

SSA01

Comparative Monitoring of Knowledge for Climate

Climate Science Programmes and Stakeholder Involvement

Introduction

Climate change presents society with major challenges. Scientific information can help policy makers in facing these challenges. In order to be useful, scientific information on climate change has to fit the knowledge demands of policy makers. Science-society collaboration programmes have been suggested as a means to produce scientific knowledge that fits these knowledge demands. In science-society collaboration programmes scientists and relevant societal stakeholders collaborate on formulating research questions and developing innovative solutions. The Knowledge for Climate programme in the Netherlands is such a programme. It facilitates science-society collaborations with hotspot projects, a societal advisory council, and various knowledge transfer activities.

In this factsheet, we examine whether other countries have introduced similar climate science programmes. The factsheet takes stock of climate science programmes in eleven countries. It describes their missions and analyses the organization of stakeholder involvement. The factsheet concludes with a research agenda for further research on the organisation of collaboration programmes in the Comparative Monitoring of Knowledge for Climate project.

Research questions

- Have other countries introduced climate science programmes that facilitate stakeholder involvement in climate science?
- What are the missions and activities of these programmes?
- How is stakeholder involvement organized in these programmes?

Data

The search for stakeholder involvement in climate science programmes consisted of two parts. We first explored the organization of climate science in 16 countries (Australia, Austria, Canada, Denmark, Finland, France, Germany, Ireland, Japan, the Netherlands,

New Zealand, Norway, United Kingdom, United States of America, Sweden, and Switzerland) based on document analysis and a web search. The exploratory analysis resulted in a longlist of 56 climate science initiatives. After a screening of the initiatives on research activities and science-society collaborations, 26 initiatives (in 14 countries) have been selected for further analysis.

The second step consisted of survey research. By means of a questionnaire, information was gathered on the organizational features and environment of the 26 initiatives. The questionnaire was sent to two groups of experts, namely climate scientists and funding agencies. In addition, questionnaires were sent to the programme directors of the 26 initiatives. 18 programme directors were willing to participate and provided information on their programmes mission, objectives, and organization.

Analysis of the survey response and programme documents showed that in 4 programmes stakeholder involvement was a secondary objective. These programmes aimed for more interaction between scientific disciplines in the field of climate science or the establishment of a network of excellence. These programmes were excluded from our sample. This factsheet is based on the responses on the survey of the programme directors of the 14 remaining programmes.

Stakeholder involvement in climate science

The document analysis showed that stakeholder involvement in climate science is on the agenda in almost all of the selected countries. Each of the 26 initiatives mentions the importance of stakeholder involvement and collaborations between scientists and societal actors on their website or in their programme documents.

The apparent importance of stakeholder involvement was confirmed by the expert questionnaire. All respondents indicate that



their government has taken at least one measure to stimulate collaborations between scientists and societal actors in climate science. In 14 countries one of these measures was the introduction of a “special programme” in which scientists and stakeholders collaborate.

14 Climate Stakeholder Programmes

This section describes the general characteristics of the 14 programmes. The table below summarizes the names, countries, and duration of the programmes.

Table 1: Characteristics of the 14 programmes

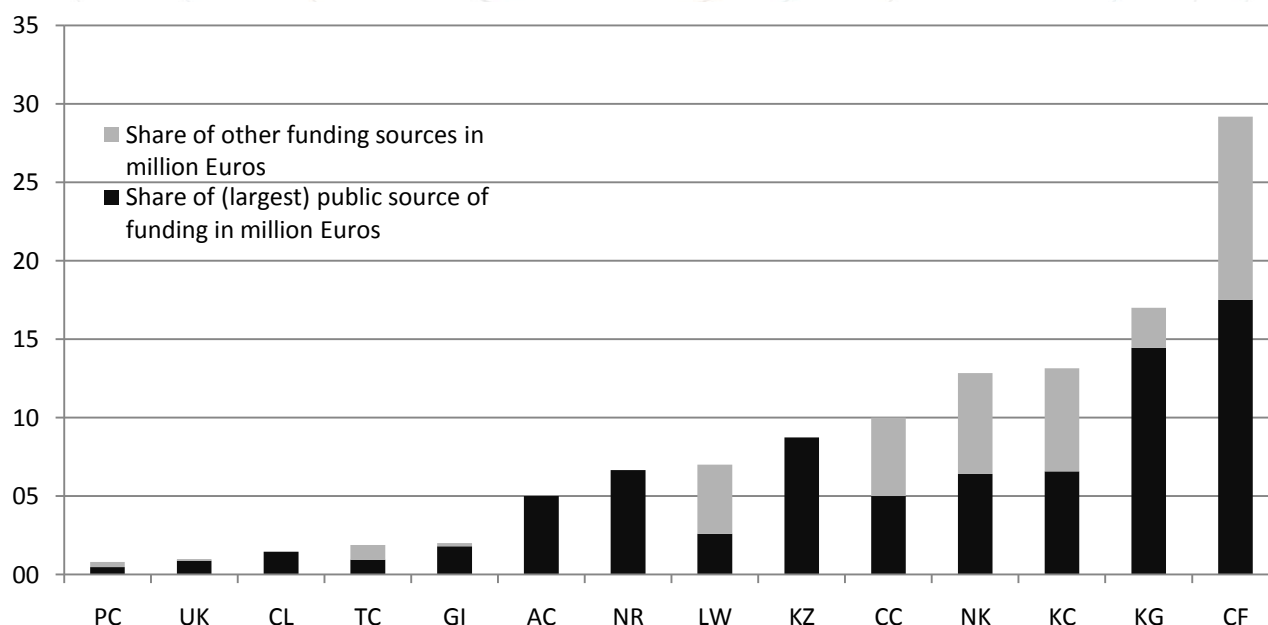
Name	Country	Period
CSIRO flagship	CF Australia	Continuous
ACRP	AC Austria	Continuous
GICC	GI France	Continuous
KLIMZUG	KG Germany	2008-14
Klimazwei	KZ Germany	2006-09
Climate changes Spatial Planning	CC Netherlands	2004-11
Knowledge for Climate	KC Netherlands	2008-14
Living with Water	LW Netherlands	2004-11
NORKLIMA	NK Norway	2004-13
CLIPORE	CL Sweden	2004-11
ProClim	PC Switzerland	Continuous
UK CIP	UK UK	2005-11
Tyndall Centre	TC UK	2000-10
NOAA RISA	NR USA	Continuous

Five programmes have a continuous character, while the other nine programmes have a limited duration. The average duration of this second group is 7 years and 6 months (with a minimum of 4 years and a maximum of 11 years). We also found that the duration of several programmes has been extended along the way, for example to enable PhDs to finish their thesis within the programme (as occurred in Climate changes Spatial Planning; CC).

The figure depicts the annual budget of the 14 climate programmes. Financially, the programmes differ with respect to two important characteristics. The first and most obvious difference is the size of the budget. The average annual budget is 8.3 million Euros, but the range is wide. The largest programme CSIRO Climate Adaptation Flagship (CF) can spend almost 36.5 times as much as the smallest programme ProClim (PC).

The second difference concerns the source of funding. Four programmes are fully funded from a single public source. Another 9 programmes receive at least 50% from a single public source. The Dutch programme Living with Water (LW) is the exception with only 37% funding from a single public source.

Figure 1: Average annual budget per year in million Euros





Research Focus

Although the 14 programmes can be described as climate science programmes, it should be noted that there is diversity in their research focus. Five programmes have an explicit focus on climate adaptation. In these cases, climate mitigation has often been taken up by another research programme (for example in Australia by the CSIRO Energy Transformed Flagship).

Table 2: Research focus of the 14 programmes

Focus	Programmes
Adaptation	CF, KG, KC, UK, NR
Adaptation & Mitigation	AC, GI, KZ, CC, NK, PC, TC
Other	LW (water), CL (policy)

Seven programmes make no distinction between adaptation and mitigation. In the Dutch programme Climate changes Spatial Planning (CC) mitigation is part of the programme only as long as it relates to land-use related emissions. The focus of the remaining programmes is not defined by the issues of adaptation and mitigation. They deal with climate modelling, improving interdisciplinary collaborations, or specific areas such as water or climate policy.

A Categorization

To get an understanding of the objective of stakeholder involvement, we asked programme directors what they thought what the most important activities of their programme were. Three activities were “traditional” science activities that concern knowledge production, i.e. research funding, conducting research, and creating and maintaining scientific networks. Two activities were stakeholder activities that concern the transferability of knowledge, i.e. knowledge dissemination and creating societal networks.

Respondent were asked to indicate the importance of each activity on a 5-point Likert scale. The averages of the scores on these two dimensions (emphasis on knowledge production and emphasis on knowledge transfer) were calculated and compared. We subsequently divided the score on the knowledge production dimension by the score on the knowledge transfer dimension.

Figure 2: A categorization based on the emphasis in programmes' activities

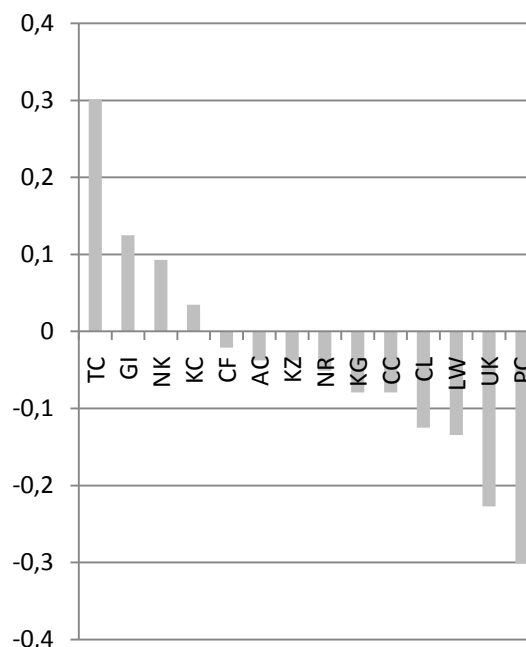


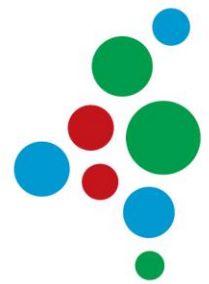
Figure 2 shows the Log10 of these calculated scores. A positive score in this figure means subsequently a stronger emphasis on the knowledge production dimension. A negative score means a stronger emphasis on the knowledge transfer dimension. A score of zero means that the emphasis in a programme's activities is perfectly balanced between knowledge production and knowledge transfer.

Three programmes (TC, GI, NK) have a clear emphasis on knowledge production activities. A large group of seven programmes (KC, CF, AC, KZ, NR, KG, CC) balances its emphasis on both knowledge production and knowledge transfer activities. A third group of programmes (CL, LW, UK, PC) focuses on knowledge transfer activities. Based on these scores and an analysis of the mission statements of the programmes we introduce a categorization of three types of programmes:

Policy inspired programmes have the objective to enable well-informed policymaking in the field of climate change by production of new climate knowledge. The production of new scientific knowledge is thus the most important of activity of these programmes. Stakeholder

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involvement is important for these programmes to align this knowledge production with the needs of policymakers. When we look at the mission statements of the programmes in this category the rationale behind these programmes becomes clear. The objective of the Norwegian NORKLIMA (NK) for example gives a good description: “primary objective [...] to generate vital knowledge [on climate change] as a basis for adaptive responses by society”.

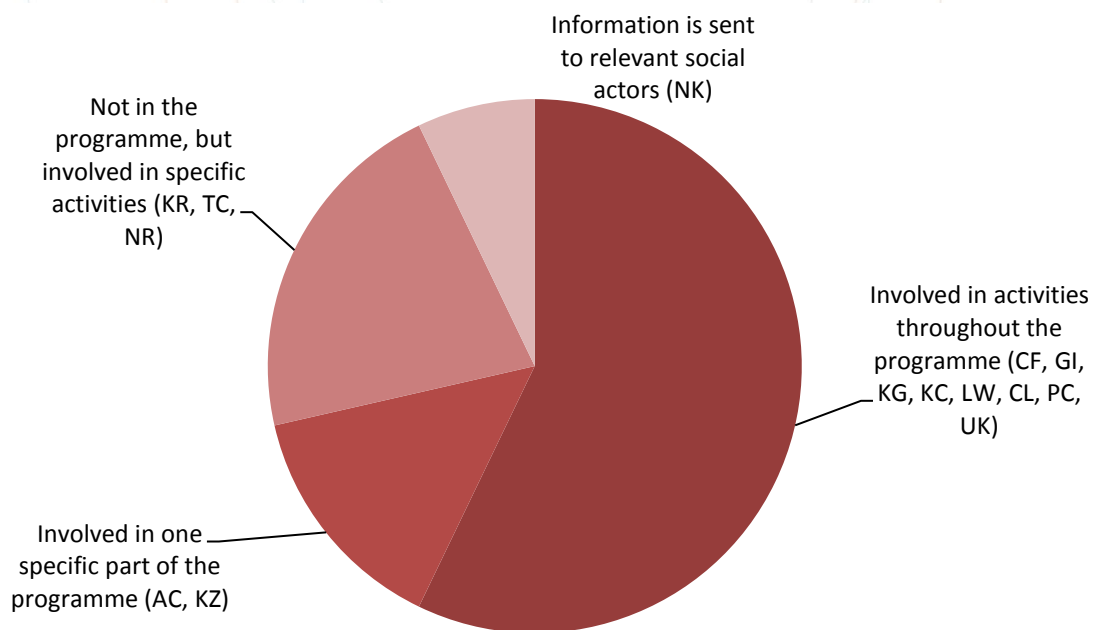
Co-production programmes aim for a simultaneous process of knowledge production and knowledge transfer. Research and transfer activities should converge in projects on practical knowledge that can readily be transferred to the involved stakeholders. In this way, these programmes create (ideally) a new research context. The mission statements of these programmes make clear that their focus is on concrete outcomes. The projects of the German KLIMZUG programme (KG), for

example, work on “a self-sustaining structure, which can implement need-oriented and innovative adaptive measures vis-à-vis climate change.”

Knowledge transfer programmes place most emphasis not on knowledge production, but on spreading (existing) scientific knowledge to relevant stakeholders. The UK Climate Impacts Programme (UK) for example “helps organisations to adapt to inevitable climate change”. What is striking in this respect is that none programmes in this class describe themselves as knowledge producer; ProClim (PC) sees itself as an interface, while Living with Water (LW) describes itself as a knowledge broker.

Organizing Stakeholder Involvement
How is stakeholder involvement organized by the programmes? We have examined the involvement of stakeholders in the programmes on three levels, namely at the programme level, at the project level, and at the level of the research process.

Figure 3: Position stakeholders in programme



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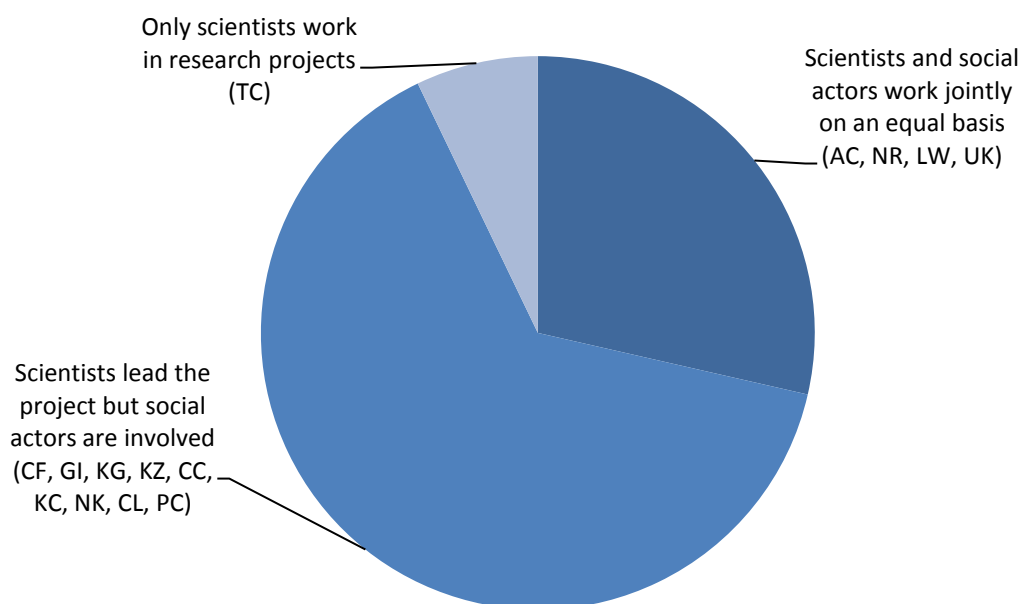
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Figure 3 shows that more than half of the programme directors report that stakeholders are involved in activities throughout the programme. It is not surprising that all four knowledge transfer programmes fit this description. The difference between stakeholder involvement in a specific part of the programme and in specific activities lies in the organization of the programme. In the first case, part of the programme is dedicated to stakeholder involvement activities. In the second case, societal actors are invited to those activities that seem relevant for them.

Only in NORKLIMA are stakeholders not directly involved in the programme. The programmes are fairly homogeneous with respect to the position of stakeholders in research projects (Figure 4). Of the 14 programmes 9 report that societal actors are involved in research projects but that scientists lead the projects. Only five programmes have chosen a different approach. In the UK Tyndall Centre, only scientists are involved in the research projects. At the other end of the spectrum are four programmes in which scientists and societal actors work in projects on an equal basis.

Figure 4: Position of societal actors in projects



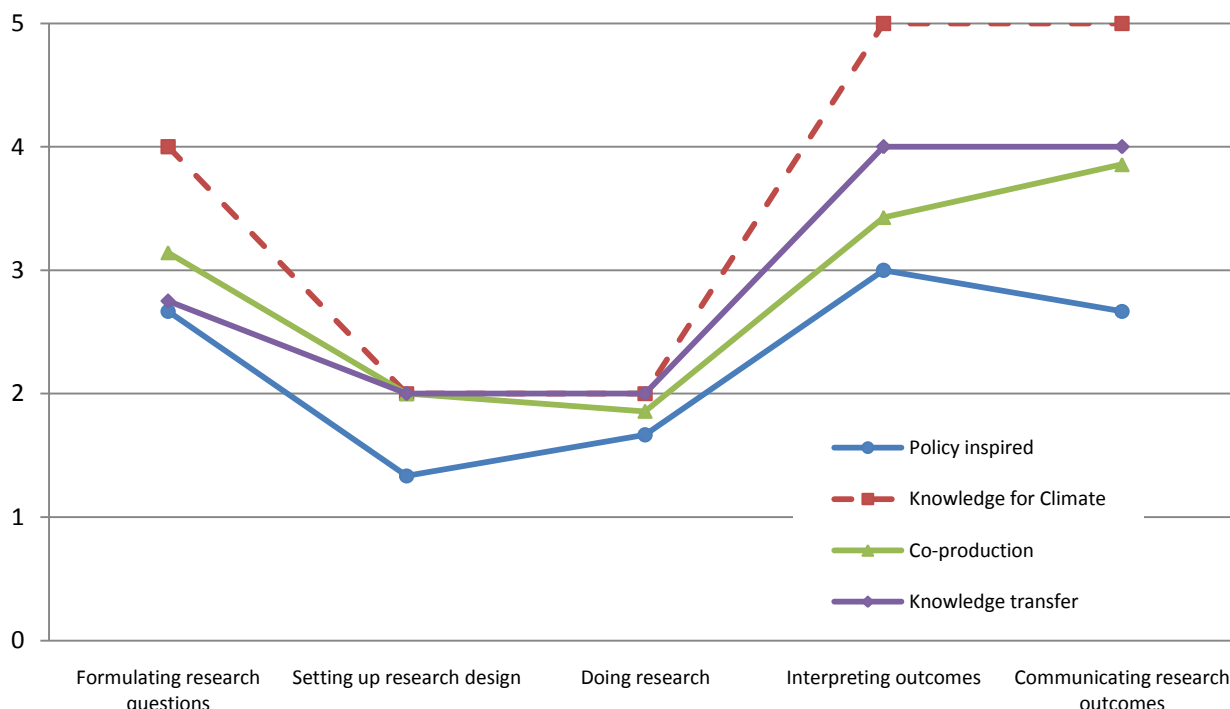


Figure 5: Involvement of stakeholders in research process per programme category (values: 1 = Never, 2 = Rarely, 3 = Frequently, 4 = Most of the time, 5 = Always)

In the questionnaire, we asked the programme directors about the involvement of stakeholders in the research process. We asked them about the frequency of involvement in five research phases; 1) formulating research questions, 2) setting up the research design, 3) performing research, 4) interpretation of the outcomes, 5) communication of outcomes. In figure 5 the involvement of stakeholders in these research phases is depicted per category of climate programme.

The figure shows that the three categories differ also on this aspect. Involvement is lowest in policy inspired programmes, while involvement is highest in knowledge transfer programmes. The similarities between the programmes, however, are more remarkable than these differences. The majority of the programmes follows a certain pattern of involvement. Stakeholders are in most cases involved in formulating research questions. In the next two steps, setting up the research design and performing research, involvement

drops significantly. Involvement is subsequently highest in the last two phases of the research, i.e. interpreting and communicating outcomes

Summary

Stakeholder involvement in climate science is high on the agenda. The responses on our expert questionnaires indicate that the 16 countries in our sample all have taken measures to stimulate collaborations between scientists and societal actors. In 14 countries one of the measures was the introduction of a “special programme” in which scientists and stakeholders collaborate. This factsheet described the differences and similarities between these “special programmes.”

An analysis of the mission statements of the programmes shows that the rationale for stimulating stakeholder involvement differs substantially. In the factsheet we have subsequently introduced a categorization of programmes based on these differences. Three categories can be identified; (1) policy

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inspired programmes (stakeholder involvement for agenda setting), co-production programmes (stakeholder involvement to increase usability of scientific knowledge), and (3) knowledge transfer programmes (stakeholders involvement to facilitate the uptake of existing climate knowledge). Our categorization explains to a certain extent the differences between programmes, but the programmes all share a pattern of involvement in research activities with the most intensive interaction between scientists and stakeholders in the final stages of the research.

Research Agenda

The inventory of science-society collaboration programmes shows the popularity of stakeholder involvement in climate science. However, the analysis of the 14 programmes leaves several questions about the organization and dynamics of these programmes unanswered. The project Comparative Monitoring of Knowledge for Climate will address four main questions; (1) how is stakeholder involvement organized in the programmes? (2) what is the influence of stakeholder involvement on the research practices of involved scientists? (3) what (collaboration) skills are obtained by scientific participants? (4) is a new type of researcher being educated within the context of these programmes?

The subproject International Comparison of Collaboration Programmes will first analyse

stakeholder involvement and its influence on research practices by means of an in-depth comparison of three cases, i.e. Knowledge for Climate (the Netherlands), KLIMZUG (Germany), and NOAA RISA (USA). The comparison will analyse how stakeholders are selected, what their influence is, and how programmes try to make knowledge useful for stakeholders. These questions are answered by means of interviews and site visits. Projects within a case are selected – in consultation with programme management – and visited. At each project different types of participants are interviewed, i.e. management, principal investigators, early career researchers, and non-academic stakeholders.

The last two questions focus on the outcomes of these programmes. Especially on outcomes in terms of human capital. Question three addresses the issue of collaboration skills. The project will study what the influence of these programmes is on collaboration skills of scientific participants, i.e. are these skills improved by participating and interacting with stakeholders. Finally, the project analyses the claim that programmes educate a new type of researcher. It has been claimed that PhD graduates from these programmes are better able to bridge the two worlds of science and society. The project will raise the question whether this becomes clear in the careers steps of these PhDs after their graduation.

More information

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