**IASS-Blogpost**

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[Dachzeile]

# Stakeholder-based scenario building: How does it work in practice?

Looking at global energy transition processes, we were keen to find out how countries of the Global South fare in their energy transitions and what factors influence these developments. To find out, we did a deep dive into stakeholder-based scenario building and conducted country case studies in four different global regions. What considerations are important when constructing scenarios and what was the role of stakeholders in the process?

With climate change becoming ever more salient a policy issue, researchers are increasingly looking into possible futures for national and global energy systems. These future projections – or scenarios – serve as an important tool to inform policy planning and support decision-makers by highlighting alternative futures and the choices underpinning them.

Scenarios are also quite useful for our research in the ISIGET team, as our main focus are systemic impacts of the global energy transition for countries of the Global South. We want to find out how risks for these countries can be mitigated in order to facilitate their transition to low-carbon economies. In order for the use of scenarios to deliver real benefits, they must reflect future pathways accurately and the results must have a real impact in policy and society. Those were two of the main concerns that we took into account in developing our research approach.

Viable Depiction of Future Pathways

Energy transition scenarios have struggled to depict future development paths accurately. One reason for this is often that the applied perspective focuses on costs and technological change, e.g., innovation rates and learning curves. Factors like domestic politics, shifting geopolitics or value chain dynamics are rarely accounted for sufficiently. Treating these factors as fixed framework assumptions, does not account for non-linear long-term developments, which are crucial in understanding energy systems change.[1] That is why, for our research, we saw the necessity to explicitly include social and political factors and to investigate the influence that variables have on

[1] see Weimer-Jehle et al. (2016): Context scenarios and their usage for the construction of socio-technical energy scenarios. Energy. 111, 956-970. https://www.sciencedirect.com/science/article/pii/S0360544216306909

each other and what dynamics might follow from this. We decided on Cross-Impact Balance Analysis[2] as the method of choice. The beauty of CIB lies in the fact that it allows us to include qualitative variables in the scenario-building process and to explore their mutual interaction. The key questions driving our study were: What factors determine the energy transition process in each case study? And what policies can support a successful transformation to a low-carbon economy?
We worked with four country case studies: Chile, Jordan, Kenya, and Malaysia. To find the most important influence factors for the energy transition processes in each case, expert interviews were conducted. In the further process, we asked decision-makers what they think is possible and what they believe is necessary for this to happen.

Research Impact
It is very important for us to make sure that our research actually influences policy and society and that we have an impact beyond our own academic circle. To achieve this, various stakeholders were involved in all stages of the process, from data collection to evaluation. We are certain that such a collaborative process is much more likely to result in important impetuses being set in local contexts, as decision-makers and other key stakeholders take ownership of the results they helped to produce. How does this participatory approach look in practice?

Stakeholder workshops to identify interdependencies and elaborate policy recommendations
After defining the most important influence factors for energy transition processes in the respective case studies based on our expert interviews, we organized stakeholder workshops, bringing together 15-20 stakeholders and experts from areas like the renewable energy industry, policy, academia, energy finance and civil society. Due to Covid-19, the team became experts in conducting workshops in all kinds of formats, be it face-to-face, hybrid or completely online. A lot of spontaneity was needed as travel regulations were changing very fast.

The workshops served as a platform for the stakeholders to discuss interdependencies between the pre-defined variables, more precisely between the different end-states they can result in. For example: If the political economy structure is liberalized, what does that mean for the quality of grid infrastructure? How does it influence public opinion on renewable energies? And also: If the political economy structure is state-centred, how does this impact the other variables? These discussions enabled us to explore interdependencies between the individual variables and to recognize the interrelations within the system.

The software “Scenario Wizard”[3] helped to make sense of these interdependencies by calculating consistent scenarios from them. Consistent, in this case, means scenarios comprising end-states of variables that are self-reinforcing. Depending on the case study, we found different amounts of consistent scenarios, varying from 3 to 31. The software also helped us understand the overall system dynamics and to identify key variables and leverage points. These findings served as a basis for the second round of stakeholder discussions. These took place in the form of 1-day online workshops with the participants of the first workshop and additional stakeholders. In one case, face-to-face discussions with representatives were held instead. In this phase of the research,

[2] Cross-Impact Balance Analysis (CIB) was developed at the Center for Interdisciplinary Risk and Innovation Studies (ZIRIUS) of the University of Stuttgart. The website https://www.cross-impact.org/ provides a good overview of the method.
[3] The program is freely available and can be downloaded here: https://www.cross-impact.org/english/CIB_e_ScW.htm

stakeholders discussed the outcomes of the first workshop. They looked at what ways and policy options are available and offered recommendations on how desirable energy transition scenarios could be achieved. For example, one of the key leverage points for Jordan was regional cooperation, which in the overall system allowed for the liberalization of electricity markets. The workshop participants agreed that this was one important factor which was already a policy focus; but that further cooperation, also in terms of market infrastructure and connections to Europe could help the country integrate more sustainable technologies.

What's next?
At the moment, our team is working on policy briefs and academic publications for the individual country case studies. In these we will describe the processes in more detail and highlight the outcomes and implications for each case study. The form of outputs is also being adapted to the needs of stakeholders and local partners. Their suggestions for reaching an even broader impact in the respective contexts are taken into consideration, for example organizing a session with the responsible ministry to present the results.