



SHAPE

Sustainable development pathways
achieving Human well-being while
safeguarding the climate And Planet Earth

Report

2nd Multi-Stakeholder Workshop

Online, 4-8 April 2022



Report

2nd Multi-Stakeholder Workshop

Initial exploration and regional perspectives on the
Sustainable Development Pathways

Dialogue organisers:

Institute for Advanced Sustainability Studies (IASS)
Stockholm Resilience Centre (SRC)

Consortium partners:

German Institute of Development and Sustainability (IDOS)
International Institute for Applied Systems Analysis (IIASA)
Norwegian University of Science and Technology (NTNU)
Potsdam Institute for Climate Impact Research (PIK; SHAPE project coordinator)
University Utrecht (UU)

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Summary and key messages

The international consortium project *Sustainable Development Pathways achieving Human well-being while safeguarding the climate And Planet Earth* (SHAPE) is co-developing a set of quantitative **target-seeking scenarios, the Sustainable Development Pathways (SDPs)**. The SDP scenarios represent alternative pathways to achieve the 2030 Agenda and the Paris Agreement on climate change. In this report, we summarise the results of the **second multi-stakeholder workshop held virtually in the week of 4th-8th April 2022** as part of a series of SHAPE dialogue events. The focus of the workshop was put on three SDP scenarios that are currently under development by the SHAPE consortium:

- **SDP scenario “Economy-driven Innovation”:** Market actors play a key role in driving transformation through deployment of technologies and market solutions; the focus is on an efficient market economy to maximise value-added in an economically globalised world.
- **SDP scenario “Resilient Communities”:** Networks of social actors (civil society, private sector and government actors) jointly drive transformation; the focus is on behaviours that support solidarity, well-being, social cohesion and green innovation.
- **SDP scenario “Managing the Global Commons”:** Governments drive transformation, enabled by strong statehood and effective institutions for multilateralism, and strong social globalisation based on universal human values. The focus is on efficacy in reaching global goals.

The purpose of the workshop was to present initial SDP modelling results to foster the discussion about their use in multiple contexts and to obtain feedback for the final model runs and the dissemination of the SDP scenario results. **These new SDP scenarios are developed in dialogue** with an international group of stakeholders from the governance, economic and civil society sectors as well as further academic experts. From 2020-2021, SHAPE’s multi-stakeholder dialogue focused on the co-development of the narratives that underlie the SDP scenarios (see 1st SHAPE report [here](#)). The consortium translated the core assumptions underlying these narratives into different model parameters and calculated a first set of quantified SDP scenarios. First results of these model runs were presented during the **second multi-stakeholder workshop** that was conducted as a series of online plenary sessions and regional working group discussions. Thirty-five participants contributed to the discussions with members of the SHAPE project consortium. Workshop participants were invited to take part in region-specific (Asia, Africa, Europe, Latin America, North America) and cross-scale “global” sessions. In these parallel sessions, we asked the participants to reflect about:

Question 1: With respect to the SDP scenario results, what interactions (synergies, trade-offs and spillovers) are you interested in? This discussion was divided into two thematic clusters: One, interactions with regard to **nexus challenges** (climate, energy, water, agriculture, nature) and two, interactions with regard to **well-being priorities**.

Question 2: How feasible and / or desirable are the different target-seeking SDP scenarios and their implied assumptions for your region?

With regard to nexus challenges and human well-being priorities, we highlight the following topics that were raised *across sessions* as priorities to be better understood and captured in the scenarios:

- **The unintended local and regional consequences** of solutions for sustainability and climate action that aim to address the interlinked global challenges of the 2030 Agenda and Paris Agreement, in particular related to the energy transition (e.g., mining, renewable energy impacts, biofuels expansion, etc.). Moreover, effects of a region's action do not necessarily remain within the region.
- **Structural social inequalities, beyond income inequalities**, as major challenges for the implementation of the Sustainable Development Goals (SDGs), within and across countries. 'Just transitions' that go beyond current political focus areas (e.g. the energy transition, economic inequality and redistribution) are a priority for all. Issues such as power inequalities and land tenure are as important as addressing the climate and biodiversity crisis synergistically.
- **Regionally different resource endowments**, both in terms of availability of resources for a (sustainable) development and the consequences of their use. This includes the available geographic space for the deployment of new technologies. This is also closely related to social inequalities: the strong differences in vulnerabilities and in access to resources, technology and financial capital among countries within Africa, Asia, and Latin America were emphasised.
- **Workforce knowledge and skills** play a vital role in today's economic production and also in enabling sustainability transitions. The pace of transitions to meet the SDGs will depend on issues such as worker mobility, skill redeployment and re-skilling, for which there are large regional and sectoral differences. Access to technologies and education is part of the challenge. So too are cultural aspects, as when people take pride in their (historically important) jobs in damaging or high emissions sectors, and the mindset changes needed to support just transitions and societal shifts to life cycle thinking.
- **Energy security** is important to incorporate and quantify in the SDP scenarios, **both in form of supply and also with regard to access and affordability.**
- **Disruptive climate change impacts are already being perceived and experienced**, such as desertification in Latin America and Africa, and water related impacts in Asia.
- **Preserving ecosystems to protect biodiversity** should always be the first-choice solution. When necessary, restoring natural ecosystems should be prioritised over afforestation as a land-based climate solution, in order to better align climate and biodiversity oriented actions. Cultural and social aspects, as mentioned before, also need to be taken into consideration.
- Finally, participants referred to **the need to take longer-term perspectives and seek for co-benefits.** Participants also discussed the **short- and long-term implications of (unexpected and sudden) events** such as the Ukraine invasion and the COVID-19 pandemic. An open question remained: What are events that can offset new sustainable development pathways and are such events significant enough to alter current trends?

With regard to nexus challenges and human well-being priorities, we further highlight the following region-specific issues:

- **Demographic changes are underway in Asia that** will have huge impacts on regional development. At the same time, models currently do not reflect demographics in Asia very well. The informal sector plays a major economic role, and is not well captured in models.
- **The deep entanglement of formal employment and social security in North America (here USA)** for health, pensions and unemployment protections is a major challenge for transformation pathways, because changing jobs can entail losing a social safety net. Other regional challenges are the sprawl aesthetic (with implications for transport and infrastructure) and cultural values of individualism.
- **SDG 16 (Peace, Justice and Strong Institutions) is seen as a priority to enhance institutional capacity for Africa.** However, it was questioned how poverty reduction and climate mitigation can be achieved simultaneously, and in a context in which disruptive climate change impacts are already being perceived and experienced. Development efforts to shift towards renewable energy sources and away from fossil fuels are challenged by unequal endowments within the region. Gas is often seen as a solution to provide affordable clean energy to communities in the short term.
- **The multiple forms of inequalities (SDG 10) interacting with all other SDGs is a key issue in Latin America.** Such inequalities are rooted in the colonial history of exploitation and the current economy based on natural resource exploitation (forests, mining, water) in a system of market liberalisation and unfair market competition. The important role of education (SDG 4) and strong institutions (SDG 16), and their multiple interactions, in particular with SDG 15 (Life on Land) and SDG 6 (Clean Water and Sanitation), were emphasised.
- For **Europe, policy coherence and horizontal and vertical integration** are major concerns by policymakers. Discussions around natural resource use are shifting to sufficiency and to the understanding of the circular economy model as going beyond material reuse, including the close interactions with decent work, economic growth and implications for inequalities. The renewal and build-up of infrastructure for meeting the climate goals is a priority, but depends on the availability of natural resources, in particular minerals which links the EU to the other continents.

Summarising the sessions' discussions about **the feasibility and / or the desirability of the three SDP scenarios** (see short descriptions above), we highlight:

- Consensus that there are **multiple coexisting realities** *within* the regions which has implications for the feasibility of the alternative SDP scenarios and deployment of climate mitigation approaches.
- **For some regions, participants leaned towards specific SDP scenarios.** This was mainly a consequence of different risk assessments that referred to societal aspects, good governance, trust and inequalities (e.g., the Latin America session leaned towards the SDP scenario "Resilient Communities"), while for other regions the SDP scenario "Resilient Communities" was considered unrealistic (e.g., in the North America session).

- It was highlighted that there is a tendency of stakeholders (and often the SHAPE researchers as well) to see the SDP scenarios in terms of a dichotomy of ‘either / or’. However, **all SDP scenarios map out cornerstones to achieve sustainable development** whereby underlying strategies undergo different nuances or dynamics. The SDP scenarios are *multi*-target-seeking, modelling long-term consequences of pathways that follow different approaches towards sustainable development and climate action.

Finally, workshop participants also articulated specific needs beyond the regional focus that should be taken up for the finalisation of the SDP scenario model runs and in the communication about the SDP results.

Key recommendations included among others:

- It was suggested to **contrast the SDP results with less optimistic scenarios based on current trends (business as usual or baseline scenarios), and to cross-check the SDP scenarios with lessons learned from other energy scenarios**. Such comparisons could highlight more specifically how ambitious the SDP scenarios are and where potential discontinuities lie (economic growth and energy demand were mentioned as examples);
- Reflecting on **the possible speed of change** in different contexts. Embedded assumptions in models may not have realistic assessments of the timeframes for workforce retraining, natural resources availability (regrowth, restocking), transitions towards sustainable energy sources, infrastructure bottlenecks, and of course the cultural aspects that influence take-up of innovations and social change.
- There is a need to analyse the results through the lens of **thematic clusters** that show interdependencies within the 2030 Agenda rather than only considering impacts on single SDGs;
- **Quantified analysis is needed of human well-being and inequality connected to the climate-land-energy-water nexus**, highlighting **strategies that are robust across all SDP scenarios**, avoiding possible lock-ins;
- SHAPE’s research needs to bridge to **regional level analysis**, and SHAPE’s research communication needs to **be aligned with regional policy strategies and objectives**;
- **The quantified key assumptions behind the SDP results need to be better articulated**;
- There is a need to **clearly indicate important aspects of the SDP scenario narratives that are not represented in the models but that need discussion via other routes**. Examples are the role of race relations and the history and legacies of colonialism. The discussion of such aspects in multistakeholder science-policy contexts aim at fostering constructive dialogue, and can inform transdisciplinary and governance research, shifting the focus beyond model parametrization.

We conclude that the SHAPE dialogue process demonstrates the potential of a global dialogue about sustainable futures including the perspectives of heterogeneous regions and sectors. We hope similar processes can be further elaborated and institutionalised to discuss the final SDP scenario results in 2023 and also in future scenario studies.

Summarising next steps for the SHAPE project and beyond:

How will the stakeholder input from the workshop be used?

Recommendations for the SHAPE modellers and the final SDP model runs:

- Take up the feedback in relation to (1) the human well-being priorities and nexus challenges, and (2) the recommendations for the finalisation of the SDP analysis and communications beyond the region-specific feedback (“Summary and key messages”; detailed information in chapter summaries and tables 1- 4).

Recommendations for SHAPE’s communication and dissemination:

- Prepare fact sheets on:
 - *Multi*-target-seeking scenarios and narratives: Going beyond the climate target incorporating broader targets of the Agenda 2030 related to well-being;
 - Key SDP assumptions for better interpretation of the SDP scenario results;
 - Other priority issues identified in the “Summary and key messages”
- Prepare policy briefs that are region and sector / topic-specific (ideally through the lens of thematic clusters).

Recommendations for further activities (outside the scope of the SHAPE project):

- Foster and perpetuate science-based dialogue on sustainability transitions:
 - Mediate dialogue between different parties by using the SDP scenarios and their narratives in region-specific settings such as in the NEXUS project;
 - Increase the usage of derived SDP scenario knowledge and the communication about knowledge needs for instance by establishing a format for regular “question and answer” sessions between IAM researchers and for example national government bodies;
- Share knowledge with the research community on the co-creation of global scenarios for Integrated Assessment Models (IAMs).

1. Introduction: Co-creating Sustainable Development Pathways

Context and purpose

The international consortium project *Sustainable Development Pathways achieving Human well-being while safeguarding the climate And Planet Earth* (SHAPE) is developing a set of quantitative target-seeking scenarios, the Sustainable Development Pathways (SDPs), representing alternative pathways to achieve to the 2030 Agenda and the Paris Agreement on climate change.

The SHAPE project is developing and analysing SDPs in order to:

- understand crucial interactions between climate action in line with the Paris Agreement and other SDGs related to land and water, consumption and production, and economic development and inequalities;
- explain system transformations to overcome trade-offs and enhance synergies, to achieve as much progress as possible by 2030 on today's broad range of internationally agreed sustainable development objectives, and
- investigate effective means of governance facilitating deep transformations on regional and global levels that maintain sustainable development for the long term.

The project is making many new integrative developments at the frontiers of scenario research. These include modelling of the climate-land-energy-water nexus, coupling insights from industrial ecology about resource use in industrial production to Integrated Assessment

Models (IAMs), improving the treatment of social inequalities in global scenario approaches, and deepening the analysis of governance to better address the challenges of providing science support for the Sustainable Development Goals.

The SHAPE consortium employs a co-creative approach for the development of this new set of scenarios, both to benefit the research approach and scenario design, and also to maximise the usefulness of the analyses and findings for a diverse worldwide audience. Dialogue is a means for clear communication and mutual learning about the strengths, limitations and open opportunities of the project's analytic approaches.

Given the expertise and international prominence of project partners, the SDPs are expected to become useful references for decision-makers in both the public and private sectors. For instance, SHAPE already has well-established links with the UN Sustainable Development Solutions Network (SDSN), especially through the involvement of project partners IASS, IDOS (formerly DIE) and PIK in SDSN Germany. Project partners provide important knowledge to policymakers and international SDG initiatives, such as the UN High-level Political Forum on Sustainable Development, and also maintain partnerships with local and regional 2030 Agenda implementation processes. In addition, the Intergovernmental Panel on Climate Change (IPCC) is another important recipient of the project's research. Several SHAPE scientists have been involved in the development and communications of the IPCC 6th Assessment Report, released in 2021 and 2022. Through this positioning in key climate research communities, SHAPE's SDPs will be usable in the longer term for analysis of SDG effects of climate impacts vs. mitigation.

More information on the SHAPE project can be found on our website: <http://shape-project.org>.

The Dialogue organisers

The SHAPE Multi-Stakeholder Dialogue has been organised by the Institute for Advanced Sustainability Studies and the Stockholm Resilience Centre, Stockholm University:

- The Institute for Advanced Sustainability Studies (IASS) conducts research with the goal of identifying, advancing, and guiding transformation processes towards sustainable societies using a transdisciplinary, transformative, and co-creative research practice.
- The Stockholm Resilience Centre (SRC) is an international centre that advances transdisciplinary research on governance of social-ecological systems with a special emphasis on resilience.

All of the dialogue events have been co-convened in collaboration with all SHAPE project

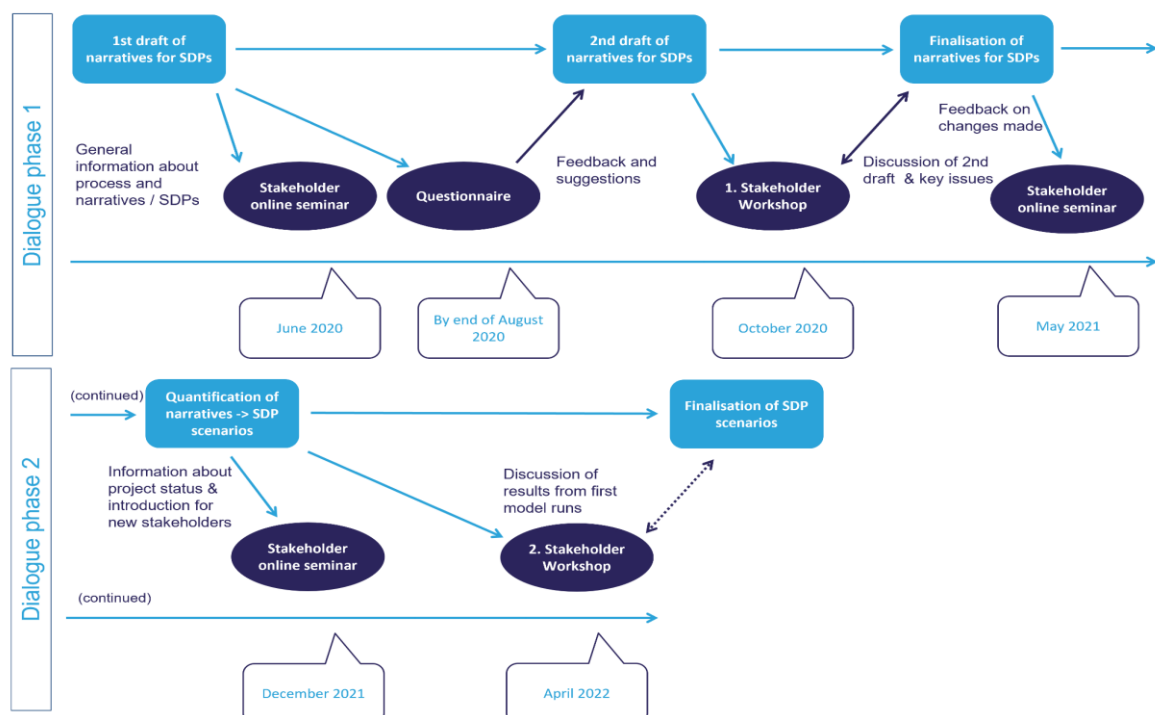
partners: the Potsdam Institute for Climate Impact Research (PIK), International Institute for Applied Systems Analysis (IIASA), University Utrecht (UU), German Development Institute (DIE), and Norwegian University of Science and Technology (NTNU).

The Dialogue structure

Figure 1 summarises the co-creative dialogue process as a series of opportunities for interaction between the project scientists and SHAPE’s diverse stakeholders from around the world.

The first phase of SHAPE’s multi-stakeholder dialogue was conducted from June 2020 until May 2021 and focused on the co-creation of the narratives for the SDP scenarios. Please see our [first SHAPE workshop report](#) and our [project website](#) for more information on this phase.

Figure 1: Timeline and interdependencies of SHAPE’s stakeholder engagement process and the development of the Sustainable Development Pathways.



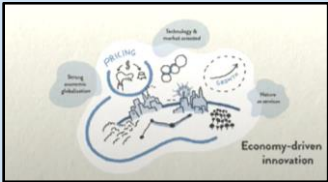
After the finalisation of the SDP narratives, the modellers in the project team worked on translating the narratives into the quantitative parameters and input values needed for the model runs. For generating the multi-target-seeking SDP scenarios, SHAPE is refining and using three major process-based integrated assessment models that allow for analysis of long-term climate and other sustainability goals simultaneously: the **IMAGE model**, **MESSAGE-GLOBIOM** and **REMIND-MagPIE**. SHAPE’s dialogue then entered its next phase, focusing on ensuring a common understanding of the necessary simplifications and assumptions involved in the translation steps and of the issues affecting the real-world usefulness and usability of the new scenarios. As the initial SDP model results became available, the dialogue was opened to additional stakeholders involved in implementation of climate and sustainability policy, who joined us in an online information seminar in December 2021.

The online seminar’s purpose was to inform new stakeholders about the SDPs and the project’s ongoing dialogue, and to reach out to our established stakeholders and academic experts with an update on the state of work within SHAPE. The information seminar also served as a valuable preparatory event for the second and final multi-stakeholder workshop. We presented a first outline of the planned scope and activities, and used the feedback to refine the workshop agenda.

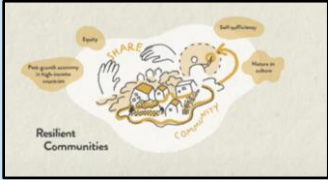
This document reports on the in-depth discussions during the second multi-stakeholder workshop, which was conducted in the week of 4th-8th April 2022. The goals of this workshop were 1) to present the first (preliminary) quantitative results of the new SDP scenarios in order to 2) foster the discussion about their use in multiple contexts and 3) obtain feedback for the final model runs and the dissemination of SDP scenario results.

Box 1: A brief overview - The narratives (storylines) of the three SDP scenarios

The narratives were co-developed in the first phase of the SHAPE multi-stakeholder dialogue in 2020-2021.



Economy-driven Innovation: Market actors play a key role in driving transformation through deployment of technologies and market solutions; the focus is on an efficient market economy to maximise value-added in an economically globalised world.



Resilient Communities: Networks of social actors (civil society, private sector and government actors) jointly drive transformation; the focus is on behaviours that support solidarity, well-being, social cohesion and green innovation.



Managing the Global Commons: Governments drive transformation, enabled by strong statehood and effective institutions for multilateralism, and strong social globalisation based on universal human values. The focus is on efficacy in reaching global goals.

Illustrations by Elsa Wikander / Azote

2. Approach and Methods: The second multi-stakeholder workshop

In brief, the workshop consisted of a series of presentation and discussion sessions held online using the Zoom platform:

- Plenary opening and closing sessions were held on the 4th and 8th April respectively, where everyone participated.
- Five discussion sessions with a regional focus were held on 5-7th April, scheduled to be suitable for different time zones. The regional sessions were for Africa, Asia, Europe, Latin America and North America.
- One discussion session, on 7th April, was for participants with a global or sectoral perspective.

Different stakeholders and academic experts participated in each of the discussion sessions, according to their focus region or domain of interest. The rationale for this format was mainly that implementation of the sustainable development goals does not take place in a policy vacuum, nor can it be done through a “one-size-fits-all” approach in all the world’s societies but needs a more differentiated approach.

The regional sessions allowed participants to focus and elaborate on their own unique regional conditions, and the societal priorities, requirements and challenges for the implementation of the SDGs and the Paris climate target. They also enabled the SHAPE project team to get region-specific feedback on the initial global IAM outputs, in order to refine regional analyses and interpretation and improve targeted policy messages.

Representatives from a considerable number of global and sectoral organisations, many from within the UN system, have participated in the preceding phase of the SHAPE dialogue. We offered the “global” session in order to give them an opportunity to participate with their perspectives on conditions, requirements and challenges that relate to specific issues that span across geographic scales (e.g., globalised food and energy systems). These perspectives might reveal cross-scale issues that could otherwise be missed when considering the outcomes of the regional discussion sessions.

The workshop agenda and a list of participants can be found in [appendix A](#) and [appendix B](#).

How did we identify our stakeholders?

Most participants in the second multi-stakeholder workshop were people who have accompanied the project through previous involvement in SHAPE research and dialogue events.

As the project shifts towards its closing research phase, the SHAPE team also wanted to expand the stakeholder network to raise awareness about the SDPs and to increase the range of inputs to the dialogue in terms of wider experiences of sustainability and climate policy implementation. To increase the reach of the project, the dialogue organisers researched other relevant events, discussion fora and institutions in the SDG and climate area, putting particular focus on regions where the project team had only few contacts before.

We also applied the snowball technique: asking our established participants and contacts across the consortium to recommend relevant individuals and organisations. A short survey was prepared for the purpose of gathering this information. Informal chats with individuals in our existing networks were also a valuable route to making new contacts.

Structure: Plenary and discussion sessions

The opening plenary started by revisiting two key concepts of the SHAPE scenarios that are crucial for understanding and applying the SDPs: target-seeking scenarios (Box 2) and the analytic target space (Box 3).

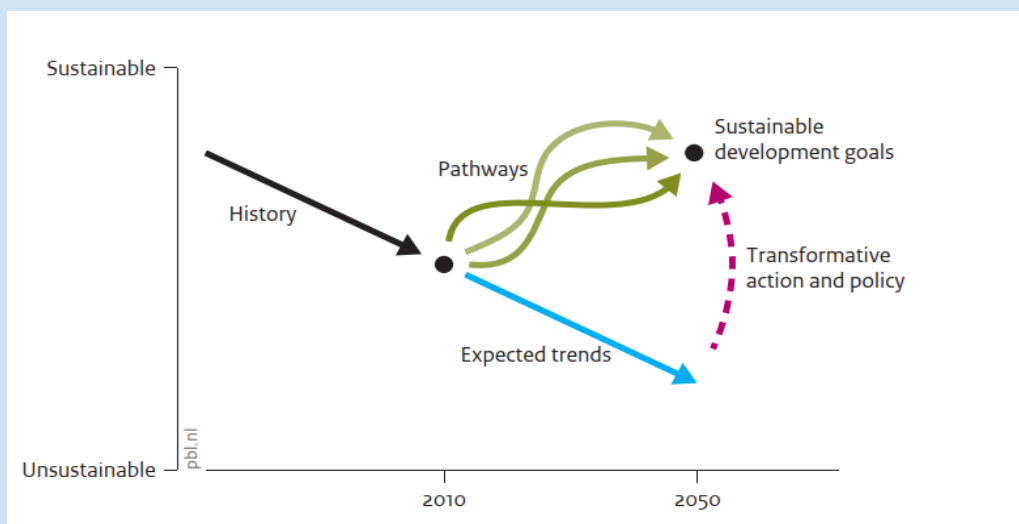
The main focus of the opening plenary was the presentation of initial SDP modelling results and explanation of the underlying quantified assumptions of the narratives for the SDPs. To ensure that this input was readily comprehensible to our participants, the modellers were asked to focus only on some selected analysis results and pathway quantifications that they considered were important for a general audi-

ence to engage with, and that were “presentation-ready” in terms of demonstrating the relationship between the pathways and policies for the 2030 Agenda. The modellers were asked to describe very clearly the connections between their model results and the SDP narratives. They were further tasked with explaining the model results regarding primary drivers (if possible) and the different model settings. For instance, the IMAGE model (developed by PBL, The Netherlands) puts a bigger emphasis on carbon capture and storage for climate mitigation compared to the Remind-MAGPIE model (developed by PIK, Germany), in part because there is a larger system inertia in the way that the energy system is represented in IMAGE.

Box 2: Understanding target-seeking scenarios

*Scenarios are not predictions of the future. Instead, scenarios provide plausible storylines to help analyse consequences of action and inaction. In the classic definition of **exploratory scenarios**, this means envisioning a wide range of projections of what could happen, often spanning from utopian to dystopian futures.*

***Target-seeking scenarios**, on the other hand, describe pathways from the present to specific future outcomes. SHAPE’s Sustainable Development Pathways are scenarios that outline pathways to reach the internationally agreed 2030 Agenda’s SDGs and the 1.5°C Paris climate target.*



*The figure shows time on the horizontal axis, the vertical axis represents an aggregate of indicators that cause unsustainable development. Source: PBL Netherlands Environmental Assessment Agency (2012), *Roads from Rio+20. Pathways to achieve global sustainability goals by 2050*, The Hague: PBL Netherlands Environmental Assessment Agency.*

In this plenary, our participants were further guided by a “presentation guide”, one recurring slide that summarised key messages from the analysis, to which our modellers added two key messages after each part they presented. The plenary further included a presentation by SHAPE’s social scientists, to help bridge the often somewhat abstract quantified SDP model results with insights for governance modes, policy instruments and principal actors as societies steer themselves along sustainable development pathways. The plenary closed with a detailed introduction of the workshop week and the workshop questions to be discussed.

The regional and global discussion sessions were all structured in the same way to obtain outcomes that could be comparable in the end. Each session was opened by a short introduction round enabling participants and SHAPE

team members to get to know each other. This was followed by a shortened and, where possible, more regionally focused recap of the project progress (quantified assumptions and first SDP model results) that had been presented in the opening plenary.

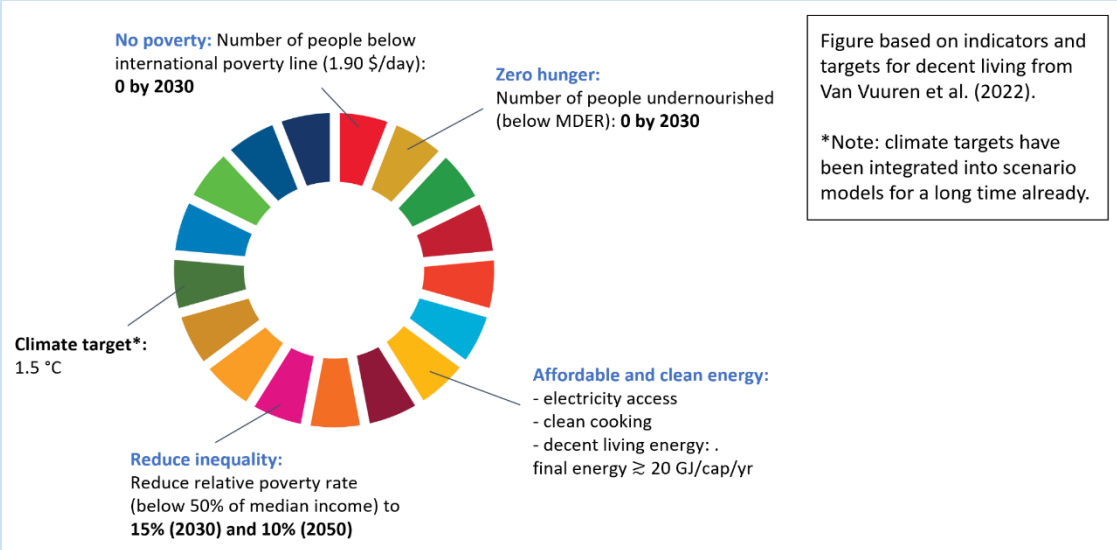
During the discussion sessions, the participants discussed two questions, each for 40 minutes:

Q1: With respect to the SDP scenario results, what interactions (synergies, trade-offs and spillovers) are you interested in? Why are they important to your context?

Q2: How feasible and / or desirable are the different target-seeking SDP scenarios and their implied assumptions for your region?

Box 3: Understanding the target space

The 2030 Agenda sets out many political SDG targets, and the Paris Agreement specifies climate goals that can be translated to mitigation pathways. The SHAPE target space translates these political targets into analytic targets and indicators for the SDGs and climate action that can be used in scenario modelling for Sustainable Development Pathways. It is drawn from a global target space developed by the scientific community (Van Vuuren et al. 2022), which proposes a set of science-based indicators and associated target values that are quantifiable and actionable to make scenario analysis meaningful, relevant, and simple enough to be transparent and communicable. This can serve as a guide for researchers to develop target-seeking scenarios. See below examples of how the target space is defined for decent living standards.

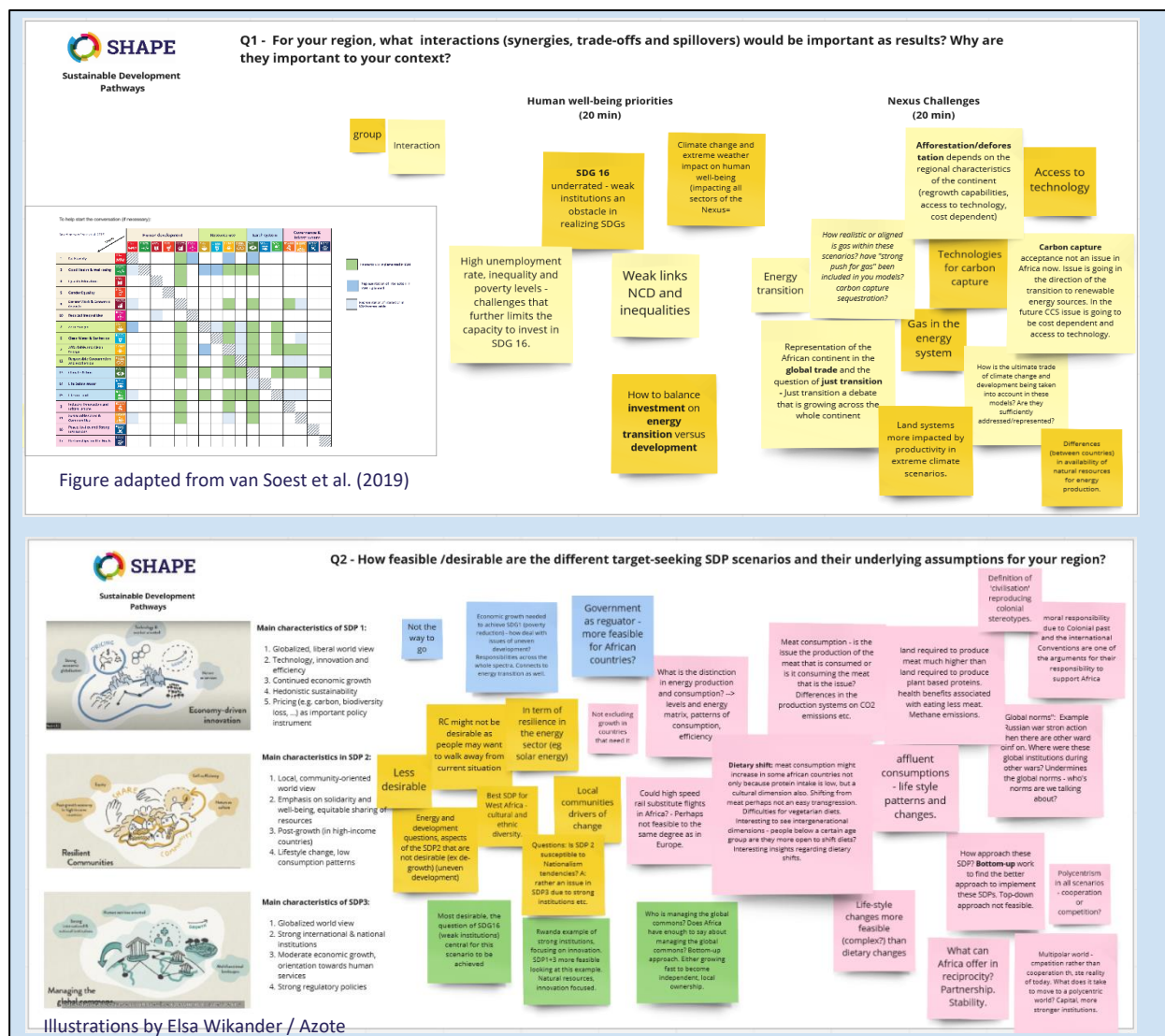


These questions were slightly adapted for the global session. The discussion was documented in real time using Miro online interactive workboards (see Figure 2). The discussion sessions ended with a brief summary of the Miro boards and the selection of one participant to present the main findings and insights during the closing plenary.

Prior to the discussion sessions, the roles for participation were clearly set: the workshop participants should lead the discussion, supported by one SHAPE colleague who moderated the discussion while another SHAPE colleague collected main discussion points on the

Miro workboard for everyone to see. In addition to these visible summary notes, extensive notes were taken by the consortium members in the background. Moreover, one “modeller correspondent” and one “governance correspondent” were assigned from the SHAPE team for each session to answer research-related questions about the modelling and its policy implications that were raised by the participants. It was attempted to keep the discussion sessions small and focused, for ease in facilitating frank discussions under the Chatham House rule. However, all SHAPE consortium colleagues were welcome to join as passive observers of the discussion.

Figure 2: Examples of the Miro boards used for documenting main discussion points.



The content of the discussions was summarised by the SHAPE team members, and sent as a session synthesis to each of the participants on the day following their respective session (see the session synthesis summaries [in appendix C](#)). This exchange allowed for further feedback from participants, including any corrections if inputs had been misrepresented, and also enabled the session's volunteer presenter to prepare a short comment for the closing plenary.

The closing plenary was structured around a panel discussion, largely forgoing presentation slides and focusing instead on short commentaries by selected participants and consortium members. The plenary started with a summary presentation (including slides) by the dialogue organisers, highlighting key findings from each

discussion session and for each discussion question. The short commentaries on regional and global perspectives were made and then the floor was opened to everyone for further questions and comments.

General remarks

We provided background material to our participants to help them understand the workshop's content. The material included a summary overview of the project and its aims; a recap of the co-development process for the narratives of the SDPs; summaries of the narratives; and examples of the quantification of the narratives into model assumptions including information on the multi-indicator analytical target space and the models used in SHAPE.

3. Workshop results and key findings

Interactions that enable or challenge the SDP sustainability transitions

The discussion group participants first addressed a question relating to the model-based scenario results that had been presented:

Q1: With respect to the SDP scenario results, what interactions (synergies, trade-offs and spillovers) are you interested in? Why are they important to your context?

The discussions started with a focus on human well-being priorities and continued to a more specific discussion of the climate-land-energy-water nexus. The discussions took this dual focus because the integrated assessment models used in SHAPE already capture nexus issues relatively well in their quantitative scenarios analysis, while the 2030 Agenda highlights various other areas of societal interest and concern that still need further development in model-based quantification and analysis.

As common themes in the well-being discussion, participants highlighted the **compounding role of inequalities**, emphasising the structural characteristics of current differences in the distribution of wealth, political and economic power, access to resources, and vulnerabilities. Participants also emphasised **the timeframes of social change**, noting that the pace of transformation needed for achieving the SDGs and Paris target faces constraints in people's capacities (knowledge, skills and agency). Sustainability transitions will not happen instantaneously following financial investments and technological innovations, but many of these social aspects are not explicitly considered in global scenario modelling approaches. **Concepts of fairness and justice**

were also discussed, both with regard to the representation of complex regional realities in the scenarios and the model frameworks, and also with regard to the different regional consequences and geographic spillover effects along the pathways of alternative decisions that would ultimately achieve the same set of targets.

Participants also highlighted issues where regional experiences and perspectives differ and where they depart from the global overview implied in the SDPs. They emphasised that **multiple realities coexist within the regions**, not only between them. The Asia discussion group focused on socio-economic and political differences, and the diverse and shifting demographics in the region. The Africa discussion group highlighted heterogeneity in resource endowments and institutional capacity. The Latin America participants emphasised cultural differences, including biocultural diversity, and the problematic effects of extractivist economic globalisation. In Europe and North America, there is less socio-economic disparity within the regions, but these regions stand apart because of the higher incidence and longer history of over-consumption and unsustainable lifestyles.

Some points raised were relevant to all SDPs across scales and regions. There was particular interest in the analysis of trade-offs and synergies affecting the socio-economic SDGs, whose integration in models is necessarily based on simplifying assumptions about economic growth and national policies. **The informal sector has a vital role for well-being** but is a challenge for such scenario exercises as it is not well reflected in global datasets. **Business action** will be essential for sustainability transitions, and it is shaped strongly by consumers and citizen demands, not only by the regulatory context. **Consumer choices about standard of living** play a decisive role in determining

what is possible in terms of sustainable development; major challenges arise in understanding and modelling shifts in social priorities and preferences. **Models are also always reliant on available data** (e.g., from the OECD databank), limiting the scope for detailed analysis of effects of social and demographic change.

The tables below summarise the key enablers and challenges for a sustainable transition that the participants put forward (table 1 and 2). This summary is structured in terms of the similarities and differences among regions in the themes raised in the discussion group sessions.

Table 1: Human well-being priorities: similarities and differences among the regions

HUMAN WELL-BEING PRIORITIES
Similarities between the regions
<p>Need for access to technology, education and (re-)skilled people:</p> <ul style="list-style-type: none"> ● Africa: Greatly widened access to technologies and education, and training in necessary skills were put forward in the context of energy transitions, especially just transitions. ● Latin America: Education was seen as a means to reduce poverty and income inequalities, and to promote sustainable management of resources. This includes traditional education and knowledge about Indigenous lifeways. ● North America: Social bottlenecks for energy and wider industrial transitions include the required scale and speed of new vocational training, social resistance to change where there is strong cultural identification with unsustainable industries, and the importance of tacit knowledge acquired through long experience – although repurposing skills might be easier for some industries than others (e.g., chemicals vs construction). <p>Tackling the challenges of structural inequalities:</p> <ul style="list-style-type: none"> ● Africa: “Past development priorities are reproducing inequalities” <ul style="list-style-type: none"> ○ Poverty levels, unemployment rates and income inequality are comparatively high across the region, making stark political trade-offs between climate mitigation and economic development decisions. ○ What was described as the “constant struggle from one crisis to the next” limits capacity to invest in SDG16 (Peace, justice and strong institutions), to ensure that climate mitigation actions also have sustainable development benefits. ● Latin America: “Inequality is better discussed in terms of exclusion”, and who suffers exclusion in the region is a complex matter of affluence, income, race and gender. <ul style="list-style-type: none"> ○ Historical root causes of stark inequalities in wealth, health and opportunities start with the region’s colonial legacy, where political and economic elites share the dominant Global North worldview, and also include decades of market liberalisation and unfair market competition. Consortium members flagged the role of extractivism by high-income countries in the region’s economies, a factor that is reflected in the project’s models.

HUMAN WELL-BEING PRIORITIES

Similarities between the regions

- **North America:** “More wealth equals more voice, more power, more agency”. This regional reality strongly affects the implementation of transformative policies.
 - Domestic energy transition faces the landlord-tenant effect, where low-income people rent houses so have little agency to switch to energy efficient technologies, while renting owners have little incentive to do so. Consortium members noted that owners and tenants are not differentiated in the project’s models.
 - Racism and the legacy of slavery and colonialism underly inequality (e.g. urban sprawl is related to structural inequalities); racist undertones in policy discourses challenge the implementation of sustainability policies and options.

Concern about concepts of justice and equity:

- **Africa:** Despite the growing emphasis on a just transition in addressing climate change, a broader conceptualization of social, economic and environmental justice is needed. The current representation of the African continent in global trade and in managing the “global commons” (informally understood as not just climate but also natural resources and biodiversity) is insufficient.
- **Europe:** The current narrow policy focus of a just transition only in energy systems should be expanded, e.g., in food systems, because of interdependencies between sectors and systems and their complex multi-region spillovers.
- **Latin America:** Unequal development, unequal access to natural resources, and the lack of strong land use rights benefits powerful sectors and large, centralised projects. This creates conflicts around the nexus and deepens divides between urban and rural communities. This manifests as SDG implementation challenges. Participants highlighted the link between SDG 16 (Peace, Justice and Strong Institutions) and SDG 15 (Life on land), and the need for a more holistic view on SDG 10 (Reducing inequalities), to consider other issues of environmental justice, like unequal access to water (SDG 6 Water and Sanitation), where water-related conflicts exacerbate income, health, and gender inequalities.

The need to take longer-term perspectives and seek for co-benefits:

- **Africa:** The pressing need for responses to near-term challenges and crises impacts the region’s capacity for implementation of long-term policies.
- **Latin America:** Long-term incentives are needed to develop and maintain sustainable livelihoods, aiming at balancing co-benefits for human development and ecological conservation.
- **Europe, Global:** Decision-makers would benefit from clearer information about the consequences for different regions that result from different choices of action.

HUMAN WELL-BEING PRIORITIES

Differences among the regions

Great disparities *within* the regions mean that addressing climate and sustainable development must consider multiple coexisting realities. These differences relate both to people's current well-being and also to the emerging challenges of navigating the climate-land-energy-water nexus.

- Disparities are largest and most obvious in Africa, Asia and Latin America, and are evident to a lesser extent in Europe and North America (*note: session participants were from USA*).
- For Latin America, discussion of the diverse realities referred to the contexts of both socio-cultural and biological diversity.
- For Asia, it was highlighted to also consider important communalities across Asia which were however less discussed in the session.

Africa:

- Despite the different realities across the continent, African countries tend to negotiate *en bloc* to reach common propositions rather than negotiating on separate country levels.
- High cultural diversity and the heterogeneity of natural resources across the region have implications for the affordability and feasibility of sustainability transitions that can achieve both climate mitigation and poverty reduction goals. Innovation cycles to break poverty traps are currently based on fossil fuel energy sources, while countries' options for shifting to renewables and carbon capture and storage are strongly shaped by their access to natural resources, social capacities, technology, and (often international) financial capital.
- There is no straightforward way for Sustainable Development Pathways to be followed for the continent as a whole. A bottom-up approach to sustainability transitions can be followed where there are weak institutions or high cultural heterogeneity; fast economic growth and independence can be pursued in other regions.

Asia:

- Socio-economic differences are stark. Some countries (e.g., Singapore) are pursuing carbon pricing and a tech-innovation approach towards sustainability transitions, while others are challenged with achieving basic economic development in an environmentally friendly way. In many areas, the informal economy plays a vital role in people's livelihoods but is not taken into account in decision-making. It was asked how the assumptions about socio-economic development take up such pre-existing conditions?
- Regionally differentiated climate impacts are increasing economic disparities, so climate policy and action are key to reducing poverty across the region. Spillover economic impacts from one country to another are a particular concern, because of their implications for interdependent supply chains and policy responses. Related implications (e.g., health differences because of air pollution) would need to be examined with regional modellers.

HUMAN WELL-BEING PRIORITIES

Differences among the regions

- Demographic changes across the region (population growth and changes in the proportions of youth, elders, etc.) have major impacts on consumption, housing, and lifestyles. Rapid urbanisation is underway, and sustainable infrastructure provision is not always able to keep up.

North America:

- The region's very low-density urban form and its widespread "big is best" mindset and sprawl aesthetics present multiple interacting challenges to sustainable urban transformation (with implications for transport and infrastructure) and reinforce social inequalities.
- In North America, the balance of private versus public sector management affects all aspects of social life. Public provision of low-emission transport infrastructure (e.g. high-speed trains instead of aviation) remains unlikely. Transport infrastructure heterogeneities across the region also mean there is less job flexibility than expected. "Food deserts" exist as it is not profitable for big companies to provide healthy food in low-income areas.
- More than in many other parts of the world, social security is tightly coupled to people's employment, so threats to jobs and livelihoods – including transition to sustainable economic production – are a direct threat to well-being outlooks at all ages. For political reasons it is hard to implement social safety-net policies, although there is broadly high social acceptance when they do exist.

A common theme in the climate-land-energy-water nexus discussions was the **high demand for more geographically detailed, consistent, realistic information** about the socio-economic and ecological consequences of different policy options. Effects of a region's actions to address the interlinked global challenges of the 2030 Agenda and Paris Agreement do not remain within the region. They can play out as complex environmental and geopolitical consequences, so better ways to explore trade-offs of alternative options are wanted. Urgency arises because **climate impacts are already experienced** and are increasingly disruptive. Basic questions were raised about **resource availability – particularly of minerals and biore-sources – for energy transitions** at regional

scales, especially in **the political and macro-economic context of increasingly liberalised global markets**.

Considering the "universal, integrated and indivisible" approach of the 2030 Agenda, the discussions emphasised the need to know more about interdependencies beyond the climate-land-energy-water nexus that is already relatively well captured in SHAPE's models. **Information is needed about links between climate action and other environmental goals, strategic objectives (e.g., circular economy) and well-being to advance policy coherence**. While many issues can be understood as "linked and with mutually reinforcing strands", **co-benefits to advance human development**

and resource conservation need to be identified. The SDPs were considered to have scope for representing and communicating about system linkages and interdependencies. Participants highlighted several uniquely regional perspectives on nexus issues. **The technically viable options for climate mitigation and energy transition** differ strongly by region, as does **the social feasibility of implementation of different options**. In Latin America, the land / climate connection is a high priority because of the links to deforestation and property rights. In Africa and Latin America, management of water resources is increasingly recognised to require a more holistic view of the whole water cycle, linked to land use and climate change. In several countries in Asia, land

area may be a constraint to a shift to renewable energy systems. While in the USA, politics appears to be an obstacle to nexus approaches to energy transition and the redeployment of existing infrastructure, Europe is seeing the discursive integration of climate action into other political agendas, such as food systems and circular economy. Systematic overuse of resources and over-consumption are specific Western issues leading to major questions and uncertainty about the type of resource use: sufficiency, circular economy and its implications beyond materials, interactions with decent work, economic growth and inequalities are part of the policy discourse.

Table 2: Climate-Land-Energy-Water Nexus challenges: similarities and differences among the regions

CLIMATE - LAND - ENERGY - WATER NEXUS CHALLENGES
Similarities between the regions
<p>Information is needed about nexus links, unintended consequences and trade-offs:</p> <ul style="list-style-type: none"> ● Asia: National Adaptation Plans tend to be too narrowly focused on climate, lacking links with other development goals. Environmental issues (like air pollution) are given lower priority than economic and infrastructure development. Unintended consequences of energy transition already include the displacement of local communities for expansion of hydro-power, geothermal energy, bioenergy and the extraction of key minerals. ● Europe: Improving policy coherence is a political priority in the region and also for international development cooperation. It requires better information about links between climate action and other environmental and well-being goals, and about alignment with other strategic objectives (e.g., circular economy). ● Latin America: There is a need for information to support equitable accessibility to resources that maintains conservation of the environment and ecosystem services. Emerging challenges include the impact of mining (lithium) and large-scale wind and solar farms on rural communities and the environment. ● Global (cross-scale dynamics): Decision-makers need more examples of the trade-offs between specific options for climate action (e.g., electrification) and other environmental objectives (raw materials, water resources) than the current relatively small and generic set of analysed nexus challenges.

Regional availability of resources is a crucial question:

- **Africa:** Different regional endowments of natural resources for energy production constrain national options and have serious implications for regional development.
- **Asia:** The lack of physical space for energy transitions and bio-based climate mitigation in some countries needs to be better recognised as a resource constraint.
- **Europe:** Both internal and international politics will be sensitive to the supply and demand balance of natural resources needed to meet climate goals, especially minerals for infrastructure construction and renewal.
- **North America:** Minerals tend to be imported and biomass is available domestically, strongly affecting the feasibility and climate impacts of alternative energy options.

Climate change impacts are already experienced and disruptive:

- **Africa, Latin America:** Desertification associated with land use changes is a problematic issue, which impacts all other sectors within the nexus.
- **Asia:** Although regional exposures differ, monsoons, extreme events and natural disaster risk are major factors hindering poverty reduction. Climate action thus brings an important focus on synergies for adaptation (with respect to food, health, etc.).

Market liberalisation, especially of the energy sector, is a worldwide trend.

CLIMATE - LAND - ENERGY - WATER NEXUS CHALLENGES**Differences among the regions**

Climate mitigation approaches and energy transition technologies differ greatly, affecting the regional relevance of globalised assumptions. **Participants recommended that the SHAPE team compares SDPs with other kinds of climate / energy scenarios** and the lessons learned from them.

Africa:

- South Africa is emphasising the shift from its current high reliance on coal for power to gas-fuelled energy, but depending on the details of mitigation policy, fossil gas may compete with zero-carbon renewables.
- The interplay of climate mitigation and poverty reduction is complex. Gas is often seen as a solution to provide affordable clean energy to communities in the short term.
- Despite political commitments, carbon capture and storage has not yet been implemented satisfactorily in the region, and scaling up depends on access to funding and technology.

Asia:

- Energy security is perceived very differently across Asia. Although there has been a general shift towards cleaner and more efficient energy sources, different countries emphasise
-

Differences among the regions

affordability, accessibility, availability and constancy of supply to different extents. For example, in the Philippines ensuring affordable electricity prices has taken first priority.

- Different priorities and strategies arise due to differences in geographies and resource endowments. For instance, space-constrained Singapore and Brunei focus on energy efficiency, while large-scale technology is more viable in Indonesia and the Philippines.
- Natural gas plays a huge role as a bridging technology toward decarbonisation. Distributed energy systems need to be mainstreamed to support energy transition on the region's many islands, requiring investment both in technology hardware and knowledge transfer.
- Public-private partnerships are important, especially in southeast Asia, as private companies are investing in technology and even capacity building for the energy transition.

Europe:

- Decarbonisation in the region faces operational feasibility concerns (e.g., whether required levels of bioenergy and carbon capture and storage are achievable in terms of land availability) – and the political challenges of reliance on offsets that “export” problems.
- Policy discourses on resource use systems include sufficiency and circular economy. A focus is on food systems, with socio-cultural as well as economic and environmental dimensions.

Latin America:

- There are complex social and environmental consequences of telecouplings, such as local effects of European policies (product bans, import tariffs) related to deforestation.
- Water cycle management needs to be considered holistically within the nexus.

North America:

- Existing continent-wide power grids could be deployed for alternative energy sources, but such shifts often face strong social opposition (e.g., to off-shore wind for aesthetic reasons).

Regional perspectives: Feasibility and desirability of the three SDP scenarios

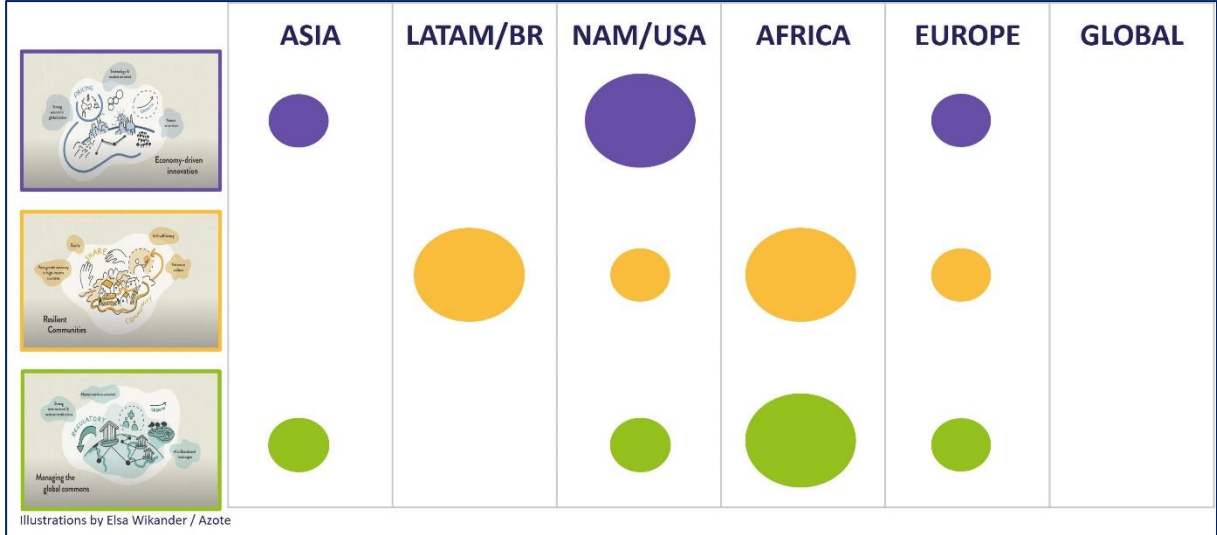
The second question that the discussion group participants addressed during the workshop was:

Q2: How feasible and / or desirable are the different target-seeking SDP scenarios and their implied assumptions for your region?

The discussion started by addressing the key assumptions of each SDP scenario (summarised in brief in the table headlines below; see

also box 1). The SDPs are, of course, stylized pathways towards sustainable development and the reality of the transition towards the achievement of the SDGs and the Paris climate target will contain a mix of strategies represented in the individual SDPs. Nevertheless, some discussion groups showed rather clear preferences in terms of the feasibility and desirability of a certain SDP scenario for their region, while other discussion groups emphasised that all SDPs have elements that are relevant to their region, or that a mix of two SDP transition approaches would be desirable (see Figure 3).

Figure 3: The preferences for / feasibility of the SDP scenarios across the discussion groups.



Participants of the Latin America session showed an overall strong preference for the SDP scenario “Resilient Communities” recognizing that bottom-up processes are already in place, as for example in Brazil. **Lack of trust in business and governance in the Latin American region** make the other two SDP scenarios appear less desirable although single existing market structures and fair pricing might also enable an economy-driven transition. In the Africa session, most potential was seen in the SDP scenario “Managing the Global Commons” – **if global institutions and norms were less**

dominated by the Global North and Africa could strengthen its position there. The strong cultural and ethnic diversity in West Africa favours a bottom-up approach as envisioned in the SDP scenario “Resilient Communities”. The SDP scenario “Economy-driven Innovation” was generally opposed, but for African countries with strong institutions, such as Rwanda, this scenario’s more service and market-oriented transition pathway appears suitable. Economic development is still needed in Asia and the business sector plays an important role by investing and partnering with the public

sector. However, *reducing the huge economic disparities among and within Asian countries is a priority*. The SDP scenario “Managing the Global Commons” was therefore seen as desirable, but possibly mixed with elements of the SDP “Economy-driven Innovation”. *All SDP scenarios were considered to contain elements that are important and relevant for Europe*. From a European perspective¹ effective means of governance towards sustainability include a mix of economic incentives, targeted support for small and medium-sized enterprises with circular & sustainable design (e.g., via regional circularity hubs), and more stringent regulation, such as now being prepared in the Sustainable Products Initiative (minimum requirements for products) and the Corporate Sustainability Reporting Directive. The North America discussion showed *discrepancies between the desirability of certain SDP scenarios as opposed to their feasibility*. The SDP scenario “Economy-driven Innovation” seemed to be rather feasible while not necessarily more desirable than the other two scenarios.

Most discussion groups put a large focus on the SDP scenario “Resilient Communities”. This SDP may have been seen as the most different from today’s reality and reactions included both much appraisal and desirability of such a bottom-up approach, and also close scrutiny about this SDP scenario’s assumptions. Discussions dealt especially with the feasibility of lifestyle change, GDP degrowth and the risks of polarisation due to trade restrictions and emerging populist nationalism. It was further recommended to give best-practice examples of existing resilient communities to provide a better understanding of how to envision such a “Resilient Communities” scenario.

Table 3 below summarises the discussion groups’ key insights with regard to each of the SDP scenarios. Discussion groups where major diverging views on the SDPs were put forward by the participants are highlighted in blue.

Table 3: Key discussion group insights on the feasibility and desirability of the three SDPs

<p>ECONOMY-DRIVEN INNOVATION</p> <p><i>Market actors play a key role in driving transformation through deployment of technologies and market solutions; the focus is on an efficient market economy to maximise value-added in an economically globalised world.</i></p>
<p>Africa – divergent views: This SDP is the least desirable to some participants, but it is also perceived as feasible for certain African regions (Rwanda was highlighted as an example).</p> <ul style="list-style-type: none"> • The “Economy-driven Innovation” scenario would require more participation from African countries in the globalised economy, however there is uncertainty about real multilateralism. (These concerns also apply to the scenario “Managing the Global Commons”.) • Economic growth is needed to reduce poverty (SDG1), yet maybe not exactly as envisioned in this SDP.

¹ This comment was sent via email as the participant could not take part in workshop discussion.

ECONOMY-DRIVEN INNOVATION

Market actors play a key role in driving transformation through deployment of technologies and market solutions; the focus is on an efficient market economy to maximise value-added in an economically globalised world.

Asia:

- The urban-rural relation and accelerated migration towards cities inflicted by inequality is already a big issue: the role of megacities as part of this SDP scenario for efficiency and growth scale-up is a priority concern.

Europe:

- The EU puts considerable focus on both technical *and* social / governance innovation. The SHAPE project's definition of "innovation" is unclear to participants, who questioned what aspects of innovation are included in this SDP.
- There are concerns regarding the feasibility of certain technologies: e.g., is the level of carbon capture and storage to meet climate goals achievable in terms of land requirement?
- If economic efficiency is to help reach the SDGs and climate goals, a drastic systems change is required. This could be achieved by introducing True Pricing as an instrument.² In the period until True Prices can be accurately set for all products and services, it is possible to work with proxy measures to nudge purchaser behaviour towards sustainable products.

Latin America – divergent views: Most participants perceived this SDP scenario as not desirable, but some considered it the most feasible scenario.

- Market structures are already in place, e.g., in the energy sector. Pricing could be a solution but only if it is fair and well coordinated.
- Afforestation is not seen as desirable and the focus should be put on forest preservation (in Brazil).
- A focus on imported, non-traditional technologies, like wind power, is seen critically.
- With regard to globalisation, it would be important to find out more about how global policies and EU policies impact Latin America (telecouplings).

North America:

- Current general assumptions on globalisation will not and cannot stay the same over time. A less globalised world might benefit domestic job availability. Operating in globalised markets means that materials get exported even if they are produced domestically which can be problematic. (These concerns also apply to the scenario "Managing the Global Commons".)
- In the USA, channelling social services through for-profit businesses has not done well at spreading economic gains through to people. The mechanism for distribution is a concern.

² This participant could not take part in workshop discussion but shared insights via email.

RESILIENT COMMUNITIES

Networks of social actors (civil society, private sector and government actors) jointly drive transformation; the focus is on behaviours that support solidarity, well-being, social cohesion and green innovation.

Africa – divergent views reflect regional diversity across the continent:

- This SDP might be most feasible and desirable in some regions, because strong and resilient communities may correspond to the cultural and ethnic diversity of many countries, in particular in Western Africa (see also above, “multiple realities” in Africa).
- However, it was also argued that people might want to depart from the current situation of cultural fragmentation and heterogeneity, which makes this scenario less desirable.

Latin America – divergent views reflect different perspectives on feasibility of change from current trends in the region:

- This SDP is considered desirable because of the emphasis on sharing social gains and responsibilities and environmental benefits. Nevertheless the “up-scaling” of resilient communities remains a challenge.
- Some participants view it as feasible as it can build on strong social movements and bottom-up initiatives.
- Other participants see the region as heading towards economics-driven globalisation and consider continuing along such a pathway more feasible than “Resilient Communities”.

Lifestyle changes are an important assumption in this SDP, and the different regions emphasised different aspects:

- **Africa:** Overall consumption in Africa is far lower than in Europe, for example. Yet, the behaviour and culture of affluent people exert a strong influence and thus required lifestyle changes might be hard to achieve. More information is needed on inter-generational shifts for example with regard to dietary patterns.
- **Asia:** Shifts in social priorities and preferences as well as consumer choices for a pro-environment behaviour are major challenges.
- **Europe:** Although this SDP has a very strong reliance on lifestyle changes, there are some indications that these are feasible assumptions in the EU region.
- **Latin America:** There are already seeds of lifestyle changes. Examples of resilient communities are the landless workers movement settlements, rural and indigenous communities, the middle-class and youth movements towards resilient lifestyles, etc.
- **North America:** In the USA, lifestyles may change very fast and a huge variety of lifestyles already exists. However, infrastructure turnover is slow and although desirable - also in terms of job creation through infrastructure investment - a large-scale shift to smaller houses or in particular to different transportation is unlikely (see related modelling questions in appendix).

The local focus of this SDP prompted discussion about its relationship to economic growth, degrowth and societies’ susceptibility to nationalist tendencies:

RESILIENT COMMUNITIES

Networks of social actors (civil society, private sector and government actors) jointly drive transformation; the focus is on behaviours that support solidarity, well-being, social cohesion and green innovation.

- **Africa:** Participants asked for clarification on the degrowth assumption of the “Resilient Communities” scenario as economic growth is needed in Africa for development. The consortium clarified that the degrowth assumptions only apply to high-income countries. This SDP also raised concern about nationalist tendencies because of its local focus.
- **Europe:** Participants observed that the tax and welfare system is still reliant on growth. It was questioned whether degrowth is automatically good for the climate and sustainability. This was countered with the question of what societies want the economy to achieve. Growth might be a by-product of efforts to achieve a sustainable economic system. While a degrowth approach can also be positive (if it is based on solidarity or pursuing local solutions), nationalist tendencies, related trade restrictions and security concerns need to be kept in mind.
- **North America:** The close connection of jobs and economic growth makes switching to post-growth only possible if effective redistribution comes into place. Although this would physically be possible, pursuing a post-growth approach is extremely challenging due to personal, structural and political reasons behind it.
- **Global session:** Questions were raised about fundamental definitions of “local” and assumptions about the way that funding is driven to the local level. In order for the “Resilient Communities” scenario to be plausible, predetermined underlying drivers and intended targets need to be clarified and articulated. From an energy sector perspective, disruptive trends are emerging for the energy industry, with a world characterised by lower population growth, radical new technologies, greater environmental challenges, and shifts in economic and geopolitical power (WEC 2016 Long-term scenarios: The Grand Transition).

Reflections on other assumptions in the “Resilient Communities” scenario:

- **Africa:** High speed train networks are considered unlikely due to the continent’s size. Regional differences are great. For instance, West Africa has good potential for a decentralised energy sector (solar energy panels).
- **Europe:** With regard to social cohesion, the “Just transition” is currently a policy focus in Europe. While it focuses on the energy transition and challenges faced by fossil fuel-based communities, the policy should also be expanded to food systems.
- **Latin America:** The preservation and natural regrowth of vegetation, as assumed in this SDP, is rather more desirable than afforestation that is assumed in the other SDPs.

MANAGING THE GLOBAL COMMONS

Governments drive transformation, enabled by strong statehood and effective institutions for multilateralism, and strong social globalisation based on universal human values. The focus is on efficacy in reaching global goals.

Africa: This SDP is considered as very desirable but at the same time problematic for Africa.

- This scenario would require more participation from African countries in global governance institutions and platforms, however there is uncertainty about real multilateralism.
- Global institutions and norms are dominated by the Global North. The assumption of polycentrism in this scenario does not reflect the current world situation. A bottom-up construction of the global commons is necessary to avoid the dominance of the Global North and to create real multilateralism and cooperation.
- Moreover, institutions are often weak in African countries, although there are exceptions as the example of Rwanda shows.
- From this perspective a mix of “Resilient Communities” and “Managing the Global Commons” is considered suitable.

Asia:

- The region’s different institutions and contexts strongly affect the scope for regulation and implementation of strategies (see also above “multiple realities”). Policy instruments such as carbon pricing are unlikely to be feasible for the whole continent. Participants asked whether SHAPE’s analysis addresses these disparities.
- A reduction of the huge economic disparities between and within Asian countries is desired, and economic development is still needed. Moreover, consumer choices are seen as drivers for businesses to change.
- “Managing the Global Commons” was seen as the “modest option” and therefore desirable. Given the large role of business, a mix with the SDP scenario “Economy-driven Innovation” might characterise this region.

Europe: International relations, standards and regulations remain critically important.

Latin America:

- There is very little trust in the ability and willingness of governments and business corporations to lead the transformation.

North America (USA):

- Although in principle very rapid changes in policy are possible, there is always the question of who benefits from a certain policy? For these reasons there are physical and legal barriers to change as envisioned in the scenario “Managing the Global Commons”.
- The USA is very different in what policy instruments and approaches are feasible compared to Europe for example.

Box 4: Additional literature & resources suggested by our participants:

On rural development in the US and energy systems:

[Powering Rural Economic Development with Renewables](#)

[The Evolution of Rural Solar: from Panel Monocrops to Multiple Land Uses](#)

On bottlenecks for the replacement of fossil fuels with renewable energy:

[A Bottom-up Insight Reveals: Replacing Fossil Fuels is Even More Enormous Task Than Thought](#)

On green growth:

[Reflecting on green growth - Creating a resilient economy within environmental limits](#)

On enablers for the transformation:

[Ecopreneur.eu advocates Circular Acceleration Houses in all EU regions](#)

[European Circular Economy Stakeholder Platform \(ECESP\) Coordination Group: Leadership Group on Economic incentives - Orientation paper](#)

On methods for linking local-to-global scenarios:

[Senses project](#) (some SHAPE consortium members participated)

On SDP scenario usage in other contexts - the NEXUS project:

[Nexus - caminhos para a sustentabilidade](#)

Insights for the communication and dissemination of the SDP scenarios

The workshop discussions yielded additional insights for the analysis of the SDP scenarios and the communication about the scenario results, beyond the region-specific insights discussed above and beyond the quantitative modelling itself. Table 4 summarises these key needs and cross-cutting recommendations.

On the thinking of international actors in politics

SDP scenarios need to show why climate change mitigation and SDG achievement should be a higher priority on political agendas. Actors in politics are very interested in areas where cooperation between countries makes sense, but **(shared) short-term agendas are generally prioritised over long-term perspectives**. Recent developments have shown clearly that **geopolitics matters**. For instance, the war in Ukraine shows how security issues and energy affordability become primary concerns and are also direct drivers of shifts in resource use and related emissions, undermining recent sustainability gains.

Scenario modelling outputs are usually not directly used by politicians at any level, but political discourses worldwide highlight **the urgent need for quantified analysis of human well-being and inequality issues**. A systemic picture is needed that goes beyond the climate-land-energy-water nexus and links it to social aspects at all levels. Generally, links of interest are relationships of climate action with inequality, the links among land, water and food systems, and issues of well-being and poverty reduction. Moreover, **the provision of scenario-based information about thematic clusters** comparable to the concept of the climate-land-energy-water nexus is more helpful for actors in politics than narrow analysis zooming

into single SDGs or using single model systems. A reasonable scope for new clusters that cover broader areas still needs to be determined.

Technical feasibility needs to be evaluated against the social feasibility of the changes required to achieve sustainability goals. Participant feedback emphasised that the technical feasibility of meeting the Paris targets and SDGs as assessed in the SHAPE models is not always aligned with transition discourses and trends in society. In this regard, a question put forward (in the European session) is whether social, economic and technical feasibility are equally important aspects?

On the communication and dissemination of SHAPE's results

SHAPE's research communications need to **align with regional policy strategies and objectives and also address the urgency of coordinated action across governance levels**. Multi-target seeking scenarios, such as the SDPs, are not prescriptions for societies' transitions towards sustainability, but they can help to better inform the different choices that decision makers (and others) can make. By spelling out and modelling specific pathways towards the achievement of multiple targets under the SDGs and the Paris Agreement, the SDP scenarios analyse interactions and consequences of actions. The SDPs may thus help inform questions about potential long-term consequences of short-term agendas and what issues or monitoring priorities should be focused on.

It was further recommended that SHAPE should **highlight the benefits of multi-target-seeking analysis** more clearly. This type of scenario seems to be less known than exploratory scenarios that extrapolate current trends without meeting a specific target at a specific point in time. Because the endgoals are defined

through policymaker agreement, implying that policymaker support is already in place, target-seeking scenarios can make comparatively optimistic assumptions. Compared with exploratory scenarios, these assumptions and pathways risk appearing unrealistic – and in the worst case, less suitable for multi-actor implementation. It was recommended to **cross-check the assumptions of the energy aspects** of the SDPs with other energy scenarios, and also to **consider the realism of assumptions about the speed of social, institutional and infrastructural change** (see also section 3.1). A broader community of scenario users will want to know **how the SDPs compare to business as usual or baseline scenarios**, for instance, to conduct risk analysis that assesses the costs of SDG and climate inaction. By analysing where the world is today compared to the SDPs, highly pressing issues and monitoring priorities may be identified.

It is important to **bear in mind the different recipients for SHAPE's results**. Societal objectives and timeframes go beyond the long-term climate and SDG focus of the SDP scenarios, including for example pressing security issues, pandemic management, and related efforts towards regionalization. **Multi-level regional analysis is needed**, also within continents. An issue highlighted especially for the EU countries is the importance of knowing what action is required on a country level and what at a (higher) structural level, as both levels are relevant to policy development in Europe. Further needs include **knowledge about policies and strategies that are robust across all SDPs, as**

they are expected to offer most potential regardless of which future might unfold, **indications of timelines and milestones that keep options open**, and **warnings of path dependencies and lock-ins**.

Addressing the tendency to view the three SDPs as “either-or” options or completely different worlds can be worthwhile. It was highlighted that in reality, a mix of the strategies incorporated in the individual SDPs will be applied. All SDPs map out cornerstones for sustainable development that fit under today's global agreements for action on climate change and global sustainability, so to some extent they imply similar strategies, but the pathways put their emphasis on different mechanisms and dynamics to reach these agreed societal goals (see also Box 5).

Lastly, but not less importantly, participants emphasised the crucial importance of **clear communication about the assumptions** behind any given model analysis and scenario results. Emphasis was placed on the increasing focus on the quantifications of well-being and inequality, which are difficult to represent in SHAPE's IAM modelling frameworks. Particular emphasis was given to aspects of the SDP scenario narratives that are not represented in the models but that are vitally important to discuss for the success of the governance of sustainability transitions, such as the complex role of race relations and the history and legacies of colonialism. Table 4 summarises these issues of concern and recommendations.

Table 4: Key needs and cross-cutting recommendations beyond the region-specific insights

- **SDP comparison to business as usual and baseline scenarios is needed;**
- **Cross-check the SDPs with other energy scenarios** and the lessons learned from it;
- Reflect on the **possible speed of social, institutional and infrastructural change;**
- **Global and regional (also intra-regional) level analysis is needed:**
 - What action is required on a country level and what at a higher structural level?
 - Trade-offs between climate action and broader environmental goals
- **Knowledge about choices of short-term action and their (long-term) consequences:**
 - **What strategies are robust across all SDPs?**
 - Path dependencies, lock-ins: What pathways are really **unfeasible**? From a policy perspective it is important to know which are actions that might reach a 2030 target but may prevent reaching longer term goals and block other responses.
 - What are major milestones and timelines?
 - For emission peak and implications for the 1.5°C target
 - Give examples for concrete steps, such as “Retiring carpark in 5 rather than 15-20 years.”
 - Make results relatable by indicator choice: The example was given of final uses of energy instead of final energy consumption.
 - “Lock-outs”: what actions can prevent a return to unsustainable developments?
- **Quantified analysis on human well-being and inequality is needed** as well as linking this analysis with the CLEW nexus.
- **Thematic clusters** are rather helpful than single SDGs or model analyses: the question is what can be useful clusters?

- **Ensure that SHAPE’s research communications align with regional policy strategies and objectives:** e.g., the EU’s Green Deal and climate neutrality, circular economy and enhanced natural capital, implications for international and sectoral competitiveness;
- **Address the tendency to look at the three SDPs as “either-or” options or completely different worlds:** however, all SDPs map out cornerstones for sustainable development but put their emphasis on different mechanisms and dynamics (see also Box 5);
- **Communicate key SDP assumptions** for easy understanding of the SDP results. The use of examples that illustrate the assumptions can be helpful;
 - There is also a need to **clearly indicate important aspects of the SDP scenario narratives that are not represented in the models but that need discussion via other routes:** e.g., the role of race relations, the history and legacies of colonialism;
- **Clarify the purpose of (multi-)target-seeking scenarios and the target space.**

4. Discussion and outlook

The use of SDPs

The goal of this SHAPE Multi-Stakeholder workshop was to present first preliminary quantitative results of the new SDP scenarios in order to foster the discussion about their use in multiple contexts, while at the same time obtaining feedback for the final model runs and the dissemination of the SDP scenario results. Two key benefits have already been obtained:

- **Dialogue as a goal in itself:** The workshop discussions enabled an active exchange between stakeholders, further research experts and the SHAPE consortium, yielding insights on region-specific as well as cross-scale challenges, enablers and preferences with regard to the sustainability transition. By providing a platform for knowledge exchange and putting the SDP modelling in the wider context of real-world implementation of the sustainability transitions, the dialogue is therefore a goal in itself. The experience gained can serve as an input for further *science-policy-society* dialogue on sustainability transitions and the following part of the report will include, among others, a short reflection of the SHAPE multi-stakeholder dialogue experience.
- **Specific feedback about SDP scenario user needs:** This workshop provided specific feedback on needs of sustainability scenario users resulting in specific recommendations for SHAPE's modellers, such as for example the comparison of the SDP scenarios to "business as usual" scenarios and to cross-check energy assumptions (see Table 4). Workshop participants also

put forward concrete suggestions for SHAPE's communication of the SDP results such as a clarification of the benefits and novelty of multi-target-seeking scenarios and a stakeholder-specific presentation of results.

The discussion contributions, especially the preferences for certain pathways, need of course to be assessed in the context of the multiple backgrounds of our workshop participants. Contributions reflect heterogeneous regional experiences with governance and corporate structures, and different arenas for regional civil society activity, resulting in different opportunities and challenges for sustainable development and climate action. For example, in the Latin America session, it was put forward that Brazil's experience of strongly increased deforestation since the election of its last government had led to very low trust in the government. The widespread distrust in government and business corporations in Latin America was said to lead to very different perceptions of approaches for the transition process compared to those in Europe, where the SHAPE project team is based.

Given these pre-existing conditions in the world's different regions, an overarching challenge presented to the SHAPE project team was: ***is SHAPE going to describe how transitions to sustainability are taking place?*** Of course, this analysis would be far beyond the scope of any one project! And the task of describing and navigating transformations to sustainability also extends far beyond the scope of academic research alone. SHAPE's global Sustainable Development Pathways are certainly not prescriptions for society. But we believe that the project's approach and findings mean that regional experiences in transformation for sustainability may be brought together better in future. SHAPE demonstrates the value of a combination of flexible ***co-created scenario***

narratives, quantified scenario model runs that provide information about most of the SDGs, **knowledge-sharing** about the important common ground and the points of divergence in sustainability pathways, and an **ongoing dialogue** involving a wider group of researchers and research users with an active stake in the outcomes of stakeholder-engaged research.

SHAPE's modelling of the SDPs is primarily *transformation* research, closely integrating modelling, governance insights from the social sciences, and stakeholder feedback on possible transformation pathways. SHAPE is investigating interactions between the SDGs and the climate target under the assumptions made by the (stylized) SDP scenarios, including analysis

of effective means of governance for transformation. Its analysis is intended to help inform decision making about long-term consequences, milestones and timelines of sustainability transitions. SHAPE's branching-points approach is deliberately flexible to allow for nuanced scenario analysis, recognizing that societies have a mix of governance options and mechanisms (Box 5). However, it remains up to decision-makers to make the choices about policy channels and instruments for their own contexts of action. Further transdisciplinary research on multi-target-seeking SDPs should therefore prioritise issues of governance and policy for the implementation of the sustainability transition. In this regard, social science research provides essential evidence about the

Box 5: The SDPs are not “either-or” options for the world’s sustainability transition

Although the quantitative modelling exercises require the SDP scenarios to be stylized pathways that are sufficiently distinct from each other, the SDP scenarios do not describe completely different worlds but imply nuanced approaches for transitioning from current societies towards sustainable and climate friendly societies. All of the SDPs map out cornerstones for sustainable development aiming at the achievement of the United Nations’ SDGs and the Paris Climate Agreement. The SDPs put their emphasis on different mechanisms and dynamics such as pricing in “Economy-driven Innovation”, and behavioural change in “Resilient Communities”.

*Looking at **the role of public-private partnerships in the SDP scenario narratives** illustrates the differences in emphasis. Public-private partnerships play an important role in the narratives of all SDP scenarios but undergo different nuances or dynamics.*

For example, in the scenario “Managing the Global Commons”, this partnership occurs within smaller policy networks (e.g., for energy efficiency) where the scope of the network is defined by the state. Between policy networks there is sometimes competition, which in turn further advances the collaboration within the network.

In the “Resilient Communities” scenario, public-private sector partnership has two stages. First, there is partnership between business and civil society. The state facilitates this partnership. In the second stage, the state partners with civil society to monitor quality and compliance of the business sector.

In the scenario “Economy-driven Innovation”, the state identifies and defines the problem, business is “tapped” to offer solutions, and the state subsequently aligns these solutions with other political priorities – similar to the social market economy principle in Germany. In other cases, the state “franchises” some state services to the business sector, following the logic that a “lean government” can act quicker to solve problems. As in a franchise system, quality assurance is a big issue, the state can take the services back if the quality of service delivery is not satisfactory.

real-world governance implementation of sustainable and climate-friendly development, specifically on aspects from beyond the global integrated assessment modelling context. Transdisciplinary dialogue formats, involving various (cross-)sectoral and regional perspectives, can inform scenario-based research and make it more inclusive (as SHAPE seeks to do) and also provide a way to move into the direction of *transformational* research, directly impacting the governance of the transition. Such dialogue can address important aspects of the SDP narratives that cannot be represented in the models but that are essential to discuss for a successful governance of the sustainability transition. Such aspects include cultural and ethnic diversities and redressing the legacy and harms of colonial exploitation. Using the SDP scenarios for further regional dialogue events would strengthen a continued science-based dialogue across regions and sectors, as the [NEXUS project](#) is currently doing. Such dialogue may however also require the establishment of more formal and permanent structures for transdisciplinary knowledge exchange and co-generation. It could for instance also entail formats for regular “question and answer” sessions between IAM researchers and for example representatives of national government bodies, linked to existing global sustainability forums such as the IPCC, IPBES and Global Sustainable Development Report processes.

Reflections

The April 2022 workshop was the last event of a series of active dialogue events within SHAPE (although a dissemination event is planned for early 2023). The following is a brief reflection on the process from the perspective of the dialogue organisers that takes up feedback received from workshop participants and intends to share “lessons learned” on the co-creation of global scenarios for IAM.

The SHAPE dialogue as a process – As outlined in the introduction, SHAPE’s stakeholder engagement consisted of a series of events that were connected to each other and designed for continued outreach with stakeholders and experts, rather than single “drop-in” events. Despite participation fluctuating to a certain degree, a good number of stakeholders and experts stayed with us over the project’s course, returning for the dialogue events. We perceived the evolving process design as helpful for the learning experience, both for external stakeholders who accompanied the scenario development from the inception of the narratives to a first set of results, and for the consortium who had to present and discuss project milestones. The dialogue was divided into two different phases which moreover allowed for new stakeholders and experts to join and share their expertise. Re-opening the dialogue for new input and insights was very beneficial for the second workshop as it allowed for regional discussion groups.

Conducting all engagement events online in the Zoom environment and aided by online collaboration tools (Miro, Mentimeter) provided much flexibility in the planning process and helped the global outreach. Online engagement makes it easier to schedule additional information sessions or to conduct regional focus sessions according to local time zones. Online sessions are moreover very cost efficient while enabling engagement with many people worldwide. Nevertheless, establishing contacts with potential participants in the first place remains a crucial challenge independent of the advantages of an online setting. We would also like to echo the feedback received from our participants that global sustainability scenario initiatives should pursue a stronger collaboration with sub-Saharan African countries, and non-Western regions in general, taking the opportunities that online working confers.

Science-policy communication – A major challenge in multi-stakeholder dialogues is the diversity of knowledge bases depending on the participants’ professional backgrounds. At the same time this is also a major opportunity and the reason why such dialogues are conducted. Developing a shared understanding requires a certain openness and willingness to learn, thus a certain mindset of all dialogue participants (including the consortium). The provision of adequate informational material and visualisations is also helpful to support a shared understanding. The online format poses particular challenges such as ensuring readable text fonts and figures when in screen sharing mode. Preparing workshop participants for the discussions is important. At each event a short repetition of the project’s goal and state of work was integrated, and additional information was provided to new stakeholders in the form of a concept note and videos. Jargon and complexity are major challenges for successful communication, next to allocating sufficient time for the necessary discussions and clarifications (which are also needed within the consortium). The structuring and moderation of discussion groups moreover needs to ensure that all voices can be equally heard. It is important to create an atmosphere where all participants feel comfortable to share their perspective.

The SHAPE dialogue involved a good number of stakeholders from non-academic organisations, but the proportion of stakeholders without a research background was relatively low. The complexity and abstractness of the modelling exercise might be a reason for this. Many

non-academic stakeholders are very interested in SHAPE’s results, highlighting the need for holistic quantitative SDG and climate scenario analysis, but time constraints often prevented these stakeholders from an ongoing active participation in the discussions. We believe nevertheless that offering the opportunity for ongoing participation throughout the whole scenario creation process is valuable. It informs the co-creation of narratives and also fosters a deeper understanding of the quantification of narrative assumptions and the scenario modelling results. However, feedback also suggested that participation in the narrative co-development was perceived as more valuable than reviewing the preliminary model-based analysis results and discussing their implications. Feedback further suggests that the communication of the SDP results should be tailored to the different target audiences, something that is being taken up by the SHAPE consortium for the final stages of the research.

Transparency – An important part of our dialogue methods, in particular for the April 2022 workshop, was to share the syntheses of our session notes with the participants. In that way, they were given the opportunity to review, complement and correct the notes before the workshop organisers used them as input for further discussion within the consortium and for the workshop reporting. In addition to the session notes, we also shared presentation slides, some session recordings (not all sessions were recorded), content material for information purposes, and report drafts with the stakeholder group.

Participant's feedback on the workshop

A short online evaluation among the workshop participants (n=8) showed that overall, the integration of close stakeholder interaction in the development process of new target-seeking scenarios as in SHAPE is perceived as very important. The April workshop was overall received positively. Participants considered the workshop's aim to be clear and the discussion questions helpful to think of priorities, actions and strategies for the sustainability of their regions, although feedback suggests that these aspects can still be improved. Our participants felt comfortable to share their own perspective and the background material that was provided prior to the workshop was considered helpful. The overall SHAPE dialogue process was considered clear or mostly clear. Written feedback and recommendations from our participants included:

- **Clearly define the target audiences** for SHAPE's scenarios and results: in what ways can the different stakeholder groups (policy makers, business leaders, ...) use the scenarios?
- **Preparation is key to enable effective participation in the workshop:** better dissemination of background material, including ensuring on-screen readability, would prepare participants better for the questions that were discussed
- **Pursue a stronger collaboration with sub-Saharan African countries** as their capacity for adaptation to climate change is still low while vulnerability remains high
- **Draft calls for action early in the process** that will become increasingly evident and refined (or challenged) from the conclusions that will be supported by the scenario work

Results of the online evaluation for the April workshop									Mean:
In general, how do you evaluate the SHAPE workshop? (100=It was interesting and fun!)	80	91	71	70	85	93	70	80	80
Was the workshop's aim clear to you? (50=mostly clear, 100=very clear)	80	90	70	40	70	74	70	70	71
Did our two workshop questions help you to think of priorities, actions and strategies for the sustainability of your region? (100=very much)	90	81	85	60	70	82	50	70	74
During the discussion sessions, did you feel comfortable sharing your own perspective? (50=mostly, 100=yes)	90	96	70	50	85	84	80	90	81
Did you find the background material helpful to understand the content of the SHAPE workshop? (50=mostly helpful, 100=very helpful)	80	80	49	50	75	88	80	90	74
In general: How important do you think it is to integrate close stakeholder interaction in the development process of new target-seeking scenarios? (100=very important)	100	100	100	100	85	81	70	100	92
If you have been part of the SHAPE dialogue from the beginning in 2020: Was the SHAPE stakeholder process so far clear to you? (optional) (50=mostly clear, 100=very clear)	-	100	56	-	70	-	-	80	77

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Appendix

A. Workshop Agenda

DATE	TIME (CEST)	EVENT	PARTICIPATION
Monday (04/04)	14:00-16:00	OPENING PLENARY	Everyone is expected to participate
Tuesday (05/04)	12:00-14:00	Session 1: ASIA	People who signed up for Session 1
	16:00-18:00	<i>Parallel Sessions for the Americas Time Zones</i> Session 2: LATIN AMERICA	People who signed up for Sessions 2: LATIN AMERICA
		Session 3: NORTH AMERICA	People who signed up for Sessions 3: NORTH AMERICA
Wednesday (06/04)	14:00-16:00	<i>Parallel Sessions for Africa and Europe Time Zones</i> Session 4: AFRICA	People who signed up for Session 4: AFRICA
		Session 5: EUROPE	People who signed up for Session 5: EUROPE
	17:00-18:00	Session 6: GLOBAL	People who signed up for Session 6
Friday (08/04)	14:00-15:30	CLOSING PLENARY	Everyone is expected to participate

B. Workshop participants

Table B1. Overview of participation by sector and region.

Sector	Africa	Asia	Europe	Americas	Global	Total number of participants by sector
(A) Academia / Think thank	3	5	2	6	0	16
(B) Business / Private sector	-	1	2	-	1	4
(C) Civil society organization	-	-	1	1	-	2
(NGO) Non-governmental organization	1	1	1	2	-	5
(G) Governmental	-	-	3	2	-	5
(UN) United Nations system	-	-	1	1	1	3
Total number of participants by region	4	7	10	12	2	35

Table B2. List of participants (plenaries, regional/global sessions, email contribution).

Name	Organisation	Country	Sector (See table 1 for codings)	Region represented
Abdul Moiz	Center for Global Commons, Tokyo University	Japan	A	Asia
Mary Ann Q. Franco	Energy Studies Institute, National University of Singapore (formerly, now at Aquatera Asia)	Singapore	A	Asia
Matteo Pedercini	Millennium Institute	USA	NGO	Asia
Takuya Hara	Toyota (currently a Fellow at IIASA)	Japan	B	Asia
Vaibhav Chaturvedi (AB)	Council on Energy, Environment and Water (CEEW)	India	A	Asia
Ana Elisa Bucher	World Bank	Argentina / USA	UN	Latin America
Johann Gnadlinger	Instituto Regional De Pequena Agropecuária Apropriada (IRPAA)	Brazil	NGO	Latin America
Eric Kemp-Benedict	Stockholm Environment Institute (SEI-US)	USA	A	North America/ Global
Seth Monteith	ClimateWorks Foundation	USA	C	North America

Femi Gabriel Oyeniyi	SDSN Nigeria	Nigeria	A (network)	Africa
Prabhat Upadhyaya	WWF South Africa	South Africa	NGO	Africa
Artur ten Wolde	Ecopreneur.eu	Belgium	NGO	Europe
Cathy Maguire	European Environmental Agency (EEA)	Denmark	G	Europe
Eva Söbbeke	German Central Bank / Network for greening the financial system	Germany	G	Europe/ Global
Jeremy Bentham	Shell	Netherlands	B	Europe
Jussi T. Eronen	BIOS Research Unit	Finland	A	Europe
Patrizia Heidegger	European Environment Bureau (EEB)	Belgium	C	Europe
Zoi Vrontisi (AB)	E3Modelling	Greece	A	Europe
Ged Davis	World Energy Council	UK	B	Global
Richard A. Roehrl	UN Department of Economic and Social Affairs	USA	UN	Global
Center for Global Commons, Tokyo University		Japan	A	Asia
Global Commons Institute, Tokyo University		Japan	A	Asia/ North America
Brazilian Institute for Space Research (INPE)		Brazil	G	Latin America
Brazilian Institute for Space Research (INPE)		Brazil	G	Latin America
University of Brasilia, Centro de Desenvolvimento Sustentável (CDS)		Brazil	A	Latin America
University of Brasilia		Brazil	A	Latin America
University of São Paulo		Brazil	A	Latin America
Cenergia/Coppe/UFRJ		Brazil	A	Latin America
World Resources Institute (WRI)		USA	NGO	North America
Rocky Mountain Institute		USA	A	North America/ Global
Le LMD, laboratoire de recherche		France	A	Africa
SDSN Sahel		Mali	A (network)	Africa
SEforALL		Austria	UN	Europe
German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU)		Germany	G	Europe
B.A.U.M.		Germany	B (network)	Europe

Name	Organisation	Country
SHAPE Advisory Board		
Vaibhav Chaturvedi	Council on Energy, Environment and Water (CEEW)	India
Zoi Vrontisi	E3Modelling	Greece
SHAPE consortium members		
Alessio Mastrucci	International Institute for Applied Systems Analysis (IIASA)	Austria
Ana Paula Aguiar	Stockholm Resilience Centre (SRC), Stockholm University	Sweden
Ariel Hernandez	German Institute of Development and Sustainability (IDOS)	Germany
Astrid Bos	Utrecht University (UU)	Netherlands
Bas van Ruijven	International Institute for Applied Systems Analysis (IIASA)	Austria
Bjoern Soergel	Potsdam Institute for Climate Impact Research (PIK)	Germany
Dorothee Keppler	Potsdam Institute for Climate Impact Research (PIK)	Germany
Edgar Hertwich	Norwegian University of Science and Technology (NTNU)	Norway
Elmar Kriegler	Potsdam Institute for Climate Impact Research (PIK)	Germany
Fabio Carrer	Norwegian University of Science and Technology (NTNU)	Norway
Falk Schmidt	Institute for Advanced Sustainability Studies (IASS)	Germany
Gabriela Iacobuta	German Institute of Development and Sustainability (IDOS)	Germany
Geanderson Ambrosio	Utrecht University (UU)	Netherlands
Ines Dombrowsky	German Institute of Development and Sustainability (IDOS)	Germany
Isabelle Weindl	Potsdam Institute for Climate Impact Research (PIK)	Germany
Jonathan Doelman	Utrecht University (UU)	Netherlands
Max Koslowski	Norwegian University of Science and Technology (NTNU)	Norway
Merle Remy	Institute for Advanced Sustainability Studies (IASS)	Germany
Sarah Cornell	Stockholm Resilience Centre (SRC), Stockholm University	Sweden
Sebastian Rauner	Potsdam Institute for Climate Impact Research (PIK)	Germany
Sofía Cortes Calderon	Stockholm Resilience Centre (SRC), Stockholm University	Sweden
Vassilis Daioglou	Utrecht University (UU)	Netherlands

Name	Organisation	Country
Workshop Assistants		
Eleanore Campbell	Stockholm Resilience Centre (SRC), Stockholm University	Sweden
Eva Porcuna	Stockholm Resilience Centre (SRC), Stockholm University	Sweden
Kinga Psiuk	Stockholm Resilience Centre (SRC), Stockholm University	Sweden
Veronica Olofsson	Stockholm University	Sweden

C. Detailed synthesis of regional discussion group sessions

This annex presents the summary of workshop participants’ responses from each regional discussion group session. Discussion group sessions were held over six different regional time zone categories : Africa, Asia, Europe, Latin America, North America, and Global.

The following summaries were prepared by the SHAPE session facilitators and complemented by participants during and after the workshop. In each case, Miro post-it notes were transcribed, and synthesis was performed.

a. AFRICA SESSION

This subsection presents the summary of workshop participant responses within the AFRICA time zones session, held virtually on: April 6, 2022 from 14:00 to 16:00 (CET time).

Participation in this session was limited. The participant’s professional backgrounds spanned the civil society and academic sector.

PART I - INTERDEPENDENCIES OF HUMAN WELL-BEING AND CLEW NEXUS

Question #1 - What interactions (synergies, trade-offs and spillovers) are important to know more about in this region? Why are they important to participants within their context?

HUMAN WELL-BEING priorities
<p>SDG 16 (Peace, Justice and Strong Institutions) as the cornerstone of SDGs:</p> <ul style="list-style-type: none"> ● “SDG 16 should be a priority to enhance institutional capacity for achieving SDGs and SDPs”; having weak institutions in the region is considered by participants as an important hindrance to systems change. ● Examinations are needed on if and how the limitations of other SDGs are affecting SDG 16. ● High unemployment rate, income inequality and high poverty levels are challenges that further limits the capacity to invest in SDG 16. ● Weak links between the NDCs and inequalities impacts human health throughout the region. ● Broad meaning of the concept of Justice is needed
<p>The geopolitical aspects of “Just sustainable transition(s)”:</p> <ul style="list-style-type: none"> ● Representation of the African continent in global trade is insufficient - also applicable whilst discussing the just transition. “Just sustainable transitions” is a growing matter across the continent but it is not made visible enough due to the insufficient representation of the multiple realities experienced within the African continent. ● African countries tend to negotiate as a whole entity to reach common propositions rather than negotiating on separate country levels.
CLEW nexus
<p>Energy transition vs development: <i>Core issues raised by participants: “How to balance investment on energy transition versus development?”</i></p>

“How is the ultimate trade of climate change mitigation and development being taken into account in these models? Are they sufficiently addressed/represented?”

- Differences between countries in the availability of natural resources for energy production as well as issues such as access to technology, costs, and capacity are other obstacles that impact countries at different scales in the energy transition, further impacting development aspects such as poverty reduction and inequality issues.
- Trap cycle poverty-trap-innovation. Current vision of development based on fossil-fuel energy sources in the region are impacting climate change but the lack of development reproduces inequalities and other aspects impacting human well-being. Open-ended question: How to find a good balance and break the cycle?

About specific strategies:

- Energy: Carbon capture technologies and embedded strategies for climate change mitigation are not an important issue in Africa now. The issue is rather going in the direction of the transition to renewable energy sources, particularly about who has availability of the natural resource, social capacities, capital and technology to transgress to renewable energy. In the future, “the situation related to carbon capture is going to be dependent on the costs and access to technology”.
 - Access to technology and trained people is crucial for a just energy transition. Not everyone can afford the costs.
- Land: Afforestation/deforestation is dependent on the country level characteristics of the region, such as regrowth capabilities, access to technology, capital for regrowth, labour costs, among others.
- Land-energy nexus: Climate change is impacting countries in diverse ways, such as desertification leading to unproductive land, the lack of access to water, eroding food security by impacting food production systems, and trade-offs between the energy produced from hydrological sources and the allocation of water to other users and purposes (e.g., domestic use and food production).
- South Africa is pushing for gas fuelled energy. “How realistic or aligned is gas fuelled energy production within SHAPE scenarios?”

Climate change and extreme weather:

- Recognition and awareness of the fact that climate change impacts on human well-being among authorities and the local population.
- Increasing desertification rate is perceived to further impact all sectors within the CLEW nexus reducing human well-being in the regions affected.
- Impacts on land systems in terms of productivity within the extreme climate scenarios, particularly the food production system and directly to human well-being.

PART II - FEASIBILITY & DESIRABILITY OF SHAPE SCENARIOS

Question #2 - How feasible and desirable are the different target-seeking SDP scenarios?
Looking at the underlying assumptions for this region.

Economy driven Innovation	<ul style="list-style-type: none"> ● The Economy-driven Innovation scenario is the least desirable pathway for the African region according to the participants. ● Dependence on a multipolar governance world for resources and technology. Main characteristics of the globalised world view regarding access to resources and technologies.
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	<ul style="list-style-type: none"> • More participation from African countries would be required to achieve the Economy-driven Innovation scenario, but there are uncertainties about how to achieve real multilateralism within the region. • Economic growth is needed to achieve SDG1 (poverty reduction), but the main question about how to deal with issues of uneven development and inequalities in the energy transition remains. • Afforestation: a matter that is achievable in countries that have the proper capacities such as capital, productive land for afforestation, and low labour costs, but less achievable in countries lacking one or more of these capacities.
Resilient Communities	<p><i>Positive aspects within Resilient Communities scenario:</i></p> <ul style="list-style-type: none"> • The energy sector is deemed as “resilient” (E.g., solar energy). • Some energy and development aspects of the Resilient Communities scenario are not deemed desirable. • Regrowth built into the model of Resilient Communities scenario - allowing natural vegetation to grow - local communities as the drivers of change in instances where this is already occurring. <p><i>Feasibility of the Resilient Communities scenario’s assumptions:</i></p> <ul style="list-style-type: none"> • Life-style changes in the Resilient Communities scenario broader than dietary changes, all consumption patterns must be included. Such patterns and changes mirror affluent people/countries and bring up the issue of cultural aspects in lifestyle and dietary changes. • The focus on strong and resilient communities in the Resilient Communities scenario in regions with great cultural and ethnic diversity may make the Resilient Communities scenario more feasible for those that live in multicultural communities. On the other hand, this issue might make the Resilient Communities scenario less desirable for some people(s). • Steering away from individualism towards communalism may impact the transport sector, such as fewer private vehicles and more public transportation, more investment in high-speed rail. • The Resilient Communities scenario’s narrative explicitly states community ownership of energy capital. <p><i>Divergences:</i></p> <ul style="list-style-type: none"> • The Resilient Communities scenario might be less desirable as people may want to ‘walk away’ from the current situation (multiple languages, ethnic groups etc). Others said that it might, for this reason, be the best SDP for West Africa, emphasising cultural and ethnic diversity. • Participants asked whether the Resilient Communities scenario might be susceptible to Nationalism tendencies. The answer from the consortium said that no, as it considers more local governance (e.g., municipalities), with local communities as drivers of change. Nationalism may rather be an issue in Managing the Global Commons scenario due to the focus on strong institutions. • One of the participants argued that the no-growth assumption is flawed, as countries need to develop, highlighting the issue of uneven development and colonial legacies of development. However, it was explained that the Resilient Communities scenario assumptions do not exclude growth in countries that need it, only for high income countries.
Managing the Global Commons	<p>The Managing the Global Commons scenario is considered by some of the participants as desirable, but the issue of weak institutions (SDG 16) is central for this scenario to be achieved.</p>

- All the participants agree that it might be feasible in some contexts, e.g., where institutions already are strong. Rwanda was mentioned as an example of a nation with strong institutions, and as focusing on innovation.

"Who is managing the global commons?" participants asked.

- Does Africa have enough to say about managing the global commons? It would have to be constructed with a bottom-up approach, growing fast to become independent, emphasising local ownership and steering away from a global North focused world view.
- This led to a discussion about who defines the "Global norms": Example Russian war as a strong action when there are other wars ongoing involving the US. Undermines the global norms, much emphasis is needed on who is defining the norms.

Governance aspects and questions:

- What can Africa offer in reciprocity? Partnership and stability. On the other hand, Europe has a moral responsibility due to the colonial legacy (international Conventions are one of the arguments for their responsibility to support Africa). Definition of 'civilisation' reproducing colonial stereotypes.
- How do you approach these SDPs? Bottom-up work to find the better approach to implement these SDPs (links to SDG 16 and 17). Top-down approach not feasible.

Dietary changes/meat issue:

- Differences in the production of meat systems regarding CO2 emissions is the main problem.
- Amount of land required to produce meat is much higher than land required to produce plant-based proteins, impacting the land nexus. Health benefits associated with eating less meat have been included in the framework for dietary shift, as well as climate change issues related to meat production such as methane emissions.
- Meat consumption might increase in some African countries - one participant commented that this is not only due to protein intake already being relatively low in the region compared to other regions, but also that the cultural aspects influence meat consumption.
- The shifting from meat consumption might not be an easy transformation due to these cultural aspects. Therefore, raising the question in intergenerational dimensions - if people below a certain age group are more open to shift diets? An interesting insight regarding dietary shifts and willingness to shift diet.

b. ASIA SESSION

This subsection presents the summary of workshop participant responses within the ASIA time zones session, held virtually on: April 5, 2022 from 12:00 to 14:00 (CET time).

Participants in this session came primarily from high-income countries in Asia. Their professional background spanned the business, civil society and academic sector, with academic participants slightly more represented.

PART I - INTERDEPENDENCIES OF HUMAN WELL-BEING AND CLEW NEXUS

Question #1 - What interactions (synergies, trade-offs and spillovers) are important to know more about in this region? Why are they important to participants within their context?

HUMAN WELL-BEING priorities
<p><i>Spillover effects within Asia continent:</i></p> <ul style="list-style-type: none">● Participants alluded to spillover economic impacts from one country to another with changes in supply chain or policy <p><i>Demographics are very relevant to Asia, particularly in terms of infrastructure and technology:</i></p> <ul style="list-style-type: none">● This refers to the current patterns of rapid urbanisation where the investment and maintenance of physical infrastructures (e.g., energy grids, roads, etc) are not always able “to keep up the pace”.● Demographic change in Korea, Japan, China will have a huge impact on developments: influence on consumptions, housing, lifestyle, etc. <p><i>Diversity of perspectives:</i></p> <ul style="list-style-type: none">● “Energy security” means different things in different countries and to different groups of people - in terms of affordability, accessibility, availability & constancy of energy supply. This situation is also applied to other environmental issues. <p><i>Paradigm shift - energy transition narratives and motivations (particularly in developing countries):</i></p> <ul style="list-style-type: none">● The narrative of energy transition changed from a “technology neutral” mindset and practice to “energy-efficient and clean energy resources”. The Philippines and some developing countries in the Global South are considered examples.● In Southeast Asia (SEA), there is a new focus on energy security and access, but not necessarily it is climate mitigation-oriented.● The economic aspect of developing countries in the SEA region is considered important in terms of the accessibility and acceptability of most environmentally friendly electricity sources.● Participants remark on the importance of the degree of liberalisation in the energy market.
CLEW nexus
<p><i>Regionally differentiated climate impacts:</i></p> <ul style="list-style-type: none">● Climate-related impacts and risks has led to focus on synergies for climate adaptation efforts.<ul style="list-style-type: none">○ Impact of extreme weather and climate disaster risks are considered one of the main factors that reinforce and expand “economic disparity” in the Asia monsoon region. This means that climate change would accelerate the vicious cycle of poverty through increased water-related disasters in Asia. Hence, climate action and policy are deemed as one of key strategies to reduce poverty in Asia.● National adaptation plans for climate tend to be too narrow. For instance, biodiversity conservation is usually solely linked to climate change issues, and not well integrated with (human) development planning.

TRANSVERSAL

Interactions between human well-being priorities and CLEW nexus.

Unintended consequences need to be considered for just and sustainable transitions:

- Impacts from the extraction of key minerals for technology adoption.
- Impacts derived from mega-extractivist base projects.
 - For example: “Big dams are still being built which have displaced historically marginalised communities”.
 - Some communities (especially indigenous communities) have been displaced by other energy projects including geothermal energy, and bioenergy.
- Access to energy: Even distributed energy systems are often considered in practice but only for a short term (e.g., lightning or mobile charging).
 - Often deployment of these technologies is only for minimal / basic appliances. There should be a move for DES (distributed energy systems) to capacitate the livelihoods of the islands themselves or even invest not only on the hardware components like the solar energy panels but actual knowledge transfer like load management, sustainable livelihood, or even disaster resilient DES like modular and light solar PV packages. These have been done before and just need to mainstream them.

Climate change-related risks perception and responses:

- Participants showed interest in the interactions among people's recognition of climate risks, the extent of regulation to the industry sector (e.g., fuel efficiency, ZEV mandate), and the reaction from the business sector.

Modelling-related questions:

- Global comment: especially interesting the trade-offs and synergies with socio-economic SDGs. The integration of socio-economic SDGs in the analysis is so far (e.g., G1) based on given assumptions about growth and inequality: how is such development taking place? is it consistent/possible with the transformation that we are discussing? the same question applies to other SDGs, and to human development in general
- Assumptions about socioeconomic development to "feed the models" depend on pre-existing conditions. “How do narrative and model analyses actually describe the transition process, its trade-offs and synergies?” a workshop participant asked.
- “How is the loss and damage facility under COP26 or the capacity building financing (or at least financial support) for developing countries considered in the model or in the scenarios?” a workshop participant asked. Answer: Models can't show specifics of financing - just whether it exists or not, in enough quantities on aggregated or not.
- Mobility modelling is now more disaggregated. Thus, there is a margin to examine the reasons and obstacles for technology roll-out (e.g., charging stations limit electrical vehicle use)
- Tech note - priority for modelling. A better understanding of networks and connections as well as different kinds of consumers for innovation diffusion is needed.

PART II - FEASIBILITY & DESIRABILITY OF SHAPE SCENARIOS

Question #2 - How feasible and desirable are the different target-seeking SDP scenarios?

Looking at the underlying assumptions for this region.

Economy

- Marked differences between rural and urban across this region (e.g., megacities for efficiency, and growth scale-up initiatives): Migration becomes a priority.

driven Innovation	<ul style="list-style-type: none"> ● Emphasis on (individualist) hedonism. ● Spanning from global energy scenarios to household levels is a huge challenge for model-based analyses.
Resilient Communities	<ul style="list-style-type: none"> ● Limited evidence on the socially differentiated effects (either as a potential assumption in the model or as explicitly modelled links to sustainability aims). For instance, level of risk exposure and savings. ● Emphasis on solidarity ● Local *worldviews*. Participants associated this term to strategies linked to local enterprise, smaller production units, smaller-scale technologies and infrastructure.
Managing the Global Commons	<ul style="list-style-type: none"> ● Policy instruments: For example, “Carbon pricing scheme is unlikely to be feasible for the whole continent.” <ul style="list-style-type: none"> ○ “Can this study address disparities?”, a participant asked. Answer: The models apply a flat rate for regions; narratives allow for differences. ● Institutions and local contexts strongly affect the scope for regulation and implementation in different countries.

General reflection for All SDPS:

- Social and economic disparities are very high across the Asian continent (and even within country-level). Mid-way options are seen as more desirable.
- Informal economic sector is an important matter. It is considered as a constant challenge because it is not well reflected in the global datasets used to structure and calibrate the models.
- Exploring the very high diversity within Asia is important for SHAPE's global analyses and the future development of policy-relevant integrated models. “There are multiple Asias within Asia!”. This has implications for the design and dissemination of the SDPs. Global (bird’s eye view) pathways always have a challenge with regional relevance.
- Within the SEA region, the capacity to transition varies depending on the priorities and socio-economic status of the country. For example, Singapore has now started with carbon pricing and is a bit moving forward on tech-innovation approach towards transition while other developing countries are challenged with achieving economic growth in an environmentally friendly way and providing energy access. Thus, a more installed capacity driven, meaning large-scale deployments to address this energy trilemma.
- Demographic changes across the region - youth and elders. Population growth and other demographic factors would be very relevant in Asia. Models are currently reliant on global or based on OECD data, which they are known to be too narrow. Implications (e.g., health differences of air pollution) need to be examined with regional modellers.
 - Demographic change in Korea, Japan, China will have a huge impact on developments: influence on consumptions, housing, lifestyle, ...
- Shifts in social priorities and preferences is a major challenge - especially the place of consumer choices as pro-environment behaviour.
- Governance assumptions can affect wellbeing beyond GDP growth - E.g., mobility, education, and better public health.
- Business action - shaped strongly by consumers and also by regulatory context. Consumer standard of living choices play a decisive role in determining what is possible.
- Private and public partnerships are important since private companies often invest on the technology and even capacity building side of energy transition. “Where do they belong in these SDPs?”, a participant asked.

c. EUROPE SESSION

This subsection presents the summary of the participant responses within the EUROPE time zones session, held virtually on: April 6, 2022 at 14:00-16:00.

Participants in this session came primarily from high-income countries in North and Western Europe. Their professional background spanned the business, academic and governmental sector.

PART I - INTERDEPENDENCIES OF HUMAN WELL-BEING AND CLEW NEXUS

Question #1 - What interactions (synergies, trade-offs and spillovers) are important to know more about in this region? Why are they important to participants within their context?

HUMAN WELL-BEING priorities
<p><i>Policy coherence:</i></p> <ul style="list-style-type: none">● EU actors in governance and policy want information about the links between action on climate and other environmental goals, strategic economic objectives (e.g., circular economy) and well-being: “How can we respond to the synergies and trade-offs highlighted in SHAPE?” Participant asked. <p><i>Resource use:</i></p> <ul style="list-style-type: none">● “The latest IPCC report mentioned “sufficiency” for the first time ever in the assessment reports.” a participant commented.● Systematic overuse of resources and over-consumption are a specific Western issue.● There are a lot of questions and uncertainty about the type of resource use (e.g., sufficiency, circular economy) and interlinkages between decent work, economic growth, and inequalities.● One issue about the renewal and building of infrastructure for meeting climate goals is of course the fundamental availability of natural resources, especially those associated with minerals: Bottom-up insights for replacing fossil fuels <p><i>Issues related to the modelling of transformation pathways:</i></p> <ul style="list-style-type: none">● The technical feasibility of meeting Paris targets and SDGs (assessed in models) needs to be evaluated against discourses in society on transitions and the social feasibility of changes necessary towards sustainability.● Energy service assumption: How can SHAPE use the model insights better with lessons learned from other kinds of scenarios (e.g., energy transitions)?● Social innovation and behavioural innovation are not a traditional focus of IAMs but will be required for sustainability transformation. Therefore, “To what extent can we use these model insights in the real world?” a participant asked.● Looking for where there are discontinuities in the SDPs relative to today’s trajectories: Development, GDP, productivity (Global North/ South) and energy use? Timelines, milestones● There needs to be some solution for the economic growth / no-growth issue. How is this integrated in the model? (Note: <i>Resilient Communities</i> can be seen as a post-growth scenario)
CLEW nexus
<p><i>Food systems and interactions:</i></p> <ul style="list-style-type: none">● Food and the food system is a major area at the moment in Europe to look into. “What can we learn from the model results in terms of food / food systems? ... and their related social and cultural interactions, not just material / economic and environmental dimensions?” Participants asked.

PART II - FEASIBILITY & DESIRABILITY OF SHAPE SCENARIOS

Question #2 - How feasible and desirable are the different target-seeking SDP scenarios?

Looking at the underlying assumptions for this region.

<p>Economy driven Innovation</p>	<ul style="list-style-type: none"> • This pathway has feasibility concerns with regard to technology, e.g. level of described CCS. "Is this doable in terms of land requirement?" Participant asked. • European policy currently places a huge emphasis on innovation and has a broad perspective on what "innovation" is. "It is not only a technological issue, but also a social innovation matter." a participant commented. • Emphasis on technology and innovation; pricing; growth
<p>Resilient Communities</p>	<ul style="list-style-type: none"> • This pathway has a strong reliance on lifestyle changes – and there are some indications that these are feasible assumptions in the EU region. • "Just transition" is currently a policy focus in Europe. At present this is mainly about fossil fuel-based communities, but this should be expanded to food systems; it is not only energy transitions that need to be just. • The SDP's emphasis is on communities and social dimensions, yet Europe also sees a tendency for autonomous "islands". Nationalism related implications for trade restrictions should be considered. • "Is degrowth automatically good for climate and sustainability?" Participants asked. • Degrowth can be positive (out of solidarity, local solutions) but bear in mind: negative implications / realities, such as security concerns over other priorities (geopolitics will be on the mind of SHAPE's audience!) • Vis-a-vis the post-growth discussion, the question should perhaps rather be: "What do we want the economy to achieve? Growth might be a by-product of efforts to achieve a sustainable economic system."
<p>Managing the Global Commons</p>	<ul style="list-style-type: none"> • Here too international relations are critical; not just in terms of regulations but also standards, global partnerships
<p><i>General reflection for All SDPS:</i></p> <ul style="list-style-type: none"> • All SDPs have relevance for Europe; all have elements important for Europe • Be aware of the different recipients of SDP knowledge: the target-seeking approach will be of interest to SDG enthusiasts but there is also a broader community of scenario users who will expect or require quantified comparison to "business as usual" or baselines. SHAPE needs to make the connection to a broader audience to actually get its insights heard! • Multiple societal objectives on different timeframes (with a geopolitical and a security focus): The current situation - post-pandemic, ongoing warfare in Ukraine - shows starkly that there are many other urgent things "going on" in Europe and around the world than the longer-term issues that are the focus of SHAPE (SDGs and climate, well-being, economy). • "What policies and strategies are robust across all SDPs? How can options be kept open?" Participant asked. This is important from a policy perspective. • Policy users will have many open questions, for example: <ul style="list-style-type: none"> ○ "Are social, economic and technical feasibility equally important aspects?", "What are the implications for EU competitiveness internationally – are certain sectors becoming more competitive than others?", and "How can the SDPs relate to Green Deal achievement?" <p><i>Modelling questions:</i></p>	

- Workshop participant’s question: “What path dependencies and lock-ins affect the different SDPs? (e.g., appropriate transport infrastructure is needed to enable modal shifts. Energy infrastructure → fossil fuel / Russia)
- Consortium question: “What really has to be implemented for Europe to achieve SDG and climate targets?” and “What issues are under high pressure?”

d. LATIN AMERICAN SESSION

This subsection presents the summary of the participant responses in the LATIN AMERICA time zones session, held virtually on: April 5, 2022 at 16:00-18:00.

Note: This session’s participants primarily came from Brazil. Most of the participants had a research background, next to other participants from civil society and intergovernmental organisations.

PART I - INTERDEPENDENCIES OF HUMAN WELL-BEING AND CLEW NEXUS

Question #1 - What interactions (synergies, trade-offs and spillovers) are important to know more about in this region? Why are they important to participants within their context?

HUMAN WELL-BEING priorities
<p><i>(In)equity issues:</i></p> <ul style="list-style-type: none"> • “Human well-being is closely linked to (income, economic) inequality issues.” • Inequity as one of the root causes of social and ecological challenges in the Latin American region (here referred as LATAM). • The following elements were repeatedly mentioned by the participants during the discussion: <ul style="list-style-type: none"> ○ Market liberalisation and unfair market competition. ○ The colonial legacy as a root cause of existing inequalities. The dominant global North worldview and perspectives are perceived to exclude knowledge, solutions and realities experienced in the Global South. ○ The historical context of LATAM - an economy based on extractivism to meet the demand of industrial and high- income countries. ○ Inequality as exploitation - conflicts over resources and territory between indigenous and afro-communities, and industries (E.g., mining and energy sector (wind energy), which has led to the exclusion and violation of indigenous rights. • Different forms of inequities and synergies among them; A call to go beyond economic inequality (income) in the SHAPE modelling process and governance analysis for achieving all SDGs. For instance: <ul style="list-style-type: none"> ○ Unequal access to water for drinking and domestic use (SDG 6). Water-related conflicts are persistent in the region, and act in synergy with income, health, and gender inequality. ○ Uneven development and access to natural resources (urban/rural communities) linked to poverty and income. ○ Unequal access to housing and lack of strong land use rights. For example, people living on property they do not legally own have no rights to the land. • Reduce income inequalities and poverty through Education: <ul style="list-style-type: none"> ○ <i>Improving both the access and the quality of Education.</i> ○ <i>(Intercultural) and environmental education:</i> Latin American scholars (e.g., Paulo Freire) and traditional knowledge and local wisdom for sustainable practices in the use of natural resources are suggested to be included. ○ <i>Environmental education for who?</i> Efforts should be also directed to decision-makers and policy-makers, not only local communities.

Other social priorities mentioned by participants:

- Reducing power imbalances across all levels (See nexus challenges): this influences the different capacities among the population to adapt and make systemic changes.
- Sustainable livelihoods and regional long-term incentives are needed to develop and maintain them.
- Equitable accessibility to resources has to be promoted in a way that maintains conservation of the environment and ecosystem services.
- Most pressing issue: decent wages (labour perspective).

CLEW nexus

- Unintended consequences of the energy transition:
 - The impact of large-scale renewable energies (e.g., wind, solar) enterprises on rural communities and the environment (land-use change).
 - Exclusion of landless people and communities. Solution: democratise the access to renewable energy sources impacting all sectors within the Nexus.
 - Market liberalisation of the energy sector characterises the region.
 - Deficiencies in governance: a thorough consideration for the role of the state (in the energy transition) is needed.
- SDG 6: the whole Water cycle management is lacking in the SDG 6’s framework.
- Link between SDG 15-16: a pressing issue and problem (particularly in Brazil currently)
 - Unequal access to natural resources benefits large sectors, creating conflicts across the Nexus (for example, the power of agribusiness causing environmental degradation in the Brazilian Cerrado, in particular in the Matopiba area).
 - General view of businesses and sectors to incorporate sustainable practices whilst profiting from ecosystem services and natural resources.

Climate change:

- Climate change is not necessarily a priority for those living in poverty.
- Stopping desertification so communities can continue to inhabit semiarid regions.
- Raise awareness of native vegetation and the role of tropical dry forests which are well-known for their supply of climate regulation services such as carbon capture and storage, which is an incentive to increase reforestation in the semiarid regions of Brazil and Mexico.

PART II - FEASIBILITY & DESIRABILITY OF SHAPE SCENARIOS

Question #2 - How feasible and desirable are the different target-seeking SDP scenarios?

Looking at the underlying assumptions for this region.

Economy driven Innovation	<ul style="list-style-type: none"> ● Participants emphasise the need to explore in this scenario how global and EU policies may have an impact in the LATAM region ● Economy driven innovation scenario’s main features reviewed by participants: <ul style="list-style-type: none"> ○ Lifestyle change for businesses to change the business model. ○ Climate impacts and global policies in the countries. ○ The change should start with the changes in demand. ○ Land sparing as concept: using as little land as possible to increase land productivity ○ Afforestation forced into the model.
Resilient Communities	<p>*Note that some divergences came up among participants.</p> <ul style="list-style-type: none"> ● One participant said that “Economy driven innovation scenario is the scenario the region is heading towards, and its solutions would be more feasible” (in comparison), but others argued that it is certainly not a good pathway for the region.

	<ul style="list-style-type: none"> ● Most participants argued that the Resilient Communities scenario is clearly the most desirable scenario for the region because it highlights the bottom-up perspective and reflects the multiple initiatives in place such as social movements and the needs and agency of local indigenous and Afro-communities: <ul style="list-style-type: none"> ○ There are existing resilient communities' experiences/cases in LATAM as well as seeds of change already planted for lifestyle changes: <ul style="list-style-type: none"> ■ For example, traditional communities (landless workers movement settlement), middle-class movements trying to build a resilient community experience. Some rural and indigenous communities are mentioned to be already mitigating and being resilient to climate change. ● A need for inclusive efforts in the policy framework - connecting to SDG 16 is relevant to equality. ● Youth is considered as a powerful force. ● Landless communities' situation is prevalent in the region: Property rights for indigenous and traditional communities is key. ● Other appealing aspects of the Resilient Communities scenario: <ul style="list-style-type: none"> ○ Brings solutions more desirable. The Resilient Communities scenario has "sharing" as a concept; driven by lifestyle change. In particular, the management of natural resources is clearer than in Economy driven innovation scenario: increased afforestation (of monocultures like eucalyptus or prosopis) is not desirable in Brazil, the Resilient Communities scenario rather assumes preservation of natural vegetation and re-growth (recatingamento). Besides, tax incentives, additional carbon taxing, trade taxes, will further affect the resilience of communities. ○ Connection to SDG 16 (Peace, justice, and strong institutions): The lack of trust in government as well as business and corporations is relevant, e.g., for driving the transformation (and the State to regulate it). ○ Other participants reinforced that the Resilient Communities scenario is feasible because social movements and Indigenous movements are already strong throughout the region. However, there is a challenge to scale up resilient communities' experiences in order to make the Resilient Communities scenario more feasible.
<p>Managing the Global Commons</p>	<ul style="list-style-type: none"> ● Generally, the Managing the Global Commons scenario was not deeply discussed. ● The Managing the Global Commons scenario and Economy driven innovation scenario both address the same afforestation assumption, which is a not desired future at least within the Brazil context.
<p><i>General reflection for All SDPS:</i></p> <ul style="list-style-type: none"> ● Changes in the governance system and individual lifestyle changes to occur. ● Pricing could help to democratise the distribution of natural resources, to give value for natural resources if it is well-coordinated. ● Inclusive policy control is needed if it is made fairly (fair pricing, fair distribution). For instance, "sharing" type of governance needs more interventions, state mechanisms for Distribution (taxes, subsidies). ● LATAM has a cultural and biological diversity. Thus, it is difficult to "decide" on only one scenario, perhaps a mosaic of SDPs within a region or country is more feasible to achieve. <p><i>Connections between SDPs:</i></p> <ul style="list-style-type: none"> ● A mix of the Resilient Communities scenario and the Managing the Global Commons scenario are also considered the most feasible pathways in the region according to some participants, wherein institutions are strengthened through a bottom-up approach and inclusion. 	

- The Resilient Communities scenario and The Managing the Global Commons scenario are more similar in the use of technology, and management of natural resources (both have high investments in revitalization and conservation), and the lack of strong political institutions. However, the existence of strong social movements makes resilient communities more feasible.
- Other participants mentioned the Economy-driven Innovation scenario and the Managing the Global Commons scenario as the most desirable pathways, rather than the Resilient Communities as the main characteristic for the region.

e. NORTH AMERICA SESSION

This subsection presents the summary of participant responses within the NORTH AMERICA time zones session, held virtually on: April 5, 2022 at 16:00-18:00.

Note: Although this session was designed to focus on North America and invitations were extended to organisations in Canada and the United States of America (USA), all participants were from the USA. In this session, participants had a research background, coming from academic institutions/think tanks and civil society organisations with a research focus.

PART I - INTERDEPENDENCIES OF HUMAN WELL-BEING AND CLEW NEXUS

Question #1 - What interactions (synergies, trade-offs and spillovers) are important to know more about in this region? Why are they important to participants within their context?

HUMAN WELL-BEING priorities
<p>Structural inequalities (also important aspect regarding Q2 on feasibility of SDPs)</p> <ul style="list-style-type: none"> ● Extremely high inequality in the region is being considered to affect policy implementation. E.g., income inequality affects participation in housing, participatory governance, jobs etc. <ul style="list-style-type: none"> ○ The problem in the US is people with lower income rent houses and have no agency, it falls on the owner's shoulders. -> Landlord-tenant effect - in models, owners and users are not differentiated ● Structural cultural-related challenges exist due to the strong link between affluence and social power. More wealth is considered as more agency (capacity to act). ● Racial divides are aligned with inequalities. Racist undertones in policy discourses, the history of slavery, and the persistence of actual racism compound challenges of implementing sustainability policies and options (e.g., universal healthcare) ● Can lifestyle changes be promoted regionally? Need to look at the contested policies when they relate to communal working, individualism etc. ● Urban sprawl is also related to structural inequalities. <p>"Soft" dimensions of the "hard" skills needed for sustainability transformation.</p> <ul style="list-style-type: none"> ● Knowledge, education and skills may not meet the needs for the required speed & scale of transitions - slower rates of transformation might be accommodated with fewer social bottlenecks (e.g., skills), absolute resource scarcity (e.g., copper). ● Often the value of tacit knowledge is not recognized - it may help with accelerating change processes. ● Transferring skills from unsustainable industries to new ones may accelerate but there is also the deeper social challenge that jobs and skills are tied into livelihoods, culture, and identity --> social resistance. ● Repurposing skills - can affect the time constants of inertia of shift to low carbon (infra)structures etc.

CLEW nexus

Urban transformation (x energy transition)

- The sprawl aesthetic and a “big is best” mindset is widespread.
- Personal indoor space is preferred to common green space.
- Infrastructure availability for public and low emissions transport - a matter of public policy with strong cultural dimensions (car ownership, etc.)
- Very low-density urban form compared to other countries: affecting transport emissions, heating/cooling.
- Links to work on potential for economic development in rural cities: [Renewables energy: rural economic development](#) ; [Solar panels tool](#)

Urban transformation (x infrastructure issues, here for healthy food)

- “Food deserts”: low-income neighbourhoods can often only have access to low quality food, hard to get healthy food;
- There is demand for healthy food, but it is relatively costly; companies that provide healthy food can't make enough money in low-income areas. If it was available and affordable, people would buy it.

Energy transition - Clean Energy x Fossil fuels

- The energy system has the benefit of its continent-wide geographic scope of power grids, suitable for fuel shifts that will continue to use these available technologies. But action on other kinds of energy and feedstock shifts are less visible. (*Open question: corporatism as an obstacle?*)
- Obstacles: biomass supplies to meet demand? imported mineral resources? The region faces the same global challenges as other regions, and operates in a globalised market
- Same with solar installation & EV charging infrastructure

Affordable & clean energy x No poverty

- Tax deductions for owners who rent their properties out who make investments and cover the expense of efficiency improvements could be a helpful mechanism
- challenges for modelling these interactions, but contributory issues are fairly well understood – e.g., “split incentive” of building owners and renters

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Modelling questions:

- Q1: In the IMAGE model's treatment of capital stocks, do you allow for early retirement of capital? Or does it go to its planned lifetime? Answer: It can be retired early, and the way it is implemented in the model explains IMAGE's inertia for change. The differences between models need to be explored more
- Q2: How can these things (lifestyle changes) be captured in our narratives and quant modelling?
- Q3: How are housing capital stocks dealt with in the models (how quick does it get houses to the small area / efficiency)? Can a much wider range of types of buildings be part of the transformation? Ownership patterns are probably even more influential
- Modellers work with both modal splits and passenger-km. Narrative harmonisation is good, but model realism is also good.
- SHAPE's inequality metric - income inequality as an absolute poverty metric deals with the target space needs. Wealth inequality, or a relative poverty measure, requires attention to redistribution.

PART II - FEASIBILITY & DESIRABILITY OF SHAPE SCENARIOS

Question #2 - How feasible and desirable are the different target-seeking SDP scenarios?

Looking at the underlying assumptions for this region.

<p>Economy driven Innovation</p>	<ul style="list-style-type: none"> ● “Globalisation is not going to be the same as it was. The growing recognition that it can't stay as it was...” ● There might be job benefits to <u>not</u> being so globalised. ● People's problems make high-speed trains unlikely. ● High-quality services require people, who require good quality of life. Channelling social services through for-profit businesses has not done well at spreading economic gains through to people. Political and personal choices and structural reasons obstruct this.
<p>Resilient Communities</p>	<ul style="list-style-type: none"> ● Lifestyle changes, such as smaller houses, less passenger transport, mode shifts to collective transport etc, are deemed hard to push even in the Resilient Communities scenario (in particular transport sector). ● What anchors aspirations? In popular culture (e.g., TV series) unrealistic depiction of size of houses, status symbols etc. and jobs that people hold ● Lifestyles may change very fast and there is a huge variety of lifestyles in the US (income sharing rural communes, co-housing vs. “big is best”) ● “If social safety nets are linked to jobs, how are they linked to economic growth? Having strong social safety nets is very valued, we would be able to fight for other stuff if we had granted social safety.” ● Different modes or processes for wealth production. ● (Post-)Growth and poverty reduction: US uses absolute poverty metrics (compared to relative poverty metrics in Europe): extremely challenging to have slower growth without redistribution, because you structurally can't have everyone making the same primary income. There's no physical reason we can't have a distribution, it's only personal, structural and political reasons behind it.
<p>Managing the Global Commons</p>	<ul style="list-style-type: none"> ● “Always multiple cultural strands and an astute politician will tug on the ones that shift their society in the desired direction. This can make very rapid changes.” ● “Who benefits from a given policy? The USA (and maybe North America in general) is very different in what policy instruments and approaches are feasible compared to Europe, say.” ● Physical and legal barriers to change in relation to infrastructures and institutions. ● On globalisation: comments about the Economy-driven Innovation scenario apply here too
<p><i>General reflection for all SDPS:</i></p> <ul style="list-style-type: none"> ● “SDPs are global tendencies, not extremes or "ideal types" (in the sloppiest sense of that phrase!).” ● Nationalist realities may be evident now - but not in the SHAPE SDPs (because not in SDGs, really). ● Hard to implement social safety nets in policy because of politics - but broadly high social acceptance when they do exist ● “The social safety net runs through a person's JOB. Threats to jobs and livelihoods threaten outlooks and personal dignity throughout life, all the way to old age.” ● Re-skilling / training is necessary for a shift towards sustainability but a huge challenge: <ul style="list-style-type: none"> ○ The skills used for low carbon constructions and refurbishment are different from the more common or conventional skills; tacit knowledge necessary but this takes much longer to acquire ○ transferring skills from one industry to another has a lot of potential but challenges are of cultural nature (sense of pride in the industry you are working in); however, people working e.g. in coal industry are close to retirement age ● “To discuss energy demand/behaviour may change results.”, a participant said. 	

f. GLOBAL DYNAMICS SESSION

This subsection presents the summary of participant responses based on the international nature of their expertise and job position. The GLOBAL discussion group session was held virtually on: April 6, 2022 at 17:00-18:00.

Note: Contributions are made by participants from business, finance and intergovernmental sectors.

PART I - INTERDEPENDENCIES OF HUMAN WELL-BEING AND CLEW NEXUS

Question #1 - What interactions (synergies, trade-offs and spillovers) are important to know more about in this region? Why are they important to participants within their context?

HUMAN WELL-BEING priorities
<ul style="list-style-type: none"> ● “A real need is for work going beyond the CLEW nexus, links to social aspects at <u>all</u> levels. Social SDGs like education, gender, SDG 17, but also communicating significance of SDG 14 (oceans) in this context.” <ul style="list-style-type: none"> ○ Clusters are much more interesting/relevant to look at instead of zooming into single SDGs or single model systems: <ul style="list-style-type: none"> ■ As for example done by bringing water into the well-established climate / energy / land cluster ■ What could be other clusters? Similar to how CLEW is clustered but in other broader areas (social, wellbeing, oceans (?) etc.)? ■ Cities, transport etc - energy efficiency, mode shifts etc - are interesting advances. ■ For member states, it would be useful to know more of the ways that these gaps can be featured, and this requires going a bit more in-depth into the modelling results and assumptions. ● More quantitative data on human well-being /inequality issues is needed. <ul style="list-style-type: none"> ○ These are things where no "big money" is thus these things are not enough covered, too little analysis. ○ Science Based Targets are expanding from the CLEW area where most financing is focused. ○ More quantitative results are needed on these other issues. For instance, “SDGs 16 and 17 have a lot of good research but it is mostly on the narrative level.” ○ Question to modellers: “Which aspects in the area of well-being and inequality etc. can be quantified?”
CLEW nexus
<ul style="list-style-type: none"> ● Geopolitics and energy transition: <ul style="list-style-type: none"> ○ “Be aware that security issues matter as well as energy affordability.” ○ The emerging geopolitical situation is a direct driver of resource use and related emissions. “For example: dealing with the energy transition and related concerns like cleaner air and required declining CO2 emissions is even more challenging than it was 6 months ago.” ● The trade-off between climate actions (e.g., electrification) and broader environmental objectives (raw materials, water resources). Example given: Tesla Brandenburg (Germany) and their Battery/Electric car manufacturing as well as the implications for water in the region.
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<p><i>Policy implications</i></p> <ul style="list-style-type: none"> ● Remaining questions about in which areas cooperation makes sense. ● Bringing different political (short term) agendas together. Scenario modelling work at global, regional, national and even local levels is not used directly by politicians (at those levels) - and there is often a

focus on the near-term perspective. Longer-term views are not so well adopted. Covid and the Russian invasion of Ukraine are intensely in focus in the current political agenda, so it is necessary to make the connection between short-term political agendas and long-term consequences.

- For instance: “how long-term are the gas and oil pipelines?”
- Highlighting the “benefits” of target-seeking scenarios: SDPs can help to better connect long-term and short-term decisions.

Modelling questions

- “How do the SDPs compare to BAU? This would be really important to know. The comparison is what we need for risk analysis (e.g., to assess the costs of inaction)”
- Q1: “Are the SDPs only looking at the global level? We need regional/sectoral granularity for our analysis”.
 - Answer: Regional/sectoral analysis will become available.
- Q2: Reality will be a mix of the SDP scenarios. Thus, “in terms of usability, can we pick and choose?”
 - Answer: SHAPE can’t reconfigure the mix, but the narrative elements of the SDP scenarios, the dimensions and the branching-point approach, allow for other groups to create and analyse pathways with different mixes.

PART II - FEASIBILITY & DESIRABILITY OF SHAPE SCENARIOS

Question #2 - How feasible and desirable are the different target-seeking SDP scenarios?
Looking at the underlying assumptions for this region.

Economy driven Innovation	No specific comments on this scenario.
Resilient Communities	<ul style="list-style-type: none"> ● A number questions were raised by participants: <ul style="list-style-type: none"> ○ “How do we make the Resilient Communities scenario plausible? Are overarching structures needed?” ○ “What drives funding to the "local" level and what is “local” in this scenario? ○ What is pre-determined? Example of the “Grand Transition”*. In a target-seeking scenario, what target do we want to reach? Understanding the scenario assumptions/pre-determined aspects need to be clearly communicated. ● Participant’s interests in going beyond the focus on final consumption of energy to focus on final uses of energy (e.g., lumens not kWh) - showing more clearly the consequences of actions, allowing for the links to be made to e.g., key behavioural shifts and changes, and / or new practices and new technologies that will be needed to meet the targets. Making it clearer for people (remaining question about who: individuals? policy makers? decision-makers?) to understand the different choices they can make to achieve change. <p>* Definition of “Grand Transition”: <i>Disruptive trends are emerging that will create a fundamentally new world for the energy industry, characterised by lower population growth, radical new technologies, greater environmental challenges, and a shift in economic and geopolitical power. These underlying drivers will re-shape the economics of energy. We call this uncertain journey into the new world of energy – The Grand Transition. (From WEC 2016 Long-term scenarios.)</i></p>
Managing the Global Commons	No specific comments on this scenario.

General reflection for All SDPS:

- Which of the worlds (SDPs) are we moving into? What should we look at, where would our monitoring priorities lie, if there were such a monitoring system?
- The Economy-driven Innovation & Managing the Global Commons scenarios are familiar to some participants, but unsure of how the Resilient Communities scenario can be made plausible.
- Suggestion to clarify the benefits of target-seeking scenarios (feasible but likely extremely challenging to implement) - how / why should people use them vis-à-vis exploratory scenarios (plausible, usable for e.g., risk analysis by users, but not necessarily right).

D. Links to original Miro boards

We also provide the links to the original Miro boards for reference:

Discussion group sessions	MIRO boards:
Africa session	https://miro.com/app/board/uXjVO_F2i_o=?share_link_id=27970807174
Asia session	https://miro.com/app/board/uXjVOBNQobc=?share_link_id=748595311943
Europe session	https://miro.com/app/board/uXjVO_RwL7c=?share_link_id=395562295121
Global session	https://miro.com/app/board/uXjVO-gsxJA=?share_link_id=729797566868
Latin America session	https://miro.com/app/board/uXjVO_FhbqQ=?share_link_id=951861131856
North America session	https://miro.com/app/board/uXjVO_ITu6g=?share_link_id=517343774310