



S10: Detecting and quantifying interactions within and across Sustainable Development Goals

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Summary of themes covered in workshop

J.Kropp: State of the art of SDG interactions research (synergies and trade-offs). Targets are politically defined. Can science fill research gaps - and how? Literature review (JPK), various papers published 2017, approx. 1% Gross World Product necessary for fulfilling SDGs until 2030. Suggestion take Green Climate Fund as example. There is no common framework for SDG. Model-based approach by Obersteiner et al. 2016 (science advances). Pradhan et al. 2017 (Earth's Future) use data driven approach analyzing indicators among all SDGs and targets. SDG are extremely important. Problem: statistical relationship does not explain anything about processes. Nevertheless, good starting point. E.g. SDG9 & SDG5 anti-correlations. SDG12 (responsible consumption etc) is conflicting with many other SDGs. SDG achievements, therefore strategical development is needed. Also needed a coherent international research agenda.

Pradhan, P., Costa, L., Rybski, D., Lucht, W., and J.P. Kropp (2017): A systematic study of Sustainable Development Goal (SDG) interactions, Earth's Future.
doi:10.0.3.234/2017EF000632

A.Palazzo: World population growing, richer, changing food preferences. Water is good for SDG3.9, SDG6, SDG7, SDG12, SDG15. Land is good for (SDG3, SDG2, SDG12, SDG6, SDG15). Based on conceptual framework, water model etc. Partial Equilibrium Model Globiom Global Biosphere Management Model. Linear programming approach maximizing something, land-cover, land.use, production, markets, demand (food, fibers, energy, industry). Water is important in all of them, irrigation etc. Effects of climate change. Biophysical and economic

scarcity. Water demand from other sectors is growing. Water may become a problem in China. Water demand for irrigation shows local differences. Water exploitation index highlights where agriculture exceeds environmental flow requirements. Implications for food security. Trade can mitigate. Temporal issues matter. Demand from other sectors is increasing. Life underwater is connected and related to fish, but was not part of the presentation.

Panel discussion: Lucht (1), Imme Scholz (2), Mark Lawrence (3), and Leena Srivastava (4), chair: J.Kropp

4: recognition of interlinkages, but not enough to turn it into action; 4: who is meant by 'we'? 3: Scientific community researching the aspects behind the SDG. 2: Rockström (not present): planetary boundaries at the center of the agenda. MDG worked, but were not satisfactory. 1: German sustainability strategy is aligned with the SDG, summary: strong environmental agenda within the SDG agenda or too much environment? Intellectual dishonesty. If you just do the right thing you can have all, economic growth, etc. Great transformation. Consumption is somehow in the center and we are not there yet. At the end it will be a cultural debate. Pathways. 1: it is not old wine in new skins because SDG do address also developed countries. Success of SDG will depend on if there is a real benefit. Many cultures have components which are not in favour of exploiting everything. 2: What are legitimate political goals? Distinguish between societal needs and environmental flow requirements nicely laid out by A.Palazzo. Integrated water resource management in South Africa, rapid provision of water in the households caused problems given the water requirements of agriculture. Social narrative, invite people to join the transformation. How do you convince people about changing the understanding the needs of prosperity etc.

3: Inspiring people for the transformation, science alone is not sufficient. How can science open up to illuminate the connection between action and consequences? Argument science, science that works together with society. 4: Politically actionable solutions are required, science needs to step out of its comfort zones. Scientists need to stop talking only to each other. Energy access will foster development in India. Incentive systems. Scientists have to look at translating interlinkages into a language that is understandable by politicians. 0: Change of self-perception.

4: 70%-80% of technologies to solve climate change are known, but are not mass-applied? 1: Modernization of production, lock-in of infrastructure, short-term vs long-term. Society in a new phase. Investment banks. Strategic investment in the future that brings us much further, despite small obstacles in the short-term. E.g. protectionism has short-term benefit, but long-term problems. 3: Yes, and. Political system is set up in a way that the short-term things decide upon they are going to be re-elected given the short election periods. In science, how well do we follow what we are saying we should be doing? 4: Micro-person example: principle secretaries discussing SDGs. conflicts between sectors. Challenges at the local level. Political mileage.

2: Governments are organized as subsystems competing with each other. They are not trained in cooperating at the interfaces. Reward system. DR: Third-party project system for politicians? 2: Deep decarbonization pathways. How do we achieve decarbonization. What would be the

consequences? We want scenarios that fulfill two objectives explicitly, eg decarbonization and creation of jobs. Multiple objectives over time need to be taken into account.

1: opportunity occurs also where the current systems shows cracks. Capitalism, identity, justice. Forward instead of backwards looking. Trade-offs are part of the problem. 4: What we think are solutions may not be solutions. 3: Marks agrees. We have to think much more broader. 2: Common good. Real civilization challenge. Explain and justify that we are working for the common good. How is the relationship with the common good? Recountor the public space. Transdisciplinary approach. Does not mean working with the private sector.

Most controversial question that came up in this workshop?

Why does SDG12 (responsible consumption) require trade-off to many others SDG - and not SDG8 (economic growth)?

What are the clear pathways beyond the low-hanging fruits?

Are the SDG just old wine in new skins? What is new? What is needed to accelerate the scientific process to advise politics.

Scientists working in silos.

Results of the discussion

hard to destil

Research gaps identified

Data scarcity.

Process-knowledge is vague.

Deterministic approach is lacking (complementary to statistical one).

Nexus approach to SDGs.

Bridge communication between science and politicians.

Next steps

We have not discussed the next steps. However, we plan to continue our work in SDG interaction in cooperation with others.

Other

Does not apply.

3-5 keywords that characterize the session

SDG interaction, Synergies, Trade-offs, Transformation, Science Society Interface, Water