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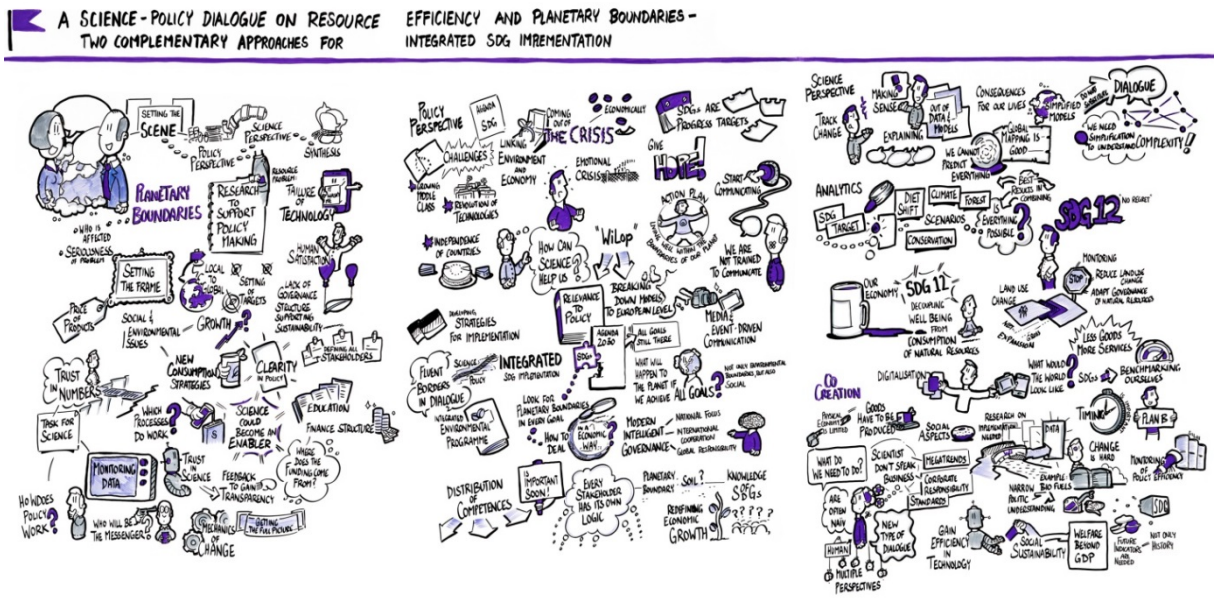

Figure 1: Graphic recording by Sven Kröger

DIALOGUE FORUM VII | Summary

A science-policy dialogue on Resource Efficiency and Planetary Boundaries - two complementary approaches for integrated SDG implementation.

RAPPORTEURS

Holger Hoff (PIK and SEI)

HOSTS

Institute for Advanced Sustainability Studies (IASS)
Stockholm Environment Institute (Sweden)

INTRODUCTION

Integrated implementation of the SDGs means reconciling long- and short-term, global and local, environment and development related targets, focusing on critical interlinkages, tradeoffs and synergies ("nexus approach"). Resource efficiency is necessary for achieving more (development and human well-being) with less (environmental pressure and resource use), but not sufficient for complete decoupling given e.g. rebound effects. Complementary budget approaches such as Planetary Boundaries must set limits to the total human footprints.

Planetary Boundaries (PBs) operationalization has just begun, not yet taking into account specific contexts, fair shares, development needs, or the externalization of pressures to other countries via trade (external footprints). While PBs can inform nationally determined contributions (NDCs) so that their total sum stays within the safe operating space (as for the global climate target), PBs themselves do not provide guidance on implementation. Resource efficiency improvement is one important measure for staying within the safe planetary operating space, others include: transformative (e.g.

agricultural) production systems, sustainable consumption and production, horizontal and vertical policy coherence etc.

Usefully applying the two complementary concepts of resource efficiency and PBs for integrated SDG implementation requires entry points for a science-policy dialogue, such as the Sustainability Strategy and Integrated Environment Programme in Germany, or the EU Circular Economy Plan and the Common Agricultural Policy.

This science-policy dialogue aimed at the "co-production" of knowledge by policymakers, scientists, and other stakeholders around the main themes of the conference, i.e. land, water and other natural resources and sustainable consumption and production, towards mainstreaming of this knowledge into actual policy processes.

GENERAL ISSUES IDENTIFIED DURING THE DISCUSSIONS

Photos by Piero Chiussi

The following issues were identified during this discussion:

- **Integrated implementation of the SDGs and Agenda 2030** means reconciling long- and short-term, global and local, environment- and development-related goals and targets. It requires horizontal and vertical policy coherence across all these dimensions, and needs to be co-developed with science. Integrated science and in particular the systemic nexus approach with its emphasis on critical interlinkages, synergies, and tradeoffs, holds a number of useful analytical tools, assessments, scenarios and insights that can support coordination and coherence.

- The **Planetary Boundaries concept** provides guidance for integrated SDG implementation in terms of large scale environmental risks and accordingly safe environmental operating spaces that should not be transgressed. PBs set global limits by calculating the sum of all nationally determined contributions (NDCs). They inform vertical policy coherence across scales and levels, and provide a consistent basis for integration of top-down and bottom-up approaches. PBs also provide a dashboard of critical environmental issues and with that inform horizontal policy coherence across sectors. Operationalization of the PBs by linking ("downscaling") them to policy- and decision-making levels raises equity and fairness considerations: how to allocate the limited resources and environmental space in a fair way to countries with different resource endowments, development

status, capacity to adapt and transform, and also different historic "debts" in terms of resource (over-)use and emissions.

- **Resource efficiency improvements also support integrated SDG implementation**. These are necessary for achieving more (development and human well-being) with less (environmental pressure and resource use); yet, they are not sufficient for absolute decoupling given in particular rebound effects. Without specific targets, efficiency improvements may even be counter-productive and possibly lead to higher total resource use ("footprints"). PBs provide such environmental targets in the form of global budget approaches (maximum total resource use or emissions). On the other hand, PBs lack means of implementation hence weight on resource efficiency at sub-global levels. PBs and resource efficiency should be seen as complementary concepts in support of integrated implementation of the SDGs and Agenda 2030.

- **Globalization and trade are causing a rapid externalization of pressures on the Planetary Boundaries**, in particular by industrialized and industrializing countries. Europe for example is a large net importer of virtual land (i.e. commodities with external land footprints) and of other (virtual) natural resources. Accordingly SDG implementation cannot be limited to domestic issues and the national territory (SDG implementation IN Germany), but it has to also include extra-territorial effects of consumption patterns and policies (SDG implementation BY Germany). This also suggests defining allowable per-capita shares of PBs on consumption- rather than on production-basis. External footprints related to PBs and addressed in SDG implementation include: water, land, biodiversity, nitrogen, carbon and possibly materials.

- **The Planetary Boundaries present a risk-based approach**, arguing that the transgression of defined boundaries will lead to a high risk of unwanted system changes. Current development trajectories will cause (or have already caused) transgression of several boundaries. So the PBs ("growth within limits") point towards the need for a different economic development model, i.e. one that aims at sufficient material provisions and human wellbeing for all by convergence of per-capita consumption levels. Such a model would maximize sustainable ecosystem services and equality rather than total economic and physical growth (see SDG 8: inclusive and sustainable economic growth). A broader application of the resource efficiency concept so that it encompasses reductions of inefficiencies, losses, and recycling all along production and consumption chains, and a comprehensive and participatory approach to demand management, can support such a transition (SDGs are process targets). This involves restructuring of supply chains and business models, but the recent economic crises around the world may provide a window of opportunity for reframing discussions; e.g. from markets and what they allow to happen to acceptable risks and politically defined priorities of what to safeguard. The definition of what development should aim for is part of the Agenda 2030 discussion and epitomized in the "safe and just operating space" donut of Raworth. New economic development models should aim at maximizing this safe and just operating space by better managing and governing production and consumption.

- **SDG 12**, one of the most integrative SDGs, **provides a good starting point for a science-policy dialogue** that defines what development should serve and what an integrated approach to the 2030 Agenda requires: what are sufficient and sustainable levels of consumption and which production and supply systems can deliver them best? Most other SDGs have more detailed descriptions and answers to this question and yet have to be addressed by (context-)specific policies and practices. A main challenge for these science-policy dialogues towards SDG implementation are the inconsistency inherent to SDGs, particularly at target and indicator levels.

- **Successful science-policy dialogues** that support mechanisms and processes from targets to implementation **also depend on a reduction of the complexity that is inherent to scientific methods and analysis**, as demonstrated by the Planetary Boundaries concept which is meant to communicate complex Earth system processes by way of simple indicators. It will also be important

to flexibly incorporate new scientific knowledge into the SDG implementation processes, such as dynamics of the safe operating spaces through adaptive governance and management.

- **In order to operationalize Planetary Boundaries,** resource efficiency and the underlying scientific insights for integrated SDG implementation, **policy entry points and processes are required.** At the European level such entry points include e.g. the 7th Environment Action Program titled: Living well within the limits of our planet; the Circular Economy Package which emphasizes "growth within"; the Common Agricultural Policy; the Resource Efficiency Roadmap; and others such as trade policies. At the German level such entry points include the revision of the national Sustainability Strategy (which is also the central entry point for national SDG implementation); the new Integrated Environment Program; the new Integrated Nitrogen Strategy; the Resource Efficiency Program and others.

- **When being directed at integrated SDG implementation science becomes part of the policy process**, throughout all stages from identification of (future) critical issues and setting agendas, through specification and quantification of regulatory targets and testing of different policy scenarios, all the way to monitoring and evaluating the effectiveness of policies. It also requires embracing the idea that steering complex systems cannot be planned and executed in a linear way and that science cannot provide exact numbers and predictions.

- Division of labor may need to be re-adjusted. **The co-development process will also have implications for science and involve additional disciplines (e.g. political sciences) in "sustainability science"**. While scientists are also stakeholders in these processes, they need to make sure not to transgress certain boundaries themselves to avoid becoming advocates for partisan solutions that negatively impact the credibility of science. The Independent Research Forum and other independent science panels such as the International Resource Panel, that have accompanied the SDG development and now implementation, may be good models for neutral clearinghouses. They can (and have) review(ed) and improve(d) the knowledge base for testing different (combinations of) policies against policy objectives.

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