UNITED
NATIONS

UN environment **United Nations Environment Programme**

First GEO-6 Innovative Scenarios and Policy Pathways Stakeholder Visioning Workshop

United Nations Conference Centre
Bangkok, Thailand
May 25, 2017

SUMMARY REPORT

This workshop report has been produced as part of the UN Environment's sixth Global Environment Outlook (GEO-6) process and the development of the *Innovative Outlooks* section of the forthcoming assessment. The following report summarizes the outcomes and deliberations of participants in the first of a series of stakeholder visioning workshops to elicit and explore innovative ideas (or 'seeds of change') that stakeholders believe could lead to positive futures and help realize the achievement of the Sustainable Development Goals (SDGs). Building on the "*Seeds of Good Anthropocenes*" initiative[1], the basic concept was to identify a suite of complimentary existing initiatives (social, technological, economic or otherwise) that are not yet widespread or well-known, that together, provide elements with which to envision alternative scenarios. The ideas and discussions generated from the interactive exercise described here will provide input into the sixth Global Environment Outlook narrative on outlooks and the assessment of target-seeking pathways. The experience of the workshop will also inform ongoing work on new ways to approach scenario analysis in global environmental assessments including future Global Environment Outlook processes. The workshop took place in Bangkok, Thailand on May 25, 2017 during the global Second Authors' meeting of the Global Environment Outlook and involved 21participants comprised largely of the youth stakeholders segment[2].

Visioning Workshop Objectives

1. To solicit feedback on the proposed strategy for the innovative outlook of the sixth Global Environment Outlook (GEO) and future Outlooks;
2. To elicit innovative 'seeds' from the region that stakeholders believe could help achieve the Sustainable Development Goals (SDGs);
3. To start the process of linking the innovative scenarios with the policy section in a way that is most useful for decision makers;
4. To test the usefulness of such stakeholder engagements and visioning exercises for the Global Environment Outlook Innovative Outlooks chapter.

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[1] The "Seeds of a Good Anthropocene" is a collaboration led by McGill University, the Stockholm Resilience Centre, and the Centre for Complex Systems in Transition at Stellenbosch University. The initiative, which began in 2014, is premised on the notion that dystopic visions of the future may be inhibiting our ability to move towards a positive future for the Earth and humanity. For more information see: https://goodanthropocenes.net/

[2] A video recording of the workshop is available at http://www.unep.org/geo/news/second-authors-meeting-22-26-may-2017bangkok-thailand.

Registration of workshop participants from 08h00 to 08h30

Item 1: Opening session and introductions (*Prof. Joyeeta Gupta and Prof. Paul Ekins, Co-chairs of the sixth Global Environment Outlook, Dr. Jian Liu, UN Environment's Chief Scientist; and Dr. Laura Pereira, Coordinating Lead Author GEO-6 Innovative Outlooks*)

The interactive visioning workshop was opened by the Co-chairs of the sixth Global Environment Outlook (GEO6) assessment process, Prof. Gupta and Prof. Ekins. They provided brief introductory remarks and explained the context for the Global Environment Outlook assessment and the overall ambition, motivation and bigger picture for engaging a broad spectrum of stakeholders (and views) for the Innovative Outlooks section. Prof. Ekins emphasized that the visioning exercise was but one attempt to systematically integrate different perspectives into the assessment process and to help 'make your words and actions more effective for decision-makers, politicians and leaders'.

Jian Liu, UN Environment Chief Scientist offered brief reflections on the Global Environment Outlook approach and the need for integrated assessments to more explicitly and more meaningfully engage decision-making communities and the general public. Dr. Liu also emphasized the need for these assessments to be more solution-oriented, and to shift the focus toward policy alternatives, practical consequences and plausible future pathways as a means of improving the utility of global assessments while strengthening the science-policy-society interface. Finally, he stressed that global assessments must continue to strive for scientific credibility and relevance. Relatedly, Dr. Liu explained that UN Environment is in the process of articulating a new science strategy to illuminate the opportunities and challenges inherent in UN Environment's normative assessment work; including how this can be more impactful and inspire practical action through innovative efforts like the current workshop.

Sixth Global Environment Outlook and the new approach to Outlooks

Dr. Laura Pereira, briefly introduced the *Innovative Outlooks* process, and gave a general introduction to the workshop.

The Outlook section draws on all relevant global assessments, including those from international science panels and other UN bodies (e.g. International Resource Panel, Intergovernmental Platform for Biodiversity and Ecosystem Services, and Intergovernmental Panel on Climate Change etc.). The section is tasked with examining the interactions and feedback loops between social, economic and environmental drivers to assess the effectiveness of different policy pathways/ responses in moving our global society towards a more sustainable and desirable trajectory in an increasingly accelerated and globalized world. This game-changer workshop is intended to explore—through interactive stakeholder dialogue and a visioning exercise–how different but complementary innovative scenarios and policy pathways can help address areas of greatest concern, and in particular, the achievement of the Sustainable Development Goals (SDGs).

Scenarios are widely seen as powerful tools to envision future human-environment interactions. They assist in assessing future development in global environmental change and sustainability problems and can inform decision makers with respect to their importance, inherent tradeoffs, interrelations (threats and opportunities) and possible response options. However, traditional scenarios developed for global environmental assessments (GEAs) have not always been taken up by decision makers. This may be partially attributable to the fact that many scenarios do not explicitly address policy objectives (for example monetary policy targets or goals) and/or potential pathways towards a more sustainable world. Moreover, many prior scenarios to a large extent have had a tendency to articulate undesirable visions of the future—where prevailing conditions and our future quality of life is envisaged as being hostile—to which people do not easily relate.

Increasingly, internationally agreed goals and multilateral processes such as the Sustainable Development Goals, the Paris climate agreement, the Sendai Framework (for disaster risk reduction)

and other Multi-lateral Environmental Agreements recognize the need for a systemic and integrated approach to account for the highly complex, interdependent and continuously changing factors in assessing the human-Earth system. At present, decision makers lack sufficient understanding of the interactions, interdependencies and the co-evolutionary pathways, including the direct effects, co-benefits and consequences, of available policy response options across various scales (Kowarsch *et al.* 2017). The emerging global architecture for sustainability governance requires a new generation of tools and outlooks that take into account the diverse range of policy pathways (with multiple and synergistic objectives), if indeed we are to move towards the collective achievement of our ambitious internationally agreed goals. The innovative outlooks being explored through the sixth Global Environment Outlook can be conceptualized and used as new thinking tools for decision makers and citizens alike. With this in mind, sincere feedback is requested on the proposed approach and the interactive session, and specifically, on how we, as a collective, can imagine and co-create radically alterative futures.

Item 2: Presentation of Global Environmental Outlook approach; **with Questions and Answers**
(Dr. Paul Lucas, Coordinating Lead Author GEO6; PBL Netherlands Environmental Assessment Agency)

Paul Lucas presented an overview of the Innovative Outlooks chapter that the expert author group is in the process of developing, and outlined the broad conceptualization and ambition for the chapter and how the narrative and analyses will differ from previous Outlooks. Mr. Lucas explained that previous iterations of Global Environment Outlooks (and scenario work more generally) were not living up to the new context in which policies are being deliberated on and decided (i.e., Sustainable Development Goals, Paris Agreement etc.). As such, in the lead-up to the sixth Global Environment Outlook, and reflecting the previous scenario and future outlooks work, countries expressed a need for a more innovative Outlooks narrative. Building on the vast experience of previous Global Environmental Assessments and the succession of Outlooks, and particularly the fifth Global Environment Outlook, the current Outlooks chapter will shift the focus from the "how" to the "what" question. Specifically, the Outlooks chapter seeks to better address synergies (or co-benefits) and trade-offs for achieving multiple goals (for example Sustainable Development Goals and Multi-lateral Environmental Agreements), rather than analyzing how to achieve specific goals. A universal, transformative and integrated agenda for sustainability and development (2030 Agenda and the Sustainable Development Goals) is now available that brings all the relevant issues together in a much more coherent framework. One of the current Outlooks' main departures or innovations is to address (and analyze) relevant issues both from a top-down as well as from a bottom-up perspective. Relatedly, the sixth Global Environment Outlook seeks to integrate the perspectives of multiple actors/stakeholders and take a multi-level perspective. And finally, a key ambition for the Innovative Outlooks is to develop new ways of communication throughout the entire process, rather than focusing only on the final report.
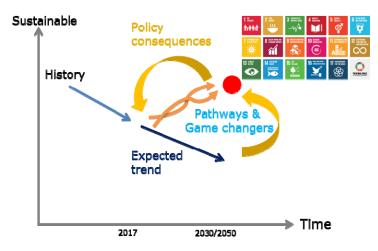

Figure 1 – A conceptual framing the proposed overarching narrative of the outlooks chapter

The guiding question for the Outlooks is: How to achieve the environmental dimension of the Sustainable Development Goals and other Multi-lateral Environmental Agreements (2030) and what are the long-term or mid-century strategies required for achieving true sustainability (2050). Two complementary approaches will be employed: (1) a top-down assessment of pathways; and (2) a bottom-up assessment of game-changers (described below) and other bottom-up initiatives including crowd-sourcing platforms (i.e., MIT Climate Colab) and existing literature.

Figure 1 (above) provides a stylized conceptualization that frames the proposed overarching narrative for the Outlooks chapter. In developing the Outlooks chapter, we intend to explore and address the following lines of investigation:
- What are the main environmental challenges and related targets on the horizon, based on the Sustainable Development Goals and other International Environmental Agreements?
- Are we achieving the targets? Is there an implementation gap? How do we characterize this gap?
- What pathways (combinations of measures) exist that could lead to achieving the broad range of targets simultaneously.
- What are exiting initiatives that could help to achieve the integrated set of targets? How can these so-called game-changers be scaled?
- What are policy consequences and required enabling conditions for the different pathways and game-changers to work synergistically?

More methodologically, different approaches will be explored for linking top-down and bottom-up scenario processes and their usefulness for decision makers. The inputs from the workshop exercise will feed into this. The purpose of the workshop exercise is to elicit game changing initiatives that can help in achieving the long-term goals and to start linking the scenario analysis with the policy section of the Global Environment Outlook in a way that is most useful for decision makers. The usefulness of this kind of experience/ stakeholder engagement will be tested, and thus we are interested in receiving candid feedback and inputs on the process and how the envisaged approach could he refined and improved

Item 3: A closer look at scenarios – *(Dr. Paul Lucas)*

Paul Lucas provided a brief overview of the scenario landscape and described the evolution and process of scenario development and described four distinct objectives of different scenario types: agenda setting, design, implementation, and review (**Figure 2**). Earlier Global Environment Outlook processes (including the third and fourth assessments) were predominantly concerned with the "what-if" rather than "how-to" questions and therefore were looking at exploratory scenarios.
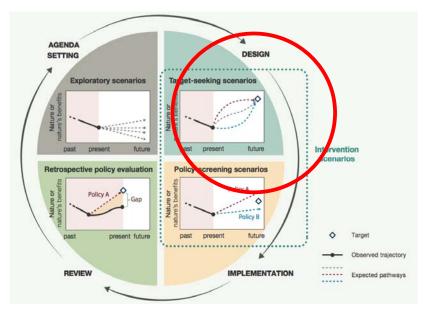
Figure 2 – The roles played by different types of scenarios corresponding to the major phases of the policy cycle (Source: IPBES, 2016).

Types of scenarios are illustrated by graphs of changes in nature and nature's benefits over time. The four major phases of the policy cycle are indicated by the labels and grey arrows outside the coloured quarters of the circle. In "exploratory scenarios", the dashed lines represent different plausible futures, often based on storylines. In "target-seeking scenarios" (also known as "normative scenarios"), the diamond represents an agreed-upon future target and the coloured dashed lines indicate scenarios that provide alternative pathways for reaching this target. In "policy-screening scenarios" (also known as "ex-ante scenarios"), the dashed lines represent various policy options under consideration. In "retrospective policy evaluation" (also known as "ex-post evaluation"), the observed trajectory of a policy implemented in the past (solid black line) is compared to scenarios that would have achieved the intended target (dashed line).
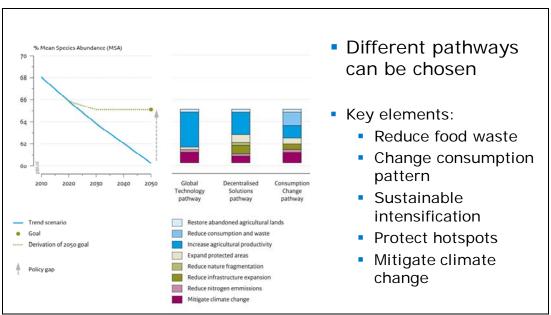
In the fifth Global Environment Outlook, there was a shift towards more transformative scenarios. For the sixth Global Environment Outlook, as the empirical literature on scenarios and futures has evolved (van Vuuren et al., 2012) the policy context has shifted (Jabbour and Flachsland, 2017). This concept will be pushed further and linked more explicitly with target-seeking scenarios and the evolution of the pathway experience. Can we conceive of pathways to achieve a broad range of goals and targets? What would these policy pathways look like? This kind of analysis builds on pre-Sustainable Development Goal pathways analysis (PBL, 2012; van Vuuren, 2015).
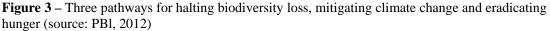
The starting point for the sixth Global Environment Outlook model-based scenario analysis, builds on an existing body of work (PBL, 2012; van Vuuren, 2015) where model-based scenario analysis discusses three distinct pathways (see **Table 1** and **Figure 3**) that simultaneously achieve a broad set of long-term environment and sustainable development targets. Model-based scenario analysis can be an effective tool in linking across temporal, scalar and domain (or sectoral) issues. A considerable body of research has advanced our understanding of how each of these pathways can be modelled and what important synergies and trade-offs exist within these pathways. Previous work has also revealed that significant challenges related to governance issues, and how to contextualize and focus scenarios on specific policy-options exist.

The sixth Global Environment Outlook contribution seeks to help address these challenges by exploring the integration of traditional top-down scenario pathways development with emerging bottom-up approaches including, but not limited to the "game-changers" exercise. The chapter will also provide an assessment of existing target-seeking scenarios, with relevant links to ongoing Global Environmental Assessments; and attempt to address the inertia and interrelations between themes and goals by linking global pathways to the experience of the "game-changers" work and to the policy effectiveness analysis.

Table 1: Different pathways (Combinations of technological and life-style measures) to achieve a set of goals (source: PBL, 2012).

Pathway	Main assumption
Global Technology	Achieves the 2050 targets, with a focus on large-scale technologically optimal solutions, such as intensive agriculture and a high level of international coordination; for instance, though trade liberalisation
Decentralised Solutions	Achieves the 2050 targets, with a focus on decentralised solutions, such as local energy production, agriculture that is interwoven with natural corridors and national policies that regulate equitable access to food
Consumption Change	Achieves the 2050 targets, with a focus on changes in human consumption patterns, most notably by limiting meat intake per capita, by ambitious efforts to reduce waste in the agricultural production chain and through the choice of a less energy-intensive lifestyle

Figure 3 – Three pathways for halting biodiversity loss, mitigating climate change and eradicating hunger (source: PBl, 2012)

Item 4: Questions and open discussion

Participants questioned the conceptual framing and approach of the proposed Outlooks section as well as the boarder narrative on scenarios and specifically, how emerging innovations (technology pledges) and other private/business driven innovations would fit into the pathways/ game-changing analysis in GEO6[3]. The team elaborated on the approach and emphasized that GEO6 is trying to go beyond the zero-sum game in terms of how responsibilities are allocated: "if we can came up with a range of ideas that can help countries comes up with shortcuts to achieving progress".

Item 5: Regional context and priorities (findings from the sixth Global Environment Outlook Asia Pacific Regional Assessment)

Prof. Angel Hsu delivered a brief presentation on the regional context and priorities for the Asia Pacific region which emerged from the Global Environment Outlook Regional Assessment. Prof. Hsu introduced the key drivers and pressures relevant to the regional context and shared some of the key findings and main messages associated with the following environmental challenges:

(1)   **Rapid urbanization and population pressures**; changing migration patterns (rural to urban shifts), demographic shifts (aging and fertility rates are rapidly declining)
(2)   **Natural resource consumption and declining productivity**; material consumption has increased sharply over the past four decades, accounting for more than 50% of world consumption in 2015. No improvement in material productivity, double the world average is expected.
(3)   **Increasing vulnerability to climate change**; Asia and the Pacific has the most reported disasters caused by natural hazards of any region in the world, approximately 41% of all natural disasters over the last two decades occurred in here. The frequency, magnitude, and impacts of disasters is increasing, with disaster risk concentrated mainly in urban areas.
(4)   **Increase in environmental health-related impacts**; Water and sanitation contribute to poor hygiene and disease risk throughout the region. Contamination of water sources by human and industrial wastes is a major problem in South and Southeast Asia. Ground water contamination from sea level rise is especially problematic for island nations in the region with limited fresh water supplies; and

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[3] See **Annex 4** for a detailed summary of the open discussion and specific interventions and questions.

(5)   **The widening gap between environmental policy and implementation**; there is a widening gap between policy and implementation, due to ineffective policy implementation, a poor scientific base for policy formulation and emerging environmental issues.

Item 6: Bottom-up, innovative game-changer session (Dr. Laura Pereira)

Dr. Laura Pereira provided a general introduction to the workshop and explained the objectives and the overall proceedings for the visioning/ interactive game-changer session:

The game-changer visioning exercise described here is an attempt to counterbalance the current dystopic visions of the future (described above) that may be inhibiting our ability to envisage and ultimately move towards more positive futures including the attainment of the Sustainable Development Goals. The half-day exercise, which has been adapted from the '*Seeds of Good Anthropocenes*' project (Bennett *et al.,* 2016), seeks to solicit, explore and develop a suite of alternative, plausible and positive visions of desirable futures. The envisaged futures that emerge will likely be very different from the world we know today, but they will comprise several elements, initiatives, or ideas that already exist, which we call "game-changer seeds". Through dialogue and interactive visioning, multiple seeds can coalesce and grow together so as to enable new and surprising constellations of ideas and visions for the future.

Game-changers are existing initiatives of alternative approaches to sustainable development that are not widespread or well-known. They can be social initiatives, new technologies, economic tools or social-ecological projects, or organisations, movements or new ways of acting that you think are making a substantial contribution towards creating a future that is just, prosperous and sustainable (Hamann *et al.* 2016).
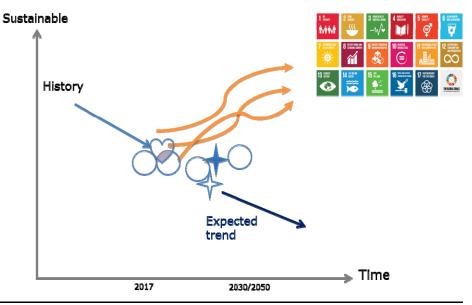

Figure 3 – A conceptual framing of multiple innovative game-changer seeds coalescing and growing together to enable new ideas and visions for achieving the Sustainable Development Goals.

The methodological and conceptual approach for the game-changer visioning exercise is grounded in future research methods (Bishop *et al.* 2007, Curry and Schultz, 2009; Schultz, 2015) and tailored specifically for the purposes of supporting the sixth Global Environment Outlooks, as explained in more detail in the section. To a large extent, the game-changer session itself is an experiential learning exercise, with important parallels to the principles and practice of deliberative social learning (see for example Kolb, 2014; Lebel *et al*., Siebenhüner, 2005; 2006). In this regard, the importance of dialogue and the direct interaction among and between individuals and the eventual alliances (or groups) formed through the exercise, allows participants to challenge their own preconceptions and

expand their understanding of (and imagination for) emerging innovations and societal transformations.

The visioning exercise was structured along into four distinct phases. The **first phase** was subdivided into two steps: establishing the scenario scene, and inviting participants to openly share game-changer ideas and reflections on how these innovations could be linked to visions of the future. The process is underpinned by the recognition that everyone has a different version of what a 'good' future is, but by combining different initiatives into diverse representations of future visions, it is possible to get to some common understanding of a positive future. The scenario scene selected for this exercise was drawn from the findings of the sixth Global Environment Outlook Regional Assessment for Asia and Pacific Region (UNEP 2016) which identified five regional priorities and environmental challenges. These included: (1) rapid urbanization; (2) natural resource consumption and declining productivity; (3) increasing vulnerability to climate change; (4) increase in environmental health-related impacts; and (5) the widening gap between environmental policy and implementation.

Participants were given forms (see **Annex 1**) to record their game-changer ideas. These consisted of a set of initiatives that the participants thought could help to address some of the environmental challenges listed above, as well as achieve the Sustainable Development Goals in an integrated fashion. The information gathered about the potentially game-changing initiatives will be captured in the Good Anthropocenes database. The group shared some of these ideas in plenary, but were then given some time before lunch to think about some important initiatives that they know of (from the region as well as from other regions) and then to write down the key characteristics of the initiative and why they think it's important for creating a more prosperous future.

The **second phase** was to begin forming alliances to develop combined ideas for addressing environmental challenges and achieving the Sustainable Development Goals. For the purposes of this exercise, a series of parallel group discussions occurred during lunch. Here participants continued sharing and discussing seed ideas and explore synergies and co-benefits between the different initiatives. Following lunch, separate breakout discussions for each of the three alliances continued in the main plenary room where each group was asked to use a flipchart to explain what their future vision that combined the interesting aspects of their seed initiatives looked like and, more importantly, how it addressed the environmental challenges of the region as well as met the Sustainable Development Goals.

In the **third phase**, the three alliances delivered presentations on their game-changing initiatives and the results of their mapping and visioning exercises. The presentations were then evaluated by members of the Scientific Advisory Panel (SAP). Each group was given a mark out of 10 based on the perceived ability of their alliance to address the environmental challenges of the regional scenario and another mark out of 10 based on their perceived ability to meet as many of the Sustainable Development Goals as possible. The combined mark (out of 20) was then converted into a so-called 'resilience score' – the higher the score, the more resilient the alliance was.

In order to add an element of fun and chance into the game, a D20 dice (a dice with 20 sides) was introduced. The numbers on the dice correspond to a number of unknown shocks- so if you throw a 1, you are only hit by 1 shock, but if you throw a 20, you are hit by 20 shocks. Your resilience score allows you to survive a certain number of shocks- so if you have a low score (e.g. 10); you are vulnerable to all shocks from 11 up to 20. Therefore, if you throw a 15, your alliance fails. However, if you throw anything that is a 10 or below, your alliance will succeed as your score provides you with resilience to face the first 10 shocks. Each team got a throw of the dice and based on the number they threw and their score, their alliance either succeeded or failed. Of the three alliances, only one landed up succeeding and it also achieved the highest score from the SAP judges. The other two alliances failed because they threw high numbers on the dice (which translates into being hit by a large number of shocks). Although one alliance received a much higher score than the other (13) it nevertheless threw a 14 and so narrowly missed out on succeeding. The pass/fail of each of the alliances brokered some interesting reflections as to why some futures came to pass whilst others did not- and this discussion flowed into the fourth phase.

The **fourth** and final **phase** included a discussion on pathways for creating the conditions that would allow the seed initiatives to thrive and build a more positive future- and to be more resilient to shocks and threats when they arise. Each group was asked to reflect on their alliance's experience of what might be enabling conditions for success; the value and limitations of their alliances; specific policies or interventions that may have inhibited the alliance; what it would take to sustain their alliances; unanticipated synergies or outcomes that emerged from the process; and finally, further suggestions on how to achieve the Sustainable Development Goals based on the visioning exercise.

Item 7: Eliciting game-changer seeds from the participants (Dr. Laura Pereira facilitated this session). See Annex 3 for the full list of ideas solicited and presented during an open plenary session.

Item 8: Lunch session – Forming alliances and discussing game-changers

Group discussions were carried out during lunch around four round-tables. The discussions were largely self-directed (with minimal facilitation from the workshop organizers/ Innovative Outlook team) and lasted approximately 50 minutes. Participants were encouraged to explore synergies and co-benefits between the different initiatives and discuss how combinations of initiatives to help to overcome scaling, uptake, and issues surrounding means-of-implementation for the Sustainable Development Goals. The original intent was to allow participants to visit the various tables or groups during the course of the lunch exercise, however that proved to be challenging logistically, and thus with a few exceptions most participants remained in their groups for remainder of the process.

Following the lunch session, separate breakout discussions for each of the three alliances continued in the main plenary room. Flip-charts and 'alliance forms' were used to record inputs and describe and feedback the alliance initiatives (see Annex 2). Using a series guiding question

Item 10: Mini 'Seeds' scenario exercise for creative visioning (Dr. Laura Pereira facilitated)

Each alliance (or coalition) was invited to deliver a short presentation summarizing the main features of their future vision, including what it seeks to achieve, how and why the individual elements / attributes in the alliance were combined, and what resulting synergies could ultimately help address Sustainable Development Goals.

Alliance 1: **Smart Communities**
This alliance proposed a vision and an approach for developing what they described as "smart communities" – a new and radically different vision for future built environments. The basic premise of the envisaged future presented here, is to challenge the conventional model and principles of urbanism and the traditional processes through which existing cities grow, evolve and function. The idea which builds on the so-called New Urbanism concept seeks to address the disconnection between the current models of urban/ city-planning and interactions at the peri-urban interface that

characterize today's built environments. For example, the group aimed to address the inefficiencies with urban and suburban sprawl, simplistic and counterproductive patterns of metropolitan growth, perverse incentives around infrastructure investment, rural-urban migration etc.

The proposed Smart Communities Alliance brings together several common elements and mutually reinforcing attributes that lead to development of smarter and more sustainable communities. The main 'seeds' or game-changers ideas that are part of this alliance include: circular economy, sustainable peri-urban agriculture, microfinancing, intelligent and sustainable transpiration systems, and public/ community awareness. This alliance proposes to address all five regional environmental challenges identified. The group felt that the Smart Communities vision was relevant to all 17 Sustainable Development Goals but in particular those related to 1, 3, 6, 7, 11, 12, 13 and 17 with an emphasis on the following synergies: smart changes, behavioural choices, sustained investments in R&D, innovation and clean technology, political and social adaptability (and adaptive governance). Finally, as a point of clarification, the group indicated that the intention of the Smart Communities was not to convert existing large cities, but rather, to shape future build environments and areas that are currently in the early stages of urbanizing.

The Smart Communities Alliance received a final score of 17 and succeeded in addressing a number of Sustainable Development Goals and leveraging synergies between urban sustainability objectives and sustainable (or eco-centric) urban infrastructure investments. One of the most important enabling conditions for bottom-up approaches to succeed is sustainability, and the need for gap analysis. Here, the alliance was able partially successful, however a major shortcoming was a lack of discussion on the need for social and political acceptability.

Alliance 2: Smart Future
The second alliance in the visioning exercise, proposed a holistic approach to bringing together and catalyzing large-scale behavioural changes through a process of "influencing the influencers". Here, the alliance stressed the importance of finding a new delivery mechanism to identify who the main private and public sector leaders (or influencers) are to communicate a single value proposition about the Sustainable Development Goals.

As a secondary approach, the alliance discussed the need to target consumers, and to leverage the opportunities brought about through big data/ data revolution. The alliance suggested that the Smart Futures vision was relevant to all 17 Sustainable Development Goals and addressed all five regional challenges. The common attributes of this alliance include: disruptive innovation technologies (e.g., smartphone applications, cloud computing, social networking), data-driven decision systems, sustainable/ smart cities, agro-economy solutions, highly inclusive/ people-centric initiatives, integration, meaningful private-public partnerships, and results-based performance to improve decision-making processes.

The Smart Futures Alliance received a final score of 9 from the SAP and despite some promising game-changing ideas, and several areas of convergence, the alliance was ultimately unsuccessful as they rolled a higher dice. Reflecting on the process, the group found that the principal barrier was that their ideas were too broad and that their main inputs were spread across too many competing (and sometimes mutually exclusive) objectives.

Alliance 3: Planet Tech
The third and final alliance was the 'Planet Tech' group presented a futuristic, hyper technology rich vision of the future with a focus on planet altering technologies and of Earth systems including: geoengineering/ carbon capture storage technologies, mesopelagic exploration, planetary tech, and artificial intelligence. The proposed vision was predominantly geared towards addressing macro/ planetary scale environmental challenges including climate change, biodiversity and complex atmospheric-ocean related issues. The common thread for this alliance was the potential for plenary harm and conversely opportunities for transformational 'planet-alerting' solutions. The main Sustainable Development Goals that the Planet Tech Alliance was targeting include 12, 14 and 17.

Several institutional obstacles and gaps were identified including mechanisms to circumvent conflict, intergovernmental and global governance issues (e.g., UN Security Council issues).

The Planet Tech Alliance received a final score of 8 and struggled with a scenario that was overly complex, far too doomsday oriented and ultimately not inspiring or compelling enough. Their high dice roll meant that their scenario also did not succeed. The group acknowledged that the overall concept was not conducive and/or accessible enough to attract meaningful political engagement and that they needed to refine their technology dominant strategy.

Final Reflections

There were several common and recurring themes that cut across all of the individual coalitions that emerged from the visioning exercise, both in terms of the game-changer ideas themselves as well as the nature and context of the scenarios presented.

All three alliances presented scenarios/ visions of the future that were characterized by an emphasis on technology, innovation and an entrepreneurial culture. The alliances also converged on notion of people-centric approaches and the importance of partnerships (and particularly public-private partnerships). Relatedly, there were commonalities around a desire for highly-participatory and inclusive approaches and the need to encourage citizenry and to build and leverage stronger communities. Finally, there was a recurring emphasis across all three alliances around conscience consumerism, ecocentric values, adaptive management, urbanism, and futuristic archetypes. These dimensions may be attributable in part, because the demographics and age cohort of the stakeholders – mostly comprised of the youth segment.

There were also points of divergence amount and between the alliances that were apparent. For instance, the Planet Tech alliances, had prevailing apocalyptic mood, reinforced by implicit links to global upheaval and a society on the brink of crisis or imminent collapse (e.g., atmospheric, climate and food systems collapsing). As one team member reflected "*suggestions for improving the Sustainable Development Goals might require us to be in a crisis situation, because that's when decisions are taken quickly…but ironically that's going back to the doomsday problem*". This was quite a departure from the two other alliances that were characterized by positive visions and messaging.

Item 11: Feedback on scenarios exercise and the relevance of these processes for the Innovative Outlooks

As an experimental endeavor to increase participation by stakeholders and to refine a workshop process for the GEO 6 Outlooks chapter, the workshop was highly successful. The participants engaged fully with the design and the seed initiatives and alliances that were formed reflected the environmental concerns of the region well. The workshop delivered important content in terms of bottom-up potential game-changers and an idea of how they could work together to overcome some of the environmental challenges in the region. It was also an important learning opportunity for the outlooks team to reflect on how best to capture the information from participants, as well as engaging them in a useful exercise. Some of the take-homes from the group that we hope to incorporate into future iterations of the workshop are to focus more on specific stakeholder groups so that we can have a more defined discussion on pathways. So, instead of asking generally about enabling conditions, a particular stakeholder group (e.g. business) would be asked- How can business act in a way to enable these future visions and what is business currently doing that it needs to stop doing in order for this future to succeed?

There has also been a discussion not only to link to the regional sixth Global Environment Outlook scenarios, but also to the scenarios and pathways being generated by the 'top-down' section of the outlooks chapter. By using these as entry points for the workshop participants to create their alliances, we hope to be able to make the innovative link between the top-down and bottom-up sections of the

chapter- where the initiatives can be seen as forming alliances to overcome some of the challenges posed by the top-down scenarios.

Based on the overall positive feedback from the participants in the closing session, as well as the reflections from the author group afterwards, it was a useful workshop that has contributed to both the content of the GEO 6 Outlooks chapter as well as to the refinement of the bottom-up engagement processes.

Item 12: Collective brainstorm on linking policy pathways and innovative outlooks; what would be the most useful option for decision makers?

- Participants noted that in different parts of the world – the word coalition may have a negative connotation; and thus proposed to change that word to "partnership". As a compromise, the organizers suggested the term "Alliance"

- Several calls for additional more information on risks; more positive message on why we're asking soliciting game changers (i.e., moving away from the notion that if we don't the planet will die).

- In terms of the coalition, it's very difficult to have a common vision without meaningful partnerships.

- The importance of conveying ideas in a manner that consumers and citizens can resonate with; raising awareness is a key to success; we need policies to create change and thus we need to create more meaningful private-public partnerships – having an innovative approach.

- Useful tool to enable a higher degree of social convergence and creativity

- "The sustainable development goals give us the license to start speaking the same language and to have a more effective relationship with the people in different spheres of influences" (dialogue for bridging typically disparate communities: science, policy, business etc.)

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Annex 1
Game-changer 'seeds' initiative questionnaire

WHAT ARE SEEDS?

Seeds are existing initiatives of alternative approaches to 'sustainable development' that are not widespread or well-known. They can be social initiatives, new technologies, economic tools, or social-ecological projects, or organizations, movements or new ways of acting that appear to be making a substantial contribution towards creating a future that is just, prosperous, and sustainable. We would like to hear about a 'seed' initiative from your region that you think could contribute to a more sustainable future.

For more information, please see: https://goodanthropocenes.net/

Change-changer	*Examples*	
A brief description of the seed initiative		
What sustainability challenges – social, economic or environmental, or combinations of these, is it engaging with?	*Food insecurity, deforestation, biodiversity loss, poverty etc.*	
Does the initiative help to achieve any of the Sustainable Development Goals? If so, which ones and how?	*See slide*	
What is the potential of this seed to tackle global environmental challenges?	*In-built incentive mechanism for consumers*	
Where is it based? (and geographic scope)	*(i.e., local, city/ municipal, national, regional, global)*	
What Stage is it in?	*(i.e., start-up, established, long-running)*	
What are its most innovative aspects and main strengths?		
What are its main weaknesses?		
Which types of actors are involved?	*(e.g., government, IGO, grassroots org., private sector)*	

Context, potential, challenges

How could the seed initiative scale? Could it be reproduced in different places (*scale out*)? Involve more people and places (*scale up*)? Change underlying values to inspire people to live in a different way (*scale deep*)?	
What factors would help make the initiative work better?	
What factors could prevent it from working well?	

<u>Annex 2</u>
<u>Game-changer 'seeds' initiative questionnaire</u>

Annex 3
List of game-changer seeds elicited from the participants

- *"**Global CEO alliance**" The initiative is to get to the core of private sector engagement/ establishing the value-proposition from the Sustainable Development Goals (what's in it for private sector)*

- *"**Initiative on sharing economy**" For example, platforms such as Uber, AirB&B, clothes swapping etc. There is growing movement where under-utilized resources are being used more efficiently – i.e., most cars sitting idle; this is expanding into all sorts of new areas and gets to the heart of SCP.*

- *"**Innovation lab that functions as an incubator for ideas**" to help scale-up small scale innovation/ technological entrepreneurial ideas (i.e., recycling innovation idea for cans)*

- *"**Green rooftops in urban spaces**" used to grow food, clean water, ...application of green infrastructure; these efforts could up hugely up-scaled*

- *"**Rain water harvesting**" particularly in the urban context where there are fewer and fewer permeable surfaces...*

- *"**Ethical fashion industry**" – using discarded fabrics and textiles from the fashion industry; using circular economy concept and applying it to the design, production, retail, and purchasing and of fashion products: addressing a range of issues including exploitation, fair trade etc. while tackling sustainable production and environmental protection .*

- *"**Solar panel windows for skyscrapers**" –massive renewable energy potential for the urban env; vast amount of glass in skyscrapers represents enormous potential for an emerging technology that turns windows into solar panels. (Yale 360 : Transforming Buildings Into Energy Producers)*

- *"**Box-type solar cookers for roof tops**" relatively simple, low-tech, low cost*

- *"**Big data and business intelligence**" at scale to tackle Zero discharge of illegal chemicals/ dyes in the supply chain;*

- *"low-carbon initiatives" – Climate Change Asia initiative launched at AIT – a pioneer initiatives in the region- helping to understand how vulnerable habitats can be restored.*

- *"**climate smart agriculture**" and "**community forestry**"*

- *"**Intelligent transportation systems**" for major cities to tackle air pollution, resource efficiency, safety... fixed route software integrated in all cars, integrated scheduling systems, fully integrated CAD/AVL system,*

- *"**Global public awareness campaigns**" to counter some of the rhetoric that some government leaders are spreading regarding climate denial*

- *"**Urban Green infrastructure – urban parks connectivity**" deliberate urban planning and design that focuses maximizing connectivity of urban green space in including inner city parks; softening park edges and better connections to the peri-urban fridge*

- *"**Green infrastructure for urban heat stress reduction**" encouraging capital infrastructure improvement projects: such as more regular street-upgrades, community level heat-reducing practices like tree plantings etc.*

- *Campaign or movement to promote "**lowering the age of decision-makers**"; tackling social barriers, addressing countries that have age limits.. (Italy, France etc.)*

- *"**Small scale renewable energy projects**" residential solar panel projects, smaller hydropower plants*

- *"**Innovating and strengthening traditional agricultural knowledge**" counter balance to the forces that are downgrading TKL …seeing soil as a living matter that needs to be cared for*

- *"**Food systems approach – from upstream to downstream**" – multi sectorial engagement at every stage*

- *Using "**Natural capital accounting**" for linking nature conservation and development impact; catalyzing technological services (i.e., e-waste tracking)*

- *"**Resource-oriented sanitation**" to convert wastes in the waste chain back to agricultural inputs/ food systems*

- *"**Circular economy and extended producer responsibility**" e-waste example, what to do with our old phones?*

- *"**Technology in renewable hydrogen**" as an element of the circular economy*

- *"**DIY waste management systems**" recycled materials for furniture*

- *"**Knowledge-sharing strategies**" using digital platforms to share ideas on*

Annex 4
Summary of questions and open discussion following

Question: Do you consider the scenario assumptions in your process and analysis of the game-changers exercise?

Response (P. Lucas): explained that in this instance we're only exploring existing scenarios (we do not intend to run new scenarios for sixth Global Environment Outlook); however our analysis will hopefully influence future GEAs and other ongoing assessments that are facing similar challenges (IPBES, IPCC).

Question: Do you look at negative or positive 'game-changers' or both?

Response: For this exercise we are interested in exploring positive interventions; we'll explain in more detail in the next session.

Suggestion: Even if you focus on the positive initiatives in the 'game-changer 'exercise, it would be helpful to be reflective in the analysis on the potential rebound-effects (i.e., things that we thought would be positive interventions but turned out to have a negative consequences once it played out/ interacted with other interventions).

Response (L. Pereira): Excellent point. This is precisely what these interactions and the visioning session seek to explore, we're all testing out these ideas together. (P. Lucas): there is emerging research underway, where people are trying to incorporate these game-changers into models and leaning about path dependencies

Comment: the notion that there is no fundamental tradeoff between Sustainable Development Goals is crucial; The key message for FAO is how we can maximize synergies and multiple benefits through this type of analysis.

Question: how does the GEO intend to integrate geographic/ regional situations that are deeply embedded in conflict at the moment; navigating political considerations?

Response (GEO Co-Chair): Good question. We're not there yet. Trying to wrap our heads around the plurality of political contexts when discussing multiple pathways; (L. Pereira): think about what are the game-changing non-state interventions in conflict situations that can shed light?

Comment: We're surrounded by exciting, disruptive outlooks quite frankly in the business / private section – what is the best way to bring business into the fold here so we can begin to change business behavior, perspectives? The role of Business in influencing scenario/ pathways work

Paul Ekins: World Economic Forum has had "Environment" at the top of the agenda for the last 10 years. Unilever is making progress but it's a lonely space; progressive business leaders have a lot of work to do and need to start getting together and start educating the investment community/ our community needs to enable that work.

Question: which scenario approach will you take? Answer: we're talking about an assessment of scenarios and a structuring and analysis of the different scenario narratives (contexts etc.) that are out there

Comment: Still trying to digest the key approach to this new sixth Global Environment Outlook and how it fits with the emerging paradigm of the climate regime; while back-casting is essential, the Paris Agreement would benefit from more analysis on whether the incremental approach/ paradigm -- wondering if in addition to back-casting, maybe it is necessary to think about where we can go if the incremental approach cannot take us into the future/ how does this game-changing concept fit with what's taking place for UNFCCC implementation (NDCs).

Reponses (P. Lucas): The needs for the policy approach doesn't discount the need for the pathways approach; i.e., Emissions Gap pathways approach; (J. Gupta):

Question: How will innovative industry technology pledges (i.e., iPhones being made entirely of renewable materials) fit into the pathways/ game-changing analysis in GEO?