

Safe Planetary Boundaries : A new environmental policy frame?

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1. Introduction

Endangered species always attract some special interest. And indeed I come from an endangered species, from an independent, interdisciplinary scientific Council to the Federal Government. Many independent scientific advisory Councils have been abolished in Europe: 10 years ago we had more than 10 – today 4 remained. The broader European Network of Sustainable and Environmental Advisory Councils (EEAC) meanwhile has suffered more than a halving of its members.

This trend seems to be a paradox: exactly when the science-policy interface gains in relevance – one type of “boundary organization” is under threat. First at all this reflects the conservative political cycle of the last decade throughout Europe: foresight, independent and critical reflection is not welcome everywhere. But it reflects also changed conditions for environmental policy advice on the basis of small independent councils of experts. Meanwhile many other venues for science- policy interfaces emerged – hence competition has increased.

I am nevertheless convinced that such structures like ours still can play an important role and may have added value. And perhaps at the end of this talk you have an idea why.

But first and foremost I would like to guide you through a thought experiment: In June 2012 SRU published a Report on Responsibility in a finite world (SRU 2012). The fundamental message of our report - and many others published in recent years is: the bio-physical metabolism of the economy has to stay within safe planetary boundaries; if not: we will have to face systemic repercussions back to the economy and human development.

Exceeding SPB's means risking tipping points, with ecosystem collapse, uncontrollable dynamics with positive feed-back mechanisms, vicious cycles. We know those earth system threats from the climate debate, but Rockström and his colleagues argue in an article in *Nature* (ROCKSTRÖM et al. 2009): there are many more vulnerable earth systems radically modified by anthropogenic interference. The "Holocene State" which offered a fertile and hospitable ground for human development for the last 10 000 years or so may be irreversibly damaged and transformed into a much less hospitable "Anthropocene".

The article from Rockström was a very short one – but – perhaps due to that – it has got an impressive reception from international organizations (OECD 2011; UNEP 2011), the EU (EUROPEAN COMMISSION 2012) and many national advisory bodies like ours (WBGU 2011; Deutscher Bundestag, Enquete-Kommission Wachstum, Wohltand Lebensqualität 2012).

So, does it have the potential to become a leading frame for environmental policy? If yes, under what conditions? What is the institutional agenda for establishing it as a lead frame? What is good institutional practice to explore? That is the thought experiment I would like to do together with you.

First I look into some characteristics of the SPB concept and their political implications. Then I discuss some essential success-conditions of political boundary work – in order to identify the important milestones and potential hurdles of a long way.

If, where, how and when SPB may become a leading environmental frame is not evident. Even the best governance of the science –policy interface has to compete with powerful socio-economic interests and institutional path-dependency. Enlightened long-term self-interest and even more an ethical approach to the fair use of the global commons has no easy position. So any linear relationship between good advice and good policy must be rejected. And nevertheless scientific frames may play an important role also to modify perceptions of interest (OWENS 2011). So there is some hope at least.

2. The "Politics" of the SPB Concept

So what is the political dimension of the SPB Debate?

First: at first look safe planetary boundaries seems to be scientific concept: it is science which tries to establish criteria for the critical thresholds, which should not be passed.

Science is trying to identify the dynamics of natural systems. And one may tend to argue: natural systems function different to human societies, they do not argue, they do not negotiate, they do not make compromises: there is some factual power in their dynamics and if you ignore that, nature is beating back. Scientists only try to make as realistic as possible models of this factual power.

We had an internal debate in our Council: does this mean power to truth? (the reverse of: HAAS 2004). Power to those, who can read the signals of nature? Does this mean: The scientist as the ruling priest class of the 21st century? (WEINGART 1999; GIERYN 1983) Or even: Avantgardist Ecodictatorship as some have warned?(VON WEIZSÄCKER 2011).

No – not in an enlightened concept of what science is and is not: The science I am talking about is “postnormal” science (FUNTOWICZ und RAVETZ 1993). Postnormal science is aware of the uncertainty and lots of unknowns, of the unavoidable value judgments. So it also humble as regards the democratic process.

In this perspective SPB is not pure science, it is a value based concept. It is conservative – as it tries to establish a “bottom-line”, it is not about a “good or optimal status” of the environment, but it is simply about preventing global disaster. So one may ask: is preventing global disaster all we are aiming to achieve? Certainly not . But as least it should attract our full attention.

As we know from the debate on postnormal science – value judgments require rather some kind of mixing science and politics than their purified separation. “Coproduction”, as Sheila Jasanoff calls it (JASANOFF 1994), requires boundary work and bridging organizations between the two systems, sciency and politics, which have to follow different rules. .

So what are the conditions that policy – and more precisely democratic societies – are buying into the warnings and suggestions of the SPB-Approach?

Cash and others (CASH et al. 2002) have identified in a seminar research paper three essential success-conditions: credibility, salience and legitimation.

I follow those 3 and try to illustrate the challenges – also on the basis of first reactions to our report.

3- Credibility

Credibility is the core business of science: scientific robustness of results, transparency of assumptions, arguments and conclusions are the preconditions for critical review. Strong arguments or sophisticated modeling are part of this.

Rockström et al: identified the themes and suggested some safe thresholds. They also had some good arguments for suggesting the thresholds they did. There might be a consensus on the observation, that as regards climate change, biodiversity loss and excess nutrients we face an overshoot. But none of the suggested thresholds can be considered as robust und consensual knowledge.

So as regards climate change Rockstrom switch from the political convention of a 2 degrees threshold to GHG concentrations of 350 ppmv, which is quite close to what we already have and below the levels, policy makers draw from the IPCC reports. As regards biodiversity they dare to define an acceptable extinction rate as a factor of an estimated natural extinction factor. Some indicators, such as land-take are only useful concepts at lower scales, others are not even operationalized, such as chemical pollution.

So the concept is a starter for debate but far from being mature and robust, to give firm political guidance. More investment in modeling, bringing scientists together in order to form consensus might be necessary, to enhance full credibility of the concept. So very high research capacity is a must to strengthen the credibility of the approach. But that's not enough.

4. Salience

Salience means relevance for stakeholders, citizens, policy makers – there must be a link to their concerns and their action options. That is not yet the case with SPB's. Ecological limits is an abstract concept, which by intuition is plausible, but not really tangible. We tend to accept the concept but we do not discuss it politically or emotionally. My council tried to do so, but failed to produce emotional response during our seminars and press work.

What is needed is a translation: What is the economic and social impact of exceeding SPB's? What repercussions do we anticipate in our national context? What is our role in overusing our safe budgets? The "nexus-approach" goes some way in that direction. It looks at the interaction of conflicts land, water, energy and resources and the resulting political conflicts, violence and wars.

We feel that overshoot has a systemic dimension to economy and society. The OECD says in its environmental Outlook 2050 even: "the risk of irreversible changes could endanger 200 years of rising living standards."! (OECD 2012). So there is salience, but the point needs to be translated. The Stern-Report (STERN 2006) compared climate change with a well known disaster: world war II and gave some idea of the cost of inaction. Only when we are able to translate the natural sciences of the SPB into socio-economic categories of interest and social stability, we can expect to mobilize some "enlightened self-interest", to care for the global commons. The Royal Society has clearly emphasized this as a missing point of the SPB-approach in its recent report on people and the planet.

The Royal Society has also emphasized an other important element of salience: it relates to solutions to "offering alternative ways of operating within those boundaries" (The Royal Society, 2012, 72). We tend to ignore problems, when we cannot solve them. That is the essence of the "catastrophe paradoxon" discovered by Volker Prittwitz (PRITTWITZ 1990). So planetary boundaries only have a chance to get accepted, if you have some solutions on how to stay within safe budgets. I am skeptical if "degrowth" belongs to the category of ideas, which are widely accepted as solution. Acceptable solutions rather can be found in the absolute decoupling and green economy discourse.

Just to give you one example!: Last year SRU launched a report which proofed, that a 100% renewable electricity sector is technically feasible, affordable and safe as (SRU 2011) regards security of supply. Proving the capacity for such a low-carbon and post-nuclear economy is an important encouragement for accepting boundaries and for daring the transformations needed.

5. Legitimation

Legitimation is one of the most critical points. It means that the science is socially accepted as credible, reliable and considered to stay beyond party politics. Policy

driven science has become a widespread phenomenon . But this implies also considerable loss of authority, as it is perceived as another form of policy advocacy and even more as “arrogance””. Also “ecodictatorship” is a common critique against any scientific attempt to constrain economic and political freedom. In a more modest form the idea , that science is trying to restrict democratic policy making, is considered as politically naïve (GEDEN 2012).

The ecological limits concept is especially vulnerable against such type of attacks . When my Council warned, that national wood demand is about to grow beyond sustainable yields – we faced an unprecedented political campaign of forest owners. They attacked us for being onesided, unscientific and uncredible, that we simply echoed environmentalist campaigners. It was a campaign against the institutional credibility of my Council, similar to the “climategate” campaign against IPCC a few years ago. One reaction against our 100% renewable report was an attempt to impose political control over a Council perceived as being a green partisan rather than an honest broker.

Our forest argument was not wrong – but our governance approach was: we did not engage early enough in a debate with forest owners due to capacity constraints. So they became institutionally aggressive, because they felt not to be taken seriously.

Also internationally there are many examples – that scientific knowledge was politically not accepted as relevant knowledge. For instance the 1995 Global Biodiv Assessment initiated by UNEP was rejected as a relevant source by US and other delegations (LARIGAUDERIE und MOONEY 2010).

Ignoring, attacking the credibility of scientific groups, challenging the results, mobilizing counter-expertise – might be some of the strategies to undermine the legitimation of scientific policy advice –especially if it contains an “inconvenient truth”. And science is vulnerable against such campaigns because campaigning does not belong to the core business of the scientific community.

The only way out is institutionalized coproduction. Legitimation has always an institutional and procedural dimension. The process must be inclusive, inviting both stakeholders, policy makers and scientists with different views to engage in the process of elaborating recommendations. But it also must maintain the integrity of the scientific core of the recommendations. This is the institutional model of IPCC and

IPBES. It is exactly the proliferation of “hybrids” – as **Bruno Latour** put, the mixing of facts and values, knowledge and identity, nature and culture, science and politics which produces legitimation (cited after: MILLER 2001, S. 487).

The challenge however is – to maintain the integrity of science – while creating boundaries between the scientific and the political worlds. Boundary work, boundary organizations, boundary objects and last not least political demand for advice – that is the core of what is needed to improve legitimation.

6. Institutionalization

How to get the policy-science interface for SPB institutionalized?

First at all, there is a rich landscape of international, European and national institutions: IPCC, IPBES; IRP; EEA and national environment agencies, ICES, European Science Academies and their national Members, EEAC and their members, like us - national research centres like the German Helmholtz Research centres of the PIK, think tanks from the World Watch Institute to SEI or IEEP. .

Each of them has comparative strengths and limitations in producing credible, salient, robust and policy relevant knowledge. Each can make important contributions in the value chain of the science policy interaction. I cannot discuss the different performance profiles here in detail. My Council for instance has a strong reputation among environmental policy makers and officials, can mobilize considerable publicity and has some potential in producing strong synthesis reports. We are good in translating insights from international policy-science panels into the national debate. But: we cannot do research and due to the very limited number of staff and Council members, we are not the specialists, neither do we have any authority of representing the scientific consensus.

There is some competition and also some redundancy between the different boundary organisations. But that is not a problem: hegemonial arguments in public discourses are repeated and repeated. Redundancy is not bad, but part of the democratic discourse.

Most of the institutions are publicly financed. But as far as I see, there is no systematic strategy on how to orchestrate the many sources for a broad discourse on SPB's. There is no strategy to make use of those resources for a debate on tipping

points, thresholds, safety margins etc. for issues others than climate. We need some political coordination at all levels for that. We need also coordinated political demand. I will not repeat here Uwe Schneidewinds call for the transformation of science, but just present an idea on how to trigger better focus.

Political demand can come from national or European environment programmes. Our argument is: the process of elaborating environmental programs creates the political demand, which gives a new focus for all the many science – policy interfaces which already exist and which may be created in the future.

In the late 80ties and early 90ties a few leading countries have strongly invested in environmental programs and systems of environmental quality objectives, namely the NL, Sweden but also the EU with its 5th EAP. This first wave of programming managed to define objectives – similar in quality as the SPB- concept. But after a while, the target led approach got disillusioned, because the level of ambition was beyond political capacity to deliver. There was an implementation and credibility gap. Perhaps this is the deeper reason, why the European Commission is everything but enthusiastic to elaborate a 7 EAP, which is at the level of the problems at stake. They know, they will face institutional, political and societal difficulties to get the targets and budgets implemented.

But unfortunately the problems don't go away if you ignore them. So what is basically needed, is a second wave.

In our 2012 report we suggested a new architecture of environment and Sustainable Development strategies, in order to give SPB's a higher ranking in the Environmental Policy Agenda. Our idea was to organize a knowledge-based target setting process: taking environmental action programmes, such as the 7th EAP as starting point for a qualified and differentiated discussion and eventually mainstreaming some of the flagship targets in a renewed SD strategy.

I am happy to tell you that we could convince the German Environment Minister Altmaier to start work for a national environment program defining a new set of environmental targets for 2030. . Starting work on such a programme is part of his 10 top priorities for his first year.

7. Conclusion

Compared to 20 or 40 years ago – we know much more about the limits to the growth of the use of natural resources and at least partially we also know more on the our capacities to stay within safe boundaries. Bringing this together is perhaps a good starting point for a second wave of environment programming. And this creates the demand on how different science-policy interfaces can create a critical and credible mass for a robust debate on safe planetary, European and regional boundaries.

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