruga, N. Ravindranath, C. Rondinini and B. A. Wintle (eds.). Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany. 348 pages. Available from: https://www.ipbes.net/assessment-reports/scenarios

4 Report from Monday (25th June)

The workshop opened with a **brief overview and update** from the Co-Chairs, the technical support unit (TSU) and task leaders on the **past and ongoing activities** of the Scenarios and Models Expert Group (see Annex II for detailed workshop programme). This included an overview of the support provided to ongoing IPBES assessments on the use of scenarios and models and the processes followed on the development of new scenarios. On the results of the online survey (policy options questionnaire conducted at IPBES-5), the experts commented that the low perceived need for species models in the future must be due to past species models focusing mostly on single species. Experts also showed interest in whether there were any differences in responses by ecosystems, by regions, or by scales, and on whether it would be possible to measure the impacts of cultural instruments. From the report of the nature futures workshop in Auckland (Lundquist et al., 2017) and the subsequent events (IPBES-6 and NatCap), an important task identified was the need to clarify the differences between each of the visions.

Afterwards, participants were requested to give a two-minute **speed-talk** on their reflections on the nature futures visions developed in Auckland. Specifically, they were asked to prepare:

1) what was their main take-home message from the visions,
2) what critical gaps may exist in the current set of visions, and
3) how we should move forward from the visions to scenarios.

Overall, experts observed that:

- The visions are all based on a widely shared perception that the current trajectory for societies is not sustainable.
- The visions reflect an understanding that the health and state of biodiversity and ecosystems is connected to the wellbeing of people.
- The visions also illustrate that alternative worlds where humans and nature are closer together in harmony are possible and imaginable.
- The visions illustrate different perspectives on how people relate to nature.
- There is a strong focus on collaboration, where communities and people work together in a participatory manner, as well as an emphasis on human wellbeing and on value systems.

Many **gaps** were identified within the visions, which would need to be filled in order to lay out the processes of achieving them.

- Experts pointed to many **dimensions** that were not sufficiently covered in the descriptions in an equal manner, such as: demography (e.g. population trends, human migration), economic trends (e.g. lifestyle changes), major drivers (e.g. climate, land use change, pollution, invasive species), governance (e.g. gender equality, political power relations, access to benefits, rights issues and conflicts, privately owned lands, etc.), technology, mining, and energy.
- The need for more **cross-scale** perspectives was emphasised (e.g. teleconnections, rural-urban flows, and highland-lowland flows).
- Experts also noted the uneven coverage of **different ecosystems**. The need for a richer diversity of visions covering businesses perspectives as well as regional perspectives was emphasised.

- The need for information on both the supply and the demand of ecosystem services was also noted, to correctly infer the provision and spatial flows of ecosystem services.
- Experts also pointed out that although there was a strong focus on the **Sustainable Development Goals** (SDGs), explicit (nature-centred) connections seemed to be missing.
- Some experts observed that the visions tend to be biased towards **nature**, with a lack of descriptions and indicators on human well-being, while others noted that the intrinsic value of nature had not been sufficiently covered.

Experts identified a wide range of **challenges** in considering the transition from visions to scenarios:

- Overall, the challenge of disentangling the "what" from the "how" was recognised. This would allow the differences between visions to be crystallised across scales and dimensions.
- By integrating overlapping visions into global visions and then into scenarios, there will be challenges of integrating across temporal and spatial scales.
- Concern was expressed over the representativeness of the visions, as the consulted stakeholders in Auckland are only a limited representation of the wider global society and their preferences. The challenge of capturing the preferences of the future generations from those of the current generations was also recognised.
- Some experts emphasised a need to translate these qualitative visions into more quantitative targets in order to check through modelling whether the assumptions described will deliver what they are promising.
- Flexibility is needed to allow identification of mechanisms and policy options to achieve the visions at different regional, national, and subnational scales.
- This flexibility in turn highlights the need to identify key trade-offs and synergies with other non-nature-related goals that people would want to achieve (e.g. allocation of space for people and for nature, possible conflicts between culture and nature, as well as between technologies and nature).
- The limited consultation to date suggested a priority task is to determine how to collaborate outside of the circle of IPBES, with the wider scientific community and with stakeholder and sectoral groups.

It was also pointed out that there may be a dichotomy among the visions, where in some, the notion of trade-offs would not apply, because nature and people are not considered to be in opposition, while in other visions there is a perceived competition between people and nature. All in all, experts were reminded that there is a broader range of scenarios that include the negative impacts of humans on nature, i.e. this development of nature futures scenarios is not an exercise done in isolation.

In the afternoon plenary session, the experts discussed which dimensions could be used to map and cluster the visions along common axes. They built on the outcomes of the previous work done by the various subgroups in collaboration with stakeholders (Auckland seeds and visions, results of surveys and consultations conducted at IPBES-5 and 6, as well as in West Africa). Through considerations on how to capture the wide range of views represented in the visions on how people relate to nature, an underlying **triangular framework emerged**, with three axes forming a gradient between the perspectives of:

- ***nature as culture*** (harmonised relationship between nature/people: nature and people as one),
- ***nature for nature*** (intrinsic value and function of nature), and
- ***nature for people*** (utilitarian, ecosystem services, nature's contributions to people).

Experts then agreed to split into three breakout groups, each reflecting on the discussions of the speed talks, to deepen understanding of the three perspectives identified in plenary, and to map the existing visions against them.

After the breakout session, groups reported back on progress in plenary. The descriptions for each of the three perspectives showed a **common understanding** across all breakout groups on their main characteristics, with *nature for nature* being typically described as nature having value in and of itself without human intervention, and the preservation of nature's functions being of primary importance. *Nature for people* was generally recognised as a perspective leading to an optimisation of multiple uses of nature for the interest of people, and *nature as culture*, as perceiving humans as an integral part of nature and its functions.

Further development of the triangular framework was suggested by one group, by inserting **additional axes** through the peaks of the triangle: an axis on the gradation from utilitarian to intrinsic value of nature, an axis on high to low importance of culture, and an axis on high to low intensity of management of nature. Another group suggested mapping the visions in **four clusters**, with three extremes closer to the peaks, and one in the centre of the triangle. Through these joint discussions, experts converged towards the idea of a **continuum between the three perspectives**.

As a final step of Day 1, experts discussed how to move from the visions to scenarios, considering the underlying triangular framework. The key points identified for further consideration were:

- How can we highlight the differences in the visions in order to have at least three distinct scenarios?
- How can we consider other dimensions such as scale, because values can be different depending on the scale at which they are considered (e.g. cultural value at local level, conservation value at global level)?
- How can we tease out the trade-offs and synergies of the SDGs?

5 Report from Tuesday (26th June)

Day 2 of the workshop began with a brief summary of the previous day, focusing on the triangular framework. Following, in the **modellers' speed talk session,** modelling experts recognised the formulation of the seeds and visions as a good first step in the scenario development process, and found the visualisations useful and interesting. They also identified, from their perspective, a series of **gaps**:

- A few of the visions seemed to be focused on specific aspects like marine or freshwater. However, integrated assessment models try to be multi-sectoral, so the existing visions can be used as building blocks for more comprehensive visions.
- Many indirect drivers were missing from the visions, such as climate change or gross domestic product (GDP) trends.
- Linkage to SSPs is missing and would be good to incorporate, as they are widely used and would facilitate the work of the modelling team.
- The visions need to be clear and concise stories, which are powerful in speaking to policymakers.

The modelling experts also identified **challenges** and requirements for modelling the visions:

- The translation of visions into pathways and quantitative metrics is needed in order to build scenarios, but this is a challenge as they currently stand.
- We need to ensure that the scenarios are easy to understand, and be clear on how they differ from what people already know.
- The usability of scenarios has been a challenge, because many of the elements included are currently not modelled yet or challenging to model.
- It would be important to make a distinction between difficult but achievable goals, and aspirational goals by testing the visions through models to see if they would deliver what they promise.
- Check the consequences of the visions across scales: whereas some visions may look good on local scales, they may not perform as well when scaled up to regional or global levels (and vice versa).
- In implementing the iterative scenario development, there may be a danger of being too prescriptive. It would be important to retain zones of overlap which include decision options.
- This scenario development process needs to be integrated with existing global initiatives, which seem to fit well within the triangular framework.
- Think about how these scenarios will create impact, e.g. in the CBD post-2020 target development.
- Seeking synergies with the private sector initiatives would also be a challenge.

Afterwards, a **plenary discussion** reflected on the speed talks in relation to the triangular framework:

- The triangular framework can be combined with existing initiatives to create stories that are easy to tell. For example, *nature for nature* can be strongly related to the Half-Earth movement driven by NGOs with a strong conservation focus. *Nature as culture* can be related to the full earth movement towards coexistence with nature, and finally, *nature for people* can be linked to the sustainable use movement based on an ecosystem services approach.
- The triangular framework illustrates that there is no single sustainability vision, and the pathways of reaching the visions will play out differently depending on the location and context.
- There is a need to think of the other outcomes of the SDGs that people want to achieve, and reach out to those already working on them. In order to do that, it may be useful to think of the values underlying the other goals of the SDGs, since they represent values of what society could look like.

Experts agreed that there was a need to further deepen the understanding on the triangular framework and to elaborate on how it would translate into a more detailed storyline when combined with the mapping of the visions. Detailed discussions were thus held in **three breakout groups** and reported in plenary afterwards. The groups worked on **defining the three corners** of the triangular framework, elaborating on how different parts of the world could be represented, and identifying the **key drivers** that need to be taken into account. Some of the groups had also shifted to a more text-based exercise on collating the narrative text of the most relevant **storylines** emerging from the visions. The experts agreed to continue the breakout session in the afternoon to elaborate further on the work being done.

A final plenary session was held at the end of Day 2 to share the progress of the breakout groups and plan the next day. A convergence was observed in the discussions across groups, which had moved on to the consideration of **drivers and indicators**. Experts agreed on the

need for a consistent approach to the development of indicators. The IPBES core indicators (https://www.ipbes.net/core-indicators) may be a good starting point, but there is a need for a broader range of indicators to be able to express the various visions in a qualitative manner, even where quantitative measures are not available.

6 Report from Wednesday (27th June)

Day 3 began with a **brief plenary** session in which the experts recognised that the discussions thus far have not been making sufficient **distinctions between the indirect drivers and the direct drivers** influencing the manifestation of the three perspectives of the triangular framework, and that the primary focus of the expert group should be on the direct drivers. They thus agreed that the three breakout groups would work on each of the three corners of the triangle, by focusing on how the perspectives would manifest themselves in different places of the world (ensuring a good coverage of different ecosystems), and on which direct drivers would have influence.

All three **breakout groups** used a common Google Docs document, adding text descriptions, listing direct drivers and noting down possible indicators, within the sections corresponding to *nature for nature*, *nature for people*, and *nature as culture*. Through this exercise, some groups came to the realisation that it is useful to distinguish current drivers, enabling conditions, and required interventions. It was also pointed out that a certain level of flexibility is required in defining direct and indirect drivers so as to leave room for interpretation within further research.

The subsequent **plenary session** worked on sharing and organising the ideas of the breakout sessions. Experts discussed the purpose and validity of the corners of the triangle at different scales:

- At the local level, this triangular framework allows comparison in a harmonised way
- At the national level, it could provide effective and efficient options for different sectoral planning
- At the international level, it could shape target groups for informing the next post-2020 targets of the CBD. The window of opportunity for providing inputs to the CBD post-2020 process would be from now to sometime in 2019 (consultation period).

Experts suggested that in order to base the scenario development on the triangular framework of values, it would be useful to build scenarios that correspond to the extreme corners of the triangle, which would serve as reference points. However it was also emphasised that these should not be seen as the only possible manifestations of the three perspectives represented in the triangular framework. It would thus be necessary to present **alternative manifestations**, and to identify the transformative changes that are required for each of them to happen, while illustrating that multiple "prisms" of perspectives are possible for each corner of the triangle. In order to achieve this, there could be modules and iterations of improvement of models, with new research needed for some parts.

Experts ended Day 3 in **breakout groups:** a small group focusing on the planning of activities after the workshop and two other groups focusing on the review of indicators for each of the perspectives. The review of indicators served as a preliminary exercise of what still needs to be elaborated beyond this workshop, and used the list of IPBES core indicators

as a starting point from which to consider a wider range of possible indicators. The experts recognised a need for the following issues to be addressed in the future work on indicators:

- What are the main dimensions in the three corners that we want to measure?
- Which indicators under the dimensions fit with the corners of the triangular framework? (based on the extensive IPBES indicators list)
- When considering indicators, it would be useful to keep the post-2020 targets in mind, and to consider whether they are transformative enough to provide added value.

7 Report from Thursday (28th June)

On the final day, a recap of the week was given to look back at the work done. The experts had agreed on the triangular framework that illustrated the three perspectives (corners of the triangle) on human-nature relationships, and had discussed how to use it for managing biodiversity and ecosystems across scales. The further development of the framework includes considerations on the storylines associated with each of the perspectives, on how to diversify the perspectives in regions, and on what additional modelling work is required to support them.

Plans on upcoming **scenario-related events** were also shared and discussed.

- Experts were requested to consider the possibility of hosting a **stakeholder workshop** in the first quarter of 2019. It was noted that additional funding may be needed, as IPBES funds can only be applied for some participants or aspects of the workshop.
- **CBD-COP** in Egypt (Sharm El-Sheikh, 17 - 29 November 2018. The CBD secretariat has offered one full-day slot for an event on nature futures scenarios, which would be an opportunity to interact with national focal points. In organising this event, the expert group would need to ensure that key people of the three perspectives are represented. The storyline development could then incorporate the feedback received at the CBD-COP. Further discussions will be held with the CBD Secretariat and with the IPBES Secretariat.
- Other opportunities for engaging **regional and national** stakeholders were shared by experts, with possibilities of conducting case studies for oceans, and for national level exercises in China, India, Brazil, and South Africa. Avenues for collaboration with other networks were discussed, such as through SwedBio, Biodiversity Beyond National Jurisdiction (BBNJ), Earth Systems Governance (forum in October), and Integrated Marine Biosphere Research project (IMBeR).

Experts also discussed the need for more **engagement of marine experts** in the scenario development process, and the need for a compelling argument on the innovativeness and uniqueness of the IPBES process in order to justify diversion of resources from existing global ocean modelling initiatives. The National Center for Ecological Analysis and Synthesis (NCEAS), a partner of Future Earth, was named as an example of an organisation that the expert group could engage with. Some **challenges** were also raised in the engagement of the ocean modelling community:

- More neutral and less value-laden scenarios are preferred by some ocean modellers and stakeholders, because ocean modellers tend to work with the fisheries sector,

which can be difficult to engage with if the starting point is immediately incompatible.
- The divisions of the ocean modelling community need to be kept in mind to understand how to best engage with these modelling communities and the typical scenarios that they are used to.
- There is a disconnect between the global ocean modelling community and those working on participatory ocean management at the local scale. This may be a gap that needs to be filled in the perspectives as they are further developed.

The experts also revisited the previous day's discussion on the identification of **indicators**, where the existing IPBES core indicators had been considered, and complemented with newly imagined indicators such as those representing relational values to nature or a local circular economy. They explored how the triangular framework could be used to start developing scenarios, by considering the balance across indicators, such as a scenario that maximises *nature for people* indicators first above other indicators, another scenario that maximises *nature as culture* indicators first, and so forth. A challenge was pointed out in the use of current economic indicators, which may be contradictory if the assumption for some of the corners of the triangle is that conventional measures like GDP will break down. Some debates arose on the selection of indicators: which can be modelled and projected into the future, and which can be measured across scenarios associated with each of the perspectives. Experts pointed out that by selecting only data-available indicators, the scenarios would be limited to current-world visions, and stressed the need to move beyond existing metrics in order to depict an aspirational world. Experts agreed that further work on indicators would require a team within the expert group, and were also reminded to revisit the other indicator work done by various communities, including:

- Socio-economic indicators developed with participation of the IPBES values group
- Systematic review of indicators on food sovereignty
- CBD's own list of indicators

Experts further discussed the development of a **paper on nature futures** as an output of the workshop. They were reminded of the importance of ensuring that an IPBES report on the process is submitted first to the MEP and Bureau to ensure the recognition of the context in which this exercise is being carried out. A clear separation of content from the IPBES report will thus be needed, with the paper focusing more on the details of the conceptual development (triangular framework). A few internal milestones were identified for processing the publication of the paper within IPBES:

- Presenting the process and plans to the MEP and Bureau at the next meeting: given the election of the new MEP members at the last IPBES Plenary, it would be necessary for the TSU to ensure a smooth communication between the Expert Group and the new and former members on the scenarios work, as it is already two years in.
- Adhering to the IPBES publication policy: taking into account the IPBES publication process required, the TSU will communicate with the IPBES publication committee to obtain approval for publication once the concept note of the paper is available.

The final session of the day was dedicated to discussing the **upcoming tasks** of the expert group and the **organisation of working groups** to ensure that teams are formed for implementation. Major tasks include the further unpacking of the triangular framework, development of the storylines, identification of indicators, and testing through modelling work at various scales. Annex IV provides a summary timeline of all activities proposed during the workshop.

8 Outcomes of the workshop

- Proposed organisation of the activities of the expert team in the coming years under a working group structure with assignment of task leaders and members (Annex III provides a table of tasks and assigned teams)
- Timeline of activities and their interconnections (Annex IV provides a diagram of the schedule and the timings of collaboration across different working groups). The mandate of the IPBES Expert Group on Scenarios and Models is until the end of 2019.
- Plan to draft a high-impact paper on the triangular framework developed during the workshop (Annex V provides an outline of the planned paper on nature futures)

9 Conclusions

- IPBES has an opportunity to build on the experience of previous exercises (e.g. Millennium Ecosystem Assessment process, IPCC scenario development process) and to complement them with an innovative multi-scale scenario framework that allows representation of diverse value systems and the broad range of storylines that arise from them.
- IPBES has an opportunity to facilitate the development of multi-scale participatory scenarios by engaging actively with the various scenario development initiatives foreseen at national and regional levels, and incorporating them into the IPBES scenario development process.
- IPBES has an opportunity to provide inputs to the international discussions on the development of the post-2020 targets under the CBD and other frameworks by mobilising the scientific community and encouraging research groups to align ongoing work with the activities of IPBES.

ANNEXES

Annex I. List of participants

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Annex II. Final programme for the workshop

(includes changes made throughout the meeting)

Monday - Day 1: Introduction and developing a joint understanding
Chairs: Carolyn Lundquist (morning) & Henrique Pereira (afternoon)

09:00 - 09:15	Arrival of experts
09:15 – 09:45	Opening and Introduction to the programme (*Machteld Schoolenberg*) and presentations: - Second phase of the IPBES expert group, TSU mandate etc. (*Rob Alkemade*) - Scenario development process (*Carolyn Lundquist*)
09:45 – 10:45	Report back on activities 1, 2, 7, 8a+b, and how our work was used in the other IPBES assessments *(10 min. presentations by task leaders + discussion*) - Activity 1: SSPs (*Rob Alkemade*) - Activity 2: Policy Options (*Jennifer Hauck and Sylvia Karlsson-Vinkhuyzen*) - Activity 7: Auckland workshop (*Carolyn Lundquist*) - IPBES-6 and NatCap (*Machteld Schoolenberg, Carolyn Lundquist*)
10:45 - 11:00	*Refreshment break*
11:00 - 12:30	'Speed talks' on homework assignments (2 min. presentations by all participants)
12:30 – 13:30	*Lunch*
13:30 – 14:45	Plenary discussion on speed talks
14:45 – 16:00	Breakout groups working on framework for the visions
16:00 – 16:15	*Refreshment break*
16:15 – 17:30	Plenary – reporting breakout groups and discussion on how to move from the visions to scenarios, considering the underlying framework

Tuesday - Day 2: Filling critical gaps and refining Auckland preliminary visions ensuring usability in next iterative cycles of stakeholder consultation, modelling and analysis, and narrative development of the nature futures
Chairs: Sylvia Karlsson-Vinkhuyzen (morning) & Rob Alkemade (afternoon)

09:00 - 09:15	Intro to Day 2 (*Machteld Schoolenberg*) and recap day 1 for additional participants (*Sylvia Karlsson-Vinkhuyzen*)
09:15 – 09:45	Speed talks by modellers reflecting on Auckland *(incl. Paul Leadley by video)*
09:45 – 10:15	Plenary reflecting on the speed talks in the context of the framework
10:15 – 10:30	*Refreshment break*
10:30 – 12:45	Breakout groups working on defining the three corners of the framework
12:45 – 13:30	*Lunch*
13:30 – 15:30	Short Plenary and continuation of group work
15:30 – 15:45	*Refreshment break*
15:45 – 17:30	Plenary recap on group work and discussion on drivers and indicators
19:00	*Dinner together*

Wednesday - Day 3: the first steps towards societal storylines, by combining overlapping visions and preliminary gap-filling
Chairs: Simon Ferrier (morning) & Ramon Pichs (afternoon)

09:00 - 09:30	Intro of day 3 (*Machteld Schoolenberg*)
09:30 – 10:30	Plenary recap day 2 (*Simon Ferrier*) and discussion on direct and indirect drivers
10:30 – 11:15	Breakout groups - text elaborations of the three perspectives of the framework
11:15 – 11:30	*Refreshment break*
11:30 – 12:45	Continuation of group work
12:45 – 13:30	*Lunch*
13:30 – 15:00	Plenary on sharing and organising the ideas of the breakout sessions
15:00 – 15:15	*Refreshment break*
15:15 – 17:15	Breakout groups: - 1 small group focusing on the planning of activities after the workshop - 2 groups focusing on the review of indicators for each of the perspectives

Thursday - Day 4: Revisit planning of activities needed to develop scenarios for nature futures based on the visions
Chairs: Carolyn Lundquist (morning) and Henrique Pereira (afternoon)

09:00 - 09:15	Intro of day 4 (*Machteld Schoolenberg*)
09:10 – 11:00	Plenary - Recap of the week (*Carolyn Lundquist*), and discussions on: - Nature futures framework development and storylines - Plans on upcoming scenario-related events (e.g. CBD-COP)
11:00 – 11:15	*Refreshment break*
11:15 – 12:45	Plenary discussions on: - Engagement of marine experts - Identification of indicators
12:45 – 13:30	*Lunch*
13:30 – 15:45	Plenary discussions on: - Reporting the workshop and the development of a paper on nature futures framework - Regional and thematic case studies - An agreement on structuring the way forward and the organisation of the expert group through working groups - Preliminary task division
15:45 – 16:00	*Refreshment break*
16:00 – 16:30	Evaluation of process expert team and closure of the meeting.

Breakout Groups of the week

Day 1

- Group 1: Carolyn Lundquist (facilitator), Sylvia Karlsson-Vinkhuyzen, William Cheung, Isabel Rosa, K. N. Ninan, Jean Paul Metzger, Gabriela Palomo
- Group 2: Jennifer Hauck (facilitator), Laura Pereira (facilitator), Rob Alkemade, Henrique Pereira, HyeJin Kim, Jan Kuiper, Jyothis Sathyapalan
- Group 3: Grigoriy Kolomytsev, Simon Ferrier, Rob Hendriks, Nakul Chettri, Sana Okayasu (facilitator), Ramon Pichs, Federica Ravera, Carlo Rondinini

Day 2

- Group 1: Federica Ravera (facilitator), Jennifer Hauck (facilitator), Paul Leadley (online), Simon Ferrier, Sana Okayasu, Rob Hendriks, Rob Alkemade, Alexander Popp, Jyothis Sathyapalan, William Cheung, (Machteld Schoolenberg)
- Group 2: Sylvia Karlsson-Vinkhuyzen (facilitator), Carolyn Lundquist (facilitator), Jan Kuiper, K. N. Ninan, Isabel Rosa, HyeJin Kim, Jean Paul Metzger
- Group 3: Henrique Pereira (facilitator), Laura Pereira (facilitator), Detlef van Vuuren, Carlo Rondinini, Gabriela Palomo, Nakul Chettri, Grigoriy Kolomytsev, Ramon Pichs

Day 3

- Group Nature for Nature: Simon Ferrier (facilitator), Henrique Pereira, Carlo Rondinini, Grigoriy Kolomytsev, Jan Kuiper, Gabriela Palomo
- Group Nature as Culture: Carolyn Lundquist (facilitator), Rob Alkemade, Federica Ravera, Ramon Pichs, Sylvia Karlsson-Vinkhuyzen
- Group Nature for People: Laura Pereira (facilitator), Sana Okayasu, Detlef van Vuuren, William Cheung, Alexander Popp, Isabel Rosa, Jyothis Sathyapalan, Jean Paul Metzger, K. N. Ninan, HyeJin Kim, Machteld Schoolenberg

Annex III. Second phase work plan of the IPBES expert group on scenarios and models

The 2nd phase of the work of IPBES on scenarios and models (following the 1st phase corresponding to the methodological assessment on scenarios and models) consists of two main activities:

(a) to help provide advice to all IPBES expert teams, in particular those working on the thematic, regional and global assessments on the use of scenarios and models (activity 1); and

(b) to catalyse the further development of scenarios and models of biodiversity and ecosystem services (activity 2).

Building on the activities that came from the workshop in Leipzig (October, 2016), the expert group on scenarios and models, supported by the TSU, updated their work plan as discussed during the expert meeting in The Hague (June, 2018). The plan consists of several tasks allocated to four working groups, which may be complemented by additional ones in future. Each working group has been assigned leaders.

Working Group 1: Overarching work Leads: Carolyn Lundquist and Henrique Pereira	
Task 1.1 Long term research agenda for development of new scenarios	**Date and Priority/Status**
• **Expert Group Workshop** A workshop took place in The Hague to further develop visions from Auckland workshop into a scenarios framework, and develop a long-term work plan for remainder of Phase 2 of Expert Group Scenarios and Models.	**[June 2018]** *Completed*
• **Scientific paper 'nature futures framework' (and report)** The nature futures framework will be laid out in a scientific paper by the full expert team and some additional participants of the workshop mentioned above. The paper will introduce the new nature perspectives framework, summarising how to the expert group arrived at this framework using the visions from the Auckland workshop, and briefly discuss key aspects of new research that need to be developed with respect to this new scenario framework.	**[Draft to MEP: Sep 2018; submit paper: Q1/2019]** High

Task 1.2 Methodology development for nature futures visioning process with stakeholders	Date and Priority/Status
• **Follow-up on development of tools used in the development of visions for nature futures based on Auckland workshop and report.** Outputs could include the process followed in the Auckland workshop, the methodology used for developing nature futures visions, mapping the nature futures framework into a global scenarios process and the global scenarios review, and the outcomes of the policy options survey.	**[June 2018]** Low urgency, but useful to have methodology defined so it can be repeated
Task 1.3 Conceptual development to support nature futures framework	**Date and Priority/Status**
• **Embryo framework development, conceptualisation of framework** The expert group will address how this framework connects across scales/multi-scale functionality and how it can be used to develop scenarios/integrate interventions (proof of concept). The expert group will also set out how to move from scenarios to using the nature futures framework to inform nature assessments.	**[Q4/2018]** High
• **Expert Group Workshop (location/host to be determined)** Expert Group Workshops will be organized to integrate the outcomes of the CBD workshop (see task 2.2 below) into narratives and models (to be held after CBD COP in Nov 2018).	**[Q1/2019]**
• **Initial narrative development** Development of narratives on what the world looks like within each of the nature perspectives, and policy options/interventions that allow the expert group to get to these visions.	**[Q1&Q2/2019]** High
• **Further illustration and development of diversity of relationships with nature** Conceptual development of the *nature as culture*/*nature for nature*/*nature for people* triangle concepts in the nature futures framework by considering these nature perspectives across contexts (e.g. urban, rural).	**[Q1/2019]** Medium
• **Translating the framework** A translation and iteration will take place addressing what the framework means and what are appropriate scenarios in different contexts/geographies/biomes, e.g. ocean perspective (can be theoretical or using stakeholder/geographic workshops). This would result in an updated version of the framework (but the iteration process would be the task of working group 2)	**[Q1&Q2/2019]** Medium
• **Ongoing cross-fertilization between scenario/narrative development, indicator development and models**	

Working Group 2: Stakeholder engagement and consultation on nature futures framework, scenarios and narratives Leads: Laura Pereira, Garry Peterson	
Task 2.1 Stakeholder strategy and (in-depth) consultations on iterative Nature futures / scenarios / narrative development	**Date and Priority/Status**
• **Stakeholder workshop** A stakeholder workshop (similar to the large stakeholder workshop in Auckland, New Zealand in 2017) is planned to consult on and involve stakeholders in the development and socialisation of the nature futures framework. • **Interviews** In depth interviews will be conducted to fill gaps in scenarios/visions/narratives, e.g. with private sector, other sector groups missing in past consultations. • **Iterative narrative development** An iterative cycle of narrative development will be done considering different contexts and geographies (with working groups 1 and 4).	**[Q4-2018 / Q1-2019]** High High
Task 2.2 Stakeholder engagement and broad scale outreach/consultations on nature futures framework	**Date and Priority/Status**
• **IPBES 6 consultation** • **Natural Capital Symposium consultation.** • **SBSTTA-22 Montreal session. Auckland task leading to Nature Futures Framework. Indigenous and Local Knowledge input.** • **CBD COP 14 Egypt (14-29 Nov 2018)** A one-day workshop will be organised at the Rio Pavilion during COP 14 by the IPBES scenarios and models expert group. This event will present the nature futures framework, and how it is used to create scenarios. It will feature actors from three perspectives and/or regions, key trade-offs and questions that emerge to inform the Nature Futures Framework development. A presentation of the draft Nature Futures Framework will be done, followed by an interactive session with participants to crowdsource indicators that are relevant for the narratives, their visions on nature within the framework, and to discuss the distinction between setting targets on drivers/pressures/responses (e.g. protected areas) vs targets in terms of nature itself (e.g. the Nature as Culture/Nature for Nature/Nature's Contributions to People perspectives of the framework).	**[Q1/2018]** **[Q1/2018]** **[Q3/2018]** *Completed* **[Q4/2018]**
Task 2.3 Internal communication of these activities	**Date and Priority/Status**
Ongoing work This internal IPBES communication work will mainly be conducted by the TSU on scenarios and models and refers to for instance: - Information documents and presentations for MEP - Information documents and presentations for the 7th session of the Plenary of IPBES - Newsletter for members of the expert group	

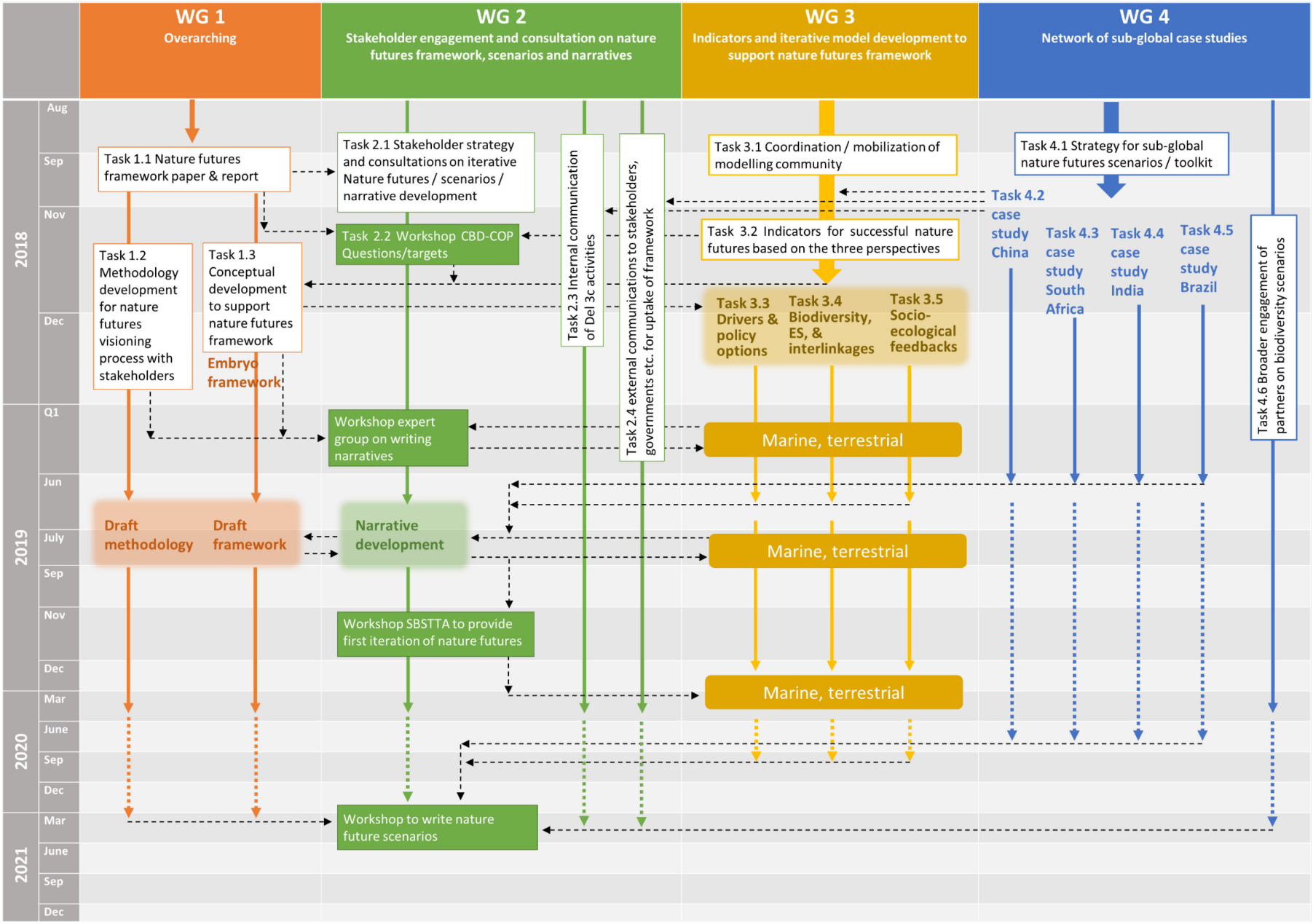
Task 2.4 External communications to stakeholders, governments etc., to enable/enhance uptake of the nature futures framework	**Date and Priority/Status**
Ongoing work This concerns the creation of communication and engagement material for the events under tasks 2.1 and 2.2. Also, it includes the creation of laid out versions and final reporting of the outcomes of the other working groups. This may include the creation of a stakeholder engagement platform on scenarios and models and includes regular updates of the IPBES webpages on scenarios and models.	

Working Group 3 Indicators and iterative model development to support the nature futures framework Leads: Carlo Rondinini, William Cheung	
Task 3.1 Coordination of modelling community	**Date and Priority/Status**
• **The mobilization of a 'coalition of the excited' (e.g. Integrated Assessment Models community) to determine which models will be run, engagement with other communities to inform models/scenarios.** • **Interoperability of models/linking/harmonising**	
Task 3.2 Indicators for successful nature futures based on three perspectives	**Date and Priority/Status**
• **Indicator development** Developing indicators will start with an inventory of which indicators we have models for across these three nature perspectives. The IPBES indicators across three perspectives will be a starting point for this. We need to determine (and address) gaps in indicators relevant to Nature as Culture and Nature for Nature perspectives especially. An important question is: how to incorporate qualitative indicators and indicators that we do not have data for/cannot yet be modelled. This will result in a paper proposing indicators for nature perspectives. • **Develop simple policy options using these indicators within the nature futures framework.** • **Informing new global/regional targets** *(as input to Task 2.2)*	**[Nov 2018]**
Task 3.3 Drivers and policy options	**Date and Priority/Status**
Projections for trajectories of drivers (land-use change, harvesting of natural resources, etc.) and associated policy options that take the world towards each of nature future scenario at multiple scales will be developed in coordination with working group 4 of the expert group. These projections should also link to other scenarios work on indirect and direct drivers (e.g. Shared-Socioeconomic Pathways).	

Task 3.4 Biodiversity, ecosystem services and their interlinkages	**Date and Priority/Status**
Detailed biodiversity projections will be developed for each nature future at the global scale and at sub-global scales in coordination with working group 4 of the expert group. Project changes in ecosystem services based on changes in biodiversity and direct drivers in each nature future at the global and sub-global scales.	
Task 3.5 Socio-ecological feedbacks	**Date and Priority/Status**
An analysis of socio-ecological feedbacks from biodiversity and ecosystem services in nature futures scenarios to the human system will be conducted, including aspects such as human health, livelihoods and influence on social attitudes towards nature and decision-making.	

Working Group 4: Network of sub-global case studies Leads: Jean Paul Metzger, Jyothis Sathyapalan	
Task 4.1 Development of strategy for sub-global nature futures scenarios	**Date and Priority/Status**
• **Development of toolkit to coordinate across case studies, i.e. guidelines for stakeholder workshops that introduce and/or regionalise the nature futures framework**	
Task 4.2 to 4.5 Development of Nature Futures Scenarios in several sub-regions	**Date and Priority/Status**
Task 4.6 Broader engagement of partners on biodiversity scenarios	**Date and Priority/Status**
• **Gap filling to identify and cover diversity of global Biodiversity and Ecosystem Services** • **Content for IPBES assessments (values, invasive alien species, sustainable use of wild species)** • **Network analysis of existing scenarios processes**	

Annex IV. Timeline of Working Group activities



Annex V. Draft outline of the scientific paper 'A novel framework for Nature Futures'

Broad topical outline:

- Why the need for a new nature-centred approach in scenarios
- Use of seeds/Auckland workshop to develop visions for nature futures
- Emergence of three perspectives on relationships with nature
- Initial embryo framework / flexibility, cross-scale functionality, How framework can be used to formulate target-seeking scenarios with explicit indicators for each of the three perspectives
- How framework maps into global scenarios and assessment processes, how it extends/adds value (Simon Ferrier, HyeJin Kim)
- Future challenges: using biodiversity, ecosystem service models and integrated assessment models to develop the scenarios

Potential figures and supplementary material

Figure 1: The nature futures visions from Auckland (Figure 14, Lundquist et al. (2017)[1] with artwork developed by Dave Leigh, Emphasis; Mary Brake, Reflection Graphics; and Pepper Lindgren-Streicher, Pepper Curry Design)

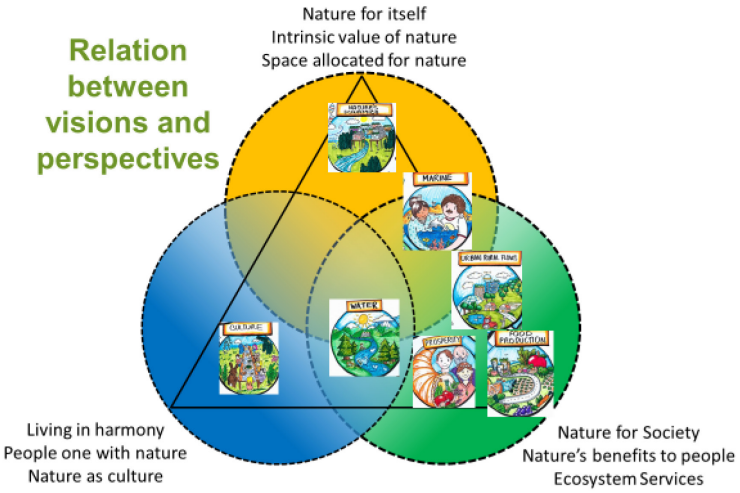


Figure 2: Emerging perspectives on human relationships with nature

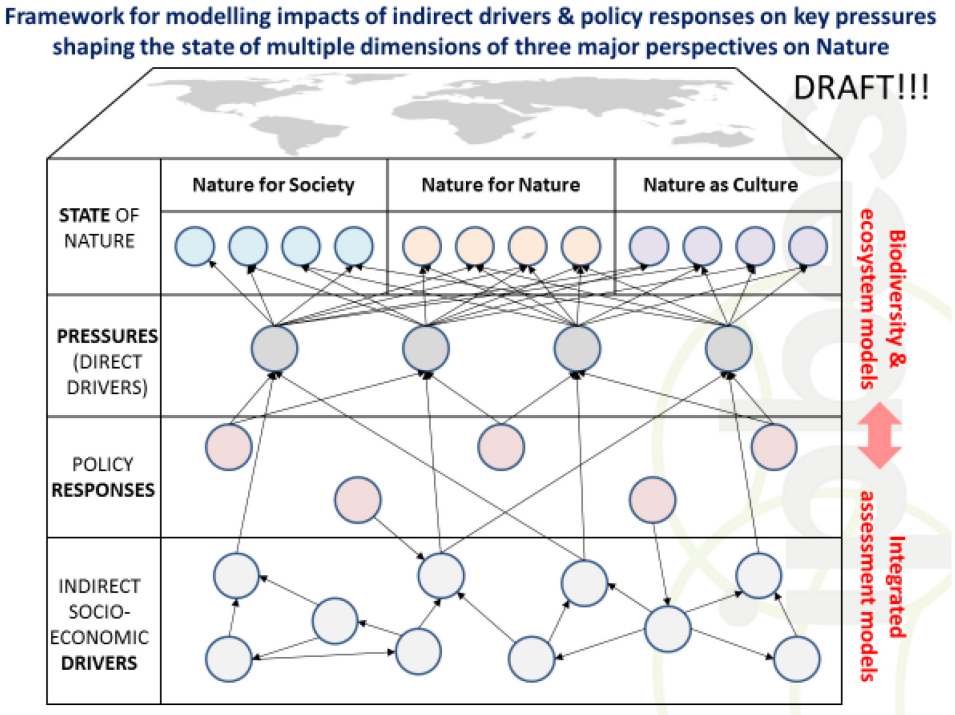


Figure 3: Connecting the nature futures framework with pressures, responses and drivers nature/BES models and scenarios.

- Appendix 1. Vignettes describing each nature futures vision across a suite of key elements.
- Appendix 2. Methodology from seeds to visions