



Midterm Review Report

NWO Sustainable Earth – Knowledge for Climate project

INSPIRATOR: INtegrated analysis of the Science-Policy Interface in Research projects on global change and sustainability: implications for AcTORS involved in the co-production of knowledge

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Background report for the NWO/KfC Midterm assessment
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Background

In several Western European countries, scientists, policymakers and other actors collaborate and share their knowledge in regional climate change adaptation projects. Such so-called joint knowledge production (also known as knowledge co-production or co-creation) is a hot topic in academic and policy discourses in various countries, and it is proclaimed and put into practice in large research programs such as Knowledge for Climate (The Netherlands) and KLIMZUG (Germany). The argument goes that joint knowledge production¹ is a potential way to reconcile supply and demand for knowledge in the field of global change adaptation and sustainability. In these (but also in other less contested) domains, science and policy may differ in their time frames, epistemologies, objectives, process cycles and criteria for judging the quality of knowledge, making a fruitful analysis and finding a shared solution direction more difficult. This particularly plays a role in the domains of global change adaptation and sustainability due to the value pluralities and uncertainties involved.

There are several studies dealing with science policy relations, including studies on transdisciplinary knowledge production, joint knowledge production, or knowledge co-creation. Much existing literature, however, is highly conceptual and most studies do not engage in theoretically inspired empirical analysis of joint knowledge production practices in real projects. There are some notable exceptions (e.g. Scholz and Stauffacher, 2007; Kemp and Rotmans, 2009) but these are limited in number.

The existence of this knowledge gap is understandable, since empirical research into joint knowledge production practices is challenging (Lang et al., 2012). Researchers have to address complicated issues, such as ‘what would be suitable normative criteria for the productivity of science-policy cooperation’ and ‘how to operationalize and measure this in an empirical setting’. But as we indicated in our original proposal submitted to NWO, we see here an important opportunity for increasing the relevance of research projects while at the same time improving the way in which policymakers make use of the results of scientific research. Our diagnosis is similar to that of the Dutch policy analyst Rob Hoppe, who argues that empirical analysis of what he calls ‘practices of hybrid management’ (Miller, 2001) are urgently needed and of people like Arnim Wiek (Arizona State University) or the researchers at the ETH in Zürich (the group of Roland Scholz).

Main objectives and expected results

The main objective of the INSPIRATOR project is *to arrive at design principles for joint knowledge production projects*. With design principles we mean potential actions to be performed by actors involved in joint knowledge production projects in order to make science-policy collaboration more effective. These principles have to be derived from rigorous empirical testing.

In order to arrive at such design principles, the following research questions are guiding the research:

- In which ways can joint knowledge production by researchers, policymakers and other actors take place?
- What opportunities and barriers for co-production occur in practice?
- How can the effectiveness of joint knowledge production be determined, and what factors account for this effectiveness?
- How effective are different ways of co-production in practice?
- How can researchers, policymakers, intermediaries and financiers of research projects contribute to effective joint knowledge production?

At the start of the project, the following sub-goals of the research have been formulated:

1. To further develop and reconcile existing typologies of co-production processes related to research projects, science-policy interfaces, and of the different ways in which the co-produced knowledge can be used. The typology

¹ In this document, ‘joint knowledge production’ and ‘knowledge co-production’ are used interchangeably. We sometimes refer back to the original research proposal submitted to NWO, in which the latter term was used. In the course of the research, however, we concluded that for the sake of conceptual clarity, ‘joint knowledge production’ would be a more appropriate term for the phenomenon we are studying.

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needs to take into account the nature of the knowledge and the (types and networks of) actors involved in the co-production process;

2. To collect normative hypotheses about how knowledge should be co-produced according to literature. An example of such a hypothesis is that intensive science-policy collaboration early in the research process enhances knowledge utilization.
3. To categorise and evaluate a variety of finished research projects in the field of global change and sustainability using the developed typology. This will help to assess the relevance of the typology and to improve it. Moreover, it will enable an evaluation of different ways of co-production and their effects on policy- and decision-making. This evaluation forms a first test of the normative hypotheses;
4. To identify the opportunities and barriers for co-production that arise during the co-production process. This will be done by analysing co-production processes in detail in a selection of ongoing projects from the research programmes “Sustainable Earth” and “Knowledge for Climate”;
5. To reflect on the opportunities and barriers for co-production in the ongoing projects, together with the actors involved, to manage mutual expectations and to give advice on how to improve co-production;
6. To assess and analyse similarities and differences of actor perspectives (both qualitative and quantitative) on the factors that constitute effective co-production processes of a large group of actors that are involved in the co-production of knowledge in research projects on global change and sustainability;
7. To formulate recommendations on how to contribute to an effective co-production of knowledge. The recommendations will address researchers, policymakers and other actors involved in the coproduction of knowledge in research projects, as well as financiers of research projects;
8. To define a research agenda for governance research on the co-production of knowledge at the science policy interface.

As the sub-goals mentioned above suggest, INSPIRATOR strives for maximum scientific and societal relevance. Scientifically, the project gathers new empirical evidence for theory and concepts of the science-policy interface. Innovative aspects are the delivery of a conceptual framework for different ways to connect research projects with policy, an overview of normative hypotheses and best practices for successfully connecting science and policy, practical recommendations and a renewed research agenda. Moreover, the way in which we generate the insights can be considered innovative. First, INSPIRATOR brings together multiple theoretical perspectives on the science-policy interface into a clear conceptual framework. Second, the project takes a predominantly empirical approach. The science-policy interface is analysed by evaluating finalised research projects and through various interactions with actors currently involved in joint knowledge production projects. Third, the project explicitly analyses the perspectives of the researchers, policymakers and other actors that are involved in the production, exchange and utilisation of knowledge from research projects in practice.

The project’s societal relevance is also very high. Through literature study we identify how science and policy co-produce knowledge in an international setting and with what results. This leads to interesting insights for connecting research and policy in the Netherlands. Moreover, the project considers the societal utility of a set of finalised national and international research projects worth tens of millions of Euros. In addition, by interacting with joint knowledge production professionals, we reflect on how to improve the coproduction of knowledge in projects, together with the involved actors. Our research leads to practical recommendations for improving joint knowledge production processes. The recommendations will be relevant for researchers, policymakers and other involved actors. They will also support financiers of research projects in judging the quality of research proposals and in stimulating an effective joint knowledge production process. Preliminary research findings also suggest that improved science-policy collaboration and joint knowledge production may lead to better and more viable policies. Hence, our recommendations may support all involved actors to spend their money, which is to a large extent brought up by society (via taxes), in an effective and efficient way.

The INSPIRATOR research team

The INSPIRATOR project is being carried out by an interdisciplinary group of researchers from Utrecht University and Maastricht University. Disciplinary backgrounds include environmental governance, environmental sociology, public administration, philosophy, sustainability science, innovation studies and general social sciences. The following persons have been included in the research team:

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<p>From ICIS (Maastricht University):</p> <ul style="list-style-type: none">• Prof. Dr. René Kemp – project leader• Prof. Dr. Harro van Lente – senior researcher (also innovation studies group, Utrecht University)• Dr. ir. Annemarie van Zeijl-Rozema – post doc researcher (until October 2011)• Dr. Ron Cörvers – senior researcher• Dr. Jeanine Schreurs (post doc researcher)• Astrid Offermans, MA – researcher	<p>From the Environmental Governance Section, Copernicus Institute of Sustainable Development, Utrecht University:</p> <ul style="list-style-type: none">• Dr. Carel Dieperink (project leader Utrecht University)• Dr. ir. Dries Hegger (post doc researcher)
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Both Dries Hegger and Annemarie van Zeijl-Rozema were appointed as post docs on the INSPIRATOR project. Their main role was to carry out the majority of the research tasks. Annemarie had to quit her activities for the project due to illness (September 2011). For that reason, less time has been invested in the project as was expected at this stage. Astrid Offermans, Jeanine Schreurs and Ron Cörvers were included in the research team to take over her tasks. It is now expected that all planned activities will be carried out, but with some delay. We expect the project to end in May 2013 instead of Nov 2012.

There has been an intense cooperation among INSPIRATOR researchers. Until now, there have been seven plenary meetings with the full team. Besides that, there are frequent bilateral interactions (face-to-face, telephone, e-mail). The empirical research is carried out in close cooperation between the most involved researchers. The research team also closely collaborates with Ymkje De Boer (MA), a freelance consultant working at the science-policy interface. De Boer is an expert in knowledge production, science communication and dialogue facilitation. Other affiliated researchers are Dr. Machiel Lamers (Environmental Policy Group, Wageningen University) and Dr. ir. Tom Raadgever (Grontmij Consultancy). In their previous positions as researchers at ICIS and UU Environmental Governance (respectively), they were co-authors of the INSPIRATOR research proposal.

Summary of conducted research

Until now, seven steps in the execution of the project have been taken. For each step, we will describe our main activities as well as the (scientific) output to which it has led or is expected to lead.

1) *Developing and publishing our conceptual framework (finished)*

The research started in August 2010 with a literature study, aiming to bring the very diverse literature on (amongst others) new forms of knowledge production, science-policy interfaces, transdisciplinarity but also literature on deliberative governance together in an integrated framework for the analysis of joint knowledge production projects. Based on this study, a conceptual article has been written, which was published in *Environmental Science and Policy* early 2012. In this article, we first address the question what joint knowledge production is according to us (we mainly talk about direct collaboration in projects). Next, inspired by the ‘knowledge system criteria’ credibility, salience and legitimacy (Cash et al., 2002; 2003) we propose an innovative definition of ‘successful joint knowledge production’ in which the quality of the process is put in the centre. Success entails, so we argue, that justice should be done to the knowledge interests of participants in joint knowledge production projects. Hence, our definition is that successful joint knowledge production can be defined as a process “in which the actors involved have managed to maximize synergy and minimize trade-offs between the salience and credibility of the knowledge produced as well as the legitimacy of the process”. The article continues by deriving seven success conditions from literature. It is shown that some of these conditions relate to the question which actors participate in projects, while others are more related to the discourses employed as well as the rules and resources present. This division into four dimensions is inspired by the policy arrangements approach (PAA), developed to analyse governance arrangements, amongst others in the context of water management and nature conservation policy (see Arts et al., 2006) Employing this approach to the analysis of knowledge production processes is an innovative theoretical step. The article illustrates the seven success conditions with some empirical examples. It is concluded that we now have a starting point for systematic empirical analysis of joint knowledge production projects. Empirical research should aim to refine and nuance the success conditions, identify relationships between them as well as provide insight in forms of self-reinforcement whereby the success (or lack thereof) of joint knowledge production projects has an impact on follow-up projects).

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2) *Carrying out retrospective analyses in eight finalised joint knowledge production projects within three programs (Living with Water, Climate Changes Spatial Planning and the EU 6th Framework Programme (almost finished)*

The developed framework was used for an empirical analysis of finalised research projects. We carried out desk research as well as 39 qualitative semi-structured interviews in eight research projects within three programmes. Our precise case selection criteria are detailed in the various publications that have appeared or are in progress (and are included in this document). Our analytical approach was to first try to evaluate the degree of success of the joint knowledge production projects. This degree of success was used as our dependent variable. Next, we started looking for explanatory factors (our independent variables). We asked ourselves if, and how, projects managed to live up to the various success conditions we derived from literature, and what could explain the presence or absence of certain success conditions. Was this due to actions of actors? Had it to do with the presence or absence of certain structural preconditions? How general or context-specific were the examples found in the projects? To do justice to all these questions, we divided our empirical analysis in various steps, which we documented in publications.

First, we used our first case study, the project Hotspot Zuidplaspolder within the Climate Changes Spatial Planning program, to demonstrate how our framework could be operationalised and what kind of lessons one could learn by actually applying the framework to an empirical case. This has resulted in a manuscript entitled “Towards design principles for joint knowledge production projects: lessons from the deepest polder of the Netherlands” which will be submitted (shortly) to *Regional Environmental Change*. The article identifies some design principles and other lessons from the case.

Next, we carried out a comparative analysis of the first six (of the eight) researched projects. This has resulted in a book chapter in the book “Learning for sustainability in times of accelerating change” edited by Arjen Wals and Peter Blaze Corcoran. The book chapter denominates some additional design principles. We conclude that we have some indications, but no absolute proof, that joint knowledge production in projects might be a fruitful way to develop knowledge that could not, or not that easily, be produced otherwise. Release of the book will take place at the Rio Plus 20 conference.. Extended and more elaborated versions of the book chapter have been presented as a conference paper (Governance of Adaptation Conference in Amsterdam; Lund Conference on Earth System Governance). The paper presented at the latter conference is the most recent one and for this reason it has been integrated in the current document. After some further revision (including the addition of the last two cases) this paper will be submitted to a journal (e.g. *Environmental Science and Policy*).

The latter journal article’s main contribution will be to come up with an empirically scrutinized typology of joint knowledge production projects. We discern two dimensions of such projects: type of knowledge aimed at (was the project aimed at developing policies, or was it aimed at innovation?) and institutional location (locus on research-policy axis). From the typology we derive the design principle that actors involved in joint knowledge production projects are at least conscious of (but preferably choose intentionally for) the type of project they are engaged in. Along with the type of project, the action perspectives in the set-up and execution phase of projects varies for different actors involved. Furthermore, the type of project has consequences for the types of outcomes one may expect of a project. An example is that one can less easily expect concrete policy measures from a project which is very much focused on knowledge development (rather than policy advice). This may seem obvious, but our research has shown that actors involved in joint knowledge production projects sometimes had very different expectations about what the project should lead to, and hence their evaluation of the project outcomes and the process through which these outcomes came about vary.

3) *Analysing social perspectives on knowledge production based on grid-group cultural theory (on going)*

Policy development can easily become controversial, and therefore a problem for society and policy makers. The traditional approach is that we need more scientific facts and knowledge to solve such problems. However, most of these problems are not grounded in any lack of knowledge, but rooted in different values and interests. Sarewitz (2004) and others make clear that scientific facts cannot value disputes and competing interests; that scientific knowledge is not independent from the political context, but co-produced by scientists and the society within they are embedded; that different stakeholders in environmental problems possess different bodies of contextually validated knowledge; and that boundaries between science and policy or politics are constantly being renegotiated as part of the political process (Sarewitz, 2004, p. 386). From this position it seems inevitably to develop methods for integrating values and interests into scientific research that aims to support decision-making (see also McNie, 2007; Sarewitz and Pielke, 2007). To this end we developed the Perspectives method, derived from Cultural Theory (Douglas, 1970, Thompson *et al.*, 1990) operationalized as an analytical tool to explore and measure different perspectives on knowledge and knowledge coproduction. We developed a perspective-based conceptual framework and an online questionnaire to measure perspectives on knowledge and knowledge production. The

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questionnaire also consists of questions asking for respondent's experiences in knowledge co-production projects. The results of the questionnaire will form the basis of a peer-reviewed article wherein we provide an overview on dominant perspectives on knowledge, differences in perspective based on professional background and we will explain how the perspective method can be used to provide a more constructive dialogue between project members with different backgrounds. The results also provides us with information on how coproduction projects are evaluated (content-, process- and result-wise) by project members. Furthermore, we asked the participants of the workshop in May (see below) to fill out the questionnaire. We analysed their answers and presented them during the workshop. As perspectives are dynamic and may change over time, we decided to use the Perspectives method instead of Q-methodology. The latter (as well as the Perspectives method) enables to provide an overview of *present* perspectives on knowledge and knowledge co-production, but does not allow monitoring perspective *change*. As perspective change may also effect the type of success factors for knowledge co-production, it is important to incorporate monitoring change into our framework.

4) *Setting up an Academic Master Class on knowledge production for sustainable development (held on 12/13 April 2012, Maastricht, The Netherlands)*

A PhD workshop with many renowned speakers was held. This workshop attracted an audience of almost 40 participants, including PhD candidates of various universities, post docs and several professionals working for boundary organisations. The speakers on 12 April were René Kemp (on working at the science-policy interface), Laurens Hessels (on changing science systems), Roger Pielke Jr. (on roles of scientists for policy) and Harro van Lente (on the politics of narratives). On 13 April, there were presentations by Rob Hoppe (on policy problems and boundary work), Jean Hugé (discourses and storylines of sustainable development) and Eefje Cuppen (on controversies as conflicting frames), followed by a plenary closing discussion. The lectures of Inspirator researchers Kemp and van Lente as well as those from non-Inspirator researchers were positively evaluated. Participants said they found the workshop interesting and learned a lot (score of 4.4 on a scale of 5). Participants' appreciation is reflected in the score of 8.2 on a scale of 10.

5) *Organising a workshop with joint knowledge production professionals (workshop was held, results are being processed)*

On 9 May 2012, we organised a workshop with joint knowledge production professionals, which was attended by more than 30 people, including scientists, policymakers, program managers and facilitators (amongst others). Two cartoonists were present. They have drawn a large number of illuminating cartoons which will be used for the popular book (step 6). All professionals at the workshop have some affinity with science-policy cooperation, mostly in a sustainability-related field. We had discussions in four small groups. One of the group members was asked, in advance, to present a specific experience with joint knowledge production (e.g. a specific meeting, a certain process of setting up a research project etc.). This experience was analysed in some detail (using so-called 'Socratic dialogue' principles) and compared with the experiences of the other participants; We had a plenary discussion on the outcomes of the small-group discussions. This was followed by a presentation of the work carried out within INSPIRATOR. For us, the workshop yielded additional empirical material which will be used to improve our publications in process. It will also serve as input for the popular book we are writing (see below). Another intended goal of the workshop was to disseminate our research results and to gain interest in the project. The participants were invited to indicate their interest in advice on on-going projects or other forms of action research, which is another planned research step. As spin-of of the workshop, discussions were held with two interns of the Ministry of Infrastructure and the Environment.

6) *Writing a popular book in Dutch (on going)*

We are currently in the process of writing a popular book in Dutch (approximately 50 pages) on joint knowledge production. The target audience is Dutch professionals with an interest in joint knowledge production (e.g. scientists interested in collaborating with policymakers; policymakers interested in collaborating with scientists; program managers, in short people like the ones present in our workshop). We will use our research results, complemented with some additional interviews, as input for the book. Furthermore, we will use the cartoons which were drawn by professional cartoonists during the workshop. An outline of the book has been written and is included in this document. Possibilities to get the book published by a professional publisher are being explored.

7) *Initiating a special issue on joint knowledge production in a high-impact scientific journal (on going)*

Some steps towards editing and contributing to a special issue in joint knowledge production in a high-impact scientific journal have been made. Rob Hoppe has been contacted and he is willing to be a co-editor. He is a top

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person in the field of the sociology and politics of knowledge production, author of “The Governance of Problems”, a seminal book, integrating different perspectives from political theory, policy studies, organisational science, sociology of knowledge and cultural analysis. We believe that Prof. Hoppe’s involvement will significantly increase the chance of getting the plan realised. The following contributors to the special issue are foreseen: Roger Pielke Jr. together with Elizabeth McNie (confirmed); Harro van Lente (confirmed); Dries Hegger (confirmed); René Kemp (together with Astrid Offermans and Dries Hegger) (confirmed) plus one or two other contributions from experts in the field. Rob Hoppe will mainly contribute to the issue’s introduction paper.

8) Reflection on joint knowledge production in action, in ongoing project (planned)

In fall 2012, actors in several ongoing research programs and projects will be approached to find out about their willingness of getting reflection and advice on their activities. Depending on the interest of the actors involved, our contribution to ongoing projects may range from a few bilateral conversations with project leaders to action-oriented participation in project and program meetings. The research team has a wealth of network contacts in relevant national research programs, including large programs such as ‘Knowledge for Climate’ and ‘Urban Regions in the Delta’. On the other hand, experience from the Knowledge for Climate research program shows that actors are not automatically inclined to have action research conducted in their projects. Hence, experience will have to show how far our engagement in these programs can go.

Scientific value of the research

The scientific value of our research project is largely in line with what was expected at the start. Our main contribution to science will be to come up with design principles for joint knowledge production based on sound empirical research. More specifically, our contribution is to:

- Develop an integrated assessment framework drawing on various bodies of literature;
- Come up with sensible criteria for evaluating the success of joint knowledge production projects, using Cash et al.’s (2003) knowledge system criteria in an innovative way;
- Use the policy arrangements approach in an innovative way, namely as the social theoretical backbone of our approach;
- Empirically analyse the phenomenon of joint knowledge production in several different ways (including semi-structured interviews; workshops; questionnaires);
- Empirically analyse the diversity of perspectives on knowledge and knowledge (co)production
- Develop an empirically scrutinized typology of joint knowledge production projects;
- Show the value of this typology for explaining the degree of success of joint knowledge production projects;
- Bring together leading scholars on the topic of joint knowledge production.
- Make a contribution to the research fields of Sustainability Science, the Sociology of Knowledge and Environmental Science and Policy.

How and to which broader debate and/or societal issues does the project contribute?

Science and policy makers are part of different social worlds. The aim of this project is to evaluate attempts at joint knowledge creation and crossing boundaries. There is a great deal of interest in our findings among policy professionals, knowledge brokers working at the interface of science and policy, and scientists interesting in transdisciplinary science and Mode-2 knowledge production. Our findings about conditions were confirmed and further substantiated by (high-level) professionals. These professionals generally believe that joint knowledge production can be a way of bringing scientists and policymakers together on the pressing issues our society faces today. Our research hitherto leads us to suggest that there certainly is value in this, although more steps have to be taken to determine “when to do” (and when not to do) joint knowledge production. More specifically, our research contributes to the following pressing issues:

- The research provides insights into the added value of large national research programs as well as recommendations on how to improve this added value;
- The research provides concrete recommendations for actors involved in joint knowledge production;
- The developed insights are being disseminated to these actors through the workshop as well as the popular book in preparation;

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- The research provides research funders with consolidated findings about conditions for useful cooperation between scientists and policy makers which can be taken into account in future programmes and attempts at stimulating effective joint knowledge production processes;
- Our research on actor perspectives on the proper roles for scientists and policy makers in processes of knowledge production may help to anticipate difficulties and may function as a basis for a more constructive and synergistic dialogue between project members with different backgrounds.

Overview of project output

Journal articles

Hegger, D.L.T., Lamers, M., Van Zeijl-Rozema, A., Dieperink, C. (2012). Conceptualising joint knowledge production in regional climate change adaptation projects: success conditions and levers for action. *Environmental Science and Policy* 18: 52-65.

Hegger, D.L.T., Dieperink, C. (**in preparation**). Patterns in joint knowledge production projects for regional climate change adaptation – lessons for project and program design.

Hegger, D.L.T., Van Zeijl-Rozema, A., Dieperink, C. (**in preparation**). Towards design principles for joint knowledge production: lessons from the deepest polder of The Netherlands.

Kemp, Offermans and Hegger on data triangulation and its value for analysing joint knowledge production (**planned** contribution for special issue on co-creation of knowledge in *Environmental Science and Policy or Sustainability*)

Van Lente on politics of narratives and displaced politics (**planned** contribution for special issue on co-creation of knowledge in *Environmental Science and Policy or Sustainability*)

Other scientific publications (conference papers, book chapters)

D.L.T. Hegger, Dieperink, C. (2012) Patterns in joint knowledge production projects for regional climate change adaptation – lessons for project and program design. Paper presented at the Lund Conference on Earth System Governance, April 18-20 2012, Lund, Sweden.

D.L.T. Hegger, Van Zeijl-Rozema, A., Dieperink, C. (**in press**). Towards successful joint knowledge production for global change and sustainability: lessons from six Dutch adaptation projects. In: Wals, A., Corcoran, P.B. (Eds.) *Learning for sustainability in times of accelerating change*. Wageningen, Wageningen Academic Publishers.

Hegger, D.L.T., Van Zeijl-Rozema, A., Dieperink, C. (2012). Joint knowledge production for global change adaptation and sustainability: lessons from six Dutch adaptation projects. Paper presented at the symposium “The Governance of Adaptation”, 22-23 March 2012, Amsterdam, The Netherlands.

Hegger, D.L.T., Lamers, M., Van Zeijl-Rozema, A., Dieperink, C. (2011). Knowledge co-production in climate change adaptation projects: what are the levers for action? Paper presented at the 2011 Colorado Conference on Earth System Governance, 17-20 May 2011.

Conference presentations

- (expected): Dries Hegger at Berlin Conference on the Human Dimensions of Global Environmental Change “evidence for sustainable development”, 5-6 October 2012, Berlin, Germany
- Dries Hegger at Lund Conference on Earth System Governance, April 18-20 2012, Lund, Sweden
- Dries Hegger at Symposium “The Governance of Adaptation”, 22-23 March 2012, Amsterdam, The Netherlands
- Dries Hegger and Annemarie Van Zeijl-Rozema at td-conference 2011 “Evaluating Inter- and Transdisciplinary Research – experiences and reflections on best practice
- Dries Hegger at Colorado Conference on Earth System Governance: crossing boundaries and building bridges, 17-20 May 2011, Fort Collins, CO, USA.

Other output

- Popular book (in Dutch) on joint knowledge production (**in preparation**)
- A large number of cartoons on joint knowledge production (**to be gradually disseminated**)
- Workshop for joint knowledge production professionals (9 May 2012, Driebergen, The Netherlands)

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- Academic Master Class on knowledge production for sustainable development (12-13 April 2012, Maastricht, The Netherlands)
- Discussion with two interns of the Dutch Ministry for Infrastructure and the Environment

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