

Minutes: SENSES Kick-off meeting October 18th, 2017 – PIK, Potsdam, Germany

PPT presentations from the project meeting can be found in this [SharePoint folder](#).
The agenda also be found in this [SharePoint](#).

Introduction

Elmar Kriegler gave a presentation on climate change scenarios, and especially on how they are built and used. He explained the SENSES aim, namely making climate change scenarios more accessible and usable for policy, businesses and regions. At the end of the project a Climate Change Scenario Toolkit will provide scenario users with visualization tools and guidelines on co-production. Elmar eventually introduced the SENSES consortium and core stakeholders in the policy, business and regional panels and highlighted their important role in identifying user needs, community building, advising the development of co-production techniques and visualization tools.

Stakeholders of the SENSES business and policy panels introduced themselves (two of them remotely).

Interactive session on visualization

Introduction

Prof. Boris Mueller gives a very short introduction on visualization. For the stakeholders he summarizes the aims of visualization:

- Gain wisdom from data through depictions
- Visualizations are tools for navigation in (geographical, informational, ...) space
- Different approaches on visualizing data:
 - Exploratory (e.g. Maps)
 - Specific (e.g. GPS-Navigation)

The following examples represent very successful projects:

- [Weather Radials](#): Multiple but simple rules → complex but easy to understand visualization. Repeating rules and scales → comparability
- [GEDVIZ](#): Visualization as an exploratory tool, which allows to create custom visualizations and use them in communication. Boris concludes "Good interfaces enable the user to ask questions".

Data-Visualization Crash Course

Jonas Parnow is giving the stakeholders and the consortium a crash course in data visualization.

Visual Variables

Visual variables are the basic tools for creating visualizations. They allow us to encode data in visual properties.

- Geometric Channels
 - Size (length, width, depth): quantitative differences
 - Shape: qualitative differences
- Optical Channels
 - Colour: qualitative differences
 - Saturation, opacity: quantitative differences

Gestalt Principles

The Gestalt theory formulates rules of how we perceive the world and hence how designer convey meaning.

- Proximity, grouping: Proximity occurs when elements are placed close together. They tend to be perceived as a group.
- Similarity: We perceive elements as belonging to the same group if they look like each other.
- Closure, figure/ground: We perceive figures from elements even when parts are missing. Sometimes negative space creates its own figures.
- Good figure/Prägnanz, Continuity/Common fate: Elements are separated to their simplest components. We tend to continue paths in their origin direction.
- Symmetry/order: We expect elements to continue in their origin pattern. Everything that is not according to that pattern causes irritation.
- Connectedness, common region: Elements are perceived as group if a third element encloses or connects these.

Diagram Types

Diagrams, charts or plots use visual variables and the Gestalt principles to make patterns visible, allow comparison and reveal correlation.

[→ Diagram Type Reference](#)

Workshop

For the workshop the participants and the consortium are separated into 4 groups, as indicated below.

Groups

Group 1 - *Boris Mueller*, Guido Schmidt Traub, Minna Hekanaho, Elmar Kriegler, Sandra Tenggren

Group 2 - *Fidel Thomet*, Miles Perry, Jakob Thomae, Volker Krey, Cornelia Auer

Group 3 - *Jonas Parnow*, Eric Fee, Takuya Hara, Kasper Kok

Group 4 - *Lavinia Baumstark*, Michael Pimmer, Daniel Huppmann, Nienke Ansems

Assignment

The groups were given paper, pens, scissors and visualization templates (printed on paper, as well). The following tasks were accomplished:

- Pick one Dataset that looks interesting
- Pick one SSP that looks interesting
- Visualize the selected data over time AND regions
- After 20 minutes, add an additional SSP or data set
- Aim for comparisons, narratives, expressiveness
- Use or ignore the diagram types - that's up to you!

Results

The following results were presented to the entire group of stakeholders and consortium.

Group 1

- Cartogram visualizing CO2 Emissions
 - SSP regions morph over time depending on emissions
 - Similar regions get closer together
 - Further details & visualizations in tooltips
- Visualizing inequality in a fracture-chart
- Comparing baseline-scenario to 2°-scenario in a pyramid
- Tree-map showing total CO2 emissions and for each region with slider to control time and forcing

Group 2

- Visualizing growth of solar energy to estimate potential for investments in solar power
 - Stacked bar-chart for absolute values
 - Line chart to visualize growth over time
 - Map to visualize regional growth
 - CO2 emissions as context data
 - Focus on development until 2050

Group 3

- Compare land use change across scenarios, regions and time
 - Use of Sankey-chart to emphasize on land use change
 - Micro-narratives: cropland-growth stops, when rainforest vanished

Group 4

- Visualizing cropland use in abstract maps (for spatial context)
 - Circles visualize cropland absolute, compared to total land and to current cropland use
 - Comparison between scenarios through multiples / side-by-side comparison

Miscellaneous

In the discussion of the entire participants the following miscellaneous points arose:

- Visualizations should really be driven by the use case not data-driven.

- The time scope from the business perspective is especially challenging, as mostly only the next 20-30 years are of interest. On the other hand they only make sense regarding the long term perspective.
- Also the depiction of relative rather than absolute values can be of high interest, e.g. regarding the developing countries, having a growth of 100% in renewables which is from the relative perspective instantly significant. However, compared to developed countries in an absolute terms this would be vanishingly low.

*Co-production of knowledge
The Advisory panel (policy and business)*

Roles:

Sandra Tenggren - observer and note-taker;
Kasper Kok - facilitator;
Cornelia Auer - clustering

Aim: Understanding important factors for stakeholders working with scenarios

Question: What factors are to be addressed in shaping scenarios?

Process: The participants were given a short presentation of what they were asked to do. They were given 5 post-its each which they were instructed to only write one topic in one word or two. As they wrote we collected the notes and placed them on the wall, trying to do a preliminary clustering. When everyone was done, the participants were invited to the wall of post-its and together with the facilitator they had a discussion while clustering the notes. The exercise led to a set of 7 clusters. We were not able to place two single post-its due to time constraints. The participants were probed by the facilitator when the discussion came to a stand-still to understand what a note meant and where it should be clustered.

Action: First analysis of the clustering to be sent before Christmas.

Further analysis of clustering and topics will occur and shared amongst participants and researchers in the project aiming to reach a consensus on topics that can be reached within the aim of the SENSES project.



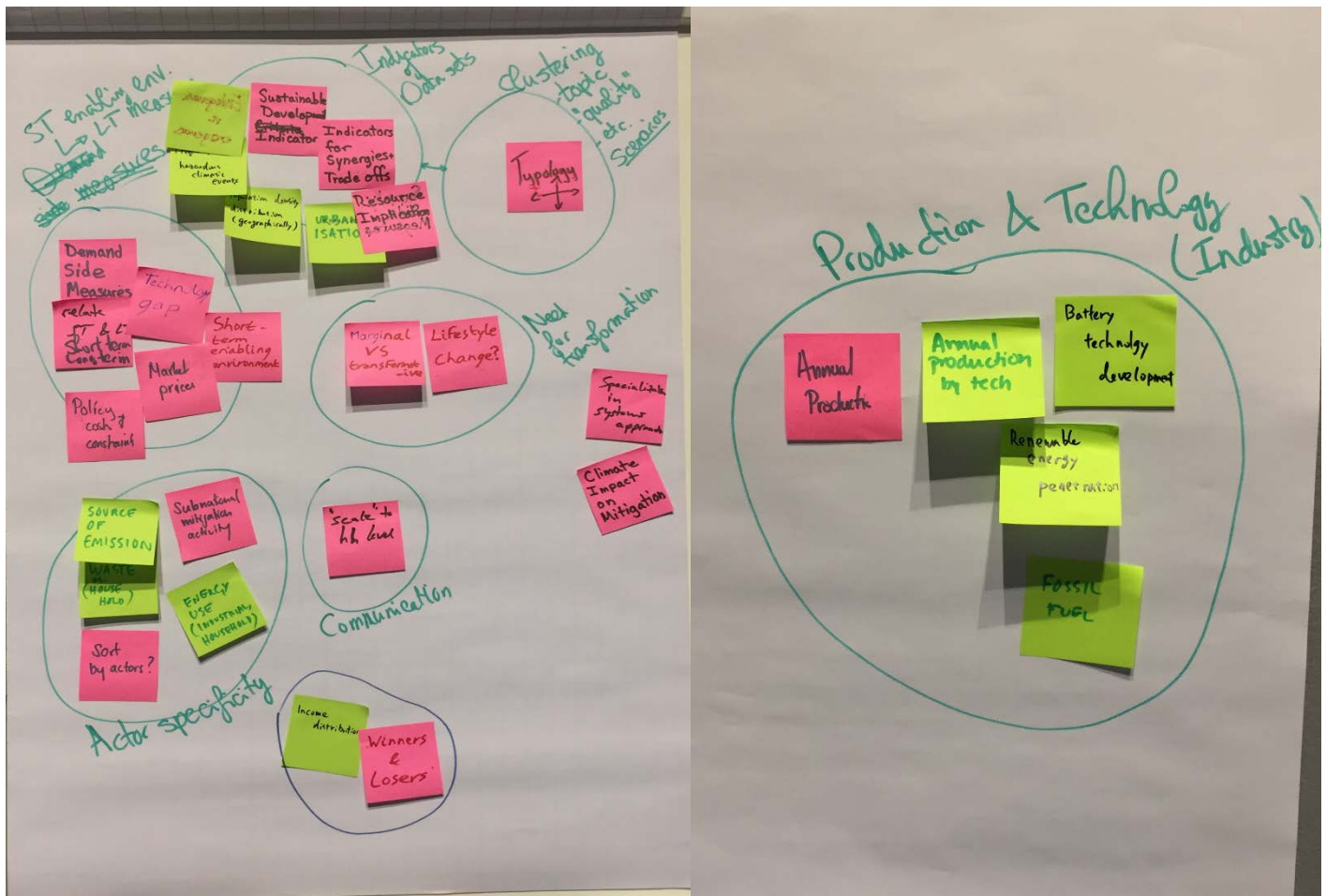
Pic 1. The participants writing on post-its.



Pic 2 post-its without clustering



Pic 3. Clustering process



Pic 4. Clusters after discussion

Results

Overall, stakeholders **confirmed the need for SENSES** and its focus on climate services and scenario communication. Almost all clusters relate to the fact that there are too many scenarios that are not always communicated towards policy and business stakeholders in the best way possible. This needs to be improved.

Clustering the scenarios by topology

Stakeholders strongly expressed the need for a (tailor-made) **scenario typology and classification** that would guide the use of type of scenarios:

- If users don't know what scenarios means what if they could get scenarios under different topics. Knowing what the topic of the scenario aims to would make scenario analysis easier.
- Output variables and other aspects that give the scope of the scenarios.
- Is two degrees aligned with the carbon budget?
- Deciphering scenarios by breaking up what kind of information it can give. Sub-sectors, high-level assumptions and many details but with a lot of uncertainties. How would this be communicated?
- Classify scenarios accordingly.

Clustering of indicators within the scenarios

Stakeholders strongly expressed the need for **tailored indicators** to improve the usability of scenarios:

- Add indicators on sustainable development/other topics such as actors, urbanization, industry, SDG, households to hang on to scenarios to visualize what implications these trajectories would have in different scenarios. Thus, see what is politically or economically feasible. I.e. more detail on other factors that have impact on our development.
- What happens on the global level when including these indicators? Macro-economic indicators, interesting for certain users. To understand macro-contexts. Influence the policy and action we can take and indicate what technology/policy can solve or break the trajectory if it is against the 2 degree target and SDGs.
- Another aspect: urbanization is a very important indicator for what would happen overall. What would each of these scenarios look like if different aspects of urbanization are fulfilled?

Stakeholders singled out **technology, inequality, transformation**, and **actor-specificity** as issues that need to specifically be included in any set of scenarios

Need for transformation

- Marginal and transformative scenarios
- Is *marginal* the 2 degree target or transformative scenarios is needed to meet 2 degrees?
- Lifestyle changes: is it needed in a 2 degree world.

Production and technology

- Energy, production, a changing industry, technology development.
- Roll-up of a technology: all the way from production processes-to use. Which impact on policy will that make?

Actor specificity

- Different scales and sectors of society: So we can see what would need to happen on different sectors and at the household level.
- Household level. What would affect households, how the *Jonson's* will have to change under different pathways. How they consume something to bring back to home more easily.
Communication is important and is there a choice between nice life or saving the planet- show that it will not be awful.

Short-term enabling environment for long-term measures

Stakeholders stressed the need to **link short-term and long-term measures**:

- Policy, market price and enabling environment together.
- Scenarios to show what we need to put in place now so we can develop technology aligned with future goals and short-term policy measures to enable actions now which can lead to a long-term change that we need.
- Policy levers – co-ordinate transport and power to talk with each other.
- Outputs: what for the long-term goal would really help. Both short term enabling environment but also in the cluster for need for transformation.
- The impacts on the demand side which might have long-term and indirect effects are needed to understand.

Communication

- Uncertainty with extreme events: Takuya Hara was the only one mentioned this.
- Climate impacts and granularity – a problem where the extreme events will happen.
- Assumptions in indicators. What indicators are there and what do they mean?
- Elements of distribution
- What is the share of something, use the scenario as input to write their own risk model. To find out if you are a winner or loser. Some people already know this.
- Political blockage – the ones already in power don't want change. "Everything needs to be an opportunity" – something like an opportunity-framing.
- Granularity – you will not capture winners or losers in scenarios: scenarios are less actors specific than what we want to know.

Further insights

Stakeholders used different types of scenarios interchangeably, mixing normative pathways and mitigation scenarios with exploration, and qualitative stories on transformations with indicators derived from quantitative model output.

Next steps

- Before Christmas send a first analysis on the clustering
- Cornelia Auer will call the stakeholders to ask questions on the survey and further feedback on the workshop
- Intensity: next 9 months – fewer meetings and more bilateral calls. Telephone conference: Policy and business division for this?
- Conference calls – to hear what others are saying and to interact, every 2-3 months.

Stakeholder feedback

Feedback on preferred stakeholder interaction

Before the next meeting in 9 months the stakeholders would prefer to be contacted in the following ways.

- The stakeholders were ok with a telephone interview within the next 4 weeks: topics are feedback regarding the survey, next step questions regarding visualization & co-production, further contacts/ stakeholders.
- One person expressed explicit preference for 1h-bilateral-calls instead of more meetings. Especially workshops that require an over-night stay are not desirable.
- Another person would prefer to have group calls for policy and business because the interchange of information with the other participants was considered especially helpful.
- The group decided on the approach that there will be one phone call this year and one next year before the next work shop.
- Networking: the stakeholders can imagine to be multipliers for the survey.

Feedback on workshop itself

- One person found the workshop good and very interesting. However, for the next time more in depth clarification is absolutely required – on what the consortium plans to do and to what they can react. There is a need for a better idea of the project.
- Another participant expressed that although the workshop was very interesting her/ his business life comes from a different perspective.
- It was stated that it is a good idea to have a dry run next meeting in 9 month. Still at the current state she/ he has to ask why she/ he and no one else would be needed.
- There was a clear expectancy from the stakeholders that the SENSES consortium would tell the participants how they **can** use scenarios and not the other way, that they were asked how they **want** to use scenarios. There is not enough clarity on for what models/scenarios can be used, participants want to learn from the scientists. Participants are asking “Do you scientists have a strategy how to use models?”
- Still, one participant explicitly expressed the advantage of the opportunity to interact with other stakeholders. Also the interactive structure/way was considered beneficial: not only presentations were given but the participants could act in an even creative way. She/he would be happy to give feedback on assumptions of the models but also it would be helpful to hear about the assumptions of the models
- To see the variety of visualization means was also mentioned to be very good. Regular meetings with the researchers of his institute would be highly appreciated from this participant. Further the stakeholder would be very interested to join the researcher part of the next meeting.