

Transformative Research in Europe: Can research accompany societal change? Should it?

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Introduction

Good morning ladies and gentlemen, dear colleagues,

my name is Sebastian Helgenberger from the BOKU Centre for Global Change and Sustainability in Vienna.

**European research
funders' Alliance
JPI CLIMATE**

I am involved in the Governing Board of the European Joint Programme Initiative JPI CLIMATE, which is an Alliance of national research funders from 15 European countries who are interested to jointly fund research to support society in tackling the grand societal challenges of climate change.

For the last 3 years I have had the honour of chairing the JPI CLIMATE Working Group on Societal Transformation. And I would like to thank the organizers for inviting me and giving me the opportunity to share a couple of reflections that accumulated during this time in terms of a new, transformative science for the environment.

Structure of my talk

To start with, I would like to talk about today's environmental research and about the abilities but also the inabilities of today's environmental research to inform society and to contribute to positive change for the environment and society.

I will then tackle the question how a new science for the environment looks like – a science for the environment that reaches out to change agents in society who are committed and willing to translate scientific evidence into positive environmental change.

JPI CLIMATE 2013
Research Call

And throughout my talk I will illustrate my main ideas along some principal, innovative features of the European Call of JPI CLIMATE 2013 “Societal Transformation in the face of Climate Change” that we just opened this week and where we would be very happy to receive your contributions!

The inabilities of environmental research to inform society and to contribute to positive change (for the environment)

Why are we doing this?

When we talk about inabilities of environmental research we need to be clear about its objectives and what we expect research on the environment to contribute. Why are we doing this – or, to shift perspectives a little, why is society, why are our fellow citizens giving us their money (in terms of taxes and public research funding) to do what we are doing?

Making my way through the debates on the role of science and research in society I understand that there exists a clear expectation that science and research should make a difference in society.

The International Social Science Council (ISSC) suggests that science should “make a real difference to people's lives”¹. The ERC, to quote another important player, aims to “provide Europe with the capabilities ... necessary to meet global challenges”². Horizon 2020 in this conference is linked to the expectation to bring clear benefits for society and societal innovations, to foster solutions to the challenges that society is facing and to support a green and prosperous future for Europe and the World³.

In terms of environmental research, which is the team we all are playing for, I would suggest that this most importantly means to

support society in conserving and reinstalling a liveable and nurturing natural environment with a good quality of life.

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- 1 Hackmann / St.Clair (Eds. 2012). Transformative Cornerstones of Social Science Research for Global Change. International Social Science Council, Paris.
 - 2 European Research Council (ERC). Mission Statement on <http://erc.europa.eu/mission>.
 - 3 cf. <http://dce-conference.au.dk/background/>

**Actively addressing
and tackle societal
challenges**

We all will agree that blue sky research, in terms of a not primarily purposeful, curiosity-driven type of research is and should always be a indispensable part of human exploration and inventive genius.

But now, with increasing scientific evidence and insights into the severe and accelerating social-ecological crises (Global warming, sea level rise, biodiversity loss – many of them are addressed at this conference), in the face of planetary boundaries and tipping points – in the face of all that, the approach of research and research funding, to actively address and tackle societal challenges, is being considered increasingly vital.

Not surprisingly, many upcoming international funding programmes are following exactly this challenge -oriented approach, among them H2020 and Joint Programming Initiatives (like JPI CLIMATE) in Europe and the new Future Earth Programme on a Global level.

**Successes and
shortcomings of
environmental
research**

The increasing focus of research programmes on grand societal challenges of our time are indisputable and clear effects of the research activities of the community assembled in this room today.

And if we talk about the abilities of environmental research, the diagnosis and analysis of ecological problems and crises is most definitely one of the big success stories of science and research. But if we talk about the abilities of environmental research to mainstream the problem awareness and the urgency across our international societies and our decision-makers to make action, we have to acknowledge an enormous deficiency and extraordinary need for readjusting what are are doing.

Of course, one could of course correctly argue that there are already national and international policies and conventions underway, aimed to reduce pressure on the natural environment, for instance aimed to mitigate climate change.

But I think we can all agree that, in comparison to the huge societal challenges we are facing according to existing evidence, these responses eventually are rather small, rather ineffective steps.

Through the work of people in this room and colleagues elsewhere we have all learned that there are a couple of severe thresholds in the environmental system that we might have to face in a not-so-near future.

So, in contrast to the rather weak responses that are taken so far, the awareness – at least among scientists - rises that if human societies do not act very quick, very comprehensively in terms of concerted strategy and action and in a Path-Breaking manner we might quickly cross these critical thresholds, such as the critical 2°C global warming threshold in terms of climate change.

Challenges of pathbreaking

To illustrate what “pathbreaking” means, let me just mention one “not-so-fun fact” on path continuation:

According to the IPCC, last week, world society cannot burn no more than 469 Gt of carbon dioxide, starting from 2012⁴, in order to stay below the critical 2°C global warming threshold (world's carbon budget). According to this years' World Energy Outlook, fossil fuel corporations now have an equivalent of around 2,795 Gt in their reserves—six times the safe amount—and according to their business plans that are already written, they're planning to burn it all⁵.

Which means these huge and powerful corporations have to be persuaded NOT to follow the path that their managers have foreseen. They have to be persuaded not to take home all the cash. They have to be persuaded not to do what they have already planned to do.

This somehow illustrates the dimension of the challenge we are facing when we are talking about path-breaking, but this is simple math arising from the figures that we produced.

Critical role for 'science for the environment'

Apparently pathbreaking in terms of NOT putting our planet under enormous threat and to move towards conserving and reinstalling a liveable and nurturing natural environment requires huge will, huge efforts and the capacities in society to do so. And talking about capacities, this means that there is also a critical role for 'science for the environment' that needs to inform these path-breaking steps. So it is up to all of us here in the room, researchers and research funders to take on the societal responsibility that arises from the insights that we have been producing.

4 See IPCC AR 5 / WG1 Summary for Policy-Makers, issued on Sept. 27, 2013

5 See also Bill McKibben's 'Terrifying New Math'

If not, environmental research will have been the mere observers of a social-ecological breakdown – and I don't think that many in this room would like to see themselves in that role, nor do I think this role would meet the societal responsibility of environmental research that I have been describing earlier.

**Transformative science
for the environment**

To fulfil our societal contract we will have to move beyond the activities we have been very successfully doing so far, which is analysing and understanding environmental problems better and better. I am not saying we should stop doing it, but I conclude that we need to shift our priorities from the analysis of environmental problems and towards a “transformative science for the environment”.

This is science for the environment that challenges society by posing fundamental and courageous (possibly inconvenient) questions and to facilitate critical self-reflection across society;

This is science for the environment that empowers institutions, organizations and individuals who are committed in tackling the grand societal challenges of global environmental change, who we in JPI CLIMATE would call “change agents”;

This is science for the environment that connects scientific knowledge to shared societal visions that drive societal transformation, and

This is science for the environment that increases its credibility by offering positive role models in terms of reducing the increasing negative environmental impacts of the research system.

Now, I would like to describe a bit more in detail what the aforementioned features of a transformative research for the environment mean for us and how they could help us moving forward.

Challenge society with fundamental, courageous and possibly inconvenient questions

“Why on earth is nothing happening, why on earth is nobody taking serious action? You have heard the IPCC! We have produced the Global Biodiversity Outlook and published the Stern Report!”

**The evidence is there,
why on earth is society
not taking serious
action?**

These are the questions that I hear again and again, talking to colleagues. And these are the questions so many of us have been asking and keep on asking. The evidence is there, why on earth are our decision-makers, are we, not taking serious action?

If we as researchers and research policy-makers take our societal responsibility serious to close critical knowledge gaps that are inhibiting a societal transformation to conserve and reinstall a liveable and nurturing natural environment and a good quality of life, if we take our societal responsibility serious, it is high time that we are stronger directing our analytical lenses towards ourselves, towards society, its institutions, inhibitors and drivers of societal change.

For our European Call in JPI CLIMATE on the “Societal transformation in the face of climate change” we were seeking to identify key areas for a transformative research in the face of climate change.

We consulted a good list of international research leaders as well as promising early career researchers who we considered to have the potential to become the future research leaders of a transformative science for the environment.

**Thematic outline of the
2013 Transformation
Call of JPI CLIMATE**

With their assistance we created the following thematic outline of the call which I would like to quickly share with you, to illustrate what a transformative science for the environment could or should address:

- This is about about moving from problem solving to realizing vision, how can socio-economic scenarios, e.g. IPCC scenarios, capture to positive visions of societal transformation?
- What role and relevance has climate science effectively had for policy and societal decision-making, and what are the implications for organising effective science-policy interactions in the future?
- This is about social justice and power structures and the question how are positive and negative impacts of climate change are distributed across society, and to what extent vulnerable groups are included in the design and benefits of climate mitigation and adaptation strategies?

- This is about trade-offs and planning horizon and the question which role the current economical and financial system play in terms of climate change mitigation and adaptation and what 'new' forms of climate finance and low carbon economies are necessary and feasible?
- Responding to a phenomenon like climate change requires unprecedented capabilities of our societies and its institutions – are we ready yet, what capacities are yet to be build up?
- The national and international governance systems so far have proven fairly effective in case of a acute catastrophes – why aren't they working in the face of an upcoming crises like climate change?

Decade for social science and humanities to inspire the Science for the Environment

When we look at the topics that we have identified for a transformative science for the environment in the JPI CLIMATE Call it becomes very obvious that we need the Social Sciences and Humanities on board. Actually we think it will be important to position the social sciences and humanities as an indispensable part of an integrated climate and global change research landscape in Europe.

The promising line-up and the programme of this conference tells us that this is actually already happening.

This decade might, in fact, become the decade for social science and humanities to inspire the Science for the Environment.

Reaching out to society's change agents

So, if we agree that science for the environment should continue to provide society the knowledge it needs to face the grand societal challenges of our time, I argued earlier that this is particularly about empowering, what we call 'Change Agents of society', that means institutions, organizations and individuals who are committed in actively tackling the grand societal challenges induced by global environmental change.

It's not researchers bringing the change, we are just informing those who do

Now, reaching out to stakeholders outside of research, in terms of transdisciplinary research co-operations is, of course, not entirely new. Nevertheless, we in JPI CLIMATE think it is important to stress this issue once again, especially in the context of a transformative science for the environment, simply because eventually, it's not researchers bringing the change, we are just informing those who do.

So, in order not to provide unneeded answers to questions that have never been asked – in our current research call we are motivating researchers to co-design their transformative research proposal with change agents in society.

We are requesting the proposed projects to display clear links to decision-makers and users of climate knowledge as well as potential change agents in society. And we make clear that our reviewers will have a keen eye on this issue when evaluating the envisaged Societal Relevance and Impact of the proposed projects. As our review panel will consist of around 25% of stakeholder representatives we are quite confident that they will come to a reasonable judgement here.

**Open access to
knowledge and data**

Without going into details, a second issue that we in our current call are also stressing, in terms of reaching out to society, is a policy of open access to knowledge and data that are produced in the research projects we are funding.

In a nutshell, reaching out to society's change agents basically means, to make knowledge count in a way that transformative research produces knowledge that is connected to shared societal visions and that is accepted and actively requested by change agents in society.

Offering positive role models (not negative ones)

The last feature of a transformative science for the environment about which I would like to talk this morning is about us all.

“Does flying around the world to conferences suggest a real and urgent concern for the effect of greenhouse gas emissions on the climate?”⁶

Not only since Al Gore's restless journey across the planet to convey his important message on Global Warming do we know that the message that science communicates is also connected to the actions we take.

We have had to learn how ruthless so-called “climate skeptics” lobby organizations are acting and investing millions of dollars to discredit the evidence from environmental and climate scientists – and our own ecological and carbon footprint provides them an excellent opportunity to do so.

⁶ Thompson (2011). Making our actions consistent with our scientific predictions. *Weather* 66(7): 195.

Acting in line with the implications of our findings

But much more important: We can offer society positive role models (not negative ones). Scientists are making a strong statement if they communicate towards the public and decision-makers that they are actually acting in line with the implications of their findings and working towards reducing the steadily increasing ecological and carbon footprint of the research system.

Actually, the important features of organizing our work, including the importance of international collaboration and exchange, lots of travelling, correspond to the conditions under which many of our colleagues in the business and service sector work. Sadly, the same holds true for a constantly growing carbon footprint that is far beyond a sustainable carbon budget.

So wouldn't it be important if those who should know best – yes, that's us – would start to find innovative ways of organizing our work, our collaboration in a sustainable, climate-friendly way to inspire others to follow?

Climate-friendly Climate Research

This is what we in JPI CLIMATE call “Climate-friendly climate research” and we have assigned a team of experts to analyse the carbon footprint of our operations and to provide us with feasible solutions to reduce it. In fact, we consider this endeavour a continuous organizational learning process and we are well aware that we cannot change our operations over night. But, it's a start, and I think it's an important one.

Join our virtual conference 11.-15.11.2013

On a virtual conference⁷ on “climate-friendly climate research” in November we will have the opportunity to find out more and you are very much invited to join in to learn and to share your ideas, as well as to consult our already existing resources on climate-friendly climate research on our webpage⁸.

By encouraging researchers who are responding to our JPI CLIMATE transformation call to experiment with climate-friendly ways of organizing their projects we also hope we can learn a lot for ourselves.

And with this in mind, I would like to congratulate the organizers of this conference for their efforts to organize and communicate this conference as green event, which I think contributes considerably to the credibility of our science for the environment in Europe.

⁷ <http://www.cfcr-conference2013.eu/>

Conclusion: Towards a Transformative Science for the Environment

Let's face it, there is a lot to be done and a lot that is waiting for us to be done.

In my talk, I have been arguing that our societies are in the midst of a severe and accelerating environmental crisis that is threatening well-being and quality of life for generations to come. And I assume we can agree on that, as it was the research community assembled in this room that collected the evidence.

Courageous, unconventional and path-breaking steps

And I also assume that we can agree that courageous, unconventional and path-breaking steps will have to be taken in order to tackle the challenges of global change we are facing, and that we are facing rather sooner than later.

And I hope you could follow my arguments on the particular societal responsibility that science for the environment has, to support and inform the necessary processes of societal transformation.

In fact, there is a great deal of thrilling and challenging research opportunities arising in the field of a transformative science for the environment and I hope that many of us here in the room will become a part of it.

Upcoming opportunities

One of these opportunities to which I would like to return to close my talk is the 2013 Call of the JPI CLIMATE on the topic of "Societal transformation in the face of climate change". This call is not only interesting because it brings together research funders from 12 European countries and roughly 9M€ for research.

The call, that has been just opened this week, in my eyes is particularly interesting because we are doing our best to realize key features of a transformative research that I just have been describing:

8 <http://www.jpi-climate.eu/joint-actions/calltransnationalcollaborativeresearchprojects/2013callclimatefriendlyclimateresearch>

- Challenging society with fundamental, courageous and possibly inconvenient questions
- Reaching out to society's change agents
- Offering positive role models by exploring a climate-friendly climate research

We are looking forward to your contributions!

Connecting climate knowledge with societal innovation

If you want to learn more about how JPI CLMATE works towards connecting climate knowledge with societal innovation and decision-making and also the current opportunities on researching Arctic and Boreal systems it is offering for you, you are invited to join the special session right after in Auditorium 5.

Thank you very much.

List of useful resources

Societal transformations in the face of climate change
Research priorities for the next decade

- <http://www.jpi-climate.eu/publications/factsheets/10829887/Factsheet-Societal-transformations-in-the-face-of-climate-change-Research-priorities-for-the-next-decade>
- <http://www.jpi-climate.eu/joint-actions/calltransnationalcollaborativeresearchprojects>
- <http://www.worldsocialscience.org/documents/transformative-cornerstones.pdf>

Climate-friendly climate research (CFCR)

- <http://www.cfcf-conference2013.eu>
- <http://www.jpi-climate.eu/joint-actions/calltransnationalcollaborativeresearchprojects/2013callclimatefriendlyclimatere search>

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