



Reshaping Science-Policy
Interactions in Climate Policy:
International Stock-Taking
and Lessons for Austria



Universität für Bodenkultur Wien
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Scientific climate policy advice: An overview of national forms of institutionalization

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Abstract

This discussion paper presents the results of a cross-national stock-taking survey on scientific policy advice in the field of climate change mitigation and adaptation policies. Its main goal is to systematically map and scrutinize different (traditional but mainly new) forms of scientific climate policy advice in selected industrialized countries.

Section A of the discussion paper introduces the ReSciPI project, discusses conceptual and methodological questions and synthesizes the major results of the stock-taking survey among 30 advisory institutions in eleven OECD countries. Based on the conceptualization of scientific advice as 'knowledge brokerage' (KB), the paper maps the different forms of institutionalizing climate policy advice, classifies and explains various KB activities and shows the strategies and mechanisms that KB institutions employ to ensure their effectiveness. Section B provides a 'compendium' of the 30 surveyed KB institutions in alphabetical order. Table-based profiles of each individual case allow cross-reading according to personal interests: readers may either scan selected individual cases or particular sub-dimensions across cases.

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List of acronyms

ACRP	Austrian Climate Research Program (AT)
ASC	Adaptation Sub-Committee (GB)
ART	Agroscope Reckenholz-Tänikon (CH)
AUSAid	Australian Agency for International Development
AU\$	Australian Dollar
BMBF	Federal Ministry of Education and Research (DE)
BMELV	Federal Ministry of Food, Agriculture and Consumer Protection (DE)
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Security (DE)
bn	billion
BOKU	University of Natural Resources and Life Sciences, Vienna (AT)
BOKU-InFER	Institute of Forest, Environmental and Natural Resource Policy at University of Natural Resources and Life Sciences, Vienna (AT)
CAF	Climate Adaptation National Research Flagship (AU)
CSIRO	Commonwealth Scientific and Industrial Research Organisation (AU)
CC	climate change
CCC	Climate Change Committee (GB)
CCRA	Climate Change Risk Assessment (GB)
CfP	Call for papers
CHF	Swiss Franc
CICEP	Strategic Challenges in International Climate and Energy Policy (NO)
CICERO	Center for International Climate and Environmental Research (NO)
CO ₂	Carbon Dioxide
COP	Conference of Parties
CSA	Chief Scientific Advisers (GB)
CSC	Climate Service Center (DE)
CZM	Adaptive Futures / Coastal Zone Management (AU)
C2SM	Center for Climate Systems Modeling, ETH Zurich (CH)
DCC	Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (AU)

DCCP	Danish Commission on Climate Change Policy (DK)
DECC	Department of Energy & Climate Change (GB)
Defra	Department for Environment, Food & Rural Affairs (GB)
DFG	German Research Foundation (DE)
DLR	National aeronautics and space research centre (DE)
DST	decision support tool
DTI	Department of Trade and Industry (GB, until 2007)
EC	European Commission
EEA	European Environment Agency
ENGO	environmental non-governmental organization
EP	European Parliament
EPSRC	Engineering and Physical Sciences Research Council (GB)
ESRC	Economic and Social Research Council (GB)
ESSP	Earth System Science Partnership
ETH	Swiss Federal Institute of Technology Zurich (CH)
EU	European Union
FOEN/BAFU	Federal Office for the Environment (CH)
FP	Framework Programme (EU)
GCF	Global Climate Forum
GEF	Global Environment Facility
GHG	greenhouse gas
GCSA	Government Chief Scientific Adviser (GB)
IenM	Ministry of Infrastructure and the Environment (NL)
IGBP	International Geosphere-Biosphere Programme
IHDP	International Human Dimensions Programme on Global Environmental Change
IPCC	Intergovernmental Panel on Climate Change
IPCC WG	Intergovernmental Panel on Climate Change Working Group
ISCU	International Social Science Council
ISO	International Organization for Standardization
IT	information technology
KB	knowledge brokerage
KBA	knowledge brokerage activity
KBI	knowledge brokerage institution
KfC	Knowledge for Climate research program (NL)
KfW	Kreditanstalt für Wiederaufbau (Reconstruction Credit Institute) (DE)
KLIFF	Climate Impact Research Lower Saxony (DE)
KNMI	Royal Netherlands Meteorological Institute (NL)
KOMPASS	Competence Centre for Climatic Consequences and Adaptation (DE)
MeteoSwiss	Federal Office of Meteorology and Climatology (CH)
NAS	National Adaptation Strategy
NCA	National Climate Assessment (US)
NCCARF	National Climate Change Adaptation Research Facility (AU)
NERC	Natural Environment Research Council (GB)

NGO	non-governmental organization
NRCan	Natural Resources Canada
OcCC	Advisory Body on Climate Change (CH)
OECD	Organisation for Economic Cooperation and Development
p.a.	per anno
PBL	Netherlands Environmental Assessment Agency (NL)
PCCC	Platform Communication on Climate Change (NL)
PIK	Potsdam Institute for Climate Impact Research (DE)
ProClim-	Forum for Climate and Global Change (CH)
Q&A	questions and answers
R&D	research and development
RACs	Regional Adaptation Collaboratives (CA)
RCCPs	Regional Climate Change Partnerships (GB)
ReSciPI	ACRP research project “Reshaping Science Policy Interactions in Climate Policy: International Stock-Taking and Lessons for Austria”
RCN	Research Council of Norway
SBSTA	Subsidiary Body for Scientific and Technological Advice
SEI	Stockholm Environment Institute (SE)
SIDA	Swedish International Development Cooperation Agency (SE)
SIDS	small island developing states
SME	small and medium-sized enterprise
SCNAT	Swiss Academy of Sciences (CH)
SCOPE	International Biofuels Project
SPI	Science-policy-interface
SRU	German Advisory Council on the Environment (DE)
TI-AK	Institute of Agricultural Climate Research at the Thünen Institute (DE)
ToR	terms of references
UBA	Federal Environmental Agency (DE)
UEA	University of East Anglia (GB)
UFOPLAN	Environmental Research Plan (DE)
UKCIP	UK Climate Impacts Programme (GB)
UKCP	UK Climate Projections (GB)
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USGCRP	United States Global Change Research Program (US)
VROM	Ministry of Housing, Spatial Planning and the Environment (NL)
WBGU	Advisory Council on Global Change (DE)
WCRP	World Climate Research Programme
WP	working package
€	Euro
£	Pound

Part A:
Synthetic Overview

1 The ReSciPI project

The project *ReSciPI – Reshaping Science Policy Interactions in Climate Policy* – is a joint effort of the Institute of Forest, Environmental and Natural Resource Policy at the University of Natural Resources and Life Sciences in Vienna (BOKU-InFER) and the Chair of Environmental Governance at the Institute of Environmental Social Science and Geography at Albert-Ludwigs-University Freiburg (FR-EnvGov). ReSciPI starts from the assumption that the complex field of climate change mitigation and adaptation is in urgent need of ‘usable knowledge’ and that sound scientific expertise has the potential to make valuable contributions to more effective policies. At the same time, the operative linking of substantive knowledge and political and societal decision-making still proves to be a difficult task. The overall objective of ReSciPI is to provide policy-relevant insights on effective science-policy interactions in climate policy, especially with respect to the question of how science-policy interactions can be *effectively institutionalized and how processes of knowledge brokerage between various actor groups can be fostered*, including climate scientists, policy-makers, interest group representatives, civil society actors, and the media. ReSciPI builds on a theoretical approach that clearly goes beyond mere ‘knowledge transfer’ and conceptualizes science-policy interactions in an iterative and reflexive manner as knowledge brokerage (KB). Specifically, ReSciPI aims to:

- (i) map and analyze the institutions, actors and processes of science-policy interaction in Austrian climate policy in order to identify the strengths, weaknesses, potentials and obstacles for an effective KB (*working package 1*)
- (ii) provide an overview of different forms of institutionalization of climate KB in selected industrialized countries (stock-taking survey, *working package 2*)
- (iii) get a profound understanding of how climate science and climate policy are effectively integrated in innovative KB models (in-depth cases, *working package 3*)
- (iv) provide options on how to improve institutions and processes of KB by synthesizing the empirical in-sights gained and critically reflecting with relevant stakeholders on how a productive climate science-policy interface in Austria and beyond could look like (*working package 4*)

This report presents and discusses the findings of the international stock-taking survey (*working package 2*). Regarding its substance as well as temporal sequence the stock-taking survey takes on a decisive role within the overall project. Its results provide a fruitful ground for the selection of particularly interesting and relevant cases to be studied in depth in *working package 3*.

Acknowledgements

The project is funded by the Austrian Climate and Energy Fund and conducted within the framework of the Austrian Climate Research Program (ACRP). We would like to express our gratitude toward the national and international experts from science and practice that serve as members to the project Advisory Board and have provided us with helpful feedback on the working package at various occasions. Moreover, the work benefited from the study of Daniel Pinillos (University of Freiburg) for his MSc thesis. Finally, we want to thank our colleagues for their valuable support, namely our project assistant Sylvia Schmidt, Mark Owe Heuer and Emily Kilham for editing and proof-reading.

2 Climate policy in need of effective knowledge brokerage

A sound evidence base for policies appears particularly relevant in the complex field of climate change mitigation and adaptation policies as well as other environmental policies: their peculiar problem structure heightens the degrees of functional and spatial interdependence, irreducible uncertainty and ignorance, as well as societal ambiguity and conflict-ladenness (Biermann, 2007; Hogg et al., 2012; Jänicke and Jörgens, 2006). Hence, there exists an elevated need for politically 'usable knowledge' (Lindblom and Cohen, 1979). As a consequence of the growing pervasiveness of science-related issues in climate policy there has also been an increase in the actual use of expert scientific advice to inform decision-making. Simultaneously, the advisory landscape has considerably differentiated. Contrary to general perception, scientific policy advice not only takes place in classical formats, like IPCC-like expert panels or advisory committees, but – especially when seen from a broader, less linear perspective – takes on much more varied forms. Venues and modes of scientific policy advice range from IT-based integrated assessment tools to collaborative planning and decision-making forums, from ad hoc consultancy contracts to long-term thematic research programs, from intergovernmental panels to private think tanks, and so forth. Within those different venues, we see an even greater variety of forms of how scientific policy advice is enacted.

The idea that scientific knowledge can be directly transferred into politics still dominates the conceptions of many scientists and policy makers (Grundmann, 2009; Weingart, 1999). That is why many advisory bodies are still designed along this idea. Nonetheless, we also witness the emergence of a range of new ideas and approaches for how to shape and institutionalize science-policy interactions in a more interactive and reflexive way in many countries. As a response to the genuine dissatisfaction with classical linear approaches those more innovative forms of scientific advice promise useful policy options and guidance for environmental and climate policy.

In light of an increased demand for and interest in innovative ways of science policy interactions, our systematic stock-taking survey in this report aims to systematically map and scrutinize different (traditional but mainly new) forms of KB as employed in various industrialized countries. The survey gives a broad overview on how scientific policy advice is institutionalized and put into practice in selected countries and what strategies and mechanisms are used to secure its effectiveness. While there exists a considerable body of academic literature on the setup and effectiveness of scientific advice bodies at the international level (especially on the flagship IPCC; e.g. Beck, 2009, 2012; Pielke, 2007), only some scattered research is available on national or sub-national formats within selected countries (e.g. UK, Germany, USA, or Canada). Accordingly, our stock taking approach denotes one of the first systematic comparative accounts of KB on climate change mitigation and adaptation as institutionalized in selected industrialized countries. Before presenting the results in Chapters 5, 6 and 7, we will briefly introduce the underlying conceptual approach (Chapter 3) and methodology, including sampling and criteria of analysis (Chapter 4). In Chapter 8, we summarize our results and provide an outlook to the following work package of the ReSciPI project.

3 Science-policy interactions as knowledge brokerage

The ReSciPI project builds on a conceptualization of science-policy interactions as ‘*knowledge brokerage*’ (in short: KB). The KB perspective has been chosen in order to allow capturing all types of science policy interactions, especially the more innovative forms which clearly go beyond a classical linear model of knowledge transfer. Science policy studies have shown that the linear model shows severe deficiencies, both in empirical and in conceptual terms (Beck and Bonß, 1995; Pregernig, 2007c; Weingart, 1999). The model builds on the assumption of a clear line of separation between knowledge production (the ‘science domain’) and knowledge use (the ‘policy domain’). The uni-directional link between the two domains is conceptualized in a way that could be best described with the phrase “speaking truth to power” (Price, 1981). This ideal-type situation is based on the naïve hopes that scientists could produce sound information that was without doubt for the best of society (Cortner et al., 1999). Recent scholarly research and particularly practical experience suggest that this wish remains unattainable in reality. Decision makers keep on complaining about useless information, while scientists produce information that remains unused (Cash et al., 2002). Apparently, the still favored contemporary forms of scientific policy advice, such as ‘science inventories’, ‘state-of-knowledge reports’ or advice bodies like the IPCC, often fail to exert the influence on policy-making for which they had been established in the first place (Beck, 2011; Pielke, 2010).

In this light, our analyses is built on a more iterative and dynamic understanding of SPI. The KB model turns on a more differentiated approach, whose conceptual and empirical strength derives from a thorough combination of different modern theories and approaches within political sciences and science and technology studies. These cover different aspects of the dynamic science-policy interactions: two communities; rational action; knowledge utilization; effectiveness; boundary work; boundary organizations.

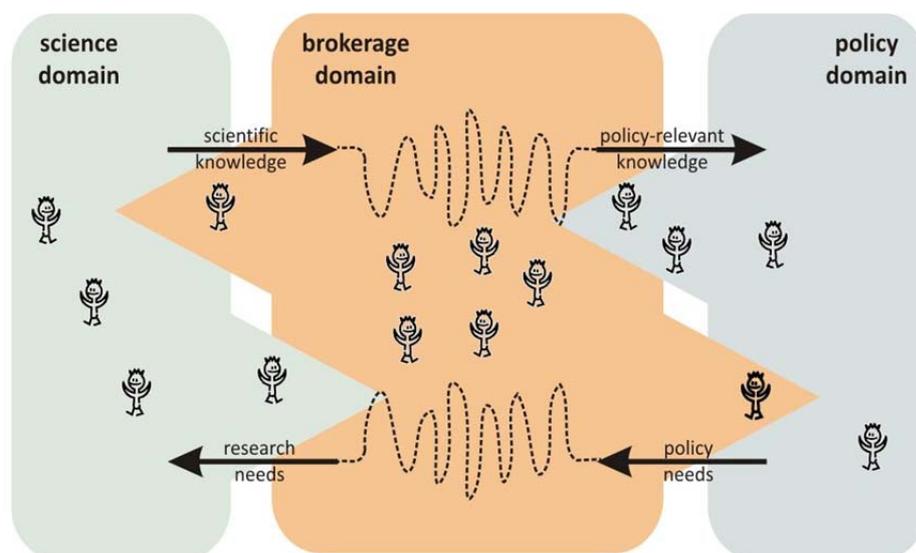


Figure 1: Science-policy interaction as knowledge brokerage

‘*Two-communities*’ theories make us aware of the fact that scientists and policy makers live and operate in separate worlds with different and often conflicting values, reward systems, conceptions of time, and languages (Caplan, 1979; Rich, 1991). Consequently, science-policy interaction tends to degenerate to a ‘dialogue of the deaf’ (van Eeten, 1999), in which science and politics talk at cross-purposes.

Rational actor theories highlight the strategic aspects of the interaction between science and politics (Collingridge and Reeve, 1986; Martin and Richards, 1995; Radaelli, 1995). In the policy process politi-

cal actors often use – some might say ‘misuse’ – scientific expertise for various purposes that best fit their interests (Boehmer–Christiansen, 1995; Pregernig, 2007c): as a source of authority to *legitimize* official policies, as instruments to *persuade* in debates and negotiations, as a mechanism to *delay or avoid* action (more research gains time and passes the responsibility to science) or as a scapegoat to *distract* from policy reversion (politicians may change minds without losing their face or having to admit error).

Theories of *knowledge utilization* suggest that the ‘use’ of research findings typically does not come in a direct and instrumental form that simply ‘transferred’ knowledge into the non-scientific world for the ‘best of society’ (Hisschemöller et al., 2001; Oh, 1996; Rich, 1977; Webber, 1992; Weiss, 1977). Rather it is used in more indirect and ‘conceptual’ ways where knowledge diffuses from science to policy on routes that are not pre-organized or pre-planned which Weiss (1980) describes as ‘knowledge creep’. Hence, the production of ‘generative ideas’ and ‘mental models’ is at least as important as that of ‘hard’ scientific data (Pregernig, 2000, 2007b; Weiss, 1991).

Related to knowledge utilization is the question of the ‘*effectiveness*’ of scientific policy advice. Since the often indirect influence of science on politics is difficult to trace, generally occurs over a longer time and is not straightforwardly observable (Pregernig, 2006), the scholarly literature proposes to draw on interim criteria for effectiveness of scientific policy advice. In particular, research on the policy impacts of global environmental assessments (GEA) singled out three characteristics of assessments as ‘*proximate pathways to effectiveness*’, that is, the criteria of saliency, credibility, and legitimacy (Cash et al., 2003; Farrell et al., 2006; Mitchell et al., 2006). *Saliency* is meant to capture the perceived relevance or value of the assessment to particular groups which might employ it to promote policy changes; *credibility* stands for the perceived authoritativeness or believability of the technical dimensions of the assessment process to particular constituencies; and *legitimacy* is targeted at the perceived fairness of the assessment process to particular constituencies.

Theories of ‘*boundary work*’ argue that what demarcates science from non-science is not a set of essential characteristics inherent to scientific knowledge itself, but rather the outcome of strategic, rhetorical positioning (Gieryn, 1983, 1999; Jasanoff, 1987, 1990). In the interaction between science and policy, boundaries serve various – sometimes seemingly contradictory – functions. While clearly discernible and undisputed lines of demarcation may protect science from politization and ensure the political acceptability of advice, boundaries may also act as obstacles to communication, collaboration, and concerted action. A targeted ‘management’ of boundaries marks a promising leverage to link knowledge to action in more productive ways (Cash et al., 2002; Pregernig, 2005, 2007a).

Building on the afore-mentioned set of theories, the concept of ‘*boundary organization*’ takes a closer look at institutions that facilitate this communication and provide mediating functions between science and policy (Guston, 1999). Existing at the frontier of the two distinct social realms, boundary organizations bear different responsibilities for each domain. They draw their stability not from isolating themselves from external political authority but precisely by being responsive to opposing, external authorities (Cash and Clark, 2001b; Guston, 2001).

Correspondingly, our KB perspective perceives SPI as a social *process*, which typically unfolds in recurring instances of joint action between scientists, policy-makers, interest groups, the media and citizens and, with that, goes well beyond the production and transfer of a product (e.g. a written report). Moreover, such concept draws no clear a-priori line of demarcation between the scientific and political domains, but rather sees the ‘boundary’ between them as constantly re-negotiated and, in many cases, as permeable and dynamically shifting (Gieryn, 1983, 1999; Jasanoff, 1987, 1990). Accordingly, science and policy come together in a hybrid ‘brokerage domain’ in which they ‘negotiate’ the relevance and cogency of knowledge claims – while still keeping their particular identities and operating conditions as specific societal sub-systems (see Figure 1).

Based on this multi-theory analytical framework the presented inventory explores different forms and practices of climate KB in various industrialized countries. It serves to systematically map and scrutinize mainly new forms of KB, but also a few traditional forms that promise to provide a first idea of what differentiates more from less successful approaches. Considering the broad range and high number of cases, we employ only a reduced set of analytical dimensions and assessment criteria that suffice to identify distinct types of institutionalizations and practices of scientific policy advice in climate policy and to carve out the pathways of their effectiveness. Within such confined analytical focus our research concentrates on the following aspects:

- (i) the different forms in which the science-policy interface is organized,
- (ii) the range of KB activities employed to engage actors from science and policy in KB, and their outputs and addressees, and
- (iii) the pathways (strategies and mechanisms) that are taken to ensure the effectiveness of knowledge brokerage.

4 Methodology and sample

The overview over the variety of modes and forms of KB in climate policy is based on a systematic survey of 30 knowledge brokerage institutions (KBIs) in eleven OECD countries. The sample of KBIs was selected in a multi-stage procedure. As a starting point, a list of roughly 100 traditional as well as innovative formats of climate policy advice in 15 OECD countries, the European Union and at the international level was compiled by desk research and was further extended with the support of the members of the project's Advisory Board (*see* Annex 1). The set of potential cases was then reduced to about 40, for which we drafted short profiles using a standardized form (*see* Annex 2). In a second selection step, we condensed the number of cases to the final 30 cases. The selection followed the strategies of stratified purposeful sampling and cluster sampling (Patton, 1990) and was driven by four main considerations:

- (1) **Type of KBI:** The sample encompasses different types of knowledge brokerage institutions that can be grouped into four basic forms of institutionalization: research institutions engaged in KB activities, scientific advisory bodies, scientific advisory processes and information exchange platforms.
- (2) **Problem areas:** We strove for a balanced representation of KBIs with a focus on mitigation and adaptation (policy), either with a comprehensive or more specific focus therein (e.g. energy, adaptation of coasts), including cases where climate change is just one among several environmental or sustainability issues addressed.
- (3) **Innovativeness:** We were particularly interested in new, innovative forms of scientific policy advice and hence the majority of our cases classifies as such. However, we also deliberately selected some more traditional, typically more unidirectional KBIs.
- (4) **Relevance:** We have deliberately chosen those KBIs that exhibit a certain relevance and visibility in their respective country and beyond. Relevance was used as a first indicator for success and effectiveness.

For the final 30 cases, we compiled systematic *case profiles* (*see* Part B). Those case profiles are based on literature review, document analysis and telephone interviews with on average one key informant per case. The case profiles build on the following main dimensions: (1) general features (including type, thematic focus, constitution and objectives), (2) institutionalization (including organiza-

tional set up, funding, reporting and evaluation), (3) knowledge brokerage setting (including brokerage activities, outputs and target groups), and (4) the effectiveness of the KB case.

In concrete, with the sub-dimension (1) *general features*, we generate more descriptive information characterizing the case with respect to: (i) the type of knowledge brokerage institution, (ii) the thematic focus of its research, (iii) the constitution and establishment, and (iv) the objectives which the case pursues.

Moreover, with the sub-dimension (2) *institutionalization* we specify the varied forms in which scientific advice can be organized. It encompasses information on the (i) organizational set up, (ii) funding as well as (iii) supervisory schemes set in place for monitoring, reporting and evaluation of the institution.

Under the sub-dimension (3) *knowledge brokerage* the concrete *activities* and strategies are identified which are generally employed to link knowledge production and use for specific *target groups*. Specifically we ask in which way thematic agenda-setting is performed, what are the most relevant knowledge brokerage activities covering, for example, actions that serve to identify research gaps (knowledge brokerage activity, KBA, 1), to directly support decisions (KBA 4) or to inform the public and media (KBA 7: “public outreach”). Enriched with information on the tangible outputs of these activities as well as the links to different policy cycle phases and the varied target groups, this dimension allows a differentiated idea of KB in practice.

We operationalize the sub-dimension (4) *effectiveness* in relation to the three attributions saliency, credibility and legitimacy (SCL) as introduced in section 3. We do not assess in how far a single KBI actually fulfils each of the three attributions but ask a) how important the three attributions are for the KBIs and their work and b) which strategies the KBIs employ to foster their SCL performance.

The case profiles were drafted by one researcher and checked by two other researchers in order to guarantee coherence and completeness across all profiles. The analytical dimensions have partly been derived deductively from the respective literature as introduced in Chapter 3 and have partly been inductively developed and iteratively re-adjusted based on the rich empirical material during the research process. In the data analysis, we have deliberately foregone an overly quantifying approach but have opted for a form of presentation in which the most significant *patterns* are introduced and described. This approach corresponds better to the size of the sample and the rather qualitative, interpretive form of data analysis which impairs giving statements about representativeness or regularities. Accordingly, we only describe tendencies and, where feasible, give more systematic accounts of our data in form of approximate frequencies of ‘three to one dots’ that indicate how often we found a certain type or pattern in our set of cases (see Table 1).

Table 1: Indicators for occurrences in the sample

○	Occurrence in a few cases only, 1-9
○○	Occurrence in many cases, ranging from 10 to 19
○○○	Occurrence in most cases, 20+

5 Typology and general characteristics of knowledge brokerage institutions

The final 30 cases of our sample originate from eleven OECD countries with Germany, the Netherlands, and the United Kingdom providing a disproportionately large number of cases to the sample (see Table 2). In these countries we find a highly institutionalized, broad and diverse spectrum of different scientific policy advice settings that are of particular relevance to the ReSciPI project, especially for the in-depth case-studies in working package 3. Our sample also includes two cases (ecologic and Global Climate Forum) that are classified as international or EU, meaning that they are organizationally spread across more than one country (in the EU or beyond). When cases have undergone major organizational changes, i.e. have been completely restructured or (substantial parts of) their tasks have been shifted to other institutions after some time, our investigations concentrate on the period that promises to be most insightful in line with our selection criteria (*italics* in Table 2), as in the case of UKCIP or the Tyndall Centre.

Table 2: Overview of KB institutions in sample

Country (<i>no. of cases</i>)	Name (<i>in alphabetical order, abbreviations, period of duration</i>)
Australia (3)	Adaptive Futures / Coastal Zone Management Pty Ltd (CZM)* Climate Adaptation Flagship (CAF) of Commonwealth Scientific and Industrial Research Organisation (CSIRO) National Climate Change Adaptation Research Facility (NCCARF)
Canada (1)	Regional Adaptation Collaboratives (RACs, 2009-2012)
Denmark (1)	Danish Commission on Climate Change Policy (DCCCP, 2008-2010)
EU / international (2)	Global Climate Forum (GCF, Potsdam) (prior name: European Climate Forum) ecologic Institute (Europe: Berlin, Vienna, Brussels)
Germany (7)	Climate Service Center (CSC) Competence Centre for Climatic Consequences and Adaptation (KOMPASS) Ethics Commission on a "Safe Energy Supply" (4-28 May 2011) German Advisory Council on Global Change (WBGU) Institute of Agricultural Climate Research at the Thünen Institute (TI-AK) KLIMZUG – Climate Change in Regions (project region: Northern Hesse, 2008-2013) Potsdam Institute for Climate Impact Research (PIK)
Netherlands (5)	The Delta Programme (2010-2014) Knowledge for Climate research program (KfC, 2008-2014) Netherlands Environmental Assessment Agency (PBL) Platform Communication on Climate Change (PCCC) Royal Netherlands Meteorological Institute (KNMI)
Norway (1)	Center for International Climate and Environmental Research (CICERO)
Sweden (1)	Stockholm Environment Institute (SEI, also international)
Switzerland (2)	Centre for Climate Systems Modeling at ETH Zurich (C2SM) Forum for Climate and Global Change (ProClim)
UK (6)	Climate Change Committee (CCC), incl. Adaptation Sub-Committee (ASC) Climate Change Risk Assessment (CCRA) (Government) Chief Scientific Adviser (G)CSA Regional Climate Change Partnerships (RCCPs) Tyndall Centre for Climate Change Research (<i>esp. until 2010</i>) United Kingdom Climate Impact Programme (UKCIP, <i>esp. until 2011</i>)
USA (1)	United States National Climate Assessment (NCA)

* dealt with together because of substantive organizational links

5.1 Typology of KB institutions

On a general note, with our research we wanted to gain an understanding of the different ways in which knowledge brokerage is organized. In this regard, we identified 4 basic forms of institutionalization of KB in our sample and distinguishable sub-varieties therein. *Inter alia*, sub-variations reflect differences in permanence, in the degree of institutionalization, in the size of the body or in the vicinity to the 'political system'. The left-hand column in Table 3 shows our deductively derived KBI typology; the right-hand column lists the cases in our sample.

Table 3: Typology of knowledge brokerage institutions

No.	Types	Cases in sample
1	Research institutions	
1.1	Research institutes at universities	<ul style="list-style-type: none"> ▪ Center for International Climate and Environmental Research (CICERO) ▪ United Kingdom Climate Impact Programme (UKCIP, <i>until 2011</i>)
1.2	Non-university research institutes and think tanks	<ul style="list-style-type: none"> ▪ Adaptive Futures / Coastal Zone Management Pty Ltd (CZM) ▪ ecologic Institute ▪ Potsdam Institute for Climate Impact Research (PIK) ▪ Stockholm Environment Institute (SEI)
1.3	Departmental research institutes and state agencies	<ul style="list-style-type: none"> ▪ Royal Netherlands Meteorological Institute (KNMI) ▪ Competence Centre for Climatic Consequences and Adaptation at the German Environment Agency (KOMPASS) ▪ Netherlands Environmental Assessment Agency (PBL) ▪ Institute of Agricultural Climate Research at the Thünen Institute (TI-AK)
1.4	Networks of research organizations	<ul style="list-style-type: none"> ▪ Centre for Climate Systems Modeling at ETH Zurich (C2SM) ▪ Global Climate Forum (GCF, Potsdam) ▪ National Climate Change Adaptation Research Facility (NCCARF) ▪ Tyndall Centre for Climate Change Research (esp. until 2010)
1.5	Thematically focused (climate) research programs	<ul style="list-style-type: none"> ▪ Climate Adaptation Flagship of CSIRO (CAF) ▪ Knowledge for Climate research program (KfC, 2008-2014) ▪ KLIMZUG – Climate Change in Regions (2008-2013)
2	Scientific advisory bodies	
2.1	Standing scientific advisory bodies	<ul style="list-style-type: none"> ▪ Climate Change Committee (CCC), incl. Adaptation Sub-Committee (ASC) ▪ German Advisory Council on Global Change (WBGU)
2.2	Ad hoc scientific advisory bodies	<ul style="list-style-type: none"> ▪ Danish Commission on Climate Change Policy (DCCCP, 2008-2010) ▪ Ethics Commission on a "Safe Energy Supply" (4-28 May 2011)
2.3	Chief Scientific Advisors	<ul style="list-style-type: none"> ▪ UK (Government) Chief Scientific Adviser (G)CSA)
3	Scientific advisory processes	
3.1	Policy-driven expert assessment processes	<ul style="list-style-type: none"> ▪ Climate Change Risk Assessment (CCRA) ▪ United States National Climate Assessment (NCA)
3.2	Collaborative planning fora with participation of scientists	<ul style="list-style-type: none"> ▪ The Delta Programme (2010-2014) ▪ Regional Adaptation Collaboratives (RACs, 2009-2012) ▪ Regional Climate Change Partnerships (RCCPs)
4	Information exchange platforms	
		<ul style="list-style-type: none"> ▪ Climate Service Center (CSC) ▪ Platform Communication on Climate Change (PCCC) ▪ Forum for Climate and Global Change (ProClim)

Basically, the KBIs in our sample range from venues with strong degrees of institutionalization to more process-based and dynamic institutions with rather loosely linked institutional structures. Moreover, one can distinguish more classical, unidirectional forms of institutionalization from more interactive patterns of KBI with science and policy interlacing within one institutional set-up, like in the case of *scientific advisory bodies* at ministries or parliaments or of *collaborative planning fora*. In detail, we distinguish in the category *research institutions* between *research institutes at universities* (1.1.), *non-university research institutes* and *think tanks* (1.2) as well as *governmental departments* or *state agencies* (1.3). Less institutionalized (and partly less permanent) forms of how these different research institutes organize knowledge brokerage is when they collaborate in *research networks* (1.4) or focused *research programs* (1.5). Within the category of genuinely more policy adjacent *scientific advice bodies* (2), we distinguish *chief scientific advisors* (2.3) as small and 'iconic' from other forms of *advice bodies* that may be established either on a *permanent* (2.1) or on an *ad hoc* basis (2.2). Our third category covers *process-based* forms of *scientific advice*, whereas *assessments* (3.1) differ from *collaborative planning processes* (3.2) with regard to their policy vicinity and high degree of interactivity. In an extreme version science-policy interactions institutionally solidify within nodal like structures that (more or less) neutrally or even impersonally (online or virtually) coordinate information exchange between knowledge providers and knowledge users. So called climate service centers (like ProClim or CSC) but also more passive online information services (like PCCC) fall in this last distinct category that we functionally categorize as *information exchange platforms* (4).

5.2 General characteristics

Regarding the *period of existence* of the different institutions, most bodies are established as permanent research organizations or advice bodies (24 of 30 cases). A few KBIs, however, have been set up only for a short or medium period of time to deal with a specific (set of) research issues and questions. Examples include the ad hoc Danish or German commissions (up to 3 years) or research programs that on average cover 3 to 5 years. Also national or regional adaptation policy and planning processes, like the Canadian Regional Adaptation Collaboratives or the Dutch Delta Programme, genuinely set up to draft policy strategies and plans, have a pre-set limitation in time. By nature of the subject matter, adaptation policy planning often demands a continued policy process.

The *establishment* of a KB institution is mainly driven by governmental actors (in 19 out of 30 cases). In contrast, it is rather an exception that science or business mark sole initiators of KBIs (total: 5) – at least in our sample. In comparably more cases (6) the initiation of a KBI is the result of a joint effort of science with different societal actors.

Also in the *funding* of KBIs, politics is central and often provides a substantial part of the institutional core, seed, or project funding. Funding may be channeled more directly from ministries or agencies at country and state level but may also take more indirect ways through publicly financed research programs (managed, e.g., by research councils or ministries). While 20 out of the 30 cases heavily rely on public funds, our sample also illustrates that the sources of funding are increasingly becoming diverse. Besides commissioned research we also find, for instance, fees for membership or for research products as well as donations.

6 Putting knowledge brokerage in action

6.1 Typology of knowledge brokerage activities

One of the key questions for our stock-taking survey was how knowledge brokerage is actually enacted in practice. Asking for the actual knowledge brokerage activities (KBA), we sought to gain a systematic account of the different ways in which KB as a process takes place. A thorough representation and collection of the whole plethora of activities that KBIs engage in was a central concern that our survey concentrated on. By means of systematic inductive stock-taking we arrived at seven broader types of activities, in the sense of distinct patterns that occurred in multiple cases of our sample. We deliberately excluded pure research activities with no or only a very remote connection to policy or societal advice. The different activity types together with distinctive approaches of how to enact them are given in Table 4. Because of the rather small sample size and the qualitative character of our study, we don't give any exact case counts but rather use a system of three to one dots to indicate how often we found a certain type or pattern in our set of cases.

Table 4: Types and subtypes of knowledge brokerage activities

Type of KBA	Occurrence*	Sub-types
KBA1 Knowledge needs and research gaps identification	0 (00)	- state-of-knowledge reviews - research evaluation /validation - user consultation
KBA2 Coordination and networking activities	0 (00)	- peer networking - stakeholder networking - pure 'match-making'
KBA3 Compiling and translating scientific information	000 (000)	- scientific assessments - science translation approaches
KBA4 Decision support	0 (00)	- decision support tools - capacity building
KBA5 Policy analysis, evaluation and development	00 (000)	- policy analyses / evaluation - develop policy / draft legislation
KBA6 Personal policy advice and consultation	0 (00)	- chief scientist - designation to advisory bodies - <i>ad hoc</i> advice to policy - quasi-political representation
KBA7 Public outreach	00 (000)	- internet-based - classical mass media - 'enacted' forms

*dots in brackets indicate how often an activity was generally found; dots without brackets reflect how often these activities have also been a major activity of the institutions in the sample

In the following, we describe the specific types of knowledge brokerage activities in greater detail. In our analysis, we often found ‘standard KB practices,’ i.e. those with a low level of interactivity, while we also found (typically fewer) cases that developed outstanding, more interactive, innovative forms of KBA. In the following, we first describe the ‘standard practices’ for each KBA and, then, briefly point out the distinctive, innovative approaches that we find in the sample (*in blue italics*).

KBA1: Knowledge needs and research gaps identification

This first KBA type is identification work and in our understanding it responds to the insight that knowledge brokerage is not just about transferring existing knowledge to users, but that from a more comprehensive perspective it is important to systematically identify knowledge needs and research gaps in the first place. Overall, we have explicitly identified the activity in roughly half of the KBIs at least as a minor activity, mostly in the group of the more science-oriented KBI types. However, only a marginal number of institutions actually concentrate their efforts on this type of KBA. The more ‘classical’ variant of this activity covers systematic *state-of-knowledge reviews* or more *ad hoc critical evaluations of the accuracy of existing science* that, for instance, contrast climate change models against new environmental and societal trends. Appearing as purely scientific exercise at first sight, they may still be perceived as of brokering quality in that they denote a first important step toward use-oriented knowledge where more accurate, less patchy and targeted research may be of better use, eventually. A few cases, all in the area of adaptation, stand out with more far-reaching and more interactive approaches that explicitly consult with stakeholders to *identify user knowledge needs*:

The Australian National Climate Change Adaptation Research Facility (NCCARF), for example, dedicated a whole project phase to a systematic research gap analysis for defining research priorities. In order to properly reflect the vulnerability and adaptive capacities of the sectors, the policy context and the understanding of the stakeholders, a major consultative process together with governments, stakeholders and the research community was prompted. The so called targeted “National Adaptation Research Plans” (NARPs) that also build the basis for each one of NCCARF’s priority themes have been developed by so called writing teams composed of researchers, end-users, and Federal Government representatives. In interactive workshops, but also more indirectly through the representatives of the adaptation research networks, stakeholders could validate the identified research priorities against their specific knowledge needs.

Also two Dutch cases present more sophisticated activities in this respect: In the “Knowledge for Climate” (KfC) research program researchers identify urgent topics that will guide the further research in a participatory manner with stakeholders from so-called ‘hotspots’, meaning regions that are particularly vulnerable to the consequences of climate change. In the “Delta Programme” knowledge agendas for the sub-programs are continuously discussed and developed by the involved local, regional and national authorities and in consultation with other stakeholders. These knowledge agendas are then implemented in ad hoc commissioned research studies and serve the fine-tuning of research programs (e.g. Knowledge for Climate) and the programming of strategic delta studies.

KBA2: Coordination and networking activities

Coordination and networking denotes a second distinct type of activities. In our sample, research bodies and think tanks are quite active in this respect. In contrast, it is rarely exerted by KBIs that are very close to government. There are three variants of coordination and networking: A first, quite common version could be best described as ‘peer coordination’ and was found in more than one third of the cases. It seeks a better connection between all sorts of knowledge providers, from academia but also from government (research agencies) or industry (R&D), either by establishing institutional arrangements, for

example research networks or consortia, or by engaging some kind of exchange events (e.g. scientific conferences). The ultimate aim is to produce more integrated and, with that, more usable knowledge. The coordination of scientists in the development of chapters for the IPCC Assessment Reports denotes a quite prominent case.

A stronger variant of knowledge brokerage are **networking** activities beyond the peer community, i.e. when KBIs build settings or organize forums etc. to ‘exchange’ with different stakeholders from policy and society. Outstanding dialogic examples are:

The aforementioned NCCARF has set up an interaction forum (FORNSAT) with state and territory governments that, inter alia, serves to communicate and exchange on past research results and future research needs. The Norwegian Center for International Climate and Environmental Research (CICERO) is regularly hosting a Climate Forum, where researchers and representatives from government and business can exchange information and viewpoints away from the media limelight.

A third quite distinct sub-type embraces activities that in the understanding of Michaels (2009) follow a ‘match making’ strategy. In that case, typically pure intermediaries would facilitate that knowledge seekers are connected to or can exchange with providers of scientific information. Sometimes this happens rather remotely without direct contact and with the ‘right’ information being passed on to the ‘right person,’ but there are also other KBIs that ‘make matches’ in more direct and dialogue-based forms (e.g. in the course of designated events).

Almost unsurprisingly, all information exchange platforms in our sample, i.e. the Swiss Forum for Climate and Global Change (ProClim), the German Climate Service Center (CSC) and the Dutch Climate Portal of the Platform Communication on Climate Change (PCCC), have set up an online-based enquiry system that allows to link information seekers with knowledge providers. An interesting more dialogic example are the events within the Parliamentary Group “Climate Change” that ProClim supports and facilitates, mainly logistically and administratively. In line with the topical interests of the Parliamentary Group ProClim identifies and briefs suitable guest speakers from the research and practice community for their lunch-break events, which are supposed to bring science and practice closer to the legislative arena.

KBA3: Compiling and translating scientific information

Another KB activity encompasses a whole range of activities where scientific information is identified, compiled and/or translated into user-benign forms. Overall this is a very common and prominent undertaking. The *first* sub-type of **compilation** covers, for instance, classical assessment processes, in which typically an interdisciplinary group of experts pulls together, reviews and eventually synthesizes the relevant scientific literature on a specific problem area. Such assessments go beyond pure research because they compile knowledge with the intention to provide a scientifically based and accurate picture of the reality that decision makers have to identify their policies in. Such assessment may not only compile existing information but may well include own and possibly more sophisticated models or scenarios. In our sample, classical assessments are largely confined to university and extra-university research institutions, like CICERO in Norway, PIK in Germany, PBL in the Netherlands, the UK Tyndall Centre for Climate Change Research, or the Swiss Center for Climate Systems Modeling (C2SM) at ETH Zurich.

The *second* more directly user targeted sub-activity is that of **translating** scientific information and it takes place in various ways – typically as an ‘add-on’ to the rather ‘classical’ compilation exercise. The standard approach found in pretty much every case is the preparation of executive summaries or policy briefs.

The German Climate Service Center, in contrast, provides a whole portfolio of different climate information formats tailored to the different needs and levels of expertise which decision makers in policy and business but also the broader public may have. These different information products are systematically displayed in different sections of the webpage (e.g. News Scan, Climate Wiki, Klimanavigator), that serves as the national internet portal for climate information. Also the German Government's Advisory Council on Global Change (WBGU), provides an interesting case, in that it produces a whole range of differentiated products to present research results to its major client, the Government in a digestible manner. For that purpose, its tome-like, so called, Flagship Reports are translated into more condensed Policy Papers as well as handy 4-page Fact Sheets.

Particularly if the broader public, media or pupils are a major target group, KBIs sometimes put extensive efforts into the production of popular-scientific and easy to understand formats. The KlimaPortal of ProClim, for instance, offers a whole set of different educational materials for schools and teachers. Within KlimZug (region: "Nord") comic books have been written to transfer the knowledge and insights in a way that is easy to understand within and beyond the Klimzug community. Issues cover for example the development of climate scenarios, nature conservation in German regions and rain water management.

KBA4: Decision support

A fourth type of KB activities seeks to enable and support political decisions. Half of the analyzed KBIs develop different kinds of *tools* in the widest sense that range from less activating and ready-made guidelines or hand books or quite science-oriented modeling, simulation or scenario generation tools to more activating decision support tools with interactive user-tailored interfaces.

A quite extensive set of user-tailored and through their website easily accessible decision support tools and material has been developed by UKCIP, e.g. the Business Areas Climate Assessment Tool (BACLIAT), the Local Climate Impacts Profile (LCLIP) for local authorities, or the Adaptation Wizard. With the help of the LCLIP, for instance, local authorities can self-assess their vulnerability to current and future climate change impacts based on which to identify and implement suitable adaptation measures. So far the tool has been used by hundreds of local authorities.

A *second form* of decision support that we could find in roughly half of the cases is more directly engaging with decision makers, in that it provides *trainings*. These are targeted at enabling various political and societal actors to derive at decisions more easily vis-à-vis climate change or other uncertain problems of sustainable development. KBIs offer a whole range of different workshops or trainings, e.g. regarding the handling of scientific knowledge in specific use contexts:

One sub-variant would be that KBIs provide trainings to familiarize users more generally with how to use the developed tools. UKCIP and the Tyndall Center, for example, hold workshops with policy makers and stakeholders for that purpose. The Australian think tank Adaptive Futures provides mentoring and capacity building support to its business clients that wish to develop climate adapted enterprises. Similarly, the German Federal Institute of Agricultural Climate Research (TI-AK) organizes workshops for farmers to sensitize them for possible climate change impacts on their business.

KBA5: Policy analysis, evaluation and development

While decision support activities in the aforementioned form mainly address the more operational-level and the general capacities of decision makers to make better use of climate knowledge, we also see another type of decision support activities that is targeted more at concrete policies or policy proposals.

About half of our KBIs are engaged in the production of **policy analyses and policy evaluations**, however only a few KBIs actually concentrate their KB efforts on this type of knowledge brokerage activity. The spectrum ranges from more scholarly policy studies to assess or evaluate (existing or planned) policies to more consultancy-style best practice benchmarking exercises. These provide decision makers with quite concrete information in support of decisions about policy changes or maintenance. Such policy analyses are quite often a substantial part of the work that standing as well as *ad hoc* advisory bodies undertake, like the German WBGU, the 'ethics commission' or the UK Climate Change Committee. Many (of these) KBIs also go beyond the mere analysis or evaluation of policies and elaborate partly quite specific *policy options or strategies*.

The Danish Commission on Climate Change Policy (DCCCP), for instance, did not only provide an extensive socio-economic assessment of Denmark's potential energy policy. The commission that was set up in the run-up to the Copenhagen climate conference to provide guidance to the Danish Ministry of Climate and Energy governmental proposal to reach EU 2050 GHG reduction goals also came up with 40 operational policy recommendations.

While it remains, yet, open whether policy recommendations are eventually taken up in actual policies a more intense sub-type is when KBIs engage in the actual drafting of concrete legislation or strategies. Marking a quite direct input to policies, these activities are often designed in a way that facilitates an interaction with the users (e.g. policy vicinity):

The UK Committee on Climate Change (CCC) is an independent advisory body to Parliament and (devolved) Government in the UK. Because of its statutory role deriving from the Climate Change Act 2008 it has a rather strong handle on the Government's Carbon Plan, especially by pre-defining permissible emissions in the so-called "carbon budgets". On the EU-level, the ecologic Institute has framework agreements with various EU bodies, e.g. the European Parliament's Environment Committee. In context of the latter agreement, the think tank provides legislative assistance to members of the European Parliament and helps to strengthen the Committee's technical competences. Moreover, the German KOMPASS at the Federal Environmental Agency (UBA) serves as the central office to coordinate the German National Adaptation Strategy (NAS). In their advisory role to the Ministry of the Environment (BMU) KOMPASS experts are strongly engaged in, first, drafting the NAS and related Action Plan and, second, in evaluating their implementation progress.

KBA6: Personal policy advice and consultation

The sixth of our identified KBA types covers activities that require an **in-person involvement** of experts or intermediaries in policy advice activities and consultation. Highlighting the capacities and features of a singular person this activity may take quite iconic forms of advice:

A flagship example is undoubtedly the UK Government Chief Scientific Adviser who supports the Prime Minister and the Cabinet in science and technology-related activities. Between 2008 and 2012 this position was held by Sir John Beddington; since 2013 it is held by Sir Mark Jeremy Walport. Since 2011, every Department has its own Chief Scientific Adviser; for the Department for Environment, Food & Rural Affairs (Defra) it was, until recently, former IPCC chairman Bob Watson.

Irrespective of whether the involved experts are as iconic as the British CSAs, principally personal policy advice comes, at least in our sample, in three variants: First, *ad hoc* advisory activities where experts are assembled for a limited period of time to give targeted advice to government bodies and departments, parliaments, political parties or interest groups, sometime only in one-shot events such as parliamentary hearing (like when NCCARF staff members attend public hearings of the Standing Commit-

tee on Climate Change, Environment & the Arts) or an invitation to participate in a party meetings (as has happened to members of the German Ethics Commission after their report was released).

A second version of personal advice is when it is institutionalized in a more permanent way, classically as standing advisory committees of ministries, or the like.

In contrast to established classical bodies such as the Danish Commission on Climate Change Policy (DCCCP) or the German Government's Advisory Council on Global Change (WBGU) more exceptional cases that established more permanent, but also still less pre-structured and more flexible interactions between science and policy are the Adaptation Flagship of the Australian research organization CSIRO and Tyndall Center: While the former runs a parliamentary liaison office, the latter has applied the approach to second its researchers for a two to six months stay in Defra's policy team.

In a third variant which often occurs in departmental research institutes or state environmental agencies scientists act as quasi-political representatives in (international) policy processes. In this form of personal advice even classical university researchers may serve as direct members of a state delegation, for example, to UNFCCC or at other international conferences.

Senior members of the Stockholm Environment Institute (SEI), for instance, serve as key negotiators for and in the international Swedish delegation, e.g. to the UNFCCC, or as policy advisors during EU presidency.

KBA7: Public outreach

Last but not least we identified the KB activity type 'public outreach' that is meant to provide a *broader audience*, be it media or the general public, with scientific information. At a very basic level all analyzed KBIs engage in public outreach towards other and broader actors groups than the specified addressees. KBIs employ three different channels of communication:

- (1) The internet: Websites with download areas or news sections more or less define the bottom line activities online.

More sophisticated and interactive modes of 'scientific advice 2.0' increasingly make use of Wikis, blogs, podcasts, webinars, apps and the like.

- (2) Classical media still play a major role, nonetheless. At the lower end of the range of different approaches we identify press releases as the most common activity.

In contrast an all-day live broadcasting of consultative meetings on TV definitely marks a more advanced exception, as seen in the example of the German post-Fukushima Ethics Commission on a Safe Energy Supply.

- (3) Enacted forms of outreach are also a quite common means to deliver scientific information to society. Publicly accessible conferences or lectures mark an approach that is quite broadly applied across basically all KBIs in our sample.

At the other more innovative and interactive edge of the spectrum, one finds trade shows (as done in the context of the US National Climate Assessment) or a public engagement package, such as the 'community engagement program' at the Australian CSIRO which is supported and facilitated by a specialized Media Centre. Also PIK complements its "Science & Pretzels series" for students with a whole set of public education products and services such as a board game or the public climate library and a climate museum that it hosts.

6.2 Target groups addressed

After having discussed the great variety of activities that knowledge brokerage institutions have set in place, a final question is who is addressed by those activities as major target groups. In this respect, our analysis shows that most KBIs address more than one target group. When looking at the different types of addressees one sees that policy makers are by far the most important type of target groups for KBIs (see Table 5). However, this observed 'bias' towards policy makers is also attributable to our case selection strategy, which was explicitly looking out for KBIs with a certain degree of 'policy vicinity'.

Table 5: Type of target groups addressed

Target groups	Occurrence
Policy makers	000
Business actors	00
NGOs	0
Science	00
Public and the media	000
Others (stakeholders, professional agencies, students, teachers etc.)	0

Among the group of policy makers, administration (from national ministries to sub-national administrative units) is most often targeted, whereas parliaments are directly addressed only in very few cases. In addition, also the general public and media mark target groups that are very frequently supplied with information and advice. However only in a few cases, like in that of the Dutch PCCC, they actually are the main target groups. It appears that the broad application of outreach activities to the public and media rather comes as a desirable side-effect of the advice services to political actors as major clients. Particularly scientific advisory bodies and scientific advisory processes are often more narrowly focused on political target groups. In contrast, KBIs with a public information mandate or objective, e.g. information exchange platforms or climate service centers, address all types of societal domains, though partly also only in passive 'serve yourself' ways. In this context, CSIRO for instance has installed a system of awarding and promotion incentives as well as guidelines to enhance the quality of information that CSIRO as a public agency is required to provide with open access. Compared to policy makers and the public or the media, other actors are far less frequently found as major addressees. Business actors and the scientific community can be seen as major target groups in about half of the cases. NGOs and other actors could be found as major addressees in about one third of the cases sampled.

7 Pathways of KB effectiveness

Besides mapping the different types of knowledge brokerage institutions, activities and addressees the stock-taking survey was concerned with the question of effectiveness of knowledge brokerage. In a more instrumental reading, effectiveness stands for the influence that knowledge brokerage institutions and activities wield on political debates and decision-making. Influence can be evidenced directly in the uptake of recommendations and policy options and hence changes in policies. More often, however, influence occurs indirectly as subtle changes in an issue domain, i.e. changes in the goals, interests, beliefs, strategies and resources of actors, changes in (problem) framings, discourses and agendas and hence problem perceptions (Clark et al., 2006). Such influence is difficult to trace, because it generally occurs over a longer time and is, thus, not straightforwardly observable (Pregernig, 2006). Consequently, within the stock-taking survey we did not aim to analyze the actual influence and effectiveness of the KBIs but rather focused on the strategies and mechanisms that the KBIs deliberately employ to foster their political and societal influence. We based our analysis on the three attributions saliency, credibility and legitimacy as introduced in chapter 3.

7.1 Relevance of SCL for different types of KBIs

Saliency, credibility and legitimacy are established in the literature typically as equally important pathways to effectiveness. Our analysis, however, showed that the KBIs highlight and actively promote the three attributions to a variable extent and that there are some systematic patterns across KBI types (see Figure 2).

Among our cases, *saliency*, i.e. relevance for politics and or society, is the attribution that almost all of the analyzed KBIs explicitly strive for and that is homogeneously perceived as important. This is not a surprise given that our selection of the KBIs was based on their orientation towards and involvement in knowledge brokerage for politics and society. Consequently, only in a few cases saliency is only of moderately or minor importance. This applies in particular to the few KBIs that are oriented at 'classical' research activities and not primarily concerned with policy advice as such, as in the case of the Centre for Climate System Modelling at the ETH Zurich or the Royal Netherlands Meteorological Institute (KNMI). The majority of KBIs in our sample, however, strives to be responsive to societal problems and political questions and to produce results that are relevant and 'usable' to particular groups.

Credibility is perceived as important in around half of all analyzed KBIs and moderately important in the other half. University research institutions and networks of research institutions generally put a strong emphasis on their scientific and technical trustworthiness. In the sub-group of non-university research institutions and departmental research institutions and research programs credibility is important for some KBIs, such as the Netherlands Environmental Assessment Agency, while other KBIs, such as the Institute of Agricultural Climate Research at the Thünen Institute, accentuate credibility to a lesser degree. Scientific advisory bodies and policy driven expert assessments also lay a high emphasis on their technical accuracy. In contrast to that in collaborative planning processes science is an important partner but credibility is not actively promoted but implicitly assumed by the involvement of scientific institutions. When comparing across countries, the attribution of credibility appears to be of higher importance in the Anglo-Saxon countries (i.e. the UK, USA, and Australia). In particular the KBIs in the UK show a strong tendency to accentuate credibility in their self-representation. In other countries, such as Germany or the Netherlands, the picture is more varied.

Legitimacy, i.e. the perceived fairness of knowledge brokerage processes, is the least articulated attribute and is clearly subordinated to concerns of saliency and credibility in most analyzed KBIs. Only very few KBIs ascribe high importance to legitimacy while the majority of KBIs does not explicitly and insistently aim to showcase aspects of procedural fairness. When comparing KBIs, there is no clear tendency

with regards to KBI type or country with respect to legitimacy. The comparatively low emphasis of legitimacy indicates that KBIs perceive the usability and technical authenticity as more important to enhance the effectiveness of scientific policy advice than aspects of inclusiveness and fairness. This observation can be partly explained by the political-cultural context of our study that analyzed KBIs mostly in a national context and in OECD countries only. In the SCL literature, studies that have found a strong importance of legitimacy as fairness have typically focused on international assessments and often made reference to the relations between countries of the Global North and the Global South (Agrawala, 1998; Biermann, 2001). In this international area, perspectives, values and norms are more diverse than in the cultural context of a single nation state. On top of this deliberate selection bias, our rather narrow conceptualization of legitimacy as perceived fairness might provide another explanation for why we consider it to be of little relevance in our set of cases.

Figure 2: Importance of saliency, credibility and legitimacy across KBI types



7.2 SCL strategies and mechanisms

Knowledge brokerage institutions employ a range of organizational, procedural and rhetorical strategies to foster saliency, credibility and legitimacy. Table 6 lists these strategies and related mechanisms that are described in greater detail in the remainder of the chapter. Examples are provided in blue italics.

Table 6: Strategies and mechanisms in support of saliency, credibility and legitimacy

	Strategy	Occurrence	Mechanism
Saliency	Programmatic problem- and decision-orientation	●●●	<ul style="list-style-type: none"> • Orientation at societal problems and their solutions in objectives and mission statements • Targeting concrete decisions or political addressees • Scaling to regional or local levels
	Demand-driven	●●●	<ul style="list-style-type: none"> • Political initiation of KBI • Research strategy and priorities in consultation with users • Single projects user-initiated or formulated with the involvement of users
	Participation in KB activities	●●●	<ul style="list-style-type: none"> • Consultation • Collaborative research
	Institutionalized societal steering, advice or evaluation	●●	<ul style="list-style-type: none"> • Societal advisory or steering bodies • Mixed advisory or steering bodies (scientific and societal) • Evaluation of societal relevance and impact
	Policy vicinity	●●	<ul style="list-style-type: none"> • Liaison offices • Frequent personal contacts and in-house stays • KBI staff speaking on behalf of principals
	Provision of use-tailored products	●●	<ul style="list-style-type: none"> • Policy summaries, briefs • User-tailored maps and tools
Credibility	Competence and reputation of staff and KBI	●●	<ul style="list-style-type: none"> • Academic qualifications and experiences • Leading and renowned scientists • Reputation of organization
	Collaboration with renowned scientists or organizations	●●●	<ul style="list-style-type: none"> • Active networking with other scientific organizations • Collaboration with renowned scientists
	Organizational independence	●●	<ul style="list-style-type: none"> • Organizational and financial autonomy • Self-initiated KB activities • Presentation as 'honest broker'
	Scientific quality standards and procedures	●●●	<ul style="list-style-type: none"> • Guidelines of good scientific practice • State of the art research, diversification in models • Disclosure of uncertainties • Use of authoritative sources
	Product quality	●●	<ul style="list-style-type: none"> • Publication record in peer reviewed journals
	Scientific advice, steering, evaluation	●●	<ul style="list-style-type: none"> • Scientific advisory or steering bodies • Mixed advisory or steering bodies (scientific and societal) • Evaluation of scientific quality
Legitimacy	Transparency	●●●	<ul style="list-style-type: none"> • Organization and processes • Outputs and products
	Inclusiveness	●●	<ul style="list-style-type: none"> • Stakeholder participation (by-product) • Involvement of different and opposing views and interests

Strategies and mechanisms to support saliency

As indicated above, saliency is for most KBIs the most important of the three criteria and consequently almost all KBIs show a programmatic problem- and decision-orientation. The ambition to wield political or societal influence becomes already apparent in the *official objectives or mission statements* of almost all KBIs. The KBIs frame climate change mitigation, adaptation or other environmental issues as political and societal challenges and state the intention to contribute to their solution by informing policy-makers, other stakeholders and the general public, by developing options for actions and policies and generally by providing solution-oriented insights.

One among numerous similar examples is the objective of CICERO that promises “to conduct research and provide reports, information and expert advice about issues related to global climate change and international climate policy with the aim of acquiring knowledge that can help mitigate the climate problem and enhance international climate cooperation”¹. Similarly PBL states its aim to “contribute to improving the quality of political and administrative decision-making by conducting outlook studies, analysis and evaluations in which an integrated approach is considered paramount. Policy relevance is the prime concern in all our studies.”²

A unique counter-example among our cases is the objective of the C2SM: “[T]he main objective [is] to improve the understanding of the Earth’s climate system, and our capability to predict weather and climate”³ more specifically, C2SM seeks “to develop the tools and methods necessary to bridge the gap between the different spatio-temporal scales and between the different (atmospheric, hydrological, oceanographic and terrestrial) components of the climate system. In turn, this will increase our understanding and sharpen our predictive capability of climate variations and change on time scales from days to millennia”⁴. The objective shows no explicit linkage towards the political sphere but rather an orientation towards the scientific community.

While the majority of KBIs state their orientation towards societal and political decision-making and name governments, industry, and society as addressees on a rather general level, some KBIs show an *orientation towards specific decisions or addressees* already in their objectives. This applies in particular to advisory bodies and ad hoc commissions.

*The CCC, for example, is clearly targeted at specific addressees in that “[...] the objective of the Committee is to be an independent and authoritative body influencing **UK Government and devolved administration** strategy in the areas of carbon budgets and preparedness for climate change in the UK” (Committee on Climate Change, 2012, emphasis by the authors).*

*Other KBIs have a clear eye towards specific policies that should be affected by their information and activities. For instance, the Delta Programme “aims at developing strategies and proposals for the so-called **Delta Decisions**” (IenM and EZ, 2011, emphasis by the authors).*

With respect to climate change adaptation we further witness that several KBIs explicitly *scale* their research and KB activities to regional or local levels because they assume those to be the appropriate levels for the majority of concrete adaptation decisions and actions. Localized or regionalized approaches are seen to allow for the production of information that is responsive to site-specific conditions and concerns (Mitchell et al., 2006).

The German Klimzug program and the Dutch Knowledge for Climate program are collaborative research programs that have adopted a regional approach. Scientists and stakeholders in seven regional networks in Germany and in eight regional hotspots in the Netherlands identify

¹ See http://www.cicero.uio.no/about/index_e.aspx (last accessed 03/06/2013)

² See <http://www.pbl.nl/en/aboutpbl> (last accessed 03/06/2013)

³ See <http://www.c2sm.ethz.ch/about/index> (last accessed 03/06/2013)

⁴ Ibid.

regional and urban vulnerabilities and develop, test and partly implement institutions, strategies and measures for the adaptation to climate change.

Cash et al. (2001a) observe that a classical *“pitfall [for policy advice] is the identification of interesting and tractable questions within a scientific community that have little relevance outside of it, including no bearing on a decision maker’s real-world situation”*. In order to avoid this pitfall almost all of the analyzed KBIs have structures or procedures in place to capture the demands of non-scientific actors in their agenda-setting. The KBIs can be demand-driven at three levels: at the level of the KB organizations themselves, at the level of their research themes and priorities and at the level of single projects and knowledge brokerage activities. More than two thirds of the analyzed KBIs were primarily *initiated by politics* or initiated in a joint effort of science and politics while KBIs whose initiation exclusively goes back to science are only a minority. The political initiative to establish a knowledge brokerage institution is often reflected in a governmental or parliamentary decree or act and frequently accompanied by a political mandate that sets the overall thematic orientation and responsibilities of the respective KBI. The political initiative and mandate signal a concrete political need and hence imply political relevance of the KBI from the start. All KBIs of the type advisory body (standing and ad hoc), departmental research institutes and state agencies, research programs and scientific advisory processes (assessments and collaborative planning fora) were primarily initiated by governmental actors and often backed by a political mandate.

The UK Climate Change Act 2008 established two KBIs and codified their terms and responsibilities: the Climate Change Risk Assessment and the Climate Change Committee. The Act also officially acknowledges the KBIs’ relevance for UK’s climate policy. Thus, the CCRA is officially intended to provide the basis for UK’s adaptation policy, in particular the development of the National Adaptation Programme.

Notably also several KBIs that fall under the categories of academic research institutes or communication platforms are strongly driven by government initiative.

The research institute CICERO was established by the Norwegian government qua royal decree in 1990. The initiative thereto came from the former Prime Minister, Gro Harlem Brundtland, who was pushing for the establishment of a Norwegian institute on climate research with a strong social science emphasis. Since its initiation, research at CICERO has been based on regular parliamentary mandates.

Responsiveness towards political and societal demands is also forged on the strategic level: Most KBIs formulate their *periodic work programs or research strategies in a participatory way* that is by including political actors and other stakeholders with the aim to align their general research orientation towards user needs. The degree and form of involvement and the decision-making power of political and societal stakeholders in defining the general research strategies, however, varies considerably, ranging from one-time consultations to approval of full research strategies. A very direct form of ‘politically negotiated’ research strategies can be found with departmental research institutes and state agencies, which generally formulate and agree their work programs with their principals, typically the responsible ministries.

KomPASS and Thünen Institute are strongly oriented at the policy foci of the respective ministries (BMU and BMLEV). They heavily coordinate their research plans with the ministries, which also have to give their final approval. The working program of PBL is based on proposals from and discussions with several ministries (most notably IenM), the PBL departments and the PBL Advisory Board. However, in contrast to the German departmental research institutes the final decision on the content of the Work Program resides with the PBL director (PBL Netherlands Environmental Assessment Agency, 2012).

Less principal-driven ways to consider user needs in the formulation of a KBI's overarching research priorities include workshops, consultations or surveys with a variety of different stakeholder groups (including government, industry, communities, etc.).

The German Climate Service Center (CSC) has taken up and systematically assessed user knowledge needs in three sectoral workshops and via extensive surveying, at the start of its operation, and it continues to include user needs via regular dialogue events, via consultation with the advisory panel or more informally with other network partners.

A last mechanism to include *stakeholders' demands* is geared to the *level of single KB activities or to specific projects*. Only one of the analyzed KBIs relies solely on self-initiated projects and advice. The majority of the KBIs, occasionally or habitually, responds to concrete needs of non-scientific actors when starting new projects or KB activities. Often stakeholders themselves call on the KBI in their request for advisory or other services. These stakeholders in many cases are government actors who commission special studies or reports but may also include NGOs or business stakeholders.

UKCIP predominantly conducts stakeholder-led research studies in which stakeholders commission the research and determine the research agenda, thus ensuring that it meets their needs. Departmental research institute such as the Thünen-Institute deliver "science on call" for the responsible ministry. Similarly advisory bodies such as the CCC respond to concrete enquiries by policy makers. Other KBIs such as the Australian Adaptive Futures / Coastal Zone Management Pty Ltd offer almost exclusively consultancy services where the activity and request for information is explicitly user-initiated and user-tailored.

A third strategy to ensure saliency is to provide opportunities and encourage participation not only in agenda setting but during the research processes and knowledge brokerage activities as well. Research-accompanying participation is perceived as a possible mechanism to foster the responsiveness of knowledge brokerage activities to user needs. We found that the majority of KBIs, at least in some of their activities, involve relevant users to oversee, inform or determine research. Again the involvement may take different forms and intensity. Some KBIs allow participation only in a few projects, while the majority of activities resembles classical research projects; for other KBIs participation is a basic design principle of all knowledge brokerage activities. Interaction with target groups often occurs in workshops or other types of events as well as in personal contacts. In most cases, *stakeholders are consulted* to obtain feedback, while scientists still maintain the authority over the process as a whole.

The German WBGU maintains active informational exchange with ministries (esp. BMU and BMBF) in inter-ministerial meetings. The Danish Commission on Climate Change Policy (DCCCP) asked for feedback on the practicability of their results in targeted stakeholder dialogues with key actors of the energy sector, NGOs and municipalities. The Adaptive Futures / Coastal Zone Management Pty Ltd (CZM, Australia) uses stakeholder consultation as central approach in numerous projects, e.g. for mapping of perceived risks or policy/management planning and formulation phases.

In a few other cases, stakeholders are equal partners in fully fledged *collaborative or transdisciplinary research processes* and knowledge brokerage activities. In these cases, participation is continuous and iterative and stakeholders have considerable sway over the processes.

In the research program Knowledge for Climate scientists and stakeholders (including municipalities, water boards, regional authorities and companies) of the so-called hotspots are actively engaged in collaborative action research. Non-scientific stakeholders are the leaders of the hotspots and hence have a considerable say in the design of the processes. This approach shows the explicit efforts to bring in regional and local knowledge and concerns and to ensure the applicability of the research results.

As a fourth strategy to enhance saliency, many KBIs not only draw on stakeholder feedback mechanisms in project-based, more ad hoc settings but have actually set up more stable organizational feedback structures like advisory bodies or evaluation mechanisms. In many KBIs representatives of the relevant ministries, NGOs and other stakeholder groups are involved in the governing bodies of the KBI. The composition of *advisory and steering bodies* varies. While some are only made up of societal and political representatives, the majority of bodies has a mixed composition. That means they include both scientists and societal actors. Advisory bodies are set up to provide feedback on the KBIs' activities and to oversee their societal relevance.

The UKCIP Advisory Panel and User Forums contribute stakeholder views and give general direction to the work of UKCIP. The PBL Advisory Committee also oversees the societal relevance of its publications.

Around a third of the analyzed KBIs have institutionalized formal *evaluations* that assess the societal impact and the relevance of the organizations' work.

The Stockholm Environment Institute has frequent internal and external evaluations on the policy impact of its work. The Climate Adaptation Flagship (CAF) of the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia undertakes an evaluation of triple-bottom-line (economic, environmental and social) impact of its work.

Saliency is further promoted by the strategy to search for and **highlight policy vicinity**. In a few cases, policy vicinity is established through physical vicinity. KBIs that are not located in the 'political hotspots', i.e. the capital city, sometimes maintain *capital city offices* that enable more direct access to decision makers.

The KNMI is located in De Bilt but has a liaison office in The Hague. Similarly, ecologic has its main basis in Berlin but in addition maintains an EU office in Brussels.

In addition, many KBIs highlight the close ties of the organization or staff members to policy arenas, respective ministries or other relevant stakeholders. These ties find their expression in *personal contacts* in regular meetings, telephone contacts or even *in-house stays*.

Departmental research institutes such as KomPASS at the German Environment Agency, generally interact with their ministerial counterparts on a frequent, often daily basis. A particularly interesting example is the connection between Tyndall and Defra. Tyndall researchers have the possibility to stay at Defra for a certain period of time and thus experience the daily departmental work and practitioners' knowledge needs.

Political vicinity is even more pronounced when scientists are eligible or authorized to *speak on behalf of users*, most often their principals, i.e. ministries. This applies in particular to departmental research institutions whose scientists often have a seat in the delegation of the department at EU or international negotiations.

A last but certainly not least strategy to ensure relevance and applicability is to provide **user-friendly and tailored information and products**. With the clear intention to foster the uptake of their information among various audiences, KBIs often provide a set of differentiated services and products. Peer reviewed articles and books as well as presentations at conferences are important, especially for the more science-based KBIs, to address the scholarly community. Products that are mainly tailored to socio-political actors include, for example, project data bases, practical guides and handbooks, IT-based assessment tools, briefing papers or climate maps. Addressing governmental and other political actors, KBIs often provide shorter and more politically focused versions of their reports (summaries for policy-makers, government reports, policy briefs, etc.). Some KBIs even draw explicit political options for concrete legislation or policy strategies.

UKCIP is an excellent example for how a KBI can be highly dedicated to providing user-tailored information and products. UKCIP has developed a wide portfolio of decision support tools and guidance that should help organizations to identify how they might be affected by climate change and what they can do to minimize their risks or exploit the opportunities (e.g. UKCIP Adaptation Wizard; Local Climate Impacts Profile; BACLIAT). In order to further facilitate their understanding and uptake UKCIP also frequently runs training workshops on climate science products (e.g. the UKCP projections).

Strategies and mechanisms to support credibility

Potential users or the wider audience are often unable to independently evaluate the scientific and technical accuracy of information and policy advice (Cash and Clark, 2001a). Hence KBIs actively employ strategies and mechanisms to ensure their scientific accuracy and to showcase their credibility and authority by proxy.

As a first proxy for their epistemic authority, many KBIs refer to the competence and reputation of their own staff or the organization as a whole. Professional competence of the staff is particularly highlighted by referring to the *academic qualifications and experiences of the scientists*. For example, several KBIs flag out the number of PhDs within their staff in order to 'prove' that the organization has the skills and competences needed for scientific analysis. Another frequently found mechanism is to adorn the KBI with *leading and renowned scientists*. Several KBIs proudly highlight the 'celebrity status' of their key scientists and, for example, tap into the reputation of IPCC lead authors. In particular, advisory bodies and commissions bank on high-profile and renowned scientists as their members. In a few instances the KBIs also make direct reference to the national and international *reputation of the organization as a whole*.

The Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) states that it employs "world-class researchers", including five IPCC lead authors (CSIRO, 2011, interview) and proudly reports that it ranks in the top 1% of scientific institutions in 14 out of 22 research fields, including the climate relevant fields (e.g. geosciences and ecology).

Organizational credibility is further established by **networking and collaboration with renowned scientists or research organizations**. Collaboration and networking is found in the majority of KBIs and often highlighted complementary to the demonstration of in-house competence. The collaboration with renowned research institutions and the publicly recognizable reference to prominent networks of expertise (Mitchell et al., 2006, 318) seems to be of particular importance for those KBIs that are not grounded in the scientific sphere.

The regional adaptation partnerships in Canada (RACs) and the UK (RCCPs) draw their credibility from involving and collaborating with research organizations.

A third strategy to gain credibility with the audience is to emphasize the independence from politics, interest groups and sometimes also commercial influences. The aura of independence is established by blunt *declarations*, but also by more indirect references, like the presentation of organigrams or the disclosure of the ratio of external funding compared to government funding. Interestingly, often those KBIs that have been initiated by government or parliament and have formal links and close relationship with politics (such as departmental research organizations or scientific advisory bodies) are particularly vocal in stressing their neutrality and objectivity. Furthermore, it is striking that the demonstration of policy vicinity in order to ensure and promote saliency and the declaration of political independence are not mutually exclusive but often go hand in hand. Around half of the KBIs that emphasize policy vicinity at the same time explicitly state their political independence. This shows that independence is not primarily sought by retraction to the scientific realm but rather through establishing *organizational autonomy* and at least partly *financial independence*. Thus many KBIs point out that beyond

demand-driven and user-initiated projects they also maintain and use opportunities for *self-initiated projects*.

The Netherland Environment Assessment Agency (PBL) is an agency of the ministry and maintains close ties to the ministry and other political actors but at the same time strongly highlights its independence and the scientific quality of research as key principles of the PBL. Saliency and credibility are invoked at the same time in the mission statement of PBL: "Policy relevance is the prime concern in all our studies. We conduct solicited and unsolicited research that is always independent and scientifically sound"⁵.

A few KBIs invoke the simultaneity of policy vicinity and political neutrality in even stronger form by making reference to the role of *'honest brokers'*. The 'honest broker' is a figure that has become a popular ideal for scientific policy advice. Following Pielke Jr. (2008, 17) "[t]he honest broker of policy alternatives engages in decision-making by clarifying and, at times, seeking to expand the scope of choices available to decision-makers" and "seeks explicitly to integrate scientific knowledge with stakeholder concerns in the form of alternative possible courses of action". The role of an honest broker also includes reservation in providing concrete policy recommendations. By their declaration as honest brokers KBIs manage to position themselves as neutral and objective yet not detached from political and societal questions.

The Stockholm Environment Institute sees itself as: "an honest broker [...] a research institute committed to rigorous and objective scientific analysis to support improved policymaking"⁶. UKCIP highlights that the independence from policy "has allowed UKCIP to play better the 'honest broker' or 'critical friend role'" (UKCIP, 2011, 75).

A further proxy for credibility that is put forward by most KBIs is the reference to the scientific process in general or to specific scientific procedures in their knowledge brokerage activities. KBIs often emphasize that they adhere to classical scientific quality standards and procedures and, with that, intend to show that their products are grounded in authoritative and credible science. A range of KBIs have explicitly subjugated to *guidelines for good scientific practice* as formulated by authoritative organizations; some have even formulated their own guidelines. Several KBIs also refer to internal review procedures in order to show their quality control.

The German think tank ecologic widely communicates that it is committed to the German Research Foundation's recommendations for good scientific practice and has adopted its own corresponding guidelines for scientific practice recognized by the German Research Foundation.⁷

A very special strategy used to prove the absence of a political agenda is the *disclosure of uncertainties* in scientific results.

PBL has explicit guidelines on how to deal with and communicate uncertainties. Built on a guiding document elaborated in 2003/2004, the agency has developed a number of tools, such as mini-checklists, a quick-scan questionnaire or a tool catalogue for uncertainty assessments (Petersen et al., 2011).

Depending on whether KBIs are actively involved in research or not, they draw on different strategies to attest their link to the scientific community: Non-research-based KBIs, such as collaborative planning fora, put great emphasis in communicating that their work is informed by recent climate science from

⁵ See <http://www.pbl.nl/en/aboutpbl> (last accessed 03/06/2013)

⁶ See <http://www.sei-international.org/sei-at-planet-under-pressure/adaptation-finance/1> (last accessed 06/06/2013)

⁷ See <http://www.ecologic.eu/our-responsability-ecologic-institute-eu> (last accessed 06/06/2013)

authoritative sources. In contrast to that, research-based KBIs often highlight their own *use of state of the art and high-end analytical methods and tools.* Especially the design and application of cutting-edge climate models is a feature that is strongly accentuated in the work of many KBIs.

Closely related to the reference to good scientific practice is the strategy to showcase the **product quality** of the KBIs' activities. Many KBIs, predominantly of the type research organizations, make public their *record of publications in (high-ranking) peer reviewed journals* and thus aim for credibility through the authority and credibility of scientific journals and the review process.

The Australian Climate Adaptation Flagship of CSIRO actively demonstrates the publication in peer review journals and proudly highlights that publications have citation rates beyond the average.

A last credibility strategy is the institutionalization of **scientific steering, advice or evaluation** at the level of the KBI. While steering, advice and evaluation by societal stakeholders (see above) serves to guarantee that the KBI meets societal relevance, scientific steering, advice or evaluation aims at the more technical dimensions of the KBI, i.e. whether and in how far the KBI's activities and products meet scientific quality criteria and standards. *Steering and advisory committees* of KBIs often contain both, renowned international scientists and societal stakeholders, and hence simultaneously serve to ensure relevance and to watch over the scientific quality of the KBI's activities. A few KBIs have stand-alone scientific steering or advisory bodies. In addition, in several cases organizations undergo regular *scientific evaluations*. In these cases mostly external and often international experts lend credibility to the KBI through their assessment of the scientific and technical quality of the KBI.

The Potsdam Institute for Climate Impact Research (PIK) was evaluated by the German Council of Science and Humanities that assessed the research quality as "good and innovative" (Wissenschaftsrat, 1999). In addition, PIK is regularly evaluated by the Leibniz Senate and a Scientific Advisory Board continuously oversees the scientific quality.

Strategies and mechanisms to support legitimacy

The attribution legitimacy, i.e. the perceived fairness of knowledge brokerage, is approached through two overarching strategies, first transparency and second inclusiveness. Transparency of knowledge brokerage can be further differentiated in transparency concerning the organization and procedures and transparency concerning outputs and products. Transparency with respect to the *organizational set-ups, governance structures, funding and the procedures* of advisory activities enhances legitimacy because it contributes to avoiding suspicions of political influence or biased results. The KBI can show that there are systems of control within the organization or that its activities are not driven by particular (vested) interests. In our set of KBIs, however, transparency with regard to organization and procedures seems to be of minor importance. Most KBIs provide some basic information, for example on governing bodies, but more detailed information on sponsors, funding and the internal organization of activities is often scattered or difficult to access. A few KBIs actively provide structured and detailed insights into organization, project team, sponsors and funding, design and other information which are supposed to show the absence of political interests and influence, balanced representation or the satisfaction of scientific standards. The information is mostly offered on the respective websites and in annual progress reports.

The British Climate Change Committee features high transparency regarding its general organization and responsibilities as well as the methodologies and outputs. All information including the disclosure of salaries and procurement processes is available through the website. The German post-Fukushima Ethics Commission on a Safe Energy Supply showed a high degree of transparency when consultative meetings were broadcasted all day on TV.

In contrast to organizational transparency, *openness with regard to outputs* seems to be a major concern for almost all KBIs. The active dissemination of results is a standard activity in most KBIs, and so is the facilitation of open access to the results. Access is mostly provided through a website where reports, working papers, policy briefs and other products are freely downloadable for the broader public. Websites with download areas or news sections more or less define the bottom line activities online. More sophisticated and interactive modes of ‘scientific advice 2.0’ increasingly make use of Wikis, blogs, podcasts, webinars, apps and the like. Some KBIs exceed this standard level of transparency and also provide access to models and detailed results or feature interactive maps and other tools on their webpages.

PBL maintains websites dedicated to their main models (i.e. IMAGE, Fair, Edgar, Hyde). On the websites the model frameworks and details are introduced, results and publications are provided and an overview over uncertainties and sensitivities is given.

Many KBIs do not only provide access to their products on their websites but employ an active dissemination strategy. KBIs often have a communication or public relation department or at least persons in charge of communication. Online dissemination beyond websites increasingly includes new social media such as blogs, podcasts or twitter. But also the use of classical media remains important. At the lower end of the range of different approaches we identify press releases on final reports as the most common activity. KBIs often issue press releases on final reports, conduct press conferences and key representatives, write commentaries in newspapers or participate in TV.

The Climate Service Center qua mandate employs a very “(inter)active” dissemination strategy through its specialized PR section. Information is easily accessible on platforms, through press releases, conferences, newsletters, and a climate-TV.

KBIs also engage in more enacted forms to enhance the public understanding of science. Publicly accessible conferences or lectures mark an approach that is quite broadly applied across basically all KBIs in our sample. At the other more innovative and interactive edge of the spectrum, we found trade shows or museums.

A second strategy to ensure and showcase fairness and impartiality is to pay attention to the inclusiveness of knowledge brokerage activities. As we observed with respect to saliency, almost all KBIs involve political and societal stakeholders in some capacity (consultation, steering, workshops, etc.). In most cases, participation in the first place serves to increase the societal relevance of the knowledge brokerage activities. Although stakeholder participation also contributes to legitimacy this seems to be rather a welcomed by-product than a top priority in knowledge brokerage activities. Some KBIs, however, deliberately build on and foster the legitimizing effects of participation. Legitimacy is invoked by securing and rhetorically emphasizing the openness to different stakeholder groups and hence the inclusiveness of the processes. KBIs actively search for collaborators from a wide variety of societal domains, including NGOs with a critical perspective to politics, administration or business with the intention to ensure and show that they “consider appropriate values, interests, concerns, and specific circumstances from multiple perspectives” (Mitchell et al., 2006, 320).

Drawing on the concept of “post-normal science”, PBL builds on the incorporation of a diversity of views and approaches to increase the robustness of conclusions and recommendations (Petersen et al., 2011). PBL has, for example, initiated online deliberations on the IPCC and possible errors in its reports and explicitly aims to enter the dialogue with climate skeptic views.

Drawing on principles of pluralist democracy, the German Energy Commission sought out and included members from different societal groups, including political parties, associations, churches, the scientific community, environmental NGOs, energy stakeholders etc. Thereby, the organizers paid particular attention to a balanced representation of proponents and opponents of nuclear power (interview).

8 Conclusions and outlook

The stock-taking survey reported in this paper provided some interesting insights on pertinent types and patterns of knowledge brokerage in the field of climate policy in selected industrialized countries.

First, our typology of *knowledge brokerage institutions* has shown that the knowledge brokerage domain is indeed a hybrid one, which provides varied venues for science-policy interactions. Research institutions, whether university or non-university, state agencies as well as scientific advisory bodies are 'classical' actors of policy advice and often strongly rooted in the science domain. However, KBIs do not necessarily have to be located in academia but may be close to the political domain. This is particularly apparent in the cases of collaborative planning forums. The analyzed regional partnerships in Canada and the UK are clearly no scientific endeavors, *per se*, but oriented at supporting adaptation action of various actors. However, they engage with science and have an influence on policy in the regions. In such hybrid venues decision-makers and stakeholders are not only passive addressees of policy advice but serve as active knowledge brokers themselves. This observation also holds with respect to more classical venues of science, like research programs. All of our analyzed research programs involve non-scientific actors and, at times, even give them considerable decision-making power over contents and design. Thus, the delineation between science and non-science is increasingly voided in favor of a hybrid knowledge brokerage domain. Noticeably, in our set of case studies many of these hybrid venues emerge in the context of climate change adaptation.

Second, our analysis and classification of different *knowledge brokerage activities* has further demonstrated that roles and positions in the knowledge brokerage domain are not rigid assigned but are shifting and floating. Again, we found more classical activities, such as scientific assessments in form of a written report or classical personal advice. In these instances, the source of policy advice remains largely situated in the science domain and it relies on a more linear transfer to the political domain. On the other side, we found a wide range of innovative knowledge brokerage activities and processes that involve decision-makers and stakeholders beyond their role as mere addressees. In many cases, interaction between scientists, policy-makers, interest groups, the media and citizens is deliberately sought, be it via internet platforms, in workshops or other events. The interaction serves, on the one side, the negotiation of knowledge needs and agendas for policy advice; on the other side, it enhances the understanding for the 'science behind climate change' and ultimately aims at the conceptual use of policy advice. The demarcation between classical linear forms and interactive forms of policy advice, however, cannot be deduced from the type of knowledge brokerage institutions in a clear and distinct way. Rather, almost all KBIs draw from different sides of the spectrum of knowledge brokerage.

Third, our survey of 30 KBIs provided a first systematic account of specific strategies and mechanisms to ensure saliency, credibility and legitimacy (SCL) in climate policy advice. One of the key insights of our study is that effectiveness is not passively experienced but deliberately created (although not fully controlled) by KBIs. The survey showed that all three attributions play a role in the KBIs' pursuit of effectiveness, albeit with different emphasis. Further, our study showed that KBIs employ different organizational, procedural and rhetorical strategies to meet saliency, credibility and legitimacy. In many instances, concerns for effectiveness are already reflected in the *organizational* design and setup of KBIs. Most notably a number of KBIs in our sample have institutionalized steering or advisory bodies some of which are only or predominantly made up of (renowned) scientific members and, with that, particularly help to bolster a KBI's credibility; other steering or advisory bodies have mixed membership or are made up of societal stakeholders and, with that, probably help more to strengthen a KBI's saliency. Besides organizational strategies, KBIs also draw on *procedural* strategies and related mechanisms to enact saliency, credibility and legitimacy. The consultation and involvement of non-scientific actors in the identification of research needs or in the actual research processes is one of the most frequently found strategies in our set of cases. Consultation and participation can be geared towards saliency and/or legitimacy. In addition to participation, the adherence to scientific standards,

publication in peer reviewed journals or disclosure of uncertainties mark other important procedural mechanisms found in our set of cases. These last-mentioned mechanisms are mainly seen to enact a KBI's claim of credibility. In addition to organizational and procedural strategies, KBIs also strongly make use of *rhetorical* strategies to strengthen their SCL (claims) vis-à-vis different audiences. For example, in how far KBIs adhere to scientific quality standards in their actual work and, hence, whether their results are credible is difficult to assess for outsiders, especially in the complex and uncertainty-laden area of climate science. Consequently, organizational mechanisms (like the establishment of scientific advisory structures) or procedural mechanisms (like provisions that ensure the adherence to scientific standards) become transmission belts for credibility only – or at least primarily – if they are openly conveyed to a KBI's external audiences. For many of the analyzed KBIs, the overt declaration of independence is a particularly important rhetorical mechanism.

Overall, the afore described portfolio of different types of KB institutions, KB activities and strategies to enhance saliency, credibility and legitimacy show insightful empirical patterns: While there remains a substantive amount of practical KB approaches that are built on the idea of a more linear model of knowledge transfer from science to policy, we also see that the idea of designing more interactive and dynamic science-policy interactions flourishes and supports the development of a broad set of innovative approaches. What this overview-oriented stock-taking could not provide is a deeper understanding of how climate science and climate policy are actually integrated in specific KB processes. Hence, in its Work Package 3, the ReSciPI project selects nine outstanding KB models for an in-depth analysis. The in-depth case studies are clustered in four different countries, i.e. Germany, the Netherlands, Switzerland and the UK. In these countries we find a highly institutionalized, broad and diverse spectrum of different scientific policy advice settings, both in environmental policy in general and in climate policy in particular. Some of the chosen in-depth case studies denote long established institutions, like the Swiss ProClim, the Dutch Environmental Assessment Agency (PBL) or the Potsdam Institute for Climate Impact Research (PIK). A number of others have just been put in place and encompass highly innovative examples, like the trans-disciplinary German KLIMZUG, the Scottish ClimateXChange initiative or the Dutch Knowledge for Climate Programs. Among the in-depth cases we find both more narrowly focused, specialized organizations, like the UK Committee on Climate Change (CCC), as well as more comprehensive 'full-service' organizations like UKCIP or the German Climate Service Centre (CSC) with links to various regional 'Climate Bureaus'. With those in-depth case studies, we strive to get a more comprehensive and more dynamic picture. For that, we will analyze how those processes have developed over time and how they are embedded in the broader political environment. In order to learn more about the policy impacts of scientific policy advice, prominent 'episodes' of scientific advice-giving will be reconstructed and analyzed.

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Part B:

Compendium of case profiles

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Adaptive Futures / Coastal Zone Management Pty Ltd (CZM, Australia)		
General	General description	Adaptive Futures, together with its coastal climate change arm, Coastal Zone Management (CZM), is a specialized technical and management consultancy service providing expertise to assess the potential impacts of climate change (CC) (especially on coastal zones) and to develop respective options for adaptation.
	Thematic focus	<p><i>Adaptive Futures:</i></p> <ul style="list-style-type: none"> • sustainable development in broader terms • focus on adaptation to CC and vulnerabilities, considering both natural as well as human (socio-political, institutional and economic) dimensions • from local (planning projects) to global (contribution to UNFCCC) scale <p><i>CZM branch:</i> targeted at coastal zones</p>
	Constitution	<ul style="list-style-type: none"> • CZM was founded as a for-profit consultancy service in 2005 by principal consultants Robert and Carolyn Kay with a focus on coastal zone adaptation • Adaptive Futures was established in 2011 to broaden the thematic scope beyond coasts^[1]
	Objectives	<ul style="list-style-type: none"> • to enhance the sustainable development of coastal zones (<i>Adaptive Futures:</i> ‘and beyond’: inlands & wetlands) in Australia (and beyond) • more specifically, to build the technical and management capacity of government, business and NGOs to deal with CC induced impacts^[1,2]
Institutionalization	Organizational structure	<p>CZM/Adaptive Futures is located in Claremont, WA, Australia and run by a team of 7 mainly principal & senior consultants supported by 1 office manager</p> <ul style="list-style-type: none"> • director and lead consultant: Dr. Robert Kay • select base of subcontractors, affiliated consultants and subject experts • sister company: ContentPlus, head: Carolyn Kay
	Funding	<p>Mixed funding:</p> <ul style="list-style-type: none"> • fees paid by (business or public) clients for specific consultancy services • various public funding sources for (joint) studies and local, national or international projects and programs^[4] <ul style="list-style-type: none"> • e.g. Australian local/municipal, federal/state governments, esp. Department of Climate Change (DCC), UNFCCC Secretariat, UNEP, UNDP, Asian Development Bank, the Australian Agency for International Development (AusAID), GEF, or foreign governments (e.g. United Arab Emirates, Indonesia) • assets: “Kay family” trust
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • no special reporting requirements or evaluations (mainly project dependent) • custom Quality Management System based on ISO 9000 and PRINCE2 Project Management methodology to ensure high quality service to clients^[2,3]
Knowledge brokerage	Definition of thematic focus	<ul style="list-style-type: none"> • mainly customer driven, i.e. specific requirements as determined by policy-makers, business, or civil society actors and project/program requirements, respectively
	Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> • support NCCARF (see separate profile) in completing National Adaptation Research Plans (NARPs) <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • establish and coordinate partnerships and networks, for example via exchange of lessons learnt: <ul style="list-style-type: none"> • e.g. workshop on CC adaptation activities with government representatives of Pacific nations organized for the AUSAid International Climate Change Adaptation Initiative (ICCAI) or for international development assistance projects (e.g. Australia-Samoa) • conduct consultations with stakeholders (e.g. “inter-agency Reference Group”) to inform studies, risk assessments (e.g. to identify hotspots for various risks) or adaptation planning processes (to identify stakeholder priorities)

		<p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • develop regional scenarios • develop (coastal) climate vulnerabilities and risk/impact assessments for local and regional business or policy makers in Australia and beyond • prepare reports, briefing papers or fact sheets (synthesizing research into open and easy to understand briefs): <ul style="list-style-type: none"> • e.g. Synthesis Report to UNFCCC NEEDS (National Economic, Environment and Development Study) on countries' financing needs for adaptation & mitigation measures <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • design and conduct workshops and trainings for (institutional) adaptive capacity building or business development: <ul style="list-style-type: none"> • e.g. exchange workshop for UNFCCC to train non-Annex I Parties on National Communications reporting • “mentoring”: coordination & technical advice e.g. on risk assessment, adaptation planning or monitoring & evaluation activities <ul style="list-style-type: none"> • e.g. enable Eastern Metropolitan Regional Council (EMRC) members to autonomously interpret climate information, undertake CC risk assessment and to develop their own CC adaptation action plan • develop decision support tools and guidance (for examples see outputs below) <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • conduct institutional and policy analyses, such as global best practice benchmarking (in coastal management) • identify and develop policy or management options and recommendations: <ul style="list-style-type: none"> • e.g. finance options (“Sustainable Coastal Protection and Management” India), coastal hazard risk diagnosis and planning (Kiribati pilot project), adaptation integrated development planning (“Programme for Climate Resilience” (PPCR), Tonga & Papua New Guinea) • support development of adaptation plans: <ul style="list-style-type: none"> • e.g. support to Western Australian Office of Climate Change in drafting Climate Change Adaptation and Mitigation Strategy (CCAMS) <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • personal advice (esp. from Director) on (coastal) CC impacts and adaptation options to policy makers (e.g. by serving as Australian expert to UNFCCC) <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • speeches/presentations at conferences or engagement in teaching, e.g. university level • (IT-based) tools (blogs, apps etc.) for knowledge dissemination, sharing and organization
Main tangible outputs		<ul style="list-style-type: none"> • consultancy reports: position, background or white papers, summary and briefing papers, management/adaptation plans, manuals, handbooks, drafts of legislative texts • (IT-based) information tools: newsletter, press releases, iPhone app, iCoast blog etc. • decision support, training and guidance products: <ul style="list-style-type: none"> • e.g. AdaptiveFutures ClimateAdaptor (risk management tool for mining sector); • e.g. UNDP training package “Climate proofing public infrastructure”, guidebook for “climate proofing projects” in UNEP’s Mangrove’s for the Future (MFF) program; guidance for policy makers and key marine industries for the “Bringing Adaptation to Life” workshop by NCCARF & the Great Barrier Reef Marine Park Authority
Target groups		<ul style="list-style-type: none"> • policy makers: local communities/cities, state, provincial or national governments (esp. Australia & Asia Pacific), international organizations (UNEP, UNDP, UNFCCC) <ul style="list-style-type: none"> • development agencies (e.g. AusAID, New Zealand Aid Programme (NZAid)) as well as NGOs from the development sector

		<ul style="list-style-type: none"> • business, esp. industries potentially exposed to CC impacts, e.g. mining, agriculture, tourism, or infrastructure • national and international scientific institutions, e.g. NCCARF • more indirectly: general public and the media, via publicly available information and tools
	Policy process	<ul style="list-style-type: none"> • local projects and business support with strong managerial, operational focus targeted at policy/management planning, formulation, implementation and evaluation phases • few activities (e.g. UN) with broader (long-term, global) focus relevant for awareness-raising, agenda-setting phases
Effectiveness	Saliency	<ul style="list-style-type: none"> • customer-tailored, service-oriented consultancy activities and products • extensive professional links of staff members to private or public sector, e.g. work experience in resource planning and management projects • stakeholder consultation as central approach in numerous projects, e.g. for mapping of perceived risks or policy/management planning and formulation <ul style="list-style-type: none"> • staff experience with training, capacity building and communication techniques • staff experienced in stakeholder consultation and facilitation • CZM draws extensively on expertise in stakeholder consultation and facilitation of sister company ContentPlus <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • interdisciplinary academic research profile of staff, esp. director “high-key expert” with extensive scientific publication and research record (IPCC reviewer since inception) • CZM draws on scientific expertise (sub-contracts, collaborations) from other consultancies or research institutes (e.g. from NCCARF) <p><i>less important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • CZM’s consultancy services are typically subject to competitive tender^[4] • open accessibility to information (newsletter, blogs, home), limited information on internal processes (e.g. governance, evaluation, accountabilities) • outputs of many projects (for public or NGO customers) are publicly shared and freely accessible online, e.g. CZM White Papers synthesize methods, concepts and outcomes from consultancies <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • stakeholder consultation central approach in numerous projects, e.g. for mapping of perceived risks or policy/management planning and formulation phases <p><i>important dimension</i></p>
Sources	Websites	<p>[1] http://www.adaptivefutures.com/</p> <p>[2] http://www.coastalmanagement.com</p>
	Literature	<p>[3] Coastal Zone Management Pty. Ltd. (2010). <i>Company Capability Statement</i>, online resource: http://www.docstoc.com/docs/71863437/CZM-Capability-Statement-20101005</p> <p>[4] Kay, R; Elrick, C.; Travers, A. (2009). <i>Coastal Climate Change Risk Assessments in Australia: A View from the Beachface</i>. 5th Western Australian State Coastal Conference Proceedings, 7.-9. October 2009. URL: http://www.perthregionnrm.com/media/3605/cc-kay_2.pdf</p>

Center for Climate Systems Modeling (C2SM, Switzerland)		
General	General description	The Center for Climate Systems Modeling (C2SM) is a network of Swiss climate research institutions at ETH Zurich concerned with climate systems modeling and application.
	Thematic focus	<ul style="list-style-type: none"> • long-term, prospective focus on the 'climate system' in a broad sense, including all its atmospheric, oceanic, terrestrial, biospheric and cryospheric sub-components^[1] • relevant to both CC mitigation and esp. adaptation • considering natural, economic, social factors (as relevant for climate system modeling) at regional, national or international scales with high or low temporal resolution^[1,2]
	Constitution	<ul style="list-style-type: none"> • founded in November 2008, operational since March 2009 • emanated from National Centre of Competence in Research on Climate (NCCR Climate)^[5,6] • initiated by ETH Zürich, Swiss Federal Office of Meteorology and Climatology (MeteoSwiss), and Materials Science & Technology Institute Empa^[1,6] • Agroscope Reckenholz-Tänikon (ART) joined later^[1,6]
	Objectives	<ul style="list-style-type: none"> • "[T]he main objective [is] to improve the understanding of the Earth's climate system, and our capability to predict weather and climate"^[1] • more specifically, to further interdisciplinary networking and exchange on climate models and data sets between partners and members in suitable forms, i.e. through hardware and software systems and analysis and data management tools^[2]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • C2SM is a component of the "U-WIS" (Environmental Sciences) Department at ETH Zurich • currently 24 members: i.e. professors or senior scientists that serve as heads of climate system modeling projects at the 4 partner organizations (ETH, MeteoSwiss, Empa, ART), with a total of 200 contributing technical and scientific experts^[1,6] • subdivided into 3 thematic working groups: Global Climate Modeling, Regional Climate Modeling, Analysis of Climate Datasets • governing bodies of C2SM: <ul style="list-style-type: none"> • executive director: main contact and coordination point for C2SM; position currently held by Dr. Isabelle Bey • steering committee: operational & representative management body of C2SM; meets once per semester; 4-6 members (min. 1 seat for each: ETH, MeteoSwiss, Empa)^[6]; prepares strategic plan, annual budget, annual reports for the Plenary Board; directs the financial budget; appoints the executive director • plenary board: highest governing body composed of all 24 members of C2SM; min. 1 meeting/year; budgetary affairs, annual report and strategic planning, admittance of new members • scientific advisory board: 4-7 internationally recognized climate researchers or representatives from research policy, private & public sector institutions in a climate relevant field; gives feedback and advises on strategic matters
	Funding	<ul style="list-style-type: none"> • budget 2008-2011: CHF 2.2 (ca. € 1.8) M^[3] • start up funds from partner institutions, "ETH-Foundation" (2009-2012) • core funding from Collaborative, Highly Interdisciplinary Research Project (CHIRP1) funded by ETH Zürich • membership fee • independent financing through (joint) research projects by members of the C2SM^[2]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • internal annual reporting by plenary board <i>vis-à-vis</i> administration of partner organization on finances and scientific productivity^[2] • external evaluation of activities, project portfolio, collaborations, organizational structure & goals by ETH Executive Board ("Schulleitung") every 3 to 4 years <ul style="list-style-type: none"> • based on this evaluation or request by plenary board the partner institutions may decide on continuation or dissolution of C2SM^[2]

Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> overall strategic plan prepared by steering committee, decided upon (discussed) by plenary board (with input from scientific advisory board) focus of 2 recent projects (water cycle modeling (CHIRP2) and GHG fluxes (CarboCount CH)) defined through a more 'bottom-up' process in a "science" plenary meeting (in 2011)^[6]
	Main KB activities (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> strengthen peer coordination and collaboration in Zurich area: C2SM as research network to systematize climate datasets, develop regional & international climate scenarios and models, exchange on methods^[1,6] <ul style="list-style-type: none"> Swiss Climate Change Scenarios CH2011 initiative between Swiss climate research institutions and governmental offices (e.g. ETH, MeteoSwiss or OcCC) technical workshops, e.g. Annual HAMMOZ Workshop, Swiss Consortium for Small-Scale Modeling (COSMO) User Workshop (co)organize dialogue events with users from policy (e.g. 'Bundesräte'), economy and society, e.g. Climate Talk 2009 for climate science discussion prior to COP15; forthcoming: water cycle, IPCC^[6] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> compile final report "CH2011" with user-relevant information on state of international climate knowledge applied to Swiss context "visualize" climate models and data for broader user range (public presentations and educational use), e.g. climate animation video of the Community Earth System Model <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> individual members serve as advisors to standing or <i>ad hoc</i> advisory committees, e.g. OcCC <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> deliver presentations at conferences (e.g. UNFCCC/SBSTA), interviews in media: esp. CH2011 professional release event with researcher interviews^[1,6] co-host, together with ETH Zurich, a climate blog to increase public awareness with contributions from representatives of policy (parties, agencies/ administration), economy, NGOs^[6]
	Main tangible outputs	<ul style="list-style-type: none"> report on Swiss Climate Change Scenarios (CH2011) incl. summary report, data sets working papers, technical reports, manuals, newsletter, press releases (IT-based) products: e.g. climate data visualizations (movies on climate scenarios for public also on YouTube)
	Target groups	<ul style="list-style-type: none"> scientists <i>Swiss Climate Change Scenarios CH2011 initiative</i>: policy makers from federal government (administration) & parliament (esp. via compiling partner OcCC) and media
	Policy process	<ul style="list-style-type: none"> focus mainly on basic research and data collection covering mostly wide temporal and spatial scales (regional and national); E2SM's work is basically relevant for political agenda-setting and awareness-raising^[6]
Effectiveness	Saliency	<ul style="list-style-type: none"> mainly CH2011: with use-orientation & format (policy summary in 4 languages, broad media coverage: huge public press release event with Q&A session for public & users)^[1,4,6] <ul style="list-style-type: none"> CH2011 successor is prepared with involvement of administrative representatives climate research (scenarios) geared to local/Swiss context are more politically relevant^[6] MeteoSwiss & ART with organizational links to government & with operational research approach^[6] future strategy (2012+) envisages a more forceful engagement with policy makers, esp. through dialogue events ^[6] <p><i>less important dimension</i></p>

	Credibility	<ul style="list-style-type: none"> assuring data and model accuracy is a major focus of C2SM: <ul style="list-style-type: none"> e.g. through new generations of climate models, high resolution and improved statistical methods as provided by several international projects continuous improvement of data, hard- and software through networking in C2SM openly accessible information on underlying scientific assumptions, research processes (employed methods and used data sets)^[1,4,6] <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> extensive documentation of and link to research in network with freely accessible research outputs information regarding internal processes (legal basis, governance, funding) partly missing or scattered across partner institutions <p>Stakeholder participation:</p> <ul style="list-style-type: none"> not relevant for C2SM <p><i>less important dimension</i></p>
Sources	Website	[1] http://www.c2sm.ethz.ch/
	Literature	<p>[2] C2SM (2010). Terms of Reference for the Competence Center. "Centre for Climate Systems Modeling – (C2SM)". URL: http://www.c2sm.ethz.ch/about/docs/C2SM_Terms-of-reference.pdf</p> <p>[3] C2SM (2010). Annual Report 2010. URL: http://www.c2sm.ethz.ch/about/docs/C2SM_AnnualReport_2010.pdf</p> <p>[4] C2SM <i>et al.</i> (2011). CH2011 Report. Summary. URL: http://www.ch2011.ch/pdf/CH2011summaryEN.pdf</p> <p>[5] ProClim- Flash 42 (2008) NCCR Climate Update 22. URL: http://www.nccr-climate.unibe.ch/newsletters/NCCR22_Flash43_screen.pdf</p>
	Interview	[6] Interview with representative

Center for International Climate and Environmental Research (CICERO, Norway)		
General	General description	The Center for International Climate and Environmental Research (CICERO) is an independent research center associated with the University of Oslo that provides knowledge about issues relating to CC and CC policy.
	Thematic focus	<ul style="list-style-type: none"> interdisciplinary (social and natural scientific) research on CC and climate policy covering both mitigation and adaptation issues concerned with local, national as well as international decision-making contexts issues are dealt with from short and long-term perspectives
	Constitution	<ul style="list-style-type: none"> established by the Norwegian government <i>qua</i> royal decree in 1990^[1] research at CICERO is based on regular parliamentary mandates, implemented (coordination and financial allocation) by the Research Council of Norway (RCN)^[4] historical context: indirect offspring of the work of the World Commission on Environment and Development (1987), headed by the former Norwegian Prime Minister, Gro Harlem Brundtland; Brundtland pushed for the establishment of a Norwegian institute on climate research with a strong social scientific emphasis (in contrast to established institutions)^[5]
	Objectives	<ul style="list-style-type: none"> to acquire, provide and mediate “knowledge that can help mitigate the climate problem and enhance international climate cooperation” specifically, to make “climate policy [...] <i>deeper</i> with respect to emissions cuts,” “<i>broader</i> with respect to participation,” “and <i>longer</i> with a view to the future”^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> affiliated with the University of Oslo at the Oslo Centre for Interdisciplinary Environmental and Social Research (CIENS) staff of ca. 80 (fluctuating), director: Cecilie Mauritzen (chief academic and administrative leader, reports to board of directors)^[1,6] organized in 4 departments: <ul style="list-style-type: none"> research, with four groups focusing on: 1. The scientific basis of the climate issue (various natural science disciplines); 2. Mitigation and costs (economics); 3. Impacts, vulnerability and adaptation; 4. International agreements and policy instruments (mainly political sciences)^[1,5] <i>ad hoc</i> organization in interdisciplinary project teams, currently: 23 active projects consulting (currently no core staff; on hourly basis), offering outward-oriented advisory services e.g. to national and international policy-making processes^[1,5,6] information (staff of 8) concerned with research communication in CICERO and Strategic Challenges in International Climate and Energy Policy (CICEP), esp. support to researchers on large projects administration (staff of 8) board of directors: currently (2012-2015) 5 members representing research (3 members, incl. 1 employee representative), government/administration (1 member) and private/business sector (1 member) appointed for 3-year term by University of Oslo (<2011: 2-year term appointed by Ministry of Environment)^[1] <p>“Strategic Challenges in International Climate and Energy Policy” (CICEP):</p> <ul style="list-style-type: none"> joint social scientific research center with the Fridtjof Nansen Institute and University of Oslo founded in 2011 and hosted at CICERO with 8 user partners⁸ and 4 international research teams^[1,3,5]

⁸ DNV, Hydro, the Norwegian Climate and Pollution Agency (Klif), LO, NHO, the Norwegian Water Resources and Energy Directorate (NVE), Statnett and Statoil

	Funding	<ul style="list-style-type: none"> • p.a. operating revenues in 2011: ca. € 9.5 M,^[6] mainly publicly funded • 10% core funding (grant) from the Research Council of Norway (RCN) • project-based funding from programs (mostly RCN: ca. 60%, e.g. Clean Energy for the Future (RENERGI) program, or EU FPs)^[6] • additionally: <ul style="list-style-type: none"> • private co-funding (e.g. business partners in CICEP)^[1,3,5] • direct payments for (consultancy) services (from ministries & agencies, business, e.g. Statoil, national and international organizations, e.g. World Bank)^[1,5,6] • fees from Climate Forum members (corporate, government or institutions)^[1,5]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • formally accountable to University of Oslo, on finances & research mainly to RCN:^[1] <ul style="list-style-type: none"> • e.g. CICERO has been evaluated on research quality, efficiency & relevance (from an international perspective) by RCN in two reviews “Research in Earth Sciences in Norway – an evaluation” (2011)^[2] and “Norwegian climate research – an evaluation” (2012)^[4]
Knowledge brokerage	Definition of thematic focus (“agenda setting”)	<ul style="list-style-type: none"> • based on thematic focus of overall Norwegian climate research as defined esp. by RCN’s Climate Research Panel (2005) and in the government’s research strategy “Knowledge for Climate” (Klima21, 2010)^[4] • more specific thematic guidance from RCN’s research programs, such as “Climate change and impacts in Norway” (NORKLIMA) • seldom: consultancy projects, where clients define information needs
	Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> • contribute to the Klima21 forum with representatives from research institutions, environmental organizations, public agencies, business & industry to produce the background report (research need assessment) for the government’s climate research strategy “Knowledge for Climate”^[2] • contribute to project-based research need assessments, e.g. for the Arctic Council in the Arctic Climate Impact Assessment (ACIA) workshop on “adaptation to climate change in the Arctic”^[1] <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • peer coordination: <ul style="list-style-type: none"> • formal (e.g. affiliated staff, IPCC WGs or EU FPs) and informal (scientific conferences and symposia) networking within national and international research communities^[1,6] • networking and exchange with users: <ul style="list-style-type: none"> • organize exchange and information events for specific target groups (e.g. Ny-Alesund Symposium on “High North” (Arctic) issues for several ministries and Statoil)^[1] • host Climate Forum (4 times in 2011) to inform on and discuss global CC issues with participants from press, industry, government and other institutions^[1,5] • organize joint research with users (esp. within CICEP)^[3] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • prepare climate impact assessments (from local to global scales) <ul style="list-style-type: none"> • e.g. impact of the global energy and transport system (EU FP6 QUANTIFY project), or on “Community Adaptation and Vulnerability in Arctic Regions (CAVIAR)” or regional CC impact assessment related to Arctic and small island developing states (SIDS) coastal regions (“Many strong voices”) • develop (GHG emission) scenarios and models as basis for decision-making • conduct preparatory work for and contribute to the IPCC (WG II)^[1,6] • translate research outputs (or needs) into user-tailored formats: reports, policy notes, popular-scientific journals, newsletter, “climate news” etc. <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • co-organize/contribute to workshops, trainings^[1]

		<p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • identify and design national and international climate policy options and scenarios: <ul style="list-style-type: none"> • e.g. via <i>CICEP</i>, a joint research center hosted at CICERO, the Center develops policy options for energy & energy technology markets, major industries & government^[1,3] • devise concrete adaptation strategies for communities in the Arctic and SIDS coastal regions (“Many Strong Voices” program) • undertake commissioned consultancy projects for ministries and government agencies, business, and national and international organizations • contribute to governmental reports (“white papers”) for the Parliament (“Storting”) <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • individual CICERO researchers serve as members of several boards of directors or commissions, as well as in national and international committees^[1] • regular policy advice in governmental hearings^[1] • CICERO members serve as (advisors to) delegates at UNFCCC^[1] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • <i>qua</i> mandate, actively disseminate climate knowledge to government, politics, business, schools and the general public:^[1,6] <ul style="list-style-type: none"> • e.g. co-organize “Forskningstorget” (Research Forum) in Oslo^[6] • engage with and provide outreach to public mainly through mass media (interviews, articles), web page (news), user-tailored online products (Klima) or social media (Twitter, Origo, Facebook)^[1,6] • produce climate films targeted at junior and senior high-school students^[6] • CICERO’s communication staff also engages in clients’ (e.g. ministries) climate research-related public outreach activities^[6]
Main tangible outputs		<ul style="list-style-type: none"> • technical reports, assessments, policy notes, contribution to “white papers” • outreach products: popular articles/interviews in press (opinion pieces/expert comments), magazine “Klima” (free, bi-monthly journal covering own research & news from the world of climate research/policy and from national research programs/projects) • (online) press releases, newsletters, esp. since 2011: more extensive use of IT-based tools or social media products: RSS climate news app • (IT-based) tools for scenario and model development
Target groups		<ul style="list-style-type: none"> • national and international scientists • politicians, esp. state government (ministries, gov. agencies), parliament • increasingly: topic-related industries (e.g. energy) • esp. outreach activities: students, teachers, media and general public
Policy process		<ul style="list-style-type: none"> • natural science-oriented research more detached from policy process; mainly covers issues relevant for agenda-setting (e.g. raising awareness for CC causes, impacts and vulnerabilities) • social science-oriented research (e.g. in <i>CICEP</i>) more targeted toward policy formulation (e.g. national and international post-Kyoto climate policies as well as evaluation (cost-effectiveness studies))

Effectiveness	Saliency	<ul style="list-style-type: none"> research focus directly based on political mandate derived from governmental and parliamentary climate policy strategy^[4] some activities esp. in new social science research center CICEP specifically target decision-making in policy and industry: consultancy services, policy analysis, direct expert advice (white papers, UNFCCC etc.)^[1,5] Climate Forum events as exchange platforms for government and industry representatives^[1,5] <p><i>moderately important dimension (esp. in social science-based projects, e.g. CICEP)</i></p>
	Credibility	<ul style="list-style-type: none"> high ratio of (renowned) academic staff (2/3 with PhD+), 5 IPCC lead authors^[1,6] extensive citation records with peer-reviewed books and articles, substantially in highly ranked scientific journals (level 2)^[1,5,6] research at CICERO was directly funded by Ministry of the Environment; now: RCN as independent research sponsor serves as decisive neutral hub between science and politics and “negotiates” and “sells” research programs to ministries^[4,5] <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> CICERO follows governmental information distribution mandate to proactively engage with mass media and public freely accessible information on in-house research and products (Working Papers, Reports, Policy Notes, Klima journal), mostly downloadable^[1] information on internal processes and governance principally available, but in part only indirectly accessible <p>Stakeholder participation:</p> <ul style="list-style-type: none"> more recently: co-production approach in selected projects at local level <ul style="list-style-type: none"> e.g. Community Adaptation and Vulnerability in the Arctic Regions (CAVIAR), integrating local and indigenous knowledge at regional level: “many strong voices” program on CC adaptation between the Arctic and the SIDS with mixed research consortium involving researchers, policy-makers & organizations^[1] more indirectly: national research strategy (Klima21) based on political mandate derived from consensual decision between government and parliament and Forum work with stakeholder representatives^[4] <p><i>moderately important dimension</i></p>
Sources	Websites	<p>[1] www.cicero.uio.no</p> <p>[2] www.forskningsradet.no</p> <p>[3] http://www.cicep.uio.no/english/about/</p>
	Literature	<p>[4] Research Council of Norway (2012). <i>Norwegian climate research: An evaluation</i>. The report can be ordered at: www.forskningsradet.no/publikasjoner</p> <p>[6] CICERO (2011). <i>Annual Report 2011</i>. URL: http://www.cicero.uio.no/publications/annualreports/a2011.pdf</p>
	Interview	<p>[5] Interview with representative</p>

Climate Adaptation Flagship (CAF) of the Commonwealth Scientific and Industrial Research Organisation (CSIRO, Australia)		
General	General description	The Climate Adaptation National Research Flagship (CAF) is a research program (2003-2013) within the Environment Group of the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia's national science agency. CAF supports large-scale, multidisciplinary research & commercial partnerships to align on major long-term national issues. ^[1,4,5]
	Thematic focus	CSIRO generally: <ul style="list-style-type: none"> • knowledge in the areas Food, Health and Life Science Industries; Energy; Environment; Information Sciences; Manufacturing, Materials and Minerals • esp. in its "Environment" group both mitigation and adaptation • social, economic and environmental aspects CAF specifically: <ul style="list-style-type: none"> • focused on climate <i>adaptation</i> from a long-term, large-scale and integrated perspective (excluding water supply issues addressed in a different flagship) • themes: 1) pathways to adaptation, 2) sustainable cities and coasts, 3) managing species and natural ecosystems, and 4) primary industries, enterprises and communities
	Constitution	<ul style="list-style-type: none"> • CSIRO is an statutory authority and operates under the <i>Science and Industry Research Act (1949)</i> as well as the <i>Commonwealth Authorities and Companies Act (1997)</i> • the National Research Flagships Program, is 1 out of 10 research programs fostering large-scale research & commercial partnerships concerned with Australia's most pressing national objectives (initiated by CSIRO in 2003 with 3 initial flagships) • the Climate Adaptation National Research Flagship was established in 2007-08
	Objectives	<ul style="list-style-type: none"> • <i>CSIRO</i> strives to deliver usable, solution-based research results (for industry, society and the environment) and thereby to elevate Australia's science and innovation position globally^[4] • <i>Flagships</i> intend to harness the expertise necessary to address the most pressing challenges and opportunities of human, environmental and economic significance identified as national priorities^[1] • <i>CAF</i> is supposed to "equip Australia with practical and effective options to adapt more effectively to climate change and variability and in doing so create AU\$ 3 (c.a. € 2.4) bn p.a. in net benefits by 2030."^[1,4]
Institutionalization	Organizational structure	CSIRO: <ul style="list-style-type: none"> • 6,550 people (60% academics) work across 57 sites in Australia and overseas and at 3 national research facilities • Executive Management Council (EMC) made up of Executive Team, Flagship Directors, Division Chiefs, Portfolio Leaders, and Enterprise Service Leaders; acts as a discussion forum on overall management and strategy • CSIRO Board meets bi-monthly; is responsible for the overall strategy, governance and performance, compiles annual reports, approves strategic plans etc.; operates through three standing Committees responsible for key governance areas (Nominations and Remuneration; Audit; Commercial) • CSIRO Strategic Advisory Committees ("Sector Advisory Councils" until July 2011) for each thematic area composed of representatives from Australia's economic, social and environmental sectors; provide independent (long-term) strategic advice and guidance on R&D as well as networks with the respective sectors • Ministerial and Parliamentary Liaison Office is a statutory post (currently held by Dr. Grant Farrell) for interactions with minister, Australian Government & Federal Parliament; identifies issues in Parliament & media relevant to CSIRO providing strategic advice on research responses • thematically, CSIRO is divided into 5 groups (Food, Health and Life Science Industries; Energy; Environment; Information Sciences; Manufacturing, Materials and Minerals) subdivided into research divisions (total: 13), flagships (total: 10) and portfolios

		<p>Flagships:</p> <ul style="list-style-type: none"> total 10 flagships: large-scale multidisciplinary research partnerships with a matrix structure (also across CSIRO divisions) linking external expertise and finance; overall: >250 external partners from industry, universities & other research or government agencies the Climate Adaptation Flagship is one of 2 flagships of the Environment Group Flagship Advisory Committees (1 for each flagship) with representatives from industry and other stakeholders; advise on research priorities to increase the effectiveness of flagships from a partner & customer perspective Climate Adaptation Flagship Advisory Committee consists of 10 independent advisors from science, government departments, industry and civil society (e.g. ENGOs)
	Funding	<p>CSIRO:</p> <ul style="list-style-type: none"> public research agency with public core-funding (roughly 60% of total) annual revenues (2010-2011) are AU\$ 1.2 (c.a. € 1) bn. with AU\$ 720 (ca. € 580) M appropriated from government additionally: AU\$ 500 (ca. € 400) M co-investments, consulting & technical services, assets or licenses from public & private sources (customers & partners) <p>Flagships:</p> <ul style="list-style-type: none"> in period 2004-2010/11, total investments in all flagships ca. AU\$ 1.5 (€ 1.2) bn., incl. AU\$ 480 (ca. € 384) M from the Federal Government <ul style="list-style-type: none"> thereof: AU\$ 114.25 (ca. € 91.41) M were 'earmarked' for the Flagship Collaboration Fund (FCF): a contestable fund to attract external research capability in 2010/11, 44% of CSIRO resources were devoted to flagships, of which AU\$ 201.7 (ca. € 161.4) M were from external partners (ca. 1/3)^[1,4,5]
	Accountability, reporting and evaluation	<p>CSIRO:</p> <ul style="list-style-type: none"> Annual Reports are tabled in the Australian Parliament Client Value Survey with customers' feedback on performance <p>Flagships:</p> <ul style="list-style-type: none"> audit of the Flagships Program by Australian National Audit Office (ANAO) in 2006, independent review of the National Research Flagships commissioned by Australian Government (as major funder of Flagships)^[6] internal (employee self-)assessment based on five key performance indicators (output/impact, publications, financial support, customer satisfaction, investments) "Impact 2020 Project": evaluation of triple-bottom-line (economic, environmental and social) impact of research as delivered by the Flagship Program independent reviews of each Flagship (3-4 year cycle): Climate Adaptation impact review in 2010-11 by economic assessment company ACIL Tasman^[1,2,5,7]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<p>CSIRO:</p> <ul style="list-style-type: none"> overall research priorities & goals follow from National Research Priorities formulated by the Department of Education, Employment and Workplace Relations (DEEWR)^[1] Board & Executive Team (supported by Executive Management Council) develop overall CSIRO Strategic Plan; consulting leaders from politics, industry, the community, environmental sector on general research strategy, formally in the Strategic Committee and informally in "heavy hitter dinners" <p>Flagships:</p> <ul style="list-style-type: none"> initiation: concept of flagships developed through extensive consultation with governments, partners in science & industry and community leaders^[1] representatives from Australia's economic, social and environmental sectors influence research orientation through Flagship Advisory Committee^[4,5]

<p>Main KB activities⁹ (core activities in bold)</p>	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • <i>CAF</i>: engage in collaborative partnerships with governments, industries and communities under themes: cities and coasts, natural ecosystems, and primary industries <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • prepare integrated assessments (e.g. climate risks, vulnerabilities, or adaptive capacities, of ecosystems, cities, or industry) • develop climate scenarios and models as a basis for identifying potential responses and likely barriers to adaptation • compile information formats tailored to different users, e.g. working papers, reports, brochures, fact sheets etc. <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • develop decision support processes & tools to inform technological, management & governance planning for adaptation of communities, industries, ecosystems & cities, e.g.: <ul style="list-style-type: none"> • (web-based, interactive) Adaptive Capacity Spatial Assessment Tool maps and informs, e.g. policy makers, about vulnerability in rural Australia as well as limiting or contributing factors for rural adaptive capacity • adaptive capacity self-assessment process for Catchment Management Authorities & New South Wales Government assists natural resource managers in building their capacity to adapt to global change <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • identify adaptation options in policy & management as well as options for their implementation, <ul style="list-style-type: none"> • e.g. management options for ecosystems or agribusinesses, technical adaptation options in mining sector <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • provide direct advice to policy makers through ministerial & parliamentary liaison officer <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • engage with media & public through CSIRO's Media Centre and "community engagement program" as set out in Strategic Plans^{1,5]}
<p>Main tangible outputs</p>	<ul style="list-style-type: none"> • major focus on applied science products with user-tailored formats, e.g.: <ul style="list-style-type: none"> • working paper (series), technical reports, reviews, fact sheets on scientific findings • decision support tools and management solutions: <ul style="list-style-type: none"> • climate adapted technologies for industries (e.g. mining or agribusiness), infrastructure, (ecosystem) management, or cities and governments, • e.g. computer-based climate model simulators "Australian Community Climate and Earth-System Simulator" (ACCESS) jointly with Bureau of Meteorology & universities, • maps (e.g. Adaptive Capacity Spatial Assessment Tool on rural vulnerability), electronic devices (e.g. for early warning for extreme events, i.e. floods or heat waves) • CSIRO generally provides various informative products for the general public, e.g. media releases, news and educational material (science pods and vods, at home science lessons), exhibitions etc.
<p>Target groups</p>	<ul style="list-style-type: none"> • Commonwealth, State and Territory governments and their (research) agencies, and cities; • Australian and global business, industries (sectors, mainly mining/metals, agrifood, health & medicine, energy generation, utilities, manufacturing, defense, infrastructure management) and their research organizations (for partnerships)

⁹ Note: The listed KB activities mainly refer to the KB activities under the CAF; CSIRO's comparably broad range of different activities exceeds the scope of this study.

		<ul style="list-style-type: none"> national and international scientists – for collaboration (e.g. NCCARF, see separate profile) media and the broader (Australian and international) public
	Policy process	<ul style="list-style-type: none"> awareness-raising and agenda-setting: via climate (impact) assessments as well as models & scenarios, that typically take a more strategic (long-term) focus policy formulation & implementation: operational decision support and guidance activities (e.g. for farmers or industries)
Effectiveness	Saliency	<p>CSIRO:</p> <ul style="list-style-type: none"> research generally focused on applicability & societal relevance (many deliverables are usable products) major part of CSIRO's resources directed to Government's National Research Priorities and activities aligned with National Innovation Priorities^[4] research priorities (in strategic plan) are further derived from need analysis conducted through consultation with leaders from industry, the community, the environmental sector and government ^[4,5] national science agency with close organizational ties to policy (esp. via Liaison Office) <p>Flagships:</p> <ul style="list-style-type: none"> collaborative research with industry and policy makers (e.g. government agencies) aligns research users & customer needs outcome ("science and solutions") as core focus of flagships, aims to provide "transformational" science to users; accordingly: <ul style="list-style-type: none"> regular use of impact performance checks Flagship Advisory Committees with (outcome) relevant experts, rather than scientists^[1,5,6,7] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> "worldclass researchers, research infrastructure and collaborative relationships" as basis for its credibility^[4,7] scientific independence of research guaranteed by Agency Charter Code of Conduct sets research standards, e.g. peer reviewed science (only limited in commercial research agreements for secrecy reasons)^[3] CSIRO ranks in the top 1% of scientific institutions in 14 out of 22 research fields (incl. geosciences & ecology/environment) with citation rates well above the world average^[4] research capabilities of CAF's host division approved as 'high-quality' or benchmarking by independent science assessment review program; (cycles: 2005 – 2007; 2008 – 2011)^[4] internal awarding system, infrastructure, training & mentoring to support scientific capabilities of staff^[4,7] <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> CSIRO: pro-active information dissemination strategy in media & public (mandate), limited only in case of commercial agreements public access to information held by government agencies guaranteed: management & Ministry push for public communication of scientists, e.g. through awarding^[1] or staff promotion incentives^[3] and guidelines (Agency Charter & "Guidelines on Public Comment") <p>Stakeholder participation:</p> <ul style="list-style-type: none"> societal representatives (appointed by the Governor General) engage in strategy development (through Boards) projects designed through participatory research, i.e. engaging public & private stakeholders (esp. business) in project development (steering committees) and reflecting all relevant views e.g. for modeling and decision support tools^[1,7] <p><i>moderately important dimension (esp. flagship with partnership approach)</i></p>

Sources	Website	[1] http://www.csiro.au/
	Literature	[2] Harris, P. & Meyer, R. (2011). <i>Science Policy: beyond budgets and breakthroughs</i> , HC Coombs Policy Forum, Australian National University, Canberra. [3] Gascoigne, T. and J. Metcalfe (1997). "Incentives and Impediments to Scientists Communicating Through the Media." In <i>Science Communication</i> 18(3): 265-282. [4] CSIRO: Annual Report 2010-11. URL: http://www.csiro.au/~media/CSIROau/Corporate%20Units/CSIROau_Annual_Report/1011/CSIRO_Annual_Report_2011.pdf [5] CSIRO: Strategy 2011-2015. URL: http://www.csiro.au/~media/CSIROau/Corporate%20Units/Executive%20Team%20ET/CSIROStrategicPlan2011-15.pdf [6] Flagship Review Panel. (2006). <i>Review of National Research Flagships: an initiative of CSIRO</i> . URL: http://www.csiro.au/~Media/CSIROau/Corporate%20Units/Operational%20Performance/CSIROFlagshipReview_Flagships_PDF%20Standard.pdf
	Interview	[7] Interview with representative

Climate Change Committee (CCC) and its Adaptation Sub-Committee (ASC, United Kingdom)		
General	General description	The Climate Change Committee (CCC) is an independent advisory body to the UK Government and Devolved Administrations that works on setting carbon budgets and reducing greenhouse gas emissions. The Adaptation Sub-Committee (ASC) as part of the CCC advises on the risks and opportunities from CC and on preparing for the impacts of CC. ^[1,4]
	Thematic focus	<ul style="list-style-type: none"> • CCC: CC mitigation, especially with regard to carbon budgets and the transition to a low carbon economy • ASC: CC adaptation, especially risks and opportunities from and preparing for CC • mainly the natural science and economic dimensions of CC • main focus is on the national level and the devolved regions, but the Committee's reports also address international issues (e.g. bioenergy, aviation) and the role of local authorities • mostly strategic focus, e.g. transition to low carbon economy, but in several cases the Committee also provides operational advice^[1]
	Constitution	<ul style="list-style-type: none"> • established by the Climate Change Act 2008^[2] • as an independent, non-departmental advisory body • under the responsibility of the relevant Secretaries of State of the UK Government (Department of Energy and Climate Change (DECC) and Department for Environment, Food and Rural Affairs (Defra)), the relevant Northern Ireland Department, the Welsh Ministers and Scottish Ministers^[2]
	Objectives	"[...] the objective of the Committee is to be an independent and authoritative body influencing UK Government and devolved administration strategy in the areas of carbon budgets and preparedness for climate change in the UK". ^[4]
Institutionalization	Organizational structure	<p>CCC:</p> <ul style="list-style-type: none"> • 8 experts from the fields of CC, science and economics^[1] • chair: Lord Deben^[1] • chief executive: David Kennedy^[1]; responsible for safeguarding the public funds and for the day-to-day operations and management of the CCC and ASC^[2]. • secretariat of 33 staff who provide analytical and corporate support^[1, 4] <p>ASC:</p> <ul style="list-style-type: none"> • 6 independent members (senior experts)^[1] • chair: Lord Krebs, who is also a member of the CCC • Sub-Committee utilizes the CCC's secretariat staff (2012: 7)^[4] <p>Chairs and members of both committees are appointed for a period of 5 years by the responsible ministers acting jointly^[2]</p> <p>CCC Sponsor Group:</p> <ul style="list-style-type: none"> • senior representatives of DECC, Defra, Communities and Local Government, HM Treasury, Department for Transport, Business Innovation and Skills, the Devolved Administrations, the CCC and the ASC • chaired by DECC^[2] • agree on business plan and key performance targets, inform the CCC and ASC of its indicative budgets for the following year, review the CCC and ASC's performance and outlook for the previous financial year.^[2]
	Funding	<ul style="list-style-type: none"> • CCC: jointly sponsored by DECC (84%), the Scottish Government (8%), the Welsh Assembly Government (5%) and the Department of the Environment Northern Ireland (3%); budget approx. £ 3 (ca. € 4) M p.a.^[2] • ASC: jointly sponsored by Defra, the Scottish Government, the Welsh Assembly Government and the Department of the Environment Northern Ireland; budget approx. £ 0.8 (ca. € 1) M p.a.^[2,4]

	<p>Accountability, reporting and evaluation</p>	<ul style="list-style-type: none"> • periodic internal and external audits on finances and attainment of goals^[2] • funding parties (DECC, Defra, Devolved Administrations) are accountable with respect to finances and strategic objectives to the respective parliaments^[2] • CCC and ASC have strict reporting and accountability requirements to the funding parties and the National Audit Office esp. with respect to the use of (financial) resources, monthly forecasts and monitoring information on performance and finance^[2] • an audit committee oversees the financial and corporate governance, internal controls, risk management systems and its compliance with relevant legal and regulatory requirements^[1] • annual reports on activities together with the audited accounts each financial year^[2]
	<p>Definition of thematic focus (“agenda setting”)</p>	<ul style="list-style-type: none"> • general responsibilities and foci set out in the Climate Change Act 2008 • tasks and working areas and issues are defined in work programs and plans in coordination with the funding parties: <ul style="list-style-type: none"> • Framework Document covers the role of the CCC and ASC, their governance and accountability, management and financial responsibilities^[1] • CCC’s Corporate Plan for 2011-2014 sets out the current and future work priorities^[1] • ASC’s Work Programme sets out its objectives, tasks and outputs in more detail^[1] • CCC and ASC additionally provide advice “on demand” from the national and Devolved Administrations
<p>Knowledge brokerage</p>	<p>Main KB activities (core activities in bold)</p>	<p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • analyze (studies) and provide information on various topics (including science of CC, international action on CC, bio-energy, renewable energy, low carbon innovation) and sectors (e.g. power, shipping, aviation, buildings & industry) for UK and regions^[1] • ASC: provide advice on the Climate Change Risk Assessment (CCRA, see separate profile) (e.g. on methodology and on the Synthesis report) <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • develop a set of emissions reduction scenarios based on alternative assumptions about Government commitment to tackling CC and policy effort^[1] • provide advice on mitigation and adaptation strategies and policies of national and devolved authorities: e.g. on Welsh Government’s Climate Change Strategy 2010^[1] • ASC: assess progress towards implementing the objectives, proposals and policies of the Adapting to Climate Change Programme^[3] • ASC: assess the preparedness for, and progress towards adapting to, CC in the UK <ul style="list-style-type: none"> • first report – ‘How well prepared is the UK for climate change’, including a monitoring framework for assessing progress) • similar assessments for the devolved regions on request (e.g. Scottish Government: evaluation of how well Scotland is preparing for CC) • provide advice on Carbon budgets: <ul style="list-style-type: none"> • set the carbon budgets, i.e. levels (e.g. recommended 80% cut) for 4-year periods, starting in 2008 and advise on the long-term 2050 target^[1,5] • monitor and report on progress in meeting the carbon budgets^[1] • identify areas and (policy) options for meeting the carbon budgets^[1,5] • assess the costs and benefits (economic impacts) of the carbon budgets^[1] <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • prepare advisory letters to individual politicians • deliver speeches to the Parliament and other public authorities <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • “(inter)active” dissemination strategy (PR section): podcasts and videos; blog; numerous press releases, social media (Twitter, Facebook, etc.)

	Main tangible outputs	<ul style="list-style-type: none"> • status and progress reports^[1] • reviews^[1] • advisory letters to MPs and high-ranking ministerial officials^[1]
	Target groups	<ul style="list-style-type: none"> • national and devolved authorities, i.e. included in the sponsor group • the Parliament and single MPs • general public / interested stakeholders
	Policy process	<ul style="list-style-type: none"> • policy formulation: advice on the level of carbon budgets; advice on policies needed to meet the carbon budgets; advice on the National Adaptation Programme • policy evaluation: progress reports on meeting the carbon budgets and adapting to CC
Effectiveness	Saliency	<ul style="list-style-type: none"> • strong mandate with main responsibilities being set in Climate Change Act 2008 • responds to concrete demands from national and devolved authorities • regular interaction with the sponsors: DECC, Defra and respective Devolved Administration • Systematic stakeholder consultation process • facilitates shared understanding and information exchange between CCC and government officials through a common working group and a Memorandum of Understanding on Economic Modeling^[2] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • members are well known experts (“eminent scientists”^[1]) with broad areas of experience and “senior enough to be independent from political influence”^[5] • close cooperation with many of the UK’s leading research centers, including the Met Office, Hadley Centre and Walker Institute^[1] • strongly emphasizes evidence-based advice (“use of robust and up-to-date scientific evidence”^[1,5] and the analytical independence of the Committee^[2]) • shortlisted as a finalist in the Climate Week Awards in recognition of the innovative analysis which informed the 4th carbon budget report^[4] <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • high transparency regarding the general organization and responsibilities of the CCC (including disclosure of salaries and procurement processes) as well as the methodologies and outputs – availability through website • reports are made available through website • strong media profile and coverage <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • stakeholder consultation in order to foster acceptance <p><i>moderately important dimension</i></p>
Sources	Website	[1] http://www.theccc.org.uk/
	Literature	<p>[2] HM Government, The Scottish Government, et al. (2010). <i>Committee on Climate Change. Framework Document</i>. HM Government, The Scottish Government, The Welsh Assembly Government, Department of the Environment Northern Ireland and The Committee on Climate Change: 35.</p> <p>[3] Committee on Climate Change Adaptation (2009). <i>Preparing for Climate Change. Adaptation Sub-Committee Work Programme</i>. London, Committee on Climate Change Adaptation.</p> <p>[4] Committee on Climate Change (2012). <i>Committee on Climate Change. Corporate Plan 2012-15</i>. London, Committee on Climate Change.</p>
	Interview	[5] Interview with representative of the Adaptation Sub-Committee

Climate Change Risk Assessment (CCRA, United Kingdom)		
General	General description	The Climate Change Risk Assessment (CCRA) is a regular assessment of the risks to and opportunities for the UK posed by current and predicted CC.
	Thematic focus	<ul style="list-style-type: none"> risks and opportunities of CC and subsequent needs for adaptation social, environmental and economic risks^[5] in 11 sectors at the national and regional levels^[5] long-term focus (up to 2100), but also current impacts
	Constitution	<ul style="list-style-type: none"> Climate Change Act 2008 commits the UK Government to carry out an assessment of the risks to the UK of CC every 5 years first CCRA published on 25 January 2012, regular assessments every 5 years
	Objectives	<ul style="list-style-type: none"> The CCRA draws together evidence and analysis in order to “inform policy-makers and other interested parties of the nature of the risk, the extent that the risks are currently understood (including the scale and time of onset of individual risks where possible), and the issues that influence the overall risk landscape for the UK”.^[3] The CCRA further aims at informing “the kinds of actions and policies Government and UK as a whole could take to reduce risks, and seize the biggest opportunities, from a changing climate.”^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> Department for Environment, Food and Rural Affairs (Defra) manages the assessment on behalf of the UK Government and the Devolved Administrations^[5,6] the first assessment was delivered by a consortium of organisations led by HR Wallingford (co-contractors: The Met Office, Alexander Ballard Ltd, Collingwood Environmental Planning, Entec Ltd UK, Paul Watkiss Associates, Metroeconomica) advice and review by Adaptation Sub-Committee (ASC) of the CCC (see separate profile) steering group (including representatives from UKCIP (see separate profile), central and local government, the Devolved Administrations and other expert bodies) oversees the assessment. A sub-group of technical risk experts from across government advises on technical issues
	Funding	<ul style="list-style-type: none"> £ 1.5 (ca. € 1.87) M^[5] for the first assessment funded by UK Government (Defra) and Devolved Administrations
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> the assessment report has to be presented to the Parliament (formal reporting) ASC provides ongoing review and expert scrutiny (e.g. on methodology, on draft report) the steering group oversees the assessment extensive peer review by scientific and economics experts, international peer review panel
Knowledge brokerage	Definition of thematic focus (“agenda setting”)	<ul style="list-style-type: none"> thematic focus on risks and opportunities of CC is stipulated by the Climate Change Act a scoping study commissioned by Defra and conducted by a private sector environmental consultancy defined the initial framework for the assessment with respect to the level of aggregation (national level, partly regional) and classification of relevant risk domains (sector approach and definition of the 11 sectors)^[5] sector workshops identified the most important risks (or opportunities) within the respective sector for more detailed consideration and analysis
	Main KB activities (core activities in bold)	<p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> draw together evidence and analysis on the risks to and opportunities for the UK posed by CC to 2100, on the basis of <ul style="list-style-type: none"> the UK Climate Projections 2009 (UKCP09) government reports, studies commissioned by the project and recent research literature stakeholder feedback through 31 (sector) workshops (including representatives of government, statutory, academic and voluntary bodies)^[5] and online consultation new analysis, including the application of specialist risk and economic assessment techniques^[5]

	Main tangible outputs	<ul style="list-style-type: none"> the UK Climate Change Risk Assessment 2012 Evidence Report reports and summaries for each of the 11 sectors technical report “Method for undertaking the CCRA Part II – Detailed Method for Stage 3: Assess Risk” Devolved Administration reports and summaries (Scotland, Wales and Northern Ireland) the CCRA UK Government Report (on 5 main priority themes: Agriculture and Forestry; Business, industries and Services; Health and Wellbeing; Natural Environment; and Buildings and Infrastructure)
	Target groups	<ul style="list-style-type: none"> national policy-makers: central government & the Devolved Administrations^[1] other public and private sector organizations^[1]
	Policy process	<ul style="list-style-type: none"> awareness-raising and problem definition^[3] agenda-setting and input to policy formulation: policy prioritization, assessment of potential adaptation actions^[3]; in particular: inform the development of adaptation plans by the UK Government and the Devolved Administrations^[3] by reviewing the “UK’s progress towards adaptation and resilience”^[3] future assessments will serve the purpose of policy evaluation, esp. of National Adaptation Plans
Effectiveness	Saliency	<ul style="list-style-type: none"> scoping study to explore adequate level of aggregation and relevant risk dimensions stakeholder workshops in each sector to identify most important risks (and opportunities) steering group: involves important target groups, i.e. central, devolved and local government statutory role (government mandate) through Climate Change Act to provide the basis for UK’s adaptation policy, in particular the development of the National Adaptation Programme^[6] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> steering group involves representatives from UKCIP (see separate profile) and other expert bodies high degree of peer review: in development of methodology and (sector) report writing (by scientific and economics experts, an independent international peer review panel, by the ASC, see separate profile)^[1,3] independence of assessment is strongly emphasized^[1] <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> assessment assigned to consortium via competitive tender accessibility of information on process, in particular methodology and outputs online is provided on the Defra website^[1] and HR Wallington Website^[2] <p>Stakeholder participation:</p> <ul style="list-style-type: none"> high degree of stakeholder consultation and review consortium model limits the risk of public dispute between different expert groups and forms of expertise^[5] <p><i>moderately important dimension</i></p>
Sources	Websites	<p>[1] http://www.defra.gov.uk/environment/climate/government/risk-assessment/</p> <p>[2] http://ccra.hrwallingford.com/CCRAREports/reportviewer.html?sector=intro&link=LinkTarget_1</p>
	Literature	<p>[3] Department for Environment Food and Rural Affairs (Defra) (2012). <i>The UK Climate Change Risk Assessment 2012. Evidence Report</i>. London, Department for Environment, Food and Rural Affairs (Defra): 488.</p> <p>[4] Department for Environment Food and Rural Affairs (Defra) (2012). <i>The UK Climate Change Risk Assessment 2012: Government Report</i>. London, Department for Environment, Food and Rural Affairs (Defra): 48.</p> <p>[5] Webb, Janette (2011). “Making climate change governable: the case of the UK climate change risk assessment and adaptation planning” in <i>Science and Public Policy</i> 34(4): 279-292</p>
	Interviews	<p>[6] Interview with representative of Defra</p> <p>[7] Interview with representative of the Adaptation Sub-Committee</p>

Climate Service Center (CSC, Germany)		
General	General description	The Climate Service Center (CSC) at the Helmholtz-Centre Geesthacht is the central national climate (change) information & advisory service at the interface between climate science and knowledge users in economy, politics and society. Linked with major research institutions and user groups in Germany, the CSC provides and actively brokers client-tailored climate information. ^[1,5]
	Thematic focus	All questions relating to CC and CC research relevant to users: <ul style="list-style-type: none"> • CC mitigation & adaptation (increasingly as per CSC's central role in NAS) • from global, national and local as well as sectoral perspectives • from a natural scientific as well as multidisciplinary perspective
	Constitution	<ul style="list-style-type: none"> • founded in 2009, on initiative of the Federal Government as part of its "Hightech-Strategy for Climate Change"^[5] and the "German Strategy for Adaptation to Climate Change" (December 2008) and its specified "Action Plan Adaptation"⁽²⁰¹¹⁾^[2,6] • established at the Geesthacht Centre for Materials and Coastal Research of the Helmholtz Association, Germany's largest private research corporation (GmbH) • ongoing reconstitution planning (beyond May 2014): potentially restructures into a full, independent and university-based member of the Helmholtz Association^[8]
	Objectives	<ul style="list-style-type: none"> • to act as the national contact point for all questions relating to CC (research) • to serve as a link between climate research and society and to make climate research available in a more practice-orientated way for the use of decision-makers in politics, administration, economy and for the broader public (in Germany)^[1,6]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • located in Hamburg, Germany; currently staff of 26 researchers from natural and social sciences as well as communication experts (plus guests) in 5 departments: <ul style="list-style-type: none"> • Director (Prof. Guy Brasseur; strategic planning and general management) • Climate Systems (data management on CC and seasonal change) • Natural Resource Management (adaptation research with respect to biodiversity, (agro) forestry and water management) • Economy and Policy (economic and political consequences of CC) • Communications (PR, education) • Strategic Advisory Panel (SAP) with 15 (international) climate experts from civil society, business and academia to advise the director on the general strategy and design
	Funding	Mainly public <ul style="list-style-type: none"> • core funding for initial phase (June 2009- May 2014): ca. € 20 M from the Federal Ministry for Research and Education (BMBF); potentially reduced beyond 2014, with CSC as "self-financed" institution^[1,8,6,7] • additionally: (joint) project-based funding (EU FP7, BMBF; which may become major funding sources after 2014); customer fees for services^[1,8,7]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • spring 2012: interim evaluation of progress by funding agency BMBF after first 2.5 years^[8] • 2013+: all activities under the German Strategy for Adaptation to Climate Change and its "Action Plan Adaptation" will be regularly externally evaluated regarding results, process, and progress^[3]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> • general working field of CSC specified in "Adaptation Action Plan" (Aug 2011) of German Strategy for Adaptation to Climate Change: "providing knowledge, informing, enabling"^[2] • generally, users define specific information needs ("bottom-up")^[8] in inquiries or contracts (e.g. collaborative research projects) • initially, 3 sectoral workshops to identify user information needs (1. economy, finance and industry; 2. politics, society and media; 3. regional planning, land and water)^[6] • further: (sectoral) stakeholder dialogues "climate change/adaptation", e.g. elaborated within the "Finanz-Forum: Klimawandel," and extensive surveying^[4,8,2] • "top-down" provision of services and products: i.e. of information and products on issues perceived as relevant by researchers at CSC^[1,8]

<p>Main KB activities (core activities in bold)</p>	<p>KBA1: Identification of knowledge needs and research gaps:</p> <ul style="list-style-type: none"> • conduct systematic users' knowledge need/gap assessment (through surveys, stakeholder dialogue, networks etc.) to inform research & service development <p>KBA2: Coordination and networking^[1,8,4]</p> <ul style="list-style-type: none"> • coordinate with relevant actors in CSC-network for enhanced knowledge transfer <ul style="list-style-type: none"> • with existing climate science (service) institutions in academia, business, administration for research & information service integration (between European climate and meteorological services, regional climate offices or KOMPASS (see separate profile) at UBA), esp. via Klimanavigator platform • with decision makers in national, regional/local or sectoral adaptation processes e.g.: <ul style="list-style-type: none"> • with regional adaptation processes (e.g. KLIMZUG (esp. Nord) (see separate profile), or Climate Impact Research in Lower Saxony (KLIFF)); • with actors from the finance sector (esp. with Sustainable Business Institute SBI & Finanz-Forum "Klimawandel") to jointly develop climate services for the finance sector • match user information needs with in-house (mainly national/international focus) or external research expertise (in CSC-network, e.g. regional climate offices) <ul style="list-style-type: none"> • ca. 10-15 enquiries/month via automatized help-desk-system <p>KBA3: Compilation and translation of scientific knowledge^[1,8]</p> <ul style="list-style-type: none"> • prepare customer-oriented climate simulations/models or integrated assessments on specific climate issues (esp. 'Climate Systems' Department), <ul style="list-style-type: none"> • e.g. regional vulnerability and impact assessments (e.g. on agriculture, forestry, water and coasts in Lower Saxony in joint-project KLIFF) as basis for adaptation strategies (e.g. for KLIMZUG, or IMPACT2C within EU-FP7 project) • compile information and data derived from modeling into different user-tailored products (esp. 'Climate Systems' Department, for examples see main tangible outputs) <p>KBA4: Capacity building and decision support^[1,8]</p> <ul style="list-style-type: none"> • develop different (IT-based) decision support tools synthesizing research results, climate model data or climate impact assessments (customized: regions, sectors), e.g. Klimadatenatlas, climate signal maps • provide support on climate simulation use (e.g. online manuals & guidance) • conduct expert workshops, conferences, speeches etc. for knowledge exchange and capacity building between science and (EU, national or local) business, politicians and administrations or on climate model use <ul style="list-style-type: none"> • e.g. "Hamburger Klimafinanzgipfel", or practitioners in local/regional adaptation processes, KLIMZUG <p>KBA5: Policy analysis, evaluation and development^[1,8]</p> <ul style="list-style-type: none"> • provide (informational) support in German Climate Change Adaptation Strategy, i.e. climate science advice to municipal, communal, state or business decision makers to enable informed decisions on mitigation or adaptation strategies <ul style="list-style-type: none"> • e.g. KLIMZUG (see separate profile) or joint KLIFF project (pilot regions in Lower Saxony): regional planning & adaptation strategy development with participation of stakeholders from science, politics & business <p>KBA7: Public outreach^[1,8]</p> <ul style="list-style-type: none"> • <i>qua</i> Action Plan,^[3] a core task is to provide national climate knowledge and inform users in tailored forms <ul style="list-style-type: none"> • e.g. via web-based information platforms, to unify scattered national climate knowledge etc. or via newsletter, climate TV, 'view points,' and through several document-based formats (see major tangible outputs) • moreover: presentations at conferences, visits to the CSC etc.
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	Main tangible outputs	<ul style="list-style-type: none"> state of knowledge reports (CSC reports), articles, position & background papers on different climate (related) issues, CSC News Scan about latest scientific results on, and political developments relating to, climate and CC statistics, animations, photographs or videos different (IT-based) decision support tools synthesizing research results, climate model data or climate impact assessments in a customer tailored format (regions, sectors), e.g. Klimadatenatlas, climate signal maps information platforms: <ul style="list-style-type: none"> Climate Wiki: homepage that compiles basic information for general public Klimanavigator: separate homepage that provides broad access to (current and user-tailored) climate relevant research in >50 German institutions
	Target groups	<p>Stakeholders from economy, policy, science and the media:</p> <ul style="list-style-type: none"> business (various, e.g. finance/insurance sector) mainly German local/municipal, state ("Länder") and national governments and administrations^[1,8] media national and international scientists (e.g. climate services at EU level, research project partners) students, pupils public more generally^[1]
	Policy process	<ul style="list-style-type: none"> services are relevant for the policy/management formulation phase because they provide operational information as a basis for political, civil society and esp. business actors' decisions CSC is also concerned with basic science research on long-term trends (and its compilation) which serves to inform actors, e.g. the public, on CC (research) developments, most relevant for awareness-raising and agenda-setting
Effectiveness	Saliency	<ul style="list-style-type: none"> activities and products are genuinely client oriented and tailored to user needs; possibility for concrete enquiries / consultancy contracts user knowledge needs taken up or systematically assessed: <ul style="list-style-type: none"> in 3 initial sectoral workshops, via extensive surveying (>1000 for work in Department Natural Resource Management), via dialogue events and more informally in the existing network via its SAP (with user group representatives) [1,8] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> high ratio of academic (PhD+) staff CSC conducts its own research (e.g. in joint projects or by staff members as active researchers in national climate research institutions) to remain updated on state-of-the-art models and thereby to enhance scientific credibility of its service products broad portfolio of peer reviewed publications CSC uses its strong links to renowned scientific institutions in Germany and internationally (joint projects and products) <i>qua</i> self-description, positioned as an 'honest broker' (committed & responsible researchers) esp. with regard to (communication of) uncertainties^[5,8] <p><i>important dimension</i></p>

	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • (<i>qua</i> mandate) very “(inter)active” dissemination strategy (specialized PR section): easily accessible information platforms, press releases, conferences, newsletter, climate-TV • high online accessibility of information on process and outputs, access to background information partly restricted <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • SAP with relevant representatives for input to broader organizational/thematic orientation <p><i>less important dimension</i></p>
Sources	Websites	<p>[1] http://www.climate-service-center.de/index.html.en</p> <p>[2] http://www.bmu.de/english/climate/downloads/doc/48464.php</p>
	Literature	<p>[3] BMU (2011). <i>Aktionsplan Anpassung der Deutschen Anpassungsstrategie an den Klimawandel</i>. http://www.bmu.de/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_bf.pdf</p> <p>[4] Sustainable Business Institute (2009). <i>Klima-Informationen-Systeme gemeinsam weiterentwickeln: Anforderungen an das CLIMATE SERVICE CENTER (CSC) aus Sicht der Finanzwirtschaft</i>. http://www.hzq.de/imperia/md/content/gkss/wissenschaft_und_industrie/csc/cfi-csc-report_deutsch_web.pdf</p> <p>[5] BMBF (2007). <i>Die Hightech-Strategie zum Klimaschutz</i>. http://www.cfi21.org/fileadmin/user_upload/hightech_strategie_fuer_klimaschutz.pdf</p> <p>[6] Deutsche Meteorologische Gesellschaft. Mitteilungen (03/2009). http://www.dmg-ev.de/gesellschaft/publikationen/pdf/dmg-mitteilungen/2009_3.pdf</p> <p>[7] Förderkatalog der Bundesministerien: BMBF, BMU, BMWi, BMELV, BMVBS http://foerderportal.bund.de/foekat/jsp/StartAction.do?actionMode=list</p>
	Interview	<p>[8] Interview with representative</p>

Competence Centre for Climatic Consequences and Adaptation (KOMPASS, Germany)		
General	General description	The Competence Centre for Climatic Consequences and Adaptation (KOMPASS) is a unit of the German Federal Environmental Agency (UBA) and serves as a guide and point of contact for CC adaptation activities in Germany ^[1] .
	Thematic focus	<ul style="list-style-type: none"> • overall focus on <i>adaptation</i>, incl. CC scenarios, climate impacts and adaptation options • natural science dimensions (CC and impacts) and social dimensions (impacts) • regional and national focus, partly local • focus both on strategic (i.e. long-term changes, impacts) and operational questions (e.g. implementation of concrete adaptation measures and the adaptation strategy)
	Constitution	<ul style="list-style-type: none"> • established in 2006 as a <i>project</i> of the federal agency UBA^[2] • later, transformed to a <i>subject group</i> (Fachgebiet) of UBA^[3] UBA: <ul style="list-style-type: none"> • established in 1974 as an agency of the Federal Ministry of the Interior • since 1986, agency of the Environmental Ministry (BMU)
	Objectives	<ul style="list-style-type: none"> • The objective of KOMPASS is to serve as an information hub between science, politics, administration, interest groups and the general public. • KOMPASS further aims at identifying vulnerable sectors and regions, assessing climate impacts and demonstrating opportunities and barriers for adaptation measures.^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • KOMPASS is integrated in the organizational structure of UBA as a <i>subject group</i> (Fachgebiet) in the division 'Environmental Planning and Sustainability Strategies'^[3] • leader of the subject group is Petra Mahrenholz • staff (in 2010): 8 employees, each dealing with 3-4 research projects in the context of the national Environmental Research Plan (UFOPLAN)^[3] • located in Dessau-Roßlau
	Funding	<ul style="list-style-type: none"> • basic funding through the budget of the UBA (federal resources) and to a lesser degree through external funding (e.g. EU research funding) • overall budget: no exact figures
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • external: UBA was evaluated by the German Science Council (Wissenschaftsrat) in 2006^[4] • internal evaluation and reporting procedures in line with UBA requirements: <ul style="list-style-type: none"> • <i>Task Reviews</i> (Aufgabenkritik) are performed every second year by the head of office (Amtsleitung); these reviews have to be approved by the Ministry^[3] • <i>Product Sheets</i> (Produktblätter) are used to specify achievements, their review and goal attainment. The results are reported to the BMU that then decides whether or not the product (project) is to be continued^[3]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	UBA in general: <ul style="list-style-type: none"> • based on the environmental policy foci of the BMU^[4] • coordination of themes between the minister, the heads of the BMU directorates-general and the UBA head of office in annual planning procedures and monthly meetings^[4] • need for extramural research is defined annually in the UFOPLAN; initiatives may come from the UBA and the BMU equally, consensus is sought but final decision lies within the BMU^[4] KOMPASS: <ul style="list-style-type: none"> • German National Adaptation Strategy defines KOMPASS as an institution to implement the Strategy's adaptation agenda • regular exchange with the respective division of the BMU (General, Fundamental, International and European Aspects of Water Management) in which BMU sets general policy priorities, however, the more specific adaptation agenda (incl. themes and projects) is strongly influenced by KOMPASS^[3]

Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> • identification of research gaps through scientific conferences (see KBA2)^[3] <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • peer coordination: <ul style="list-style-type: none"> • commission, supervise and coordinate research on CC impacts and adaptation in the frame of the UFOPLAN (leading role in awarding the respective research budget of the Federal Environmental Ministry)^[2] • organise research conferences for scientists (ca. 1 per year)^[3] • stakeholder coordination: <ul style="list-style-type: none"> • organize (smaller) stakeholder dialogues in various sectors (4-5 per year) e.g. on energy or the chemical industry, and national stakeholder conferences (1 per year), primarily targeted at businesses and municipalities^[3] • represent Germany in international networks (e.g. EEA) <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • serve as information platform: summarize, process and provide expert knowledge on climate impacts, including information about climate projections and climate models, adaptation in different sectors and regions, and national adaptation initiatives in selected European countries • conduct and assign exploratory research, e.g. vulnerability study for Germany^[3] • support the IPCC process for WG2: CC impacts, adaptation and vulnerability^[1] • national implementation of the process concerning the EU white book “Adaptation to climate change” by building a “German window” for the Clearing House Mechanism at the KOMPASS website^[1,3] • contribute to a “Baltic window” for the Clearing House Mechanism through Interreg BALTADAPT^[3] <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • develop (online) guidance, most notably Klimalotse (<i>see below</i>) and project data bases^[3] <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • central office for the formulation, coordination and implementation of the German National Adaptation Strategy (NAS): <ul style="list-style-type: none"> • provide conceptual advice to the BMU regarding formulation and implementation of adaptation policies (e.g. drafting of NAS and action plan)^[3] • coordinate, recommend and evaluate strategies, measures and instruments for the implementation of NAS, e.g. develop a concept for prioritising adaptation strategies and measures, develop an evaluation concept, including an indicator system for the German NAS^[3] • compile the progress report for the NAS (due in 2013), assess climate impacts and measures^[3] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • maintain website as central information hub • produce regular newsletter, presenting the latest findings and developments regarding climate impacts and adaptation • press information (until 2008)
Main tangible outputs	<ul style="list-style-type: none"> • website as a central information platform on adaptation in Germany: information on CC, impacts and adaptation options, including relevant studies • background papers, leaflets and press information summarizing the knowledge on CC, impacts and adaptation options in various sectors • Klimalotse: online guidance for local authorities and businesses to identify vulnerabilities and implement the first steps of adaptation^[1,3] • databases (project catalogue – “Klimafolgen und Anpassung”, “Tatenbank”) on implemented adaptation projects and measures on local, regional and national levels^[1]

	Target groups	<ul style="list-style-type: none"> • Federal Environment Ministry (BMU), in particular the „General, Fundamental, International and European Aspects of Water Management“ division^[3] • scientists (research projects, models and data, conferences) • other ministries and agencies • businesses • local authorities/administration • trade associations and environmental organizations • Länder (states) • general public^[1,3]
	Policy process	<ul style="list-style-type: none"> • awareness-raising, problem definition and agenda-setting: crucial role in establishing adaptation as a political issue at the national level • policy formulation: conceptual and technical input to NAS and action plan • policy implementation: NAS and Action Plan, EU White Book • policy evaluation: development of evaluation concepts (including indicator systems) and monitoring progress
Effectiveness	Saliency	<ul style="list-style-type: none"> • strong and regular exchange with the BMU (main client) on a daily basis, and good backing by BMU^[3] • strives for good relations to other ministries as well^[3] • advice BMU regarding formulation and implementation of actual policies, German National Adaptation Strategy (NAS) • stakeholder dialogues with varying target groups (federal and Länder (state) agencies, associations, businesses, local authorities) • highlights customer orientation^[3] • aims to meet different needs and expectations of the various target groups by providing differentiated services and products (stakeholder dialogues, project data bases, practical guidance versus climate models and data, scientific conferences)^[3] • provides regional models and scenarios in order to increase the applicability of the research for adaptation strategies and measures^[3] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • high degree of professional competence, recognized by ministries/ administrative actors^[3] • good relations with the scientific community, networking in different bodies, commissioning of research projects^[3] • use of different modelling approaches^[1] <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • high transparency concerning information on CC impacts, studies, models; provision of raw data • medium transparency concerning the organization and processes <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • stakeholder dialogues with varying target groups (<i>see saliency</i>) • actively seeks support (mainly from ministries, Länder) for the political process of developing the national adaptation strategy and adaptation plan^[3] <p><i>moderately important dimension</i></p>
Sources	Website	[1] http://www.anpassung.net/
	Literature	[2] Swart, R., R. Biesbroek, et al. (2009). <i>Europe Adapts to Climate Change. Comparing National Strategies</i> . Helsinki, Partnership for European Environmental Research: 280. [4] Wissenschaftsrat (2007). <i>Stellungnahme zum Umweltbundesamt (UBA)</i> , Dessau. Drs. 7700-07, Berlin: Wissenschaftsrat.
	Interview	[3] Interview with representative of KOMPASS

Danish Commission on Climate Change Policy (DCCCP, Denmark)		
General	General description	The Danish Commission on Climate Change Policy (DCCCP) was a targeted <i>ad hoc</i> advisory body to the Danish Government, operational between 2008 and 2010, on matters of climate and energy policy with the task to formulate a national policy proposal for the phasing out of fossil fuels by 2050. ^[1,2]
	Thematic focus	<ul style="list-style-type: none"> • focus on national mitigation policies (GHG reductions) • mainly in the energy sector • from an economic (feasibility) and global perspective
	Constitution	<ul style="list-style-type: none"> • appointed by the Danish Government in March 2008 with the work to culminate in the publication of a final report in September 2010 • resulting from Government Platform <i>Society of Opportunities</i> (November 2007) & based on Government energy policy proposal towards 2025, <i>A visionary Danish energy policy</i> • international background: EU 2050 goal of 60-80% reduction in GHGs; Denmark as host of the UNFCCC COP 15 in December 2009^[1]
	Objectives	<ul style="list-style-type: none"> • to elaborate a proposal on how the Government's long-term vision of making Denmark independent of fossil fuels can be realized in practice by developing proactive instruments for energy and CC policy that have a global, market-based perspective • to establish a solid basis for implementing a long-term policy on CC that can further reduce GHG emissions while maintaining economic growth and prosperity^[2]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • DCCCP (chaired by Prof. Katherine Richardson) comprised 10 independent scientists with expertise in the fields of climate, energy, agriculture, transportation and economics^[1] • work accomplished in 21 meetings; plus stakeholder consultations/workshops in 10 Danish cities to engage interest groups from industry, NGOs and politics in process^[1,6,7] • logistical and scientific (drafting) assistance by independent secretariat (4 experts) located at Danish Energy Agency of Ministry of Climate and Energy • on-demand input from Energy Agency (particularly during finalization phase), the Ministry of Economic and Business Affairs, the Ministry of the Environment, the Ministry of Finance and beyond^[1,6] • specific analyses outsourced to commissioned consultancy^[2,6] • support by professional communication bureau and professional lay-outer during report finalization and release phase^[2,6]
	Funding	<p>Fully public:</p> <ul style="list-style-type: none"> • budget of ca. € 1.5 M for 2 years, covered by Energy Agency^[6] <ul style="list-style-type: none"> • mainly made up of expenses for members' salaries (esp. chair), external consultancies, technical support and workshops • secretariat staff and external ministerial advice as <i>in-kind</i> contributions covered by the Energy Agency (mainly) and involved ministries
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • formal assessment of the Commission regarding its "results, composition and any future work tasks" was envisaged in the ToRs,^[2] but did not take place^[6] • „internal," self-responsible review approach (e.g. cross-revision by different authors from DCCCP, the secretariat or external experts)^[6]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> • thematic focus and specific tasks stipulated by Government • concrete ToRs with questions to be answered in report, which should contain comparative analyses, assessments and proposals^[2]
	Main KB activities (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • consult with stakeholders in local workshops <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • prepare DCCCP report with energy policy analysis and assessment and develop 40 operational policy recommendations based on input from 12 DCCCP meetings, sub-contracted consultancies as well as a consultation with stakeholders in local workshops

		<p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • 10 single experts, acting in their individual capacity, contributed to work of DCCCP <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • professional report “launching”: press conference and interviews to stimulate broad public debate on future CC policy, energy consumption and supply • very active (classical) media relations (press articles, interviews with DCCCP members) in pre- and post-launching phase, partly ongoing
	Main tangible outputs	<ul style="list-style-type: none"> • report “Green Energy – the road to a Danish Energy System without fossil fuels” with executive summary and detailed background report presented on 28 Sep 2010^[3] • integrated website hosted by Energy Agency with major documents and background information (e.g. interviews with members)
	Target groups	<ul style="list-style-type: none"> • primary: Danish Government (esp. Ministry of Climate, Energy and Building) & Parliament • cities/local decision makers • energy sector/industry • NGOs • public (through media) • international (country) partners (e.g. EU/UNFCCC)
	Policy process	<ul style="list-style-type: none"> • report with policy analysis, evaluation as well as concrete recommendations on how fossil fuel dependency could be eliminated by 2050 was intended to provide direct input to parallel policy <i>formulation</i> process
Effectiveness	Saliency	<ul style="list-style-type: none"> • clear assignment from the Government with focus on energy and economics • spatial and topical vicinity to political process: DCCCP situated within Energy Agency, which at the same time was heavily engaged in drafting energy policy^[6,7] • feedback on practicability in targeted stakeholder dialogues with key actors in energy sector, NGOs and municipal politics^[6] • Danish government’s Energy Strategy “Our future energy” in February 2011 built significantly on DCCCP’s suggestions & serves as proposal for energy agreements reached in Parliament in March 2012^[6] • moreover: usability for other countries with report made available in Danish, English and Chinese and actual uptake of commission model by South Korea^[1,6] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • scientific expertise and capacity of appointed members, secretariat & sub-contractors^[1,2] • report draws on acknowledged scientific economic & energy models <ul style="list-style-type: none"> • background information on underlying assumptions (models & scenarios), use of external sources of information (e.g. workshops & consultancies), and the scientific basis of recommendations is made explicit in (Danish) full version^[5] & on webpage (“Baggrundsrapporter”)^[1,6] • despite being located at Energy Agency, work of commission and secretariat <i>de facto</i> independent from Energy Agency & Ministry^[6] <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • information on process (consultation processes, background information with details on methodologies etc.) available online (at least in Danish) • outputs, e.g. report (summary) easily accessible (also in English and Chinese)^[1] • professional external PR and design support and media engagement for better launching of results (facilitation role of secretariat)^[6]

		<p>Stakeholder participation:</p> <ul style="list-style-type: none"> • consultation process with relevant stakeholders (energy sector, NGOs, municipal policy makers) in 10 cities (in 2009) • perceived as exceptionally effective in generating stakeholder interest & support for energy policy transition, esp. energy sector & media (which reported strongly despite low interest in climate issues after UNFCCC COP15 in Copenhagen)^[1,6,7] • only few perceive final report & recommendations as not being representative of (green) citizens' views or as being biased towards economic, technical solutions (biofuels) & the economic sector and industries^[4,7] • report gained high level of acceptance amongst Government & Parliament (all parties); unprecedented parliamentary majority for energy agreements in 2012, which were substantially based on DCCCP recommendations^[1,6] <p><i>moderately important dimension</i></p>
Sources	Website	[1] http://www.ens.dk/en-US/policy/danish-climate-and-energy-policy/danishclimatecommission/Sider/Forside.aspx
	Literature	<p>[2] DCCCP (2008). <i>Terms of Reference</i>, URL: http://www.ens.dk/en-US/policy/danish-climate-and-energy-policy/danishclimatecommission/aboutthecommission/termsofreference/Sider/Forside.aspx</p> <p>[3] DCCCP (2010). <i>Green Energy – the road to a Danish energy system without fossil fuels. Final report</i>. URL: http://www.ens.dk/en-US/policy/danish-climate-and-energy-policy/danishclimatecommission/greenenergy/Documents/green%20energy%20GB%20screen%201page%20v2.pdf</p> <p>[4] Larsen, K.A.; Kajberg, L. (2010). <i>Klimakommissionen negligerer transportområdet</i>, URL: http://www.information.dk/247510</p> <p>[5] DCCCP (2010). <i>Dokumentationsdelen til Klimakommissionens samlede rapport: GRØN ENERGI - vejen mod et dansk energisystem uden fossile rændsler</i>. [full version] URL: http://www.ens.dk/da-DK/Politik/Dansk-klima-og-energi-politik/klimakommissionen/klimakommissionensrapport/Documents/DOK%20MASTER%20FINAL%20u%20bilag%205%20okt%2010%20E-opt.pdf</p>
	Interviews	<p>[6] Interview with representative</p> <p>[7] Interview with independent key informant</p>

Delta Programme (The Netherlands)		
General	General description	The Delta Programme is a national programme in which the national government, provinces, water boards and municipalities together with social organizations, knowledge institutes and the business community develop policy options and implement measures to protect the Netherlands against flooding and to ensure a sufficient supply of freshwater ^[1,2] . In its current first phase, the Delta Programme focuses on the joint development of knowledge to prepare for decision-making. ^[2,3]
	Thematic focus	<ul style="list-style-type: none"> • adaptation to CC, with a focus on flood protection and freshwater supply and the integration of these issues in spatial planning • aims at incorporating natural, economic and social dimensions^[5] • combining very long-term, strategic focus (Delta decisions) with current implementation programs (short-term, operational)
	Constitution	<ul style="list-style-type: none"> • in 2007, the government of the Netherlands set up the Delta Committee to give advice on flood protection and flood risk management for the next century^[1] • following the Committee's recommendation, a <i>Delta Act</i> was passed and a <i>Delta Commissioner</i>, who would be in charge of the Delta programme, was appointed • with the Delta Act, a <i>Delta Fund</i> was also set up^[1] • the Delta Programme must be drawn up annually and presented to the Parliament
	Objectives	<ul style="list-style-type: none"> • on the basis of joint knowledge production, the Delta Programme aims at developing strategies and proposals for the so-called Delta Decisions^[3] • the Delta Decisions aim at protecting the Netherlands from flooding and to ensure adequate supplies of freshwater for generations ahead^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • divided into 9 sub-programs (3 national, 6 regional) • work is undertaken in 8 MIRT studies (Multi-year Programme for Infrastructure, Spatial Planning and Transport) <p>Governance structure – program-wide:</p> <ul style="list-style-type: none"> • directed by the Delta Commissioner, who is appointed for 7 years by the Cabinet; position currently held by: Wim Kuijken • Steering Group: chaired by the Delta Commissioner; comprises representatives of sub-programs, water boards, provinces and municipalities and the relevant ministries^[2] • National Water Consultation Committee: coordinated and chaired by the Secretary of the Ministry of Infrastructure and Environment (IenM)^[2] • Ministerial Steering Group: chaired by the Prime Minister and coordinated by the IenM • Group of Directors: weekly meeting of directors of the sub-programs and the Delta Commissioner <p>Governance structure – sub-programs:</p> <ul style="list-style-type: none"> • Administrative Umbrella Consultations (in 3 national sub-programs) and <i>Steering Committees</i> (in 6 regional sub-programs) with national government, provinces, water boards and municipalities and the director of the sub-program • multi-stakeholder Working Groups which conduct analysis and prepare decisions • Reflection Groups mainly consisting of scientists <p>Knowledge integration:</p> <ul style="list-style-type: none"> • agreements with most important knowledge institutions (e.g. Deltares, Alterra, Environmental Assessment Agency) and programs (e.g. "Knowledge for Climate")^[4]
	Funding	<ul style="list-style-type: none"> • ca. € 1.5 M p.a. per sub-program for joint knowledge production and preparation of decisions • costs borne <i>by</i> the commissioning ministries (Infrastructure & Environment; Economic Affairs, Agriculture & Innovation)^[3]

	Accountability, reporting and evaluation	<ul style="list-style-type: none"> in 2011, external evaluation of Delta Programme's organization and approach^[3] annual progress report on the work on the delta region is adopted in the Delta Programme, along with the national budget^[3]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> overall focus initially set by the Delta Committee specific priorities set annually by the sub-programs and Delta Commissioner
	Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> establish <i>knowledge agendas</i> for the sub-programs <ul style="list-style-type: none"> formulate knowledge questions as a basis for subsequent studies^[2,3] discuss interconnected (for more than one sub-program) knowledge questions every 2 to 3 months^[5] embedded into the <i>ad hoc</i> commissioning of research studies, the fine-tuning of major knowledge development programs (e.g. Knowledge for Climate (see separate profile), Delta-proof) and the programming of strategic delta studies^[3,4] <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> coordinate research and collaboration with knowledge institutions and programs in line with the questions identified in the knowledge agendas^[3,5] organize conferences: annual <i>National Delta Conferences</i>, which bring together the business community, civil society organizations and scientific circle; <i>Knowledge Conference</i> to reflect on the Delta programme from a scientific, international and practical perspective^[1,3] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> process and translate existing knowledge from knowledge institutions, universities, and ongoing programs for the sub-programs^[3] analyze, develop and interpret information in visualized form (e.g. GIS maps, images) for various target groups^[3] develop scenarios for sub-programs^[2,3] conduct economic analyses, incl. studies on the impact of different discount rates ^[3] <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> develop an evaluation system that will enable comparison of all possible solution strategies^[3] develop a Delta model, i.e. a toolbox for established decisions supporting the preparation and implementation of the Delta Programme^[3] <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> develop and assess strategies and Delta decisions in several phases: possible strategies (2013) → preferential strategies (2014) → proposal for Delta Decisions (2015) to be embedded into the National Water Plan and at different levels: Delta Programme as a whole – area-based sub-programs – project level^[2] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> public relations, media coverage
	Main tangible outputs	<ul style="list-style-type: none"> interim: annual Delta Programme (situation report) final: in 2014/ 2015, Proposal for Delta Decisions submitted by the Delta Commissioner to the Cabinet to be embedded in the next National Water Plan
	Target groups	<ul style="list-style-type: none"> responsible ministries and parliament regional and municipal decision makers stakeholders (e.g. businesses, associations) in the regions and at local level
	Policy process	<ul style="list-style-type: none"> problem identification (earlier phases) and policy formulation (later phases) overall focus: very strategic and long-term

Effectiveness	Saliency	<ul style="list-style-type: none"> • identification of, and continuous reflection on, knowledge needs/issues • consultation with stakeholders at local and regional level to identify their rationales and perspectives (“what is important for them”)^[5] • based on the recommendations of the Delta Commission <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • consistent use of data, assumptions and starting points, ensured reproducibility of choices made^[2] • efforts to ensure consistency and reproducibility via a uniform approach using a set of scenarios; an evaluation system for the comparison of all possible solution strategies; a Delta model to carry out (some) of the underlying calculations^[2] • close cooperation with knowledge institutions and programs • reflection groups as “checks on the scientific level”^[5] • joint fact finding as method for improving the quality of the solutions^[2] <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • annual progress report • information concerning overall structure and main products accessible • information on the concrete work of the sub-programs less transparent <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • stakeholder workshops at regional and local levels • joint fact finding as method for increasing the support base for the solutions^[2] <p><i>moderately important dimension</i></p>
Sources	Website	[1] http://www.deltacommissaris.nl/english/
	Literature	<p>[2] Ministry of Transport Public Works and Water Management, Ministry of Agriculture Nature and Food Quality, et al. (2010). <i>Delta Programme 2011: Working on the Delta</i>, Ministry of Transport, Public Works and Water Management, Ministry of Agriculture, Nature and Food Quality and Ministry of Housing, Spatial Planning and the Environment.</p> <p>[3] Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, Agriculture and Innovation (2011). <i>Delta Programme 2012: Working on the Delta</i>, Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, Agriculture and Innovation.</p> <p>[4] Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, Agriculture and Innovation (2011). <i>Delta Programme 2012: Working on the Delta</i>. Appendix, Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, Agriculture and Innovation.</p>
	Interviews	[5] 9 interviews including representatives of the staff of the Delta commissioner, directors of sub-programmes, representatives of organizations and authorities involved in the sub-programme Rhine –Estuary – Drechtsteden

ecologic Institute (Germany, EU, US, international)		
General	General description	ecologic Institute is an international think tank for applied environmental research, policy analysis and consultancy with a primary focus on European and North American (international) environmental policy and sustainable development.
	Thematic focus	<ul style="list-style-type: none"> • a broad range of environmental & sustainable development issues • CC mitigation and adaptation • multi-disciplinary perspective (natural, social/economic) including cross-sectoral links with adjacent policy fields • major focus is on international (transatlantic, US and European) policy, also at the national and local (incl. company) level • from short-term pressing problems to long-term strategic considerations
	Constitution	<ul style="list-style-type: none"> • founded in 1995 in Berlin (Germany), in parallel to dissolution of Bonn office of Institute for European Environmental Policy (IEEP), a network of European environmental research institutes, of which Ecologic Institute is a member • US office (Washington DC) opened in 2008 • chartered as independent, not-for-profit private research institute acting in public interest; US office: legally and financially independent IRS 501(c)(3) public charity
	Objectives	<ul style="list-style-type: none"> • to conduct and promote “scientific research in the areas of nature conservation and environmental protection, ecologically sustainable resource management and environmentally friendly economic, political and social development [...] as well as the promotion of public and professional education”^[6] • <i>ecologic Institute US</i>: “to promote transatlantic understanding of environmental policies, sustainable economic and political development, and environmental protection”^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • 2 headquarters in Berlin & Washington DC; each with independent constitutional set-up <ul style="list-style-type: none"> • <i>ecologic Institute EU</i>: staff of ca. 120; Director and CEO: R. Andreas Kraemer <ul style="list-style-type: none"> • 2 major working divisions: <i>ecologic Legal</i> (staff 16): specialized lawyers, focused on advice to decision makers on international, EU and domestic environmental law and governance; <i>ecologic Events</i> (staff 9): engaged in organization of events for dissemination, discussion, and communication^[1,5] • legally separate, but fully-owned subsidiaries: <i>ecologic Institute</i>, Vienna, Austria, and <i>Relaw</i>, Center for Renewable Energy Law in Berlin • ecologic office in Berlin also maintains EU Office in Brussels • General Assembly: meeting of capital shareholders convened by the managing directors that decides upon allocation of possible surplus^[6] • <i>ecologic Institute US</i>: total staff of 6 (incl. 1 in San Mateo Office) plus 6 policy advisors and associates; President: Michael Mehling^[1,5] • Advisory Board
	Funding	<ul style="list-style-type: none"> • <i>ecologic EU</i>: p.a. revenues € 3.8 M in 2011 (€ 4.5 M in 2009); <i>ecologic US</i>: € 258,000^[1,5] • core income: project-based e.g. research partnerships (under EU FP7), consultancies <ul style="list-style-type: none"> • esp. from EU institutions and German ministries and agencies • 34% from EC, European Parliament, EEA, Committee of the Regions • 47% German Ministry of the Environment (BMU), of Education (BMBF), Foreign Office & environmental agency (UBA) • moreover: sponsorships and donations as well as the joint Konrad von Moltke Fund for granting research fellowships^[1,5]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • as an independent consultancy, no special accountability mechanisms in place • advice to German agencies & ministries accountable to Federal Court of Auditors • external performance reviews (e.g. <i>ecologic Institute</i> among Top 10 Environmental Think Tanks in 2010 ranking from the University of Pennsylvania) • annual financial statement audited by certified auditors^[1]

Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> • corporate object of research set out (in a more general way) in the Statute^[6] • specific research foci mostly driven by client demands (e.g. consultancy contracts) or research program lines (e.g. EU FPs) • (joint) framework agreements (e.g. within IEEP) with European Parliament (Environment Committee and Framework Contract Development Policy), EEA, and EC (Directorate-General for Research and Innovation (DG))
	Main KB activities (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • coordinate large-scale international research collaborations with industry, academia and other organizations • (co-)organize and (co-)host events and platforms for informational exchange between scientists, policy makers, business, citizens and the media <ul style="list-style-type: none"> • e.g. Transatlantic Program best practices exchange between actors in the EU Member States and counterparts in the US and Canada, e.g. on CC and renewables • dinner dialogues, transatlantic lunch, riverside chat, climate talk, e.g. Transatlantic Media Dialogues • visitor programs for international knowledge exchange with international scientists and policy makers • e-platform concept for Convention on Migratory Species' National Focal Points <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • translate scientific knowledge into use-tailored formats <ul style="list-style-type: none"> • e.g. policy briefing notes to the European Parliament's Environment Committee on European Commission proposals or state of implementation of existing legislation; books, studies, lectures ^[1] <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • (jointly) conduct technical training for decision makers <ul style="list-style-type: none"> • e.g. 2011 ICAP Training Course on Emissions Trading for decision makers in emerging economies & developing countries • develop handbooks, manuals and tools for decision makers, e.g.: <ul style="list-style-type: none"> • guidelines for environmental policy (adaptation) strategies,^[1-4] handbook for KLIMZUG (see separate profile) Regional Adaptation Strategies for German Baltic Sea Coast (RADOST)^[1,2,5] • guidance on how to implement legal instruments or regulatory frameworks • in EU FP7 SmartSOIL project, decision support tool (DST) for farmers, advisors & policy makers for cost-effective, climate sensitive farming practices <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • prepare environmental policy assessments (reviews) <ul style="list-style-type: none"> • e.g. Climate Change, Hydro-Conflicts and Human Security (CLICO), a security-focused analysis of, and recommendations for, international, national and regional policies on hydro-climatic hazards and adaptation • develop proposals for environmental policies/legislation on emerging issues <ul style="list-style-type: none"> • e.g. under permanent framework agreements with the European Parliament, EEA and the EC • evaluate environmental policy <ul style="list-style-type: none"> • e.g. monitor EU progress on the Resource Strategy (decoupling) <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • expertise sought by committees (e.g. EP), Directorate-Generals (EC), EU governments and other countries, and EEA • individual researchers serve as scientific advisors in standing scientific committees and on boards <ul style="list-style-type: none"> • e.g. German Enterprise Initiative Energy Efficiency (DENEFF)

		<p>KBA7: Public outreach</p> <ul style="list-style-type: none"> public websites (with publication database) and newsletter as major medium for dissemination of knowledge to public audiences in use-tailored formats
	Main tangible outputs	<ul style="list-style-type: none"> working & discussion papers, meta-studies, technical and legal reports, policy evaluations, policy briefs (“ecologic briefs”), newsletter and (online) press releases, etc.^[1,5] (IT-based) decision support products: handbooks & manuals (regulatory frameworks), SmartSOIL tool for farmers, e-community platform for national focal points^[1]
	Target groups	<ul style="list-style-type: none"> public and private decision makers at international (EU), national, sub-national and local level, especially: <ul style="list-style-type: none"> (EU) parliament, governments and their administrations on federal, state and local levels industry associations, trade unions, governmental and non-governmental organizations, environmental protection associations as well as consumer protection agencies scientists media and general public^[1,5]
	Policy process	<ul style="list-style-type: none"> cover most stages of the policy cycle (esp. agenda-setting, formulation, and implementation) esp. activities by ecologic Legal and RELAW Center and within the EU framework agreements of high importance to the policy formulation and evaluation stages
Effectiveness	Saliency	<ul style="list-style-type: none"> strives for “policy-relevant research” that seeks to “provide practical ways forward for policymakers”^[1] client-oriented approach: market-based, customer-tailored activities (consultancy contracts), applied science with useful output formats for, e.g. policy makers^[1] several joint projects, e.g. SmartSoil or KLIMZUG RADOST involve relevant stakeholders and are aligned to their needs^[2,7] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> science-based approach, partly drawing on expertise from other academic institutions and universities high research quality to be assured through peer review, expert workshops, scientific advisory boards and stakeholder involvement^[5] committed to the German Scientific Association’s (DFG’s) recommendations for good scientific practice in research and has adopted its own corresponding guidelines for scientific practice recognized by the DFG <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> free online access to information on ongoing activities, mostly in English (plus other working languages) accessible information on organizational structure, such as the identity of sponsors or clients, staff involved, project duration, etc.^[1] information on overall governance structure (e.g. rules of procedure) partly scattered or missing <p>Stakeholder participation:</p> <ul style="list-style-type: none"> project-dependent approach e.g. RADOST project (<i>see saliency</i>) own, recognized “events” division for active dialogue and exchange of views with and between stakeholders^[1] <p><i>moderately important dimension</i></p>

Sources	Websites	[1] http://www.ecologic.eu
		[2] http://klimzug-radost.de
	Literature	[3] Martins, A. and T. Mata (2012). "Webwatch." In <i>Clean Technologies and Environmental Policy</i> 14(3): 377-379.
		[4] Ribeiro, M. et al. (2009). <i>Design of guidelines for the elaboration of Regional Climate Change Adaptations Strategies</i> . Study for European Commission – DG Environment - Tender DG ENV. G.1/ETU/2008/0093r. Ecologic Institute, Vienna.
		[5] Ecologic Institute (2010). <i>Milestone: 15 Years</i> . URL: http://ecologic.eu/download/briefe/2010/Ecologic_15_Years.pdf
		[6] Statutes Ecologic Institute (as of 16 December 2008), URL: http://ecologic.de/download/verschiedenes/About_us_neu/Statutes_EN.pdf
		[7] ecologic Institut (2012). <i>Projekthandbuch 2011</i> . URL: http://www.ecologic.eu/files/attachments/Publications/2011/ecologic_projekthandbuch_2011.pdf

Ethics Commission on a “Safe Energy Supply” (Germany)		
General	General description	The Ethics Commission on a “Safe Energy Supply” is a targeted <i>ad hoc</i> scientific advisory body assessing the potential risks of nuclear energy from a social and ethical perspective and developing options for a medium-term energy transition
	Thematic focus	<ul style="list-style-type: none"> national energy policy, specifically energy supply for Germany (nuclear and/or alternative) from an ethical and political perspective prospective focus (10-year strategy) with operational policy recommendations and steps
	Constitution	<ul style="list-style-type: none"> appointed by Federal Chancellor Dr. Angela Merkel fixed term of assignment: 4th April to 28th May 2011 driven by need to rethink national energy policies in light of the nuclear accident in Fukushima (Japan) complementing technical safety review by the standing Commission on Nuclear Safety (RSK) advising the Ministry of the Environment
	Objectives	<ul style="list-style-type: none"> to assess nuclear energy and its potential technical risks from an ethical and societal (i.e. value) perspective to prepare an energy strategy that reflects a societal consensus regarding a potential phase-out of nuclear energy to develop options and suggestions (guidelines) for the energy transition towards renewables in the coming decades^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> members: 17 experts from politics, churches, natural and social sciences, industry and associations chairs: former Minister of the Environment and former head of UNEP, Dr. Klaus Töpfer, and President of the German Scientific Association (DFG), Prof. Matthias Kleiner coordination: content-wise: managing director of German Council for Sustainable Development, Dr. Bachmann; organizational: Director of the DFG, Berlin, Dr. Ina Sauer^[1,8] Steering Group: made up of coordinators, chairs and 3 committee members; in charge of planning meetings, further processing and completion of draft texts for report^[8] 2-headed Secretariat in the Federal Chancellery; Director: head of division for churches and religious groups (Dr. Rudolf Teuwsen), administrative & logistical support, esp. with regard to public relations (e.g. public hearing)^[1]
	Funding	<ul style="list-style-type: none"> no figures available on costs for honoraria, external studies, public consultation event (organized by consultancy company) etc. funding source: public (esp. federal Chancellery)^[8] in-kind contributions: <ul style="list-style-type: none"> committee members' expert input secretariat service, report drafting and coordination support: by Chancellery, German Council for Sustainable Development, and German Scientific Association
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> no formal evaluation or assessment process „internal” cross-revision by experienced (academic) authors (and their staff) and by Direction team^[8] discussion of report with stakeholders from politics, business and society^[1, 2]
Knowledge brokerage	Definition of thematic focus	<ul style="list-style-type: none"> “crisis-driven” mandate from Chancellor^[1,3]
	Main KB activities (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> coordinate public hearing with 28 representatives from energy sector, natural, engineering and social sciences, local authorities, workforce committees, tenant association, NGOs and citizens for informational exchange (of views) and discussion organize public release event on 30 May 2011 with > 200 guests from business, politics, and society for informational exchange with members on results^[2]

	<p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> develop report assessing nuclear energy policy and drawing scenarios for a prospective energy transition in Germany: <ul style="list-style-type: none"> proposes 10-year policy strategy & suggests steps to transform the existing (nuclear) energy policy e.g. to establish a National Forum Energy Transition & Parliamentary Representative, to conduct law amendments etc.^[3,2] <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> commission members attended party hearings to inform political actors on committee work and outcomes^[8] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> esp. during assessment phase high media coverage and very active outreach to inform public and disseminate results: <ul style="list-style-type: none"> discussion and presentation in and with media, e.g. interviews (in TV/talk shows, radio and print media)^[1,8] advertisement at public events, (press) conferences (live online & TV) broadcasting of public hearing with stakeholders & of public release event^[2]
Main tangible outputs	<ul style="list-style-type: none"> final report: “Germany’s energy transition – A collective project for the future” documentation and outreach products: press releases, articles & interviews, videos etc.
Target groups	<ul style="list-style-type: none"> direct clients: federal policy makers (Chancellor and ministers) various societal stakeholders from different economic and social sectors (e.g. energy, churches, ENGOs) media and general public
Policy process	<ul style="list-style-type: none"> policy evaluation: current nuclear energy policy from an ethical perspective policy formulation: the commission proposes a concrete 10-year policy strategy (Energy Transition)^[3,2]
Effectiveness	<p>Saliency</p> <ul style="list-style-type: none"> “on order” from policy makers with targeted mandate, clear questions, call for policy-relevant recommendations^[1,3] participation of government representative (Chancellor & Minister of the Environment) in first meeting <p><i>important dimension</i></p>
	<p>Credibility</p> <ul style="list-style-type: none"> work & results based on scientific knowledge: through members with background in research or links to research organization (external input to chapters) & researcher contribution in public hearings^[8,7] but, (technical) scientific credibility rather through parallel Commission on Nuclear Safety RSK <p><i>moderately important dimension</i></p>
	<p>Legitimacy</p> <p>Transparency:</p> <ul style="list-style-type: none"> broadcasted hearings, final result and information on process accessible online, e.g. documentation of hearing, protocols and videos^[1,3,2] limited access to information about the internal process (drafting procedures, internal meetings, responsibilities, funding sources etc.) <p>Stakeholder participation:</p> <ul style="list-style-type: none"> strong consensus orientation members from politics, associations, churches, social/natural science; few from environmental, energy and political sector^[4,5,6,8] with balanced representation of proponents and opponents of nuclear power^[8] public hearing: balanced consultation with 28 representatives from science, industry and society^[1,8] <p><i>important dimension</i></p>

Sources	Websites	[1] http://www.bundesregierung.de/Content/EN/Artikel/2011/04/2011-04-04-ethik-kommission_en.html?nn=447030
		[2] www.ifok.de
	Literature	[3] Ethics Commission for a Safe Energy Supply (2011). <i>Germany's energy transition – A collective project for the future</i> , Berlin, 30th May 2011; URL (last accessed June 2012): http://www.bundesregierung.de/Content/DE/Anlagen/2011/05/2011-05-30-abschlussbericht-ethikkommission_en.pdf?__blob=publicationFile&v=2
		[4] Frankfurter Allgemeine Zeitung, 04 April 2011, Ethik-Kommission: Eine „Energiewende mit Augenmaß“ http://m.faz.net/aktuell/wirtschaft/wirtschaftspolitik/energiepolitik/ethik-kommission-eine-energiewende-mit-augenmass-17293.html
		[5] Sueddeutsche Zeitung, 28 April 2011, "Rat der Weisen" zum Atomausstieg Töpfer sucht das Gegengift" http://www.sueddeutsche.de/politik/rat-der-weisen-zum-atomausstieg-toepfer-sucht-das-gegengift-1.1090364
		[6] Financial Times, 04 April 2011: Debatte um Atomausstieg Union und FDP setzen eigene Arbeitsgruppe zur Energiewende ein. http://www.ftd.de/politik/deutschland/debatte-um-atomausstieg-union-und-fdp-setzen-eigene-arbeitsgruppe-zur-energiewende-ein/60034745.html
		[7] DFG (2011) „Ohne Forschung keine Energiewende“. Interview with chair Mathias Kleiner. In: Forschung: Magazin der Deutschen Forschungsgemeinschaft, 2/2011. URL: http://www.dfg.de/download/pdf/dfg_magazin/wissenschaft_oeffentlichkeit/forschung_magazin/2011/forschung_2011_2.pdf
	Interview	[8] Interview with representative

German Advisory Council on Global Change (WBGU, Germany)		
General	General description	The German Advisory Council on Global Change (WBGU) is an independent scientific advisory council to the German Federal Government. It periodically assesses global (environmental) change and its consequences and helps to form an opinion on these issues in all responsible government institutions and the broader public. ^[1]
	Thematic focus	<ul style="list-style-type: none"> • global environment and development problems as relevant for Germany, but also beyond • CC (mitigation and adaptation) is prominent among several acute topics in the field of global environmental change • natural and anthropogenic causes of environmental degradation (e.g. industrialization, agriculture, overpopulation, urbanization) with particular focus on complex interactions and feedback effects^[1] • strategic, long-term perspective^[6]
	Constitution	set up by the German federal government as an independent, scientific advisory body in 1992 in the run-up to the Rio Earth Summit <i>qua</i> joint decree
	Objectives	<ul style="list-style-type: none"> • to provide science-based policy (and societal) advice on global change for sustainable development • particularly, to identify precautionary options through which grave and irreversible damage to human societies and natural systems can be avoided^[2]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • council: <ul style="list-style-type: none"> • 9 members appointed <i>in personam</i> for 4-year terms by the Federal Cabinet (re-election possible), nominated by the Ministries of Education and Research (BMBF) and the Environment, Nature Conservation and Nuclear Safety (BMU) • current 5th term (ended in February 2013) • council meets 11 times per year for 2 days • support structures: <ul style="list-style-type: none"> • 8 scientific staff members directly affiliated with single members • secretariat of 11 staff members (thereof 6 scientists); Secretary General: Dr. Inge Paulini; administratively hosted by the Alfred Wegener Institute for Polar and Marine Research, Berlin; provides scientific (background research, preparation & drafting of chapters), logistic (editing, coordination of external expertise or events) and PR (media relations & release events) support^[5] • inter-ministerial committee of the Federal Government comprising representatives of all ministries and of the Federal Chancellery providing support and supervision
	Funding	<ul style="list-style-type: none"> • total budget: ca. € 1.7 M p.a. • public funding (equal shares): BMBF and BMU
	Accountability, monitoring and evaluation	<ul style="list-style-type: none"> • no special reporting requirements or evaluations • WBGU's reports are not formally reviewed: <ul style="list-style-type: none"> • chapter-wise internal (& external) "cross-commenting"^[5,6] • Government may comment on ongoing flagship report topic (§2.2 of Founding Decree)^[1]; feedback on report contents in inter-ministerial committee meetings^[6] • formally accountable to Alfred Wegener Institute; as publicly funded institution infrequently evaluated by German Federal Court of Auditors^[6]
Knowl. brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> • focal themes of flagship (and some special) reports self-initiated (decided upon during council meetings) • in regular meetings (ca. 2/year) with inter-ministerial committee for general consultation on research interests (feedback on past and input for future reports)^[6] • German Government may commission special reports and policy papers on topics of current interest (e.g. 1998, 2009)^[1]

<p>Main KB activities (core activities in bold)</p>	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> • identify 'hot' global change topics (by reviewing latest national and international research findings) and formulate (research) recommendations on persisting gaps for (science) policy makers^[1,6] <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • coordinate scientists, policy advisors and decision makers: <ul style="list-style-type: none"> • co-organize symposia and dialogic conferences with actors from science, policy and economy, for exchange on different WBGU (report) topics (e.g. "Great Transformation Towards a Low Carbon Society", 2011; „Towards Low-Carbon Prosperity“, 2012) <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • review research and compile reports on key topics to inform the government, public and international policy arenas, (may be commissioned by the government to produce special reports on demand)^[1] • translate information into readable use-tailored products (esp. done by secretariat)^[1,6] <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • conduct workshops, seminars or lectures for political, business and societal actors concerned with global change (security) issues, e.g. World Bank, UN General Secretariat, or officers (block course in officer training at the German Development Institute (DIE) Leadership Academy (Führungsakademie), Hamburg)^[6] <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • monitor and assess national and especially international policies for sustainable development, and on this basis, develop recommendations for action and research <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • single council members are invited to hearings to give direct advice on certain topics under discussion, e.g. in ministries or parliament^[6] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • reports are formally submitted to the government, parliamentary evenings, parliamentary committees^[1] • report topics are presented & discussed in Germany and beyond with various target groups to raise political & public awareness & to heighten media profile of global change issues: <ul style="list-style-type: none"> • e-learning lecture series jointly developed with University of Bremen on „Transformation“ for education at university level • e.g. "report release" presentations to politicians (e.g. BMU, BMBF, department of foreign affairs, UNFCCC side events), to scientists (e.g. at conferences) or to (development) banks (e.g. KfW)^[6] • press conferences, lectures at universities, online release^[1,6] • secretariat also supports public outreach and educational activities of ministries on WBGU topics
<p>Main outputs</p>	<ul style="list-style-type: none"> • flagship reports (13 reports between 1993 and 2011) on self-chosen topics which are considered of the highest importance by the members of the council, published every 2 years (initially: annually; now: alternately with German Advisory Council on the Environment (SRU)) • special reports (8 between 1995 and 2009) with summary for decision makers, address current topics of global change; published as need arises (e.g. specific UNFCCC negotiations), partly commissioned by the federal government • policy papers (6 papers between 2001 and 2010): short texts of ca. 20 pages focusing on urgent issues requiring policy action; usually produced in preparation for key conferences • factsheets (since 2009) are 4-page abstracts of selected issues addressed in reports; a supplementary 'comic' format for laypersons is planned for 2013 • documentation of Symposia (video or texts)

	<p>Target groups</p>	<ul style="list-style-type: none"> • policy makers: international and national governments (reports esp. target BMU and BMBF) and their administration/agencies^[6], regional administration; local authorities • students, pupils • public • media
	<p>Policy processes</p>	<ul style="list-style-type: none"> • WBGU mainly targets strategic-systemic (global) issues relevant to the agenda-setting stage (“early warning”) • if directly related to its expertise, WBGU also gives direct feedback on or recommendations for actual (science) policies (policy formulation & evaluation)^[1,4,6]
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Effectiveness</p>	<p>Saliency</p>	<ul style="list-style-type: none"> • institutional ties with policy-making arena <ul style="list-style-type: none"> • <i>qua</i> mandate advisory body to the Government, which also appoints its members • Government may commission special studies/reports and comment on reports (work in progress feedback, e.g. in inter-ministerial committee) • active informational exchange with ministries (esp. BMU & BMBF, e.g. inter-ministerial meetings with representatives from several policy fields)^[5,6] • use of tailored products (reports and beyond) builds direct links to ongoing policy processes: “Through its reports and policy papers, it has made policy recommendations to the German government on numerous occasions.”^[1] <ul style="list-style-type: none"> • e.g. special reports in the 1990s in direct lead-up to first COPs (Kyoto) cover actual CC policy issues e.g. political (GHG reduction) strategies^[3] <p><i>important dimension</i></p>
	<p>Credibility</p>	<ul style="list-style-type: none"> • reports are based on latest research findings or draw on external expertise (consultancies) of specialists in other research institutes where internal expertise is absent <ul style="list-style-type: none"> • working group leaders for single chapters are chosen based on their proven expertise in the respective sub-topic^[6] • direct science support staff and secretariat, with relevant academic backgrounds^[6], who conduct report drafting work • cross-revision of report sections by different (esp. lead) authors from WBGU, the secretariat or – if necessary – external experts • formal independence from political instructions^[6] <ul style="list-style-type: none"> • administratively hosted by independent research institution • § 4 of Founding Decree requires that members are independent from politics, business or any other non-scientific interest^[1] • <i>de facto</i> also “free mandate”: e.g. autonomous choice of focal theme of annual flagship reports, unconditioned financial compensation, support staff from independent research institute^[1,4,5,6] • strategic focus of topic increases distance from day-to-day politics^[6] • points out that WBGU uses its independence to draw also politically provocative conclusions even in commissioned reports, e.g. on bio-energy^[3,6] <p><i>moderately important dimension</i></p>
	<p>Legitimacy</p>	<p>Transparency:</p> <ul style="list-style-type: none"> • very active information dissemination through publications, available for free download in English & German, and beyond • medium transparency on organizational set up, procedures and internal processes (e.g. practical election, report compilation) <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • indirect consideration of societal views through reflexive precautionary approach that (<i>qua</i> decree) “consider[s] ethical aspects of global environmental change”; i.e. to identify “guard rails” not to be crossed^[1,4] • balanced representation of all relevant (natural & social scientific) disciplines in council and regular substitution of members to allow for new ideas and views^[3,6] <p><i>less important dimension</i></p>

Profiles of knowledge brokerage institutions
German Advisory Council on Global Change (WBGU, Germany)

Sources	Website	[1] http://www.wbgu.de
	Literature	[2] German Advisory Council on Global Change, WBGU, 2011. <i>Serving Global Change Politics</i> http://www.wbgu.de/fileadmin/templates/dateien/presse/der_wbgu_in_kuerze/wbgu_selbst_en_2011.pdf
		[3] Schulz-Baldes, M. (1999). „Politikberatung zum Globalen Wandel: Zum wissenschaftlichen Beirat der Bundesregierung Globale Umweltveränderungen“ in <i>Zeitschrift für angewandte Umweltforschung</i> , 12(1): 22-29.
		[4] Ziegler, H. (2003). „SRU und WBGU: Die Umweltpolitikberatung der Bundesregierung“. In: Altner, G., Leitschuh-Fecht, H. & Michelsen, G. (Hg.) <i>Jahrbuch Ökologie 2004</i> . München: Beck. 80-95.
Interview	[5] Weingart & Lentsch (2008). <i>Wissen - Beraten – Entscheiden</i> . Velbrück Wissenschaft, Weilerswist	
		[6] Interview with representative

Global Climate Forum (GCF, EU, international)		
General	General description	The Global Climate Forum (GCF) is an international research association of research institutes, companies, NGOs and individual researchers. GCF serves as a platform for joint studies (“research processes”) and science-based stakeholder dialogues on CC with governments, local authorities, businesses, and social movements. ^[1]
	Thematic focus	<ul style="list-style-type: none"> targeted at climate mitigation and esp. adaptation policies, but also covering ‘sustainable development’ in a broader sense^[1,6] green growth, global climate and socio-economic system interactions, regional CC impacts, city planning, economic and political instruments as well as technological solutions for GHG-emissions reductions (e.g. renewables), CO₂ sequestration options, and integrated climate risk management from global to regional (and city) level from a long-term and interdisciplinary perspective
	Constitution	<ul style="list-style-type: none"> founded in 2001 as a non-profit organization (registered association in public interest) by representatives of leading European research institutes, NGOs & business on initiative of Prof. Carlo Jaeger (PIK, see separate profile) & Prof. Klaus Hasselmann (Max-Planck Institute for Meteorology (MPI Met)) scientific founding members¹⁰ original name: “European Climate Forum”, renamed Global Climate Forum in 2011 because of increasing geographic reach of members beyond Europe^[1,6]
	Objectives	<ul style="list-style-type: none"> to “bring [...] together representatives of different parties concerned with the climate problem and scientific experts investigating CC and options for sustainable development”^[2] in a manner “beyond the traditional linkage between academic institutions and the nation state hosting them”^[1] to provide “a more robust foundation for the development of long-term climate mitigation and adaptation policies leading ultimately into a sustainable development path” to “develop flexible, efficient, effective and equitable strategies for dealing with long-term climate risks”^[2]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> 76 constituent members in Europe and beyond (e.g. USA, China, Australia): <ul style="list-style-type: none"> 31 institutional members from research institutions (20), companies (5), government bodies (1), NGOs (5) and 35 individual members representing the energy sector (industries/business, major users), the insurance/finance sector, ENGOs, and scientific institutions investigating CC and options for sustainable development^[1,5] main (own) office situated in Berlin, Germany (since 2012) <ul style="list-style-type: none"> staff of 22 (with 10 process leaders): initial and overall administrative (intersectional) research line support: strategic development, internal & external communications, web & IT, events, financial reporting etc. up until 2007/08, administratively & logistically supported by PIK^[1,6] GCF activities are organized along 10 independent, basically self-sufficient research lines (referred to internally as “Processes”) at different stages of development, and with varying (personnel) weight: <ul style="list-style-type: none"> with own staff (core in Berlin) and extensive external scientific network and administration: Adaptation and Social Learning; Green Growth, Integrated Risk Governance; subordinated and in premature stages: Arctic; Earth League; GCF Capacity Center, Participatory Methods; Socio-Ecological Modelling; SuperSmart Grid; Sustainable Cities^[1,6]

¹⁰ PIK (Germany, [see separate profile](#)), Max-Planck Institute for Meteorology (MPI Met, Germany), Tyndall Centre (UK, [see separate profile](#)), FEEM (Italy), Nansen Environmental and Remote Sensing Center (NERSC, Norway), Paul Scherrer Institute (PSI, Switzerland), Center for International Research on Environment and Development (CIRED, France)

	<ul style="list-style-type: none"> • Board of Directors currently consisting of five members (min. 4; max. 7), elected for 2 years (with option of re-election), <ul style="list-style-type: none"> • Chair: Prof. Carlo Jaeger, Vice: Prof. Klaus Hasselmann • prepares & proposes short and long-term strategy (research lines), budget & annual report, organizes General Assembly meetings, establishes GCF Processes and appoints Process leaders^[1,6] • Members General Assembly: meets annually to appoint (4 members of the) Board of Directors, approve annual report & budgets for GCF activities and projects & to supervise activities^[4] • Council of Process leaders: 10 headed assembly of all research line leaders, appointed for 1-3 years; research line leaders mobilize external resources for the processes operated by the Association, foster synergies & avoid overlaps between GCF lines, ensure that processes are in line with overall GCF strategy etc.
Funding	<ul style="list-style-type: none"> • varying project-based (mainly public) funding, mobilized autonomously by each research line: e.g. from EU-FPs, national governments/ministries (e.g. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)), business or foundations, • substantial in-kind manpower contribution from project partners • additionally, but limited: membership fees (€ 200-25,000/member, dependent on member status) and donations • public and private clients may commission and pay for targeted products and services, such as papers, conferences or workshops^[1,6]
Accountability, reporting and evaluation	<ul style="list-style-type: none"> • no special - mainly research line dependent - reporting requirements or evaluations • financially accountable as charity; two internal auditors appointed by the General Assembly are in charge of financial controlling • annual report prepared by Board and approved by General Assembly • General Assembly oversees that activities are in line with overall strategy and objectives^[1,6]
Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> • "stakeholder dialogue" approach: overall strategy defined in General Assembly with stakeholder representatives and specific research foci via consultations with stakeholders prior to or during specific projects • research lines are set by the Board based on external thematic input (e.g. proposals or informal discussions, esp. from and with scientific members)^[6] • client-orientated in commissioned work (support services)
Knowledge brokerage Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> • jointly identify long-term research topics in GCF General Assembly with representatives from business, politics and NGOs <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • peer coordination: <ul style="list-style-type: none"> • coordinate with GCF partners (and beyond) along 10 research lines: initiate long-term joint research projects or partner with existing related projects • organize scientific conferences for knowledge exchange with practitioners on critical problem areas, e.g. as basis for use-oriented "state of knowledge" reports • coordinate with users by facilitating networks between scientists, economic sector, NGOs, and policy makers: <ul style="list-style-type: none"> • (co-)organize international scientific conferences with user groups, e.g. cities, or dialogue & networking activities within the partnering "Global Systems Dynamics and Policy" project aimed at developing a joint research program with decision makers • establish joint research networks with stakeholders, e.g. local authorities in integrated risk governance or ENGOs & business in "Green Growth" research line^[6] <p>KBA3: Compilation and translation scientific knowledge</p> <ul style="list-style-type: none"> • synthesize GCF climate change research findings of partner institutions into user-tailored formats (working, synthesis and policy papers)

		<p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> project-based capacity building of actors in NGOs, financial/policy analysts, decision-makers (e.g. Chinese local authorities in research line “Integrated Risk Governance”): <ul style="list-style-type: none"> e.g. technical trainings on climate (natural) risk assessment techniques, mentoring on organizational management/legal framework development etc. (initiated by GCF capacity center)^[6] develop methods/tools (e.g. transdisciplinary integrated models, toolboxes, training materials) for more effective interfaces between researchers, decision makers, interest groups, and the public in support of policy/decisions <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> conduct socio-ecological and socio-economic analyses and develop climate policy (options), e.g.: <ul style="list-style-type: none"> assess (economic) impacts of climate mitigation policies with integrated actor-based models (e.g. “Adaptation and Social Learning”, “Germany’s National Energy and Climate Program,” or “Green Growth”)^[6] identify technical, planning, design and policy solutions e.g. a European renewable power (“super smart-grid”) system; or case study based risk governance options (“Integrated Risk Governance”) <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> individual researchers serve as members of governmental committees or boards, e.g. chief scientist of the chancellor <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> initiate public debate through informational & educational material, interviews, public conferences, participation in public debates (e.g. media)^[1,6]
Main tangible outputs		<ul style="list-style-type: none"> project reports (on singular research project outputs), GCF reports (integrated assessments & synthesis typically with executive summaries), GCF working and background papers, conference proceedings, book series (Integrated Risk Governance) (IT-based) material & tools for public dissemination & education: News, newsletter, GSDP’s global systems science blog, climate board game “winds of change” (with PIK) individual project-specific deliverables of various kinds
Target groups		<ul style="list-style-type: none"> scientists business stakeholders (esp. energy industries & major energy users, companies engaged in renewables, insurance and finance enterprises) policy-makers (e.g. UN level, national ministries, cities) environmental NGOs public media
Policy process		<ul style="list-style-type: none"> research with long-term, rather strategic, and “reconciling” focus most relevant for the pre-policy formulation stages (agenda-setting) many GCF activities (integrated assessments, policy analysis and evaluations) relevant for policy formulation and implementation or evaluation^[1,6]

Effectiveness	Saliency	<ul style="list-style-type: none"> • need driven research: <ul style="list-style-type: none"> • research lines cover “hot topics”, i.e. problems of pressing importance to clients and members in policy and economy, e.g. Green Growth, Smart Grid, or Sustainable Cities • overall thematic orientation and strategy co-defined with members from business, NGOs and government in General Assembly; • project-based and general stakeholder dialogue approach to “check” relevance of research^[6] • commissioned research in line with client demand • (output) usability: <ul style="list-style-type: none"> • “joint research” (with stakeholders) and synthesis (integrated) approach to allow for the generation of more realistic scenario and policy options and the communication of these • multiple research products are relevant and informative for policy-making (e.g. socio-economic impact assessment with policy advice)^[1,3,6] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • association of high profile research institutions (PIK etc.) • multiple members are renowned international researchers with extensive research (leadership) experience in climate field and long records of peer reviewed publications • mainly research project-based approach: science foundation funding, singular output revision in scientific journals etc. • GCF’s networked set-up allows it to draw on additional expertise, e.g. through members and partnering networks^[1,6] <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • free online access to information on overall institution, matured research lines and related projects and networks; newsletter and press releases online • some information on internal (governance) processes accessible (statutes etc.), others inaccessible (e.g. annual reports, budgets etc.) <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • General Assembly with representatives from business, NGOs and government (open membership)^[1,4,5] • “joint studies” and systems thinking as approach to providing knowledge on particularly contested problems: <ul style="list-style-type: none"> • internal approach: integrative of (opposing) views of all relevant stakeholders (dialogue-based) and research partners to develop a range of opinions rather than consensus as basis for sound decisions • as independent research institute subject to external competition of viewpoints e.g. with other research institutions^[3,5,6] <p><i>less important dimension</i></p>
Sources	Website	[1] http://www.globalclimateforum.org/
	Literature	<p>[2] European Climate Forum (ECF): Position Paper (2004), URL: http://www.globalclimateforum.org/fileadmin/ecf-documents/publications/articles-and-papers/ecf-position-paper.pdf (last accessed July 2012)</p> <p>[3] Welp, M., A. de la Vega-Leinert, et al. (2006). "Science-based stakeholder dialogues: Theories and tools." In <i>Global Environmental Change</i> 16(2): 170-181.</p> <p>[4] Global Climate Forum (2012). Statutes of the Association 'GCF – Global Climate Forum e.V.' as mandated at the General Assembly on May 2nd 2012 in Barcelona, Spain. URL: http://www.globalclimateforum.org/fileadmin/ecf-documents/join-gcf/GCF_Statutes_May-2012_en.pdf</p> <p>[5] Welp, M., Hasselmann, K. and Jaeger C.C. (2003). <i>Climate Change and Paths to Sustainability: The Role of Science-Based Stakeholder Dialogues</i>. In Reference Magazine No.19 (February): 8-13.</p>
	Interview	[6] Interview with representative

Institute of Agricultural Climate Research at the Thünen Institute (TI-AK, Germany)		
General	General description	The Institute of Agricultural Climate (AK) Research is a departmental research unit of the Federal Research Institute for Rural Areas, Forestry and Fisheries (Thünen Institute, TI), a German federal research institute under the auspices of the German Ministry of Food, Agriculture and Consumer Protection (BMELV). TI-AK develops the scientific basis for government decision-making on climate issues in agriculture.
	Thematic focus	<ul style="list-style-type: none"> • <i>TI-AK</i>: issues relating to agricultural production and CC across 5 focal research areas: GHG emissions; CC impacts; adaptation of production areas and systems; soil sciences • for <i>TI in general</i>, CC (mitigation and adaptation) is a cross-cutting issue • broad focus on natural, technical & socio-economic aspects • from a long-term, strategic perspective, but also aimed at immediate and operational questions relating to agricultural policy evaluation and monitoring^[1,4]
	Constitution	<ul style="list-style-type: none"> • TI-AK was established together with the overall TI in January 2008 by BMELV; through a merger of 3 existing federal research centers founded after WW2 • named after Johann Heinrich von Thünen, a pioneer in Agricultural Economics^[1]
	Objectives	<ul style="list-style-type: none"> • TI-AK specifically aims to identify ways to reduce and minimize GHG emissions from the agricultural sector while securing high quality food and raw material production in a changing climate^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • TI-AK is one of 15 specialty institutes at TI; Director: Prof. Dr. Folkhard Isermeyer • located in Braunschweig (together with the TI main headquarters) • staff ca. 95 (56 scientific staff, 39 technical staff incl. externals & guests)^[1,6]
	Funding	<ul style="list-style-type: none"> • TI's core budget is based on public funds: € 60 M p.a. • external funding (via research programs, national and EU) allows employment of additional scientists • "Association of the Friends of the TI" (GdF) supports projects beyond existing budget^[1,4,6]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • annual reports document the activities in all TI-institutes • in Dec 2011, the German Council of Science and Humanities ("Wissenschaftsrat") was mandated by BMELV with the external evaluation of TI's research^[2]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> • as operational division of the BMELV, TI's mandate derives from legal requirements, e.g. under Germany's Act on Preventive Radiation Protection and Federal Waterways^[1,4] • BMELV sets out its research needs in a Research Plan, which is applicable to all TI Institutes (incl. main goals, objectives, and key responsibilities of departmental research)^[6] • TI works out a detailed research program (consulting the Advisory Council with independent international academic, societal & political representatives esp. from agricultural sector); the overall research strategy with research activities (projects & ongoing tasks) is coordinated with other BMELV research institutes (through Senate) & approved by the Ministry^[5,7,3]
	Main KB activities (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • TI-AK coordinates EU-research networks (currently „GHG-Europe“ with peers from European research institutions for GHG data synthesis) <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • conduct analysis, assessments and regional modeling of climate (environmentally) relevant agricultural material flows <ul style="list-style-type: none"> • with stakeholder consultation in project „Bodenzustandserhebung Landwirtschaft“ which provides the soil data for Germany's National Greenhouse Gas Inventory^[1,7] • (<i>ad hoc</i>) compile & translate research outputs into readable formats (mainly for the Ministry, see outputs)^[1,7] <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • conduct conferences, workshops, trainings etc. for decision makers, e.g. on decision support for farmers in relation to CC

		<p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • analyze, develop and/or evaluate policy or management strategies and options in the field of agriculture, e.g. regarding their mitigation/adaptation impact e.g.: <ul style="list-style-type: none"> • “CC-LandStraD” (joint) project: which develops efficient climate protection policy measures in the agricultural sector • joint study to identify policy options for GHG reductions in agriculture sector of the state Lower Saxony for the state’s government committee „Klimaschutz“^[1,6] • agri-economic projections for Germany assessing the environmental impacts of current agricultural policy (changes) (2011-2021)^[1,6] • prepare national reports (GHG Inventory) for agriculture and land use sectors fulfilling the federal government’s reporting commitments under UNFCCC <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • indiv. researchers provide direct policy advice to policy makers (at state, federal, EU, international level), • e.g. by taking part in departmental meetings (“hearings”), ^[1,7] • e.g. by serving as members of (international) scientific advisory committees/bodies, or by acting on behalf of the government^[1, 6, 7] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • deliver seminars and presentations at conferences or universities^[1,4] • (contribute to) popular science articles to inform broader public
	Main tangible outputs	<ul style="list-style-type: none"> • statements, (technical) reports, expertise • papers for science and public communities (incl. the media), e.g. biannual popular scientific magazine “ForschungsReport” by the Senate • (IT-based) open access interactive tools: TI-AK’s project „Bodenzustandserhebung Landwirtschaft” with planned (web GIS based) interactive emission calculator map for agricultural soils in Germany^[1,7]
	Target groups	<ul style="list-style-type: none"> • policy makers esp. at the Ministry (different departments at BMELV), and beyond (states, federal, international/EU) • scientists • stakeholders from the rural areas and agricultural sector (e.g. farmers) • public and the media (through PR department, popular science articles or Senate)^[1,5]
	Policy process	<ul style="list-style-type: none"> • TI-AK provides an informational basis (GHG inventories & scenarios) for policy as well as policy interpretation (options, strategies) relevant for: <ul style="list-style-type: none"> • policy formulation (e.g. land use strategies in “CC-LandStraD” project), • implementation (particular land use management schemes) • evaluation (e.g. Germany’s National Inventory reporting to UNFCCC)^[1,6]
Effectiveness	Saliency	<ul style="list-style-type: none"> • departmental research institute: “science on call” for commissioning Ministry, which can readjust focus of research (as set in Research Plans) in line with policy needs^[1,5,7] • outputs (reports, statements & expertise) responsive in content and format (few pages) to user needs (esp. policy makers)^[1,7] • despite personnel fluctuations (past election), close long-lived organizational links between TI and Ministry: partly scientists of the TI may act on behalf of Ministry^[7] • stakeholder involvement in Advisory Council <p><i>important dimension</i></p>

	Credibility	<ul style="list-style-type: none"> extensive record of scientific, referenced and peer reviewed publications^[1,4,6,2] scientific profile of staff and advisory council^[1,2] vivid networking with (academic and/or ministerial) national and international research institutions or sub-contracting extends scientific expertise^[1,4,5] while TI is principally subject to directions (research plan & inquiries) from the commissioning Ministry, external funding provides the institute with additional research independence^[1,7] <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> political media profile: extensive PR concerning research results through overall TI,^[7] Senate (e.g. "ForschungsReport") and the BMELV publications and information are easily accessible (online, free of charge, in English and German), less so information on internal procedures <p>Stakeholder participation:</p> <ul style="list-style-type: none"> singular research project with "trans-disciplinary" approach (inventory with farmer support, „Bodenzustandserhebung Landwirtschaft"^[7]) <p><i>less important dimension</i></p>
Sources	Websites	<p>[1] http://www.vti.bund.de/en/institutes/ak</p> <p>[2] http://www.wissenschaftsrat.de/home.html</p> <p>[3] http://www.bmelv.de</p>
	Literature	<p>[4] Johann Heinrich von Thünen-Institut (vTI): Wissenschaft erleben (1/2008): Das vti stellt sich vor. URL: http://www.vti.bund.de/fileadmin/dam_uploads/vTI/Publikationen/Wissenschaft_erleben/we2010-Sonderheft.pdf</p> <p>[5] Senat der Bundesforschungsinstitute im Geschäftsbereich des Bundesministeriums für Ernährung, Landwirtschaft und Verbraucherschutz, URL: http://www.bmelv-forschung.de/fileadmin/dam_uploads/senat/bilder/Senat-Flyer17-01-11.pdf</p> <p>[6] vTI: Jahresbericht 2011, http://www.vti.bund.de/fileadmin/dam_uploads/vTI/Publikationen/Jahresberichte/JB_2011_Internet.pdf</p>
	Interview	<p>[7] Presentation by representative</p>

KLIMZUG (Germany): Project Region Northern Hesse ¹¹		
General	General description	"KLIMZUG-Northern Hesse" is a transdisciplinary network for climate adaptation that aims at the integration of aspects of adaptation to CC into existing regional governance structures. ^[2,4] The network is part of the KLIMZUG research program "Managing climate change in the regions for the future" that focuses on adaptation in 7 German pilot regions. ^[3]
	Thematic focus	<ul style="list-style-type: none"> • general focus on <i>adaptation</i>, specifically CC impacts and strategies • thematic areas: scenarios, resources, energy, traffic, tourism, health, society • geographic focus: regional (Northern Hesse) and local • temporal focus: short-term, operational to mid-term
	Constitution	<ul style="list-style-type: none"> • time-limited research initiative: 2008–2013 • overall KLIMZUG program initiated by German Ministry of Education and Research (BMBF) • Northern Hesse: initiated and coordinated by University of Kassel and the regional business development association „Regional management Northern Hesse“
	Objectives	<ul style="list-style-type: none"> • close cooperation between researchers, local enterprises, political decision makers, other social groups and administrations • identification of regional and urban vulnerabilities and developing, implementing and testing structures, institutions and procedures for the adaptation to CC^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • 17 consortium partners: University of Kassel and other regional research organisations, business networks and associations, individual business enterprises, educational institutions and regional and local administrative bodies^[1] • Coordination team: in charge of management and implementation; project coordination: University of Kassel (Dipl.-Umweltwiss. Marcus Steffens), 3 subject coordinators, 1 public relations officer, 1 project assistant^[5] • Steering Group: executive body charged with operative planning; composed of the heads of the 3 subject areas (solutions, society/governance, and implementation) & project coordinator; meets every 4 weeks^[5] • 27 projects: 18 research projects and 9 complementary practice-oriented projects (at time of application, more practice-oriented projects were added later – now 21)^[5] • Plenum: discusses the strategic development of the work; includes 1 representative per project; meets twice a year^[5] • Advisory board: meets twice a year to provide advice, includes representatives of all important actor groups (regional administration, NGOs, environmental ministry Hesse, KOMPASS (see separate profile) and scientific representatives) <p>KLIMZUG in general:</p> <ul style="list-style-type: none"> • lead partner (Projekträger): Deutsches Zentrum für Luft- und Raumfahrt e. V. (DLR), Umwelt, Kultur, Nachhaltigkeit^[1] • joint projects in 7 German regions (with Northern Hesse being one of the project regions) • Advisory Board of international experts, giving advice on the implementation of KLIMZUG's main goals, such as the research process itself, networking activities etc.^[1] • institutional ties with Climate Service Center (see separate profile) which advises and supports interdisciplinary KLIMZUG projects, e.g. by refining the results of climate research and conveying the findings to decision makers in politics, administration, economy and for the broad public^[1] • support process by the Cologne Institute for Economic Research: collective presentation of the KLIMZUG projects to the public and facilitation of communication among the 7 joint projects and overall exchange with other interested parties, especially from business^[1]

¹¹ This profile covers the program KLIMZUG with respect to the pilot region Northern Hesse. Focusing on a particular pilot region allows for a more specific description of knowledge brokerage activities and outputs. Where necessary for contextualization, information on the overall KLIMZUG program is also provided.

	<p>Funding</p>	<ul style="list-style-type: none"> • overall budget of KLIMZUG program (2008-2013): ca. € 83 M^[3] • KLIMZUG Northern Hesse (2008-2013) ca. € 10 M^[5] • principle of co-financing: practice partners receive ca. 50%, research institutions are funded 100%^[5]
	<p>Accountability, reporting and evaluation</p>	<ul style="list-style-type: none"> • process support for all regions via group of experts installed by BMBF: each region has one expert as “mentor”, who attends meetings and events, provides advice on strategic developments etc.^[5] • formal project control by DLR^[5] • Humboldt University studies the improvement of communication structures and processes, on behalf of BMBF/FONA program^[5] • KLIMZUG Northern Hesse: internal evaluation of the practice projects and governance approaches, evaluated by the subject area ‘society’^[5]
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Knowledge brokerage</p>	<p>Definition of thematic focus (“agenda setting”)</p>	<ul style="list-style-type: none"> • basic requirements as set in CfP by BMBF: regional approach, focus on adaptation and practice orientation building on previous cooperation in the region, 6 thematic action areas were identified by the consortium partners on the basis of regional needs and the competences of the network^[5]
	<p>Main KB activities (core activities in bold)</p>	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • facilitate networking and coordination with different societal domains and integrate key actors in the Northern Hesse adaptation network • organize 4 regional forums that bring together decision makers and experts from businesses, politics, administration, science; forums facilitate discussion of vulnerabilities, research results, options and measures for an adapted Northern Hesse and demonstrate best practice examples^[2] • undertake international knowledge transfer: close cooperation and exchange of experiences with Austrian region Waldviertel^[2,5] • organize exchange with other KLIMZUG regions in common working group “communication and education”, initiated by Northern Hesse^[5] • establish a working group CC adaptation in regional planning in the respective planning authority: to integrate adaptation in administrative decision-making; includes administrative and scientific representatives^[5] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • compile and translate environmental and climate data and climate projections for local and regional contexts and communicate these to all projects • develop and discuss issue-specific and integrative scenarios in cooperation with various project participants <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • establish, test and evaluate 3 governance structures for the communication and brokering of CC information: <ul style="list-style-type: none"> • <i>Climate Adaptation Officers (KAB)</i> as contact points in administration (altogether 5) • <i>Climate Adaptation Managers (KAM)</i> as contact points for businesses (3 in the central economic clusters) • <i>Climate Adaptation Academy</i> which addresses civil society in a broader sense^[1,5] • organize issue-specific workshops and trainings for representatives of businesses and administration targeted at potential impacts of CC and related potentials and challenges for businesses and administration • develop and test decision-support approaches and tools in several sectors, e.g. for tree selection in forestry, simulation models for energy demand in businesses, indoor climate in schools • provide guidance on the integration of adaptation in planning processes, including climate function maps^[5] • develop educational tools and events for relevant target groups

		<p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • develop operational planning options and measures in several sectors, e.g. agriculture, forestry, water management, traffic • analyze and develop recommendations for revision of the legal framework for CC adaptation • support the development of adaptation strategies , e.g. in the district Waldeck-Frankenberg^[5] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • internet platform ‘Climate Communication’ of the Climate Adaptation Academy • organize and provide information about events on adaptation and mitigation (e.g. Kassel’s climate talks) • newsletter, press releases
	Main tangible outputs	<ul style="list-style-type: none"> • publications (e.g. on scenarios and analysis) • guidance (e.g. climate function maps)
	Target groups	<ul style="list-style-type: none"> • regional decision makers, esp. in administrations at the level of districts (Landkreise) and municipalities • businesses • civil society groups • scientists
	Policy process	<ul style="list-style-type: none"> • awareness-raising: informing practice actors in the region on CC impacts and adaptation needs and options^[5] • policy formulation: identification of options, measures • policy implementation: targeted at adaptation options at the operational planning level
Effectiveness	Saliency	<ul style="list-style-type: none"> • central involvement of regional stakeholders (or “practice actors”) in the regional network and the implementation projects^[5] <ul style="list-style-type: none"> • partners: “practical needs of the region influence research and research results influence adaptation measures”^[2] • key principles: embedding in the “regions’ culture”, “need-orientation”^[3] • approach to develop and demonstrate exemplary, technical solutions – best practice examples (“not only guidance”)^[5] • increased number of implementation projects from 9 to 21^[5] • 3 new governance institutions secure close contact with the relevant groups • transferability is an important principle for the projects^[5] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • involvement of university and other research organizations in the region • support from the Climate Service Center (see separate profile), providing epistemic authority • projects heavily draw on scientific climate modeling and scenarios in the development of their adaptation measures • advisory board of international experts (at the level of the overall KLIMZUG program) <p><i>moderately important dimension</i></p>

	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • project information and outputs (publications) easily accessible for some but not all projects • information on organizational structure only partly accessible from webpage <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • network between researchers, administrative representatives and businesses is also intended to contribute to acceptance^[1] • selection and invitation of additional practice actors in agreement with practice partners^[5] • project on the societal implementation of adaptation measures in the region; development of strategies to avoid/deal with potential conflicts and to increase public acceptance; by strengthening participatory elements <p><i>moderately important dimension</i></p>
Sources	Websites	<p>[1] http://www.klimzug.de/</p> <p>[2] http://klimzug-nordhessen.de/</p>
	Literature	<p>[3] Bardt, H., H. Biebeler, et al. (2012). <i>Climate Change in Regions. Adaptation strategies for seven regions</i>. Köln, Cologne Institute for Economic Research.</p> <p>[4] KLIMZUG Northern Hesse – Flyer, available at http://www.klimzug.de/media/Flyer_neu%281%29.pdf</p>
	Interview	<p>[5] Interview with representative of KLIMZUG Northern Hesse</p>

Knowledge for Climate (KfC, The Netherlands)		
General	General description	“Knowledge for Climate is a research programme for the development of knowledge and services that make it possible to climate proof the Netherlands. Governmental organisations (central government, provinces, municipalities and water boards) and businesses, actively participate in research programming through the input of additional resources (matching).” ^[1]
	Thematic focus	<ul style="list-style-type: none"> • in general: adaptation (“climate proofing the Netherlands”) • specifically: spatial planning and infrastructure, fresh water supply, flood risk management, rural areas, and cities, governance of adaptation and decision support tools^[1] • natural dimension: e.g. climate scenarios; social dimension: e.g. governance of adaptation • local and regional focus (“hotspots approach”); partly also covering questions from the national level^[5]
	Constitution	<ul style="list-style-type: none"> • approved by the Dutch Cabinet in July 2007, started in 2008, will finish by the end of 2014^[1] • set up as a research program (successor of three other programs: “Living with Water”, “Habiforum” and “Climate Changes Spatial Planning”) • initiators: Deltares, Royal Netherlands Meteorological Institute (KNMI; see separate profile), TNO Built Environment and Geosciences, University of Utrecht, VU University Amsterdam, Wageningen University and Research Centre (WUR)^[1]
	Objectives	Mission statement: “To develop the scientific and applied knowledge required for climate-proofing the Netherlands and to create a sustainable knowledge infrastructure for managing climate change.” ^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • Knowledge for Climate Foundation: organizational hub; sited in Utrecht; director: Prof. Pier Vellinga • Executive Board: 3 members; responsible for overall planning, management and representation of Foundation^[2] • Supervisory Board: 5-7 members; convenes at least twice a year; fulfils monitoring functions and gives advice on future direction and overall policy^[2] • Programme Board: 22 members (KfC foundation, hotspot coordinators, representative knowledge institutes, knowledge transfer); meets at least once a year; plays an advisory role in the execution of the program in 8 specific locations in the Netherlands (so-called “hotspots”) and 8 themes^[2] • Programme Office: is in charge of the day-to-day execution of the program^[2] • Knowledge Transfer: org. body that aims at effective transfer and sharing of knowledge on CC adaptation between knowledge suppliers and knowledge users^[2] • Hotspots: 8 specific locations (Schiphol Mainport, Haaglanden region, Rotterdam region, Major rivers, South-West Netherlands Delta, Shallow waters and peat meadow areas, dry rural areas, Wadden Sea^[2]); execution of the research projects, governed by hotspot teams consisting of stakeholders such as municipalities, water boards, regional authorities, and companies^[4]; • Themes: cross-cutting research (Climate Proof Flood Risk Management, Climate Proof Fresh Water Supply, Climate Adaptation for Rural Areas, Climate Proof Cities, Infrastructure and Networks, High-quality Climate Projections, Governance of Adaptation, Decision support tools)^[2] • 3 more remote advisory councils provide periodical advice to the Supervisory Board and Executive Board:^[2] <ul style="list-style-type: none"> • <i>Executive Advisory Board</i>, with representatives of ministries and research organisations, advises on strategic issues, particularly on the cooperation with the public and private parties, knowledge development and transfer • <i>International Scientific Advisory Council</i> advises every 2 years on the progress and scientific quality of the program • <i>Societal Advisory Council</i>, with representatives of provinces, businesses, water boards, non-profit organizations, advises every 2 years on the societal relevance and impact of the program

	Funding	<ul style="list-style-type: none"> total budget of € 100 M, € 50 M awarded from the Economic Structure Enhancing Fund (FES) (the Ministry of Infrastructure and the Environment), the other half by co-financing through hotspots^[1]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> Internal evaluation mechanisms <ul style="list-style-type: none"> Executive board monitors progress, quality of execution of the research and expenditures; drafts annual plan and report (financial and progress) for approval of the Supervisory Board^[2] Project leaders report on the content and financial progress to the Programme Office and indirectly to the hotspot coordinator, the Programme Board and the Executive Board^[2] Supervisory Board monitors expenditures and is accountable to Executive Board and Ministry of Infrastructure and Environment mid-term review: conference on 4 October 2012, in Amsterdam; scientific and societal evaluation of the program; hotspots and consortia presented their midterm reports, reflections by the international program reviewers^[1]
Knowledge brokerage	Definition of thematic focus	<ul style="list-style-type: none"> demand driven: involvement of decision makers and stakeholders of the hotspots in defining themes and research needs in an iterative and participatory process^[1]
	Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> identification of research topics is the first phase of the program: formulate research questions in an iterative and participatory process in the hotspots <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> conduct collaborative action research with stakeholders in the hotspots^[5] collaborate and network with other research programs and research organizations (national and international)^[1] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> conducting applied research is the second phase of the program: develop specific solutions for CC hotspots in the Netherlands: <ul style="list-style-type: none"> develop scenarios for adaptation conduct risk and costing studies develop regional climate models conduct vulnerability assessments, e.g. for cities and rural areas <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> develop decision-making tools for adaptation, e.g. tools: <ul style="list-style-type: none"> to formulate the adaptation task to develop and visualize adaptation strategies to evaluate & monitor adaptation strategies <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> develop local and regional adaptation strategies (3rd phase of the program) <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> organize conferences (e.g. Climate changes Spatial Planning 2011, Deltas in Times of Climate Change 2010) organize exhibitions (e.g. climate as an opportunity 2010) prepare brochures, newsletters, press releases, social media, website
	Main tangible outputs	<ul style="list-style-type: none"> publications: (scientific) articles, popular scientific books, brochures, fact sheets on projects, newsletters, press releases, PhD-theses, posters and presentations, conference proceedings, project reports, research highlights decision-support tools, e.g. Climate Impact Atlas (to disclose spatial information on CC impact) planned: adaptation strategies and measures

	Target groups	<ul style="list-style-type: none"> • decision makers and stakeholders in the hotspots (regional and local level)^[5], input to the Delta Programme (see separate profile) • national decision makers, involved ministries • scientists • general public (and media)
	Policy process	<ul style="list-style-type: none"> • problem identification, awareness-raising (esp. first phase): identification of regional needs and vulnerabilities (research needs) • policy formulation: adaptation needs and options for the hotspots, main outcomes are regional adaptation strategies^[4]
Effectiveness	Saliency	<ul style="list-style-type: none"> • “demand-driven program”: research questions formulated in an iterative and participatory process^[1] • collaborative action research with stakeholders in hotspots • strong focus on the applicability of research, with hotspots as “real life laboratories where knowledge is put to practice”^[1] • Societal Advisory Council advises on societal relevance and impact of the program • societal program evaluation <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • approach to combine applied research in hotspots and “high quality scientific knowledge in eight themes”^[1] • international consortia of scientists conduct the research • publications in peer reviewed journals and PhD studies as a main scientific outcome <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • high transparency concerning the organizational structure of the program • hotspots and themes: mid-term review provides good overview of activities, organizational structure less transparent • high visibility and accessibility to publications <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • hotspots involve government, businesses, NGOs and researchers • collaborative action research <p><i>less important dimension</i></p>
Sources	Website	[1] http://knowledgeforclimate.climate-research-netherlands.nl/
	Literature	<p>[2] Brochure: Foundation Knowledge for Climate: Tasks and responsibilities, available at: http://knowledgeforclimate.climate-research-netherlands.nl/gfx_content/documents/UK%20kvk%20roles%20and%20responsibilities.pdf</p> <p>[3] Catrien Termeer, Art Dewulf, Helena van Rijswijk, Arwin van Buuren, Dave Huitema, Sander Meijerink, Tim Rayner and Mark Wiering (2011). „The regional governance of climate adaptation: A framework for developing legitimate, effective, and resilient governance arrangements” in <i>Climate Law</i> 2: 159–179.</p> <p>[4] Wouter Boon, Edwin Horlings and Peter van den Besselaar (2012). Governance of learning processes in transdisciplinary research teams, online proceedings of the symposium “The governance of adaptation”, Amsterdam, The Netherlands, March 22-23, 2012; http://www.adaptgov.com/science-policy-interactions/</p>
	Interviews	<p>[5] Interview with representative of the knowledge for climate program</p> <p>[6] Interview with representative of the Ministry of Agriculture, Nature and Food Quality</p>

National Climate Change Adaptation Research Facility (NCCARF, Australia)		
General	General description	The National Climate Change Adaptation Research Facility (NCCARF) is an end-user oriented adaptation research center at Griffith University's Gold Coast Campus that is derived from a partnership between the Australian Government Department of Climate Change and a consortium of eight universities. ^[1]
	Thematic focus	<ul style="list-style-type: none"> • cross-cutting CC adaptation research in 9 key sectors: Emergency management; Freshwater biodiversity; Human health; Indigenous communities; Marine biodiversity & resources; Primary industries, Settlements & Infrastructure; Social, economic & institutional dimensions of CC; Terrestrial biodiversity • biophysical, economic and social dimensions • local, national and international levels • strategic & operational^[1]
	Constitution	<ul style="list-style-type: none"> • established in November 2007 based on the National Climate Adaptation Framework of the Council of Australian Governments (COAG), founded in 2008 • NCCARF is an official part of Griffith University corporation accountable to the Queensland Government under the Griffith University Act 1998^[1]
	Objectives	<ul style="list-style-type: none"> • making Australia adapted to CC by 2030 by providing governments, industry and the community with clear and reliable information needed to assess risks and develop adaptation strategies^[2] • leadership of the research community on national interdisciplinary research through research networks that enhance researcher interactions, bridge gaps between fundamental and applied sciences and advance priority sectoral research^[1,3] • <i>Phase 1: Establishment Phase (2008-2010):</i> development of NCCARF: network building and coordination of planning and initiation of research themes • <i>Phase 2: Operational Phase:</i> Knowledge generation and delivery to researchers and users • <i>Phase 3: Mainstreaming Phase "Facilitation":</i> CC and adaptation knowledge considered in all planning in Australia: integrated research, delivery of products, services & tools to end-users and building capacity of end-users^[3]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • NCCARF facility hosted by Griffith University in partnership with 7 other universities and the Queensland Government (consortium) • Director: Prof. Jean Palutikof • total of 14 staff members at Griffith University in charge of general administration, research (network) coordination and knowledge communication • NCCARF coordinates 8 research networks around 9 thematic research priorities with over 5,000 national members (ca. 60% from universities and 40% from government, industry & "the broader community" (e.g. interested public); partly direct end-users)^[1,3,6] • Partner Advisory Group (PAG): 10 members from NCCARF partner consortium, with 2 government representatives of Queensland and one member per university partner; provides NCCARF and the Board with input on partner interests and perspectives; ensures co-operation between consortium members; 3 annual meetings, prior to Board meetings^[1,3] • Advisory Board: 10 members representing local, state and federal governments, business and research; directs & oversees operations in line with information needs of decision makers, at least 3 annual meetings^[1,3] <p>commencing 2013 (Phase 3):</p> <ul style="list-style-type: none"> • a new Advisory Body with representatives from major investors (business & government)s plus "skills-based" appointees will be established^[1]
	Funding	<ul style="list-style-type: none"> • Australian Government provides <i>seed funding</i> of AU\$ 20 (ca. € 16) M for 2008-2012 (same amount extended for 2013) <ul style="list-style-type: none"> • half for core functions of the Facility at Griffith University hub; half supports the Adaptation Research Networks^[3,4] • another AU\$ 6 (ca. € 4.8) M is provided through partner contributions to NCCARF • additional in-kind contributions through the Networks and partner activities (with business and governments)

		<ul style="list-style-type: none"> • program funding for <i>thematic research activities</i>: AU\$ 27 (ca. € 21.6) M from the Australian Government for the Australian Research Grants Program (ARGP) addressing NARPs and AU\$ 4.5 (ca. € 3.4) M for activities under Synthesis and Integrative Research (SIR)^[5] <ul style="list-style-type: none"> • both programs are managed and funds dispersed by NCCARF • leverage of additional funding at program & project level: AU\$ 7 (ca. € 5.6) M from the Fisheries Research and Development Corporation, National Health and Medical Research Council and the National Water Commission) for work under ARGP^[5] • from 2013 onwards, funding mainly from businesses, governments etc. that become consortium (funding) partners; target: AU\$ 100 (ca. € 80) M over 7 years, in cash and in-kind from investors who wish to become consortium partners <ul style="list-style-type: none"> • with major contribution from the Commonwealth Government, as well as state & territory governments, supplemented by AU\$ 40 (ca. € 32) M from business partners^[1]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • NCCARF is accountable to Griffith University and (ultimately) to the Queensland Government under the Griffith University Act 1998 • under the NCCARF Funding Agreement, Griffith University reports on NCCARF activities to the Department of Climate Change and Energy Efficiency, which in turn reports to the Minister^[1,3] • NCCARF Advisory Board oversees and guides operations (following “Board Charter”) • Annual Operating Plans (on key activities) highlight program of deliverables for each 6-month period in line with NCCARF Strategic Plan; biannual Progress Reports evaluate progress on specific objectives against deliverables^[1,3] • three surveys (in Phase 2) among NCCARF stakeholders (researchers & end users) evaluate progress on key performance indicators (KPIs); are reported to the Board^[3] • regular internal revision of NARPs in relation to new developments in research^[6]
Knowledge brokerage	Definition of thematic focus (“agenda setting”)	<ul style="list-style-type: none"> • a regularly readjusted Strategic Plan outlines the overall research knowledge delivery portfolio; • annual Operating Plans set out activities and deliverables for each year on 4 key activities: Management of adaptation research networks; Adaptation Research Grants Program (ARGP); Synthesis and Integrative Research (SIR); Knowledge communication and adoption • National Adaptation Research Plans (NARPs) are developed by NCCARF with consultation of relevant stakeholders and research end-users^[3,6] • NCCARF Board, with representatives from local, state & federal governments, business and research, oversees and guides NCCARF operations and provides input on information needs based on stakeholder surveys or input from Forum for NCCARF interaction with states and territories (FORNSAT), i.e. a dialogic network with state and territorial governments^[1,3]
	Main KB activities (core activities in bold)	<p><i>Note: focus on certain KB activities is phase dependent:</i></p> <p>KBA1: Identification of knowledge needs and research gaps (<i>esp. phase 1, 2008-2010</i>)</p> <ul style="list-style-type: none"> • conduct research gap analysis for National Adaptation Research Plans (NARP), defining national research priorities; develop implementation plans for each NARP <ul style="list-style-type: none"> • expert writing team with researchers, research end-users and a government representative • public consultation of relevant stakeholders to identify knowledge needs, i.e. research end-users, e.g. through review and comment on draft NARP^[3,6] <p>KBA2: Coordination and networking (<i>all phases</i>)</p> <ul style="list-style-type: none"> • peer coordination: <ul style="list-style-type: none"> • in 8 research networks across Australia on 9 key national thematic priorities of NARPs^[1] • e.g. to prepare and review the Australia and New Zealand Chapter of the IPCC Fifth Assessment Report (as part of the SIR Program, phase II)^[1]

		<ul style="list-style-type: none"> • coordinate with users in fora, workshops or conferences for information exchange e.g.: <ul style="list-style-type: none"> • “Coastal Community Engagement under a Changing Climate” workshop on effective coastal management and climate change adaptation with researchers, local councils, regional bodies, state governments, ENGOs • “The Climate Change Research Strategy for Primary Industries” (CCRSPI), exchange on latest climate research between researchers, policy makers, practitioners and farmers • “Science meets Parliament,” or “roadshow” to Australian states & territories • FORNSAT: research presentations & promotion meetings (2-3/year); and web-portal as tool for dialogue and interaction among Australian state and territory governments and with NCCARF to progress CC adaptation research and activities in Australia <p>KBA3: Compilation and translation of scientific knowledge (<i>esp. phase 3</i>)</p> <ul style="list-style-type: none"> • “Knowledge for policy adoption”: develop targeted communication products within the 2 research activity streams (96 ARGP and 44 SIR projects) that meet end-user needs <p>KBA4: Capacity building and decision support (<i>esp. phase 3, 2013+</i>)</p> <ul style="list-style-type: none"> • develop products, services & (decision support) tools for capacity building of end-users <p>KBA5: Policy analysis, evaluation and development (<i>esp. phase 3</i>)</p> <ul style="list-style-type: none"> • understand and develop adaptation strategies for vulnerable communities, and the institutional challenges of adaptation to CC^[3] <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • individual researchers serve in advisory bodies (e.g. Councils), are invited for public hearings, e.g. to Standing Committee on Climate Change, Environment and the Arts <p>KBA7: Public outreach (<i>esp. phase 3</i>)</p> <ul style="list-style-type: none"> • co-organize public lectures & symposia (e.g. “addressing the myths of climate change science, impacts and adaptation”) & public conferences or panel discussions • disseminate information online, e.g. document database & newsletters → develop the NCCARF homepage to serve as THE adaptation knowledge website in Australia
	Main outputs	<ul style="list-style-type: none"> • reports (proceedings, key findings, executive summaries for decision makers, fact sheets, etc.) accessible on NCCARF publication database • regular newsletters (national adaptation information platform) • products for capacity building of end users, e.g. (IT-based) decision support tools
	Target groups	<ul style="list-style-type: none"> • scientists (<i>all phases</i>) • policy makers: national, sub-national and local (<i>esp. phase 2 & 3</i>) • stakeholders esp. from industry & communities (<i>esp. phase 2 & 3</i>) • media, public (<i>esp. phase 3</i>)
	Policy process	NCCARF strives to provide all knowledge that should equip Australia to adapt to CC by the year 2030: accordingly, activities do not address a specific stage of the policy/planning cycle
Effectiveness	Saliency	<ul style="list-style-type: none"> • strong emphasis on the generation and delivery of knowledge in a succinct and useable format • iterative end-user engagement in research priority definition: consultative process in development of NARPs and stakeholder input to research needs through NCCARF Board, stakeholder surveys & FORNSAT • research esp. under ARGP and SIR with involvement of end-users throughout the project life cycle, from inception to information dissemination^[5] <p><i>important dimension</i></p>

	Credibility	<ul style="list-style-type: none"> • research at academic institutions and in research networks • involvement of leading Australian researchers • all research in the research programs, as well as workshop & conference activities employ: <ul style="list-style-type: none"> • peer reviewed sources • internal/external peer review & verification of papers, posters, unpublished material in use, or even local adaptation processes^[1] <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • accessible, user friendly webpage with information on research & outputs (brief/summary versions of nearly all documents in research activity streams) • open background information on institution, governance <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • representatives of selected stakeholder groups (major financiers) on NCCARF Board • stakeholder participation in research projects, e.g. under ARGP and esp. in local adaptation planning or assessment projects, ranging from informing, interviews/surveys, feedback or consultation, workshops and knowledge co-production approaches (e.g. future scenario assessments)^[1,3] <p><i>moderately important dimension</i></p>
Sources	Website	[1] http://www.nccarf.edu.au/
	Literature	<p>[2] 2007 National Climate Adaptation Framework</p> <p>[3] Summary NCCARF Strategy 2010-2013, URL: http://www.nccarf.edu.au/sites/default/files/attached_files_publications/11136%20NCCARF%20Corporate%20Strategy.pdf</p> <p>[4] Australian Government, Department of Climate Change and Energy Efficiency: NCCARF; http://www.climatechange.gov.au/government/initiatives/national-climate-change-adaptation-research-facility.aspx</p> <p>[5] NCCARF research highlights (2012). <i>NCCARF Research Programs: Delivering a portfolio of research to support climate change adaptation in Australia</i>, URL: http://www.nccarf.edu.au/sites/default/files/attached_files_publications/NCCARF-Research-Programs.pdf</p>
	Interview	[6] Interview with representative

Netherlands Environmental Assessment Agency (PBL, The Netherlands)		
General	General description	The Netherlands Environmental Assessment Agency (PBL) is the national institute for strategic policy analysis in the fields of environment, nature and spatial planning. ^[1] The PBL is one out of three independent assessment agencies in the Netherlands. ^[2]
	Thematic focus	<ul style="list-style-type: none"> • broad focus on environment-related questions, incl. biodiversity, CC, integral nitrogen, models and data, sustainable development, transboundary air pollution, spatial planning and quality of the local environment, urbanization and transport^[1] • with respect to CC, focus on mitigation and adaptation, combating air pollution and achieving a sustainable energy supply^[1] • linking different domains – economic, ecological, social and cultural^[1] • at national, European and global level^[1] • strategic focus^[1]
	Constitution	<ul style="list-style-type: none"> • predecessor: Netherlands Environment Assessment Agency (MNP) established in 1996 as part of the Netherlands National Institute for Public Health and the Environment (RIVM)^[7] • in 2008, PBL established through a merger of the Netherlands Environment Assessment Agency (MNP) and the Netherlands Institute for Spatial Research (RPB)^[2] • set up by Royal Decree and a decision by the Dutch Cabinet^[8] • PBL is a government institute under the Ministry of Infrastructure and the Environment (IenM) but operates as an independent organisation^[8]
	Objectives	“contribute to improving the quality of political and administrative decision-making by conducting outlook studies, analyses and evaluations in which an integrated approach is considered paramount. Policy relevance is the prime concern in all our studies. We conduct solicited and unsolicited research that is always independent and scientifically sound”. ^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • located in Bilthoven and The Hague • total staff: 274; around 200 permanent employees in 2012^[8] • organized in 2 staff offices and 7 departments: <ul style="list-style-type: none"> • offices: Operational and Human Resource Management; Communication and Management Support • departments: Climate, Air & Energy; Sustainable Development; Spatial Planning & Quality of the Local Environment; Urbanization & Transport; Nature & Rural Areas; Water, Agriculture & Food; Information, Data & Methodology • Management: director (Prof. Maarten Hajer), deputy director (Dhr ir. Reinier van den Berg), secretary, department heads and chief scientist (advisory role; added in 2011)^[1,8] • Advisory Committee: on behalf of the Minister of Infrastructure and Environment, includes scientists and representatives from stakeholder organizations; oversees the quality of the work and working methods; organizes audits to assess the scientific quality of PBL’s work and its societal relevance^[8]
	Funding	<ul style="list-style-type: none"> • annual budget for 2012: € 33.8 M (significantly reduced since 2009 from around € 42 M and subject to further budget cuts of 25% over the 2011-2019 period)^[8] • majority of funding (97% in 2012) from ministries, most notably the IenM^[8] • external funding through collaboration in international research projects (e.g. under the EU FP)^[8]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • first major international audit in 2012: <ul style="list-style-type: none"> • commissioned by the PBL Advisory Committee^[1] • based on “PBL Self-evaluation Report May 2008 – May 2012”^[8] • visit by an international audit committee of scientists in November 2012, led by Lea Kauppi (SYKE, the Finnish Environment Institute)^[1] • focus on quality and relevance of the research from an international perspective^[8] • for 2014–2015, another audit is planned with an emphasis on PBL’s mission, its interaction with clients and its position within the Dutch system of scientific advice to policy^[8]

Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> Working areas, issues and products are defined in PBL's Work Programme: <ul style="list-style-type: none"> based on proposals from several ministries (most notably IenM), PBL departments and the PBL Advisory Board that are combined into a draft programme draft programme is discussed with the main clients, the directors general and the PBL Advisory Board ultimately, the PBL director decides on the definite content of the Work Programme^[8] specific products (e.g. assessment reports) that PBL is legally required to produce are constant and recurring in the Work Programme <i>ad hoc</i> assignment on the basis of requests by ministries, the national or European parliament, political parties, the European Commission, international organizations such as UNEP and OECD; formally any requests must first be presented to the Minister of Infrastructure and the Environment^[8] in addition, research is initiated by PBL itself^[8]
	Main KB activities (core activities in bold)	<p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> compile the "Assessment of the Living Environment" (status report) (statutory responsibility, biennial) to investigate and document current environmental, ecological and spatial quality^[2] conduct Nature Outlook (every four years) conduct scenario studies on the environment and nature (every four years)^[2] undertake independent integrated assessments on topics such as sustainable development, energy and CC, biodiversity, transport, land use and air quality^[2] conduct studies on scientific, economic and governance aspects of societal developments, often based on integral quantitative analyses using various calculation models and a systems approach^[1] develop climate models^[1] <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> assess and evaluate policies (proposed or in place); e.g. assessment of IPCC reports, co-impacts of climate policies on air polluting emissions in the Netherlands, European Commission's proposal to calculate Member States' targets for emissions not included in the Emission Trading System (ETS)^[1] analyze international and national policy developments (e.g. "the Copenhagen Accord, Climate policy after Kyoto – Analytical insights into key issues in the climate negotiations"; election manifestos analyses in "Choices Outlined 2013-2017")^[1] conduct outlook studies: identify possible strategic options (e.g. "Exploration of pathways towards a clean economy by 2050")^[1] <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> PBL researchers taking part in departmental meetings, such as task forces^[8] advise officials who prepare Cabinet discussions and decisions^[8] advise advisory councils and sub-Councils of the Cabinet, such as the Council for Infrastructure and the Environment and the Council for the Economy, Work and Innovation^[8] attend meetings of parliamentary committees, providing technical briefings on the PBL reports^[8] present PBL views in parliament hearings on requests^[8] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> provide press releases and comments on national and international policy developments (e.g. Rio+20, Copenhagen) develop videos and special web applications on specific reports (e.g. "Roads from Rio+20", "Pathways to achieve global sustainability goals by 2050")^[8] manage several thematic websites for interaction with stakeholders (e.g. for discussions on the possible errors in the IPCC Working Group II report; or about PBL models)^[8] FAQ-sections for the general public along the main topics

	Main tangible outputs	<ul style="list-style-type: none"> • structural, legally required reports (e.g. policy assessment reports, compendia, outlook reports)^[8] • reports resulting from multiannual strategic programs and more short-term assignments (e.g. Trend Reports)^[8] • comments and press releases • PBL Working Papers Series (since 2011)^[8] • models, e.g. GLOBIO3 (a global Biodiversity model) or Integrated Model to Assess the Global Environment (IMAGE), including websites with description of models
	Target groups	<ul style="list-style-type: none"> • Dutch Cabinet, ministers, and ministry officials (IenM, Ministry of Economic Affairs, Agriculture and Innovation, Ministry of Foreign Affairs)^[8] • Parliament (House of Representatives, Dutch Senate; European Parliament)^[8] • international organizations such as OECD, UNEP, IPCC, EEA^[8] • Dutch political parties and parliamentary groups^[8] • European Commission^[8] • provincial and municipal authorities^[8]
	Policy process	<ul style="list-style-type: none"> • agenda-setting and awareness-raising: exploring social trends • policy formulation: <i>ex-ante</i> assessment of policy options/proposals • policy evaluation: <i>ex-post</i> evaluations of policies
Effectiveness	Saliency	<ul style="list-style-type: none"> • strong links with politics, esp. the IenM • policy relevance of research as important selection criterion for projects in the annual Work Programme^[1] • post-normal science approach, i.e. provision of knowledge for urgent decisions and high stakes (under conditions of high uncertainty)^[5] • PBL Advisory Committee also oversees the societal relevance of its publications • frequent contact with main target groups; strategy to increase interaction with policy makers and in particular to get closer to parliament^[8] • asked provinces and municipalities what role PBL could play for them^[8] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • strongly highlights independence and the scientific quality of research as key principles of the PBL^[2] • special institutional arrangements to guarantee the scientific quality of PBL products: review procedures (internal, external and peer review); seminars; procedures and support for information, data and methodology; PBL Academy; Chief Scientist; Advisory Board and audits^[8] • use of state-of-the-art theoretical and conceptual approaches or develop such approaches when the work of strategic policy makers raises new research questions^[1] • PBL positions itself as a “learning organization”^[1] • collaboration with other Dutch policy analysis agencies and universities and work in national and international scientific networks and research projects^[1,8] • highlight expertise in various domains (e.g. via number of peer reviewed articles) and competences of staff (e.g. via number of professors and PhDs in self-evaluation report)^[1,8] • procedures for dealing with and communicating uncertainties in assessments – “Guidance for Uncertainty Assessment and Communication” <p><i>important dimension</i></p>

	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • results of projects are made publicly available • high transparency on organization and working though self-evaluation report^[8], less through website <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • incorporation of diversity of views and approaches to increase the robustness of conclusions and recommendations (following the post-normal science approach)^[1,5] • thematic websites for interaction with stakeholders, example online deliberation on IPCC, are also explicitly open to sceptic views <p><i>moderately important dimension</i></p>
Sources	Websites	<p>[1] http://www.pbl.nl/en</p> <p>[2] http://epanet.ew.eea.europa.eu/european_epas/countries/nl</p>
	Literature	<p>[3] Hage M. and Leroy P. (2008). <i>Stakeholder Participation Guidance for the Netherlands Environmental Assessment Agency: Main Document</i>. Available at: http://www.pbl.nl/sites/default/files/cms/publicaties/550032007.pdf</p> <p>[4] Huiteima D. and Turnhout E. (2009). "Working at the science-policy interface: a discursive analysis of boundary work at the Netherlands Environmental Assessment Agency" In <i>Environmental Politics</i> 18(4): 576-594.</p> <p>[5] Petersen A., Cath A., Hage M., Kunseler E. and van der Sluijs J.P. (2011). „Post-Normal Science in Practice at the Netherlands Environmental Assessment Agency" In <i>Science, Technology and Human Values</i> 36: 362-388.</p> <p>[6] Wardekker J.A., van der Sluijs J.P., Janssen P.H.M., Kloprogge P. and Petersen A.C. (2008). "Uncertainty communication in environmental assessments: views from the Dutch science-policy interface". In <i>Environmental Science & Policy</i> 2: 627-641.</p> <p>[7] Pesch U, Huiteima D, Hisschemöller M (2012). "A boundary organization and its changing environment: the Netherlands Environmental Assessment Agency, the MNP" in <i>Environment and Planning C: Government and Policy</i> 30(3): 487-503</p> <p>[8] Netherlands Environmental Assessment Agency (PBL) (2012). <i>PBL Netherlands Environmental Assessment Agency. Self-evaluation Report</i>. May 2008 – May 2012, available from: http://www.pbl.nl/sites/default/files/cms/publicaties/PBL_2012_self-evaluation-report_711_0.pdf</p>

Platform Communication on Climate Change (PCCC, The Netherlands)		
General	General description	The Platform Communication on Climate Change (PCCC) is a collaborative venture of universities & public research institutions aimed at improving the communication of Dutch climate research to policy makers, business, NGOs, the media and public. PCCC's main instrument for this is the interactive information platform <i>klimaatportaal.nl</i> (Climate Portal). ^[1,3]
	Thematic focus	<ul style="list-style-type: none"> causes and consequences of CC, adaptation and mitigation (options) as well as energy issues covering natural (e.g. extreme weather events), economic and social (e.g. ongoing climate conferences and political developments) aspects at local, national as well as international scales
	Constitution	<ul style="list-style-type: none"> PCCC is a collaborative venture established in 2003 between 8 Dutch universities and public research agencies¹² the Climate Portal is the internet platform through which the "Platform Communication on Climate Change" operates^[1,3]
	Objectives	PCCC seeks to enhance the quality, efficiency and effectiveness of the communication of Dutch climate science by providing a communication platform (mainly through its Climate Portal) for climate science institutes as well as potential information users ^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> PCCC currently consists of 9 members (8 founding members + Netherlands Organisation for Applied Scientific Research (TNO)) PCCC Secretariat: managed by Royal Netherlands Meteorological Institute (KNMI, see separate profile), chair: Dr. Rob van Dorland Steering Committee: composed of representatives from each member plus observers; chair: A.J. Feijt (KNMI); decides upon annual plan & resource expenditure, guides work of the Scientific Editorial Board Scientific Editorial Board: core staff of 15; mainly composed of scientists from member institutes, the BSIK Climate Changes Spatial Planning Program (dealing with subsidies for investments in the knowledge infrastructure) & Synergos Communication; chair: Dr. Rob van Dorland (KNMI); develops and implements annual plans, e.g. internet climate portal coordination
	Funding	<ul style="list-style-type: none"> partners contribute in kind (mainly personnel), may receive funding through the BSIK Climate Changes Spatial Planning Program (within program's communication strategy COM-3)^[1,2,3] additional support from Ministry of Housing, Spatial Planning and the Environment (VROM)
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> no formal reporting or evaluation procedures in place annual plans are decided upon and operations overseen by a Steering Committee composed of member institutes memorandum of understanding stipulates that each member is responsible for the quality of the knowledge that informs different PCCC activities^[1]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> thematic focus as outlined in annual plans decided upon by member institutes (in Steering Committee)^[1] users may interact with PCCC staff on additional information needs, e.g. through interactive interface features (Q&A)
	Main KB activities (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> "peer coordination": establish a communications network between CC research institutes (within PCCC and with other programs), e.g. meetings to better coordinate & promote communication, climate calendar, etc.^[1,2,3]

¹² Netherlands Environmental Assessment Agency (PBL, *see separate profile*), Royal Netherlands Meteorological Institute (KNMI, *see separate profile*), Climate Change and Biosphere Centre, Wageningen UR (CCB), Energy Research Centre of the Netherlands (ECN), Climate Centre VU University Amsterdam (CCVU University), Utrecht University, Deltares, Netherlands Organisation for Scientific Research (NWO)

		<ul style="list-style-type: none"> coordinate and network with different information users: <ul style="list-style-type: none"> “match” climate science providers with users,^[3] e.g. identify need through interactive (Q&A) interface features and link it with communication & dialogue services provided by PCCC members organize symposia and dialogue workshops on topical issues with different stakeholders, e.g. politicians, government officials, industry etc., e.g. on “The IPCC report and its meaning for the Netherlands”^[1,2,3] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> translate climate science into readable (popular scientific) formats, suitable for various users, e.g. pupils, to be published on the <i>Klimaatportaal</i> <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> organize annual climate updates and climate days on topical issues, e.g. press conference on the “State of the Climate 2006” reports^[1,2] inform public through media & the web platform (<i>Klimaatportaal</i>): with different information formats (publication section), information on ongoing international activities (IPCC, Kyoto and Montreal Protocols) or through the climate diary^[1,2]
	Main outputs	<ul style="list-style-type: none"> web-based “<i>Klimaatportaal</i>” with interactive features (Q&A, discussion fora, calendars) brochures (esp. “The State of the Climate” annual brochure), fact sheets, etc. newsletters, videos or press releases (comments & interviews)
	Target groups	<ul style="list-style-type: none"> wide audience, on the national, regional and local scale: incl. policy makers, stakeholders in spatial planning, business, NGOs, the media the public more generally, esp. pupils (own section) climate scientists (PCCC peers & beyond)^[1,2]
	Policy process	Not specifically focused on concrete policy processes, but more information service that aims to contribute to awareness-raising among the general public.
Effectiveness	Saliency	<ul style="list-style-type: none"> strong emphasis of <i>relevant</i> science communication^[1] built-in interactive interfaces allow for response to individual user needs recognized climate “service” provider bridging science and society: European Meteorological Society Outreach and Communication Award for “role model that Klimaatportaal plays in communicating climate science to society”^[2] <p><i>moderately important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> scientific credibility is stressed, e.g. in memorandum of understanding^[1] collaboration of Dutch research institutes that cover a broad spectrum of climate science (interdisciplinarity, also embracing alternative concepts, skeptics vs. proponents) platform contents informed by recent climate science <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> easy access to information, publications, events etc. (mostly in Dutch) information on internal procedures and rules is limited and partly scattered across different institutions and domains <p>Stakeholder participation:</p> <ul style="list-style-type: none"> dialogue (events or online) with stakeholders from media, politics, business and NGOs, explicitly including climate protagonists and skeptics^[1,2] <p><i>less important dimension</i></p>
Sources	Websites	<p>[1] http://www.klimaatportaal.nl</p> <p>[2] http://knowledgeforclimate.climate-research-netherlands.nl/</p>
	Literature	<p>[3] VROM (2005). <i>4th Netherland's National Communication under the UNFCCC</i>. URL: http://unfccc.int/resource/docs/natc/natc4.pdf</p>

Potsdam Institute for Climate Impact Research (PIK, Germany)		
General	General description	The Potsdam Institute for Climate Impact Research (PIK) is an independent non-university research institute of the Leibniz Association engaged in the study of global change and its impacts on ecological, economic and social systems. ^[1]
	Thematic focus	<ul style="list-style-type: none"> • main focus: CC impacts (relevant for both adaptation & mitigation) • from an integrated, interdisciplinary (social & natural scientific) perspective • focus is mainly global, partly (and more recently increasingly) national & regional • beyond that, also general questions on global change & sustainable development^[1,8,9]
	Constitution	<ul style="list-style-type: none"> • founded in 1992, instigated by German Science Council^[9] • non-profit organization as member of the <i>Leibniz Association</i> (i.e. an umbrella organization of 87 independent research institutions in the public interest that conduct research, provide infrastructure for research & perform research-based services for the public, policy makers, academia and business)^[1,2]
	Objectives	<ul style="list-style-type: none"> • to examine the earth system's capacity for withstanding human interventions and devise strategies and options for a sustainable development of humankind and nature • to generate interdisciplinary and solution-oriented insights and to provide society with sound information for decision-making^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • located in Potsdam, director: Prof. H.J. Schellnhuber^[1] • overall staff of 323^[5] with diverse international & disciplinary backgrounds • organized in four research domains with flagship projects: 1. Earth System Analysis, 2. Climate Impacts and Vulnerabilities, 3. Sustainable Solutions, 4. Transdisciplinary Concepts and Methods^[1] • executive staff: scientific coordination, director's office, public relations, administration and IT-services • constitutional bodies: <ul style="list-style-type: none"> • general meeting, chair: Prof. H. Graßl (Max Planck Institute (MPI) Hamburg), all members, incl. State of Brandenburg & Federal Republic; annual meeting, elects Board of Trustees, changes statutes of the association, approves annual reports by the Board of Directors^[9] • Board of Directors, 3 headed: director, deputy & assistant director, responsible for overall management and direction (e.g. development of research programs with consultation of staff), develops working plans and annual reports^[1,9] • Board of Trustees, ("Kuratorium", chair: Dr. Josef Glombik), currently 9 independent members encompassing federal & state government representatives, researchers from other research institutions and stakeholders from NGOs; oversees the director & decides upon all fundamental aspects of the institute, e.g. research activity guidelines, appoints Scientific Advisory Board^[1,9] • Scientific Advisory Board, chair: Prof. Dirk Messner, German Development Institute (GDI); 12 independent international researchers, advises on important scientific and organizational aspects: medium term research planning & development, regular evaluation of research, advice and service activities^[1,9]
	Funding ^[5]	<ul style="list-style-type: none"> • overall budget in 2011: ca. € 28 M^[5] • core funding from the Federal Republic of Germany and the Federal State of Brandenburg (50:50, ca. € 11 M in 2011)^[1,5] • other sources: external funding <ul style="list-style-type: none"> • to a large extent national or EU research grants (ca. € 11 M in 2011)^[1,5] • in 2011: € 225,000 from German Federal Government's economic stimulus packages and the European Regional Development Fund^[1]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • regular (every 7 years, next in 2014) independent evaluation of contents & structure by Leibniz Senate (with independent representatives from science and policy) on behalf of the state governments' Joint Science Conference (GWK)^[2]

		<ul style="list-style-type: none"> regular evaluation by independent scientific Advisory Board, e.g. in-depth audits (conducted between 2 senate evaluations)^[9] Scientific Advisory Board evaluates scientific quality and working plans (for all research activities) on an annual basis in a report which may decide upon continuation of and changes to core projects^[9] in 1994, the predecessor of the GWK commissioned the German Science Council to externally evaluate PIK regarding its research quality and organization^[8]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> Board of Trustees and Scientific Advisory Board give advice on overall research strategy^[1,9] director develops research programs in consultation with PIK researchers, e.g. "ToPIK process", i.e. ideas for projects: <ul style="list-style-type: none"> are derived internally & through a "bottom up" process; are selected by Board of Directors in consultation with research leaders & science coordination staff; and take into consideration the recommendations from the Scientific Advisory Board^[1]
	Main KB activities ^[1] (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> identify research gaps to improve understanding & reduce uncertainties, e.g. of (high resolution) models for (regional) climate (impact) simulations (e.g. "Regional Climate Change & Extremes" (RECCWEX)) <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> with peers: <ul style="list-style-type: none"> Technical Support Unit (TSU) of IPCC's working group on mitigation located at PIK serve as co-location center and network with private, public and academic actors under Climate-KIC, 1 of 3 Knowledge and Innovation Communities (KICs) to accelerate and stimulate innovation <p>KBA 3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> conduct integrated environmental assessments, e.g. contribute to IPCC develop scenarios & models of natural and social systems, develop computer simulations and data integration translate climate research into easy to understand formats (<i>see main outputs</i>) <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> Research Domain III "Sustainable Solutions": analyze regional and global policy pathways (e.g. regarding global cooperation or sector specific), policy options and instruments to achieve a low carbon economy and GHG reductions for long-term climate protection^[1] provide input into development of adaptation strategies and options, e.g. recommendations on water resource management in the 'Land' (state) Brandenburg^[1] <p>KBA6: Personal policy advice and consultation^[1]</p> <ul style="list-style-type: none"> institute members serve as advisors in several national and international committees & boards: <ul style="list-style-type: none"> e.g. Schellnhuber as Chief Scientist, WBGU (see separate profile), SEI (see separate profile) etc.; Jäger as member of scientific and technical advisory committee to the International Disaster and Risk Conference (IDRC) Davos; Edenhofer as member of the advisory committee of the Green Growth Knowledge Platform etc. <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> lectures for students ("Science & Pretzels series") public engagement through classical media (interviews and articles in journals, TV, radio), the webpage & newsletter or public education products (e.g. board games) visits to PIK, the library, or museum "weather factory"

	<p>Main tangible outputs</p>	<ul style="list-style-type: none"> • reports, working papers, brochures, ‘fact sheets’, online research briefs • scenarios or models & respective simulation tools (e.g. within Potsdam Real-Time Integrated Model for probabilistic Assessment of emission Paths (PRIMAP), MegaRun, NEXT) • interactive maps (e.g. tipping elements or ‘hot’ issues, i.e. components of the Earth System that could be ‘tipped’ into different states by small perturbations) • esp. for “outreach”: newspaper, TV and radio articles & comments, press releases, newsletter, library, games (e.g. climate board game with GCF, see separate profile), museum “weather factory”^[1]
	<p>Target groups</p>	<ul style="list-style-type: none"> • scientists • German (federal & regional)/international policy makers: e.g. state of Brandenburg, EU • international/multilateral organizations (e.g. the World Bank, UNFCCC) • business community (e.g. through Climate Knowledge and Innovation Community (KIC) at European Institute of Innovation and Technology (EIT)) • explicitly through outreach: Media • public more generally^[1,8,9]
	<p>Policy process</p>	<ul style="list-style-type: none"> • general research approach (systems analysis, global, max. regional, and long-term models and simulations)^[3,4] more relevant for “prospective” agenda-setting, and awareness-raising (“alarming”) • activities that analyze policy pathways, options or instruments (Research Domain: Sustainable Solutions) more operationalizable for policy formulation and implementation
<p>Effectiveness</p>	<p>Saliency</p>	<ul style="list-style-type: none"> • decisive guidance by Board of Trustees with representatives from federal & state government and stakeholders from NGOs on overall research strategy • solution-oriented research design (system analysis, scenarios & models) • increasing focus on <i>regional</i> impacts and vulnerabilities (higher temporal and spatial resolution) with higher relevance to concrete decisions, (e.g. adaptation strategy of the Land Brandenburg) than to global models^[1,3,4] • range of research activities and products (tools, maps, policy options & recommendations) with use orientation and as basis for decisions in politics, economics and civil society^[5] e.g. in “sustainable solutions” domain^[1] • integrated (interdisciplinary) and problem-oriented research is linked to practice (reality check) through ‘transdisciplinary’ research designs^[1,3,6] <p><i>moderately important dimension</i></p>
	<p>Credibility</p>	<ul style="list-style-type: none"> • organizationally independent research institution • peer reviewed, high-profile interdisciplinary research^[1,9] • research quality evaluated by the German Science Council as “good and innovative”^[8,9] • PIK seeks to be an ‘honest broker’: “uncertainties which are inherent in many scenarios are clearly spelled out according to good scientific practice”^[1,7] (however, perceived as “climate change alarmist” by some researchers, e.g. Hans von Storch) • scientific excellence regularly evaluated by Leibniz Senate & Scientific Advisory Board^[1,2] <p><i>important dimension</i></p>
	<p>Legitimacy</p>	<p>Transparency:</p> <ul style="list-style-type: none"> • projects and outputs: information easily accessible online (deliverables in publication section); active information dissemination to broader public (own Press & Public Relations Office); online, classical media, enacting through library, museum or board game, etc. • process and organization: varying, partly limited information on internal governance (roles and responsibilities, annual reports etc.)^[1,9] <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • recently increasing role of transdisciplinary research also for purpose of representativeness/legitimacy and for grasping different views & perceptions: <ul style="list-style-type: none"> • esp. for the development of policies or integrated assessment (models)^[1,3,6,7] <p><i>moderately important dimension</i></p>

Sources	Websites	[1] http://www.pik-potsdam.de
		[2] http://www.leibniz-gemeinschaft.de/
	Literature	[3] de la Vega-Leinert, A., D. Schröter, et al. (2008). "A stakeholder dialogue on European vulnerability." In <i>Regional Environmental Change</i> 8(3): 109-124.
		[4] van der Sluijs, J. P. (2002). "A way out of the credibility crisis of models used in integrated environmental assessment." In <i>Futures</i> 34(2): 133-146.
		[5] Leibniz Gemeinschaft: Jahrbuch 2012. Retrieved from: http://www.leibniz-gemeinschaft.de/fileadmin/user_upload/downloads/Presse/Publikationen/Leibniz_Jahrbuch_2012.pdf
		[6] Welp, M. (2000). <i>Stakeholder successes in global environmental management</i> . PIK Report No. 70
		[7] Jürgens, I. (2004). "Science-Stakeholder Dialogue and Climate Change. Towards a Participatory Notion of Communication". In: Biermann, Campe, Jacob, eds. 2004. <i>Proceedings of the 2002 Berlin Conference on the Human Dimensions of Global Environmental Change "Knowledge for the Sustainability Transition. The Challenge for Social Science"</i> , Global Governance Project: Amsterdam, Berlin, Potsdam and Oldenburg. pp. 87-101.
		[8] Wissenschaftsrat, (1999) Stellungnahme zum Potsdam - Institut für Klimafolgenforschung (PIK), Potsdam. Wissenschaftsrat, Göttingen.
		[9] Leibniz Gemeinschaft, der Senat (2007): Stellungnahme zum Potsdam-Institut für Klimafolgenforschung e. V. (PIK). SEN 0065/076; 22.11.2007

ProClim- Forum for Climate and Global Change (Switzerland)		
General	General description	ProClim-, the Forum for Climate and Global Change, is a platform for research and science-policy coordination on global (climate) change at the Swiss Academy of Sciences (SCNAT). ProClim- coordinates, <i>inter alia</i> , the independent Advisory Body on Climate Change (OcCC) and the Parliamentary Group 'Climate Change'. ^[1,5]
	Thematic focus	Thematically, ProClim- covers all "climate and global change" issues dealt with under the (ISCU) world research programs (WCRP, IGBP, IHDP, ESSP and IPCC) broadly <ul style="list-style-type: none"> • climate as central issue: focus on the physical, biogeochemical and human dimensions of mitigation and adaptation issues • mainly national & international, increasingly also subnational ("Regionen") focus • strategic, long-term focus
	Constitution	<ul style="list-style-type: none"> • founded 1988, on initiative of the Swiss climate research community via and at SCNAT as interdisciplinary national climate research program "Programme Climatologique Suisse" • in 1991, redefined by the SCNAT Board as Swiss Institute for Climate and Global Change, since 1993, called "Forum for Climate and Global Change"^[4,5] • in 1996, the Federal Department of Home Affairs & the Federal Department of the Environment (Etec) mandated the SCNAT to create the <i>Advisory Body on Climate Change</i> (OcCC, operational phase: 1997-2012) • in 1996, 8 Parliamentarians founded the <i>Parliamentary Group „Climate Change“</i> at SCNAT
	Objectives	<ul style="list-style-type: none"> • ProClim's main objectives are "to facilitate both integrated research activities and the necessary linkages among scientists, policy-makers and the public at home and abroad" and to "enhance communication between science, public administration, politics, economy and the public."^[1] Objectives of ProClim- subsidiary bodies: <ul style="list-style-type: none"> • <i>Parliamentary Group "Climate Change"</i>: "to inform Swiss parliamentarians about the anticipated global climate change and its local impacts and to discuss opportunities to mitigate and adapt to climate change" • <i>OcCC</i>: "to formulate recommendations on questions regarding climate and global change for politicians and the federal administration"^[1,2]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • Steering Committee ("Kuratorium", director: Prof. Heinz Gutscher) with 11 independent members from public and private research institutes, 1 ex-officio member • ProClim- office at SCNAT in Bern, executive director: Dr. Christoph Ritz <ul style="list-style-type: none"> • core staff: 5 scientists, plus 3 student assistants & 2 observers/guests • simultaneously serving as managing secretariat of the OcCC^{a)} & the Parliamentary Group "Climate Change"^{b)} a) OcCC: <ul style="list-style-type: none"> • independent, advisory body for politicians/federal government with ca. 30 members from research, private sector & federal administration (FOEN) • executive secretary at ProClim-: Dr. Christoph Kull • following expiration of the current mandate in 2012, considerable restructuring envisaged^[6] b) Parliamentary Group "Climate Change": <ul style="list-style-type: none"> • executive secretary at ProClim-: Dr. Christoph Ritz
	Funding	<ul style="list-style-type: none"> • mixed funding: <ul style="list-style-type: none"> • ca. 50% core public financing via SCNAT (budget for "climate" theme: ca. CHF 950,000 (ca. € 700,000) p.a., mainly implemented by ProClim-)^[7] • ca. 50% additional, project-based funding from various sources, e.g. Federal Agency for the Environment, Swiss Re (Reinsurer), MeteoSwiss, international research programs (e.g. WCRP); or service fees, e.g. for business workshops^[3,8]

	Accountability, reporting and evaluation	<ul style="list-style-type: none"> no special reporting requirements or evaluations formally accountable to SCNAT regular publication of annual programs & reports on major activities & products^[1,3,6]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> core activities are self-initiated & independent from SCNAT consultation with Steering Committee on new ideas co-definition in case of individual requests or project partnerships^[8]
	Main KB activities ¹³ (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> coordinate Swiss & international scientific peers <ul style="list-style-type: none"> as authors or reviewers to IPCC reports within international research programs like IGBP, WCRP, IHDP, SCOPE at national fora for peer exchange, e.g. the Swiss Global Change Day in research networks (e.g. "a+ energy committee") through research database "InfoSystem" (with > 10,000 researchers and >2,500 research projects on climate and global change) match socio-political actors (administration, media, business) with national and international climate & global change expertise <ul style="list-style-type: none"> by linking media, administrative or private inquiries with suitable experts (e.g. via online help desk), e.g. for guest lectures at networking events (e.g. the annual Symposium on Climate Change Adaptation for scientists and administration) in "regional climate dialogue" events between climate science and sub-national & municipal decision-makers from policy & economy by identifying & supporting guest speakers for 3-4 open working lunch meetings/year (= secretariat service for Parliamentary Group "Climate Change") <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> provide personal & use-tailored information in response to inquiries on climate science questions (e.g. on IPCC) compile and translate climate science (partly as support service for Swiss scientists): <ul style="list-style-type: none"> assessment reports, position papers, climate science synopses formats with broad user range: newsletter and fact sheets (also on demand, for administration, media, economy) <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> esp. assessments products jointly produced with OcCC function as preparatory policy advice with recommendations for decision-making in government, administration (agencies) or economy^[2] <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> office staff members serve as advisors in several national and international committees & boards <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> manage information portal (joint "KlimaPortal" targeted at pupils and public) organize public exhibitions (e.g. for schools or for rent) facilitate public fora and media conferences on (research on) emerging topics (e.g. DenkSchrift Energie, IPCC InfoVeranstaltung, Klimaforum Thun)^[1,2,3,6,7,8]

¹³ Note: Because of the "nested" organizational structure of ProClim-, some activities listed here are conducted in partnership with OcCC or the Parliamentary Group.

	Main tangible outputs	<ul style="list-style-type: none"> online electronic platforms & tools for information dissemination & match-making: research "InfoSystem" with inquiry help-desk, "KlimaPortal" (with OcCC & partners) assessment reports (jointly with OcCC or C2SM, e.g. CH2011 "Swiss Climate Scenarios"), position papers, climate science synopses ("Global Change Abstracts"), fact sheets (e.g. "Climate Press" for journalists), newsletters (e.g. "ProClim- Flash" with OcCC), educational material, etc.
	Target groups	<ul style="list-style-type: none"> scientists: national research, international programs, academies policy makers: esp. administrations, parliamentarians, increasingly: cantons business schools, universities public more broadly: mainly through media (multiplier)
	Policy process	<ul style="list-style-type: none"> main focus on providing pre-policy information for awareness-raising, agenda-setting & public education limited scope for direct advice on policy formulation, implementation or business planning questions, but access to Swiss research landscape enables match-making^[8]
Effectiveness	Saliency	<ul style="list-style-type: none"> strong focus on coordination of science with socio-political actors^[1,6] broad portfolio of use-tailored products^[1,6] secretariat function for OcCC and Parliamentary Group Climate Change fosters strong, institutionalized links to government, parliament and private sector^[5] some members in academic Steering Committee with link to practice (e.g. Federal Office for the Environment (BAFU), Swiss Re) <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> targeted scientific supervision of products by scientists in Steering Committee whenever its own internal capacities are limited, ProClim- draws on relevant research in Switzerland and abroad (e.g. Swiss Academy of Sciences & international state-of-the-art research processes)^[1,4,8] policy oriented bodies (OcCC & Parliamentary Group) are institutionally linked but practically independent to assure political independence of ProClim-^[5] <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> strong information dissemination strategy with broad product portfolio (from highly scientific to plain popular), in up to 3 languages (English, French, German) and with open access platforms & possibility of direct inquiries^[1] scattered, partly limited, information on internal processes, institutional affiliations or responsibilities <p>Stakeholder participation:</p> <ul style="list-style-type: none"> broad representation not so important, as apparent from insignificant number of non-academic and social science stakeholders in Steering Committee^[1] <p><i>less important dimension</i></p>
Sources	Websites	<p>[1] http://www.proclim.ch/4DCGI/en/index.html</p> <p>[2] http://www.occc.ch/index_e.html</p>
	Literature	<p>[3] ProClim- Jahresprogramm (2011). http://proclimweb.scnat.ch/portal/ressources/1770.pdf</p> <p>[4] Niederberger, A. A. (2005). "Science for climate change policy-making: applying theory to practice to enhance effectiveness." In <i>Science & Public Policy (SPP)</i> 32(1): 2-16.</p> <p>[5] Lehmann & Rieder (2002). <i>Wissenschaftliches Wissen in der politischen Auseinandersetzung: Fallstudie zur Genese des CO2-Gesetzes im Auftrag der Arbeitsgruppe Transdisziplinarität der Energiekommission der Schweizerischen Akademie der Technischen Wissenschaften (SATW)</i>, SATW-Schriften 34; http://www.interface-politikstudien.ch/downloads/deutsch/Be_CO2-Studie.pdf</p> <p>[6] ProClim- Jahresprogramm 2012, http://proclimweb.scnat.ch/portal/ressources/2584.pdf</p> <p>[7] Mehrjahresplanung 2012–2016 der vier Schweizerischen Akademien der Wissenschaften, dem Zentrum für Technologiefolgenabschätzung sowie Science et Cité; http://www.akademien-schweiz.ch/index/Portrait/Auftrag.html</p>
	Interview	[8] Interview with representative

Regional Adaptation Collaboratives (RACs, Canada)		
General	General description	The Regional Adaptation Collaboratives ¹⁴ (RACs) are collaborative partnerships between the Federal Government, provincial authorities and local and private stakeholders that “support coordinated action towards advancing regional climate change adaptation decision-making”. ^[1]
	Thematic focus	<ul style="list-style-type: none"> • adaptation (CC impacts and adaptation options) • key thematic areas are water management (incl. flood risks, groundwater protection, droughts, etc.), ecosystem management (forests, grasslands), community adaptation • mainly natural dimensions, occasionally economic or social dimensions • mainly local and partly regional impacts and adaptation options • long-term (impacts), short-term/operational (options)
	Constitution	<ul style="list-style-type: none"> • initiated through the RAC program by Natural Resources Canada (NRCan) (division “Climate Change Impacts and Adaptation”) • fixed-period, project-based initiative set in place between 2009 and 2012
	Objectives	The objective of the RAC program is to “catalyze coordinated and sustained adaptation planning, decision-making and action, across Canada’s diverse regions”. ^[1,2]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • RAC program is a program of NRCan (division “Climate Change Impacts and Adaptation”) which supported the establishment and activities of six collaboratives throughout Canada • single RACs: <ul style="list-style-type: none"> • partnerships between the federal government, provinces, territories, communities, businesses, academia, and civil society organizations • differ as regards numbers and types of partners involved, e.g. RAC Prairie includes 14 partners (mainly provincial representatives), RAC Atlantic includes 66 partners (mainly municipal and provincial representatives) • similar governance structures: daily management routines (finances, reporting, timelines) are undertaken by a manager and his/her team, supported by a management or coordination committee (consisting of the manager, the key provincial partners and NRCan). In addition, some collaboratives have set up advisory, steering or supervision bodies that provide strategic guidance and supervise the coordination committee • RACs organize their activities predominantly in predefined projects
	Funding	<ul style="list-style-type: none"> • RAC program was endowed with \$ 30 (ca. € 23.4) M through the Clean Air Agenda • single RACs apply a cost-sharing approach: half of the budget is provided by NRCan’s RAC program, half by partners (may also be in-kind contributions), around \$ 6.6 M - \$ 8.2 M (ca. € 5.1 M - € 6.4 M) per collaborative
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • overall RAC program: internal and external evaluation by the Auditor General following the termination of the program • single RACs: <ul style="list-style-type: none"> • are accountable to the steering committees and most notably to NRCan. This includes financial and management issues and overall performance • mid-term evaluation (in 2011) and final evaluation (at conclusion) of single RACs by NRCan based on reports by the collaboratives^[5] • standardized assessment, on a project basis, of the contribution to “adaptive capacity”: template filled in by project leaders indicating, on a scale from 1-5, the extent to which the project has led to an increase in stakeholders’ understanding of CC adaptation and capacity^[5]

¹⁴ The profile is based on an analysis of the overall RAC program and case studies on 3 regional adaptation collaboratives (Preparing for Climate Change: Securing British Columbia’s Water Future, Prairie Regional Adaptation Collaborative, and Atlantic Climate Adaptation Solutions Project).

Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> initially, the overall thematic focus of the RAC program was determined by the previous Assessment "From Impacts to Adaptation: Canada in a Changing Climate 2007". Subsequently, NRCan strongly recommended pursuing the most urgent challenges & thematic areas identified in the assessment in the process of establishment, single RACs then further defined 3 to 4 issue areas in which they wanted to focus their adaptation work specific thematic foci have been defined on the project-level (in line with the overall issue areas and subject to stakeholders' willingness to participate)
	Main KB activities (core activities in bold)	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> organize conferences, workshops and stakeholder forums (e.g. the Adaptation and Resilience Forums in the RAC Prairie) including decision-makers (partly very high-level), other stakeholders and scientists to inform about CC impacts and vulnerabilities as well as adaptation options <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> conduct vulnerability and risk assessments conduct mapping studies undertake modeling and scenario building all targeted at the local or provincial level <p>KBA 4: Capacity building and decision support</p> <ul style="list-style-type: none"> develop guidance and decision-support tools e.g. community vulnerability assessment tools tailored to small and rural communities, water management tools, guidelines for sea dikes and coastal flood hazard land use, CC adaptation framework manuals <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> assist policy formulation and planning processes at the provincial and local level (e.g. adaptation-focused municipal CC action plans, provincial drought strategies) <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> Webinars press releases at the beginning of the single RACs single RACs: Websites: publications available, reports on workshops overall not very extensive media profile
	Main tangible outputs	<ul style="list-style-type: none"> reports on vulnerability and risk assessments, often including maps (e.g. floodplain maps) or similar tools guidelines and other decision-making tools (see examples above) updated or new policies and planning documents (see examples above)
	Target groups	<ul style="list-style-type: none"> mainly decision makers at local and provincial levels: <ul style="list-style-type: none"> decision makers in municipalities provincial departments partly also professional agencies
	Policy process	<ul style="list-style-type: none"> agenda-setting and policy formulation: The program is quite clearly focused on the support of policy formulation, not implementation. In practice, it is more often problem identification and definition (assessments, etc.). often it is very operational and short-term (e.g. how to increase sea dyke standards) some more strategic policy processes (e.g. adaptation strategies)

Effectiveness	Saliency	<ul style="list-style-type: none"> focus on <i>regional</i> and <i>local</i> level in order to initiate adaptation action <ul style="list-style-type: none"> projects are targeted at particular problems, specified policies and planning (e.g. provincial water management strategy; municipal infrastructure planning) RAC projects generally involve the relevant decision makers, e.g. municipalities, provincial departments RACs' themes are oriented on the most important impacts identified in the Assessment "From Impacts to Adaptation: Canada in a Changing Climate 2007" <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> the work of the RACs is based on the findings of the scientific Assessment "From Impacts to Adaptation: Canada in a Changing Climate 2007" research institutions participate in the RACs and/or single projects and are strongly involved in assessments and modeling. <p><i>less important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> outputs: varying for the single RACs, in most cases reports, conference proceedings are made available through website process and organization: varying, basic organization of RACs is presented, single projects vary <p>Stakeholder participation:</p> <ul style="list-style-type: none"> built on a "partnership approach", i.e. the involvement of the concerned & relevant decision-makers, partly involvement of stakeholders like ENGOs, Aboriginal organizations, industry etc. <p><i>moderately important dimension</i></p>
Sources	Website	[1] http://www.nrcan.gc.ca/earth-sciences/climate-change/community-adaptation/regional-collaborative/48
	Literature	<p>[2] Natural Resources Canada (NRCAN) (2011). <i>Evaluation of the Climate Change Geoscience and Adaptation Program Sub-Activity</i>. Ottawa, Canada, Natural Resources Canada (NRCAN).</p> <p>[3] Bauer, Anja & Steurer, Reinhard (2012). "Multi-level governance through regional adaptation partnerships." In <i>Institute for Environmental Studies (IVM), VU University Amsterdam, Online Proceedings of the Symposium 'The Governance of Adaptation'</i>, http://www.adaptgov.com/download-papers/ [Symposium 'The Governance of Adaptation', Amsterdam, 22-23 March 2012]</p> <p>[4] Bauer, Anja & Steurer, Reinhard (2012). <i>Regional adaptation partnerships in Canada and the UK: Catalysts for policy innovation or talking shops?</i>, Draft prepared for the Climate Policy Innovation Workshop, 28-29 June 2012, Cambridge, the UK</p>
	Interviews	[5] Nine interviews with representatives from NRCAN, the managers of three collaboratives and key partners of three RACs

Regional Climate Change Partnerships (RCCPs, United Kingdom)		
General	General description	The Regional Climate Change Partnerships ¹⁵ are collaborative networks between public, private and third sectors in the English regions and in the Devolved Administrations that support coordinated action on CC adaptation at a local and regional level.
	Thematic focus	<ul style="list-style-type: none"> • adaptation (CC impacts and adaptation options) • natural, economic or social dimensions • local and regional impacts and adaptation options • long-term (impacts), short-term/operational (options) • focus areas include, among others, communities, business, biodiversity, tourism, health, agriculture and forestry, transport, planning, monitoring
	Constitution	<ul style="list-style-type: none"> • as a follow-up of the UKCIP's (see separate profile) initiative to conduct regional scoping studies in 1999 • established by regional authorities from 2000 on, supported by UKCIP
	Objectives	The partnerships aim to investigate the regional and local impacts of CC, build the knowledge base as well as the capacities required for effective adaptation, and advise public and private decision makers.
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • 12 independent regional partnerships with different organizational and management structures in the English and devolved regions, but, in broad terms, with the following main structural elements: <ul style="list-style-type: none"> • key partners: organizations from across the public, private and third sectors (including local authorities (county and borough councils), public agencies, research organizations, public service providers, NGOs and businesses) • management teams: located at various organizations in the different partnerships (e.g. regional branch of Environment Agency, own non-for-profit company) • executive or steering groups: comprise the funding partners (originally regional authorities, but since the omission of the regional governance arrangements more diversified), take strategic decisions, provide overall guidance and maintain close relations with the management • advisory groups: in some partnerships (e.g. Climate SouthWest), consist of different stakeholders, support the management • President or Chair: in some partnerships (e.g. London, Climate South East) as high-profile representatives (from science or business) • working groups: organize activities either along thematic lines or sectors • all partnerships collaborate within ClimateUK, a 'community of interest company', which evolved from an informal coordination platform (the UK Interregional Climate Change Group) in 2011
	Funding	<ul style="list-style-type: none"> • differs from partnership to partnership and no overall figure is available • sources: core partners, Defra, EU funding • funding through Defra: since 2008, between £ 20k and £ 80k (ca. € 22,8k and € 91,5k) per partnership per year through its Adapting to Climate Change Programme (ACC) with a decreasing tendency^[2]; current agreements for 18 months (until March 2013) delivered through Environment Agency
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • annual reports on financing and activities^[5] • internal procedures: accountability of the management to the executive committee • Defra funding: no comprehensive formal evaluation of all partnerships, but less formalized reviews of activities on the basis of progress reports every three months^[5]; review on partnership activities at the end of the current funding period in 2013 by Environment Agency^[1]

¹⁵ The profile is based on an analysis of case studies on three regional climate change partnerships (Climate South East, Climate SouthWest, London Climate Change Partnership).

Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> largely driven by perceived needs of management and key partners, willingness of organizations in various sectors to engage and funding opportunities; key areas of CC impacts and vulnerabilities identified in scoping studies; partly key sectors identified in stakeholder workshops^{5]} agreement with Defra: general objectives and criteria agreed between partnerships and Defra^{5]}
	Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> assess data availability, use and data needs for local/regional weather and climate services (e.g. Observing London) <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> host or support a range of workshops for members and other stakeholders to address specific aspects of adapting to CC impacts (e.g. for businesses in various economic sectors in Climate SouthWest, on local health in London) or discussion forums establish mechanism to improve the connection between research with the sectors and local decision-makers (in development in London) facilitate stakeholder consultation in Defra's work to develop the National Adaptation Programme (2013) <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> compile and update regional scoping studies to identify CC impacts conduct a range of vulnerability and risk assessments and studies at regional level and often on specific sectors (e.g. South East Climate's 'Threats and Opportunities Research Study' or 'Wild weather warning: a London climate impacts profile' by London climate change partnership) translate assessments and studies into policy recommendations, brochures, leaflets, etc. provide regional input to the UK Climate Change Risk Assessment (see separate profile): organize workshops with local actors on CC risks, contribute to regional reports, communicate the results translate UK Climate Projections 2009 (UKCP09) for local authorities (e.g. spreadsheet in Climate South West) <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> develop and test guidance and decision-support tools (often in collaboration with UKCIP, see separate profile): e.g. risk assessment tools for organizations, handbooks, checklists for planners, adaptation guides (e.g. for the sector tourism, for communities, for the health sector) demonstrate good practice through case studies on adaptation activities that are already taking place (e.g. 'Adapting to climate change: local authority case studies' by Climate South West) provide training and workshops: <ul style="list-style-type: none"> on decision support tools (e.g. on how to use the UKCP scenarios) for communities for the implementation of the performance indicator NI188¹⁶ for SMEs on business resilience qualifications provide access to and actively promote guidance and tools by other professional organizations

¹⁶ In the UK, the National Indicator 188, measuring the "progress on assessing and managing climate risks and opportunities, and incorporating appropriate action into local authority and partners' strategic planning" (Local and Regional Partnership Board 2010), was part of the Local Government Performance Framework in effect from 2008 to 2011. Thereafter, Defra used the indicator to support local authorities on a voluntary basis.

	<p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • involvement in regional strategies and plans on adaptation, spatial development, etc. (e.g. South East Plan, the London Plan, London climate change adaptation program) • provide input to local plans and strategies (at borough and district level) • involvement in local programs (e.g. retrofitting program in London) • provide input to the National Adaptation Programme (2013) <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • representative of ClimateUK in Local Adaptation Advisory Panel LAAP (formerly the Local and Regional Adaptation partnership Board – LRAP), a local government led group which is set up to influence the work of Defra’s Adapting to Climate Change Programme and its delivery bodies, including the development of the National Adaptation Programme^[5] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • participate in public events such as the annual CC week • websites: publications, newsletters (e.g. Climate Change Bulletin) • attend public and broader sector events to raise awareness • provide public relations material (such as PPP, postcards, leaflets) to be used by other actors
	<p>Main tangible outputs</p> <ul style="list-style-type: none"> • reports on CC impacts, vulnerability and risk assessments, often in specific sectors • case studies on on-going adaptation activities • guidelines and other decision-making tools (see examples above) • brochures and leaflets for different target groups
	<p>Target groups</p> <ul style="list-style-type: none"> • decision-makers at local and (regional) levels: <ul style="list-style-type: none"> • decision-makers in counties and boroughs, partly communities • before 2010: regional authorities; in London still the Greater London Authority • public service providers • businesses • public agencies (e.g. Natural England) • general public
	<p>Policy process</p> <ul style="list-style-type: none"> • agenda-setting: identification of regional and local vulnerabilities and options • policy formulation: input to regional and local strategies and plans, guidance; input to National Adaptation Plan • policy implementation: assistance for the implementation of NI188 • often very operational and short-term, but some more strategic policy processes
Effectiveness	<p>Saliency</p> <ul style="list-style-type: none"> • explicitly established to deal with adaptation at regional and local scales: proximity to stakeholders, allowing for two-way interactions, i.e. to translate knowledge from the national level, and provide knowledge about regional vulnerabilities and needs • outputs strongly oriented towards stakeholders (e.g. postcards for tourism sector) • close cooperation with regional and local decision-makers • cooperation with established professional organizations and associations • responding to members’ needs <p><i>important dimension</i></p>
	<p>Credibility</p> <ul style="list-style-type: none"> • very close collaboration with UKCIP that provides scientific authority on CC issues^[5] • close collaboration with other (regional) research organizations • UKCIP and other research organizations as important partners and partly involved in executive and/or advisory groups • work is based on UKCIP’s scenarios and assessments <p><i>moderately important dimension</i></p>

	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • outputs: varying for the single RCCPs, in most cases reports are made available through website • process and organization: varying, basic organization is presented, single projects vary <p>Stakeholder involvement:</p> <ul style="list-style-type: none"> • various stakeholder workshops <p><i>less important dimension</i></p>
Sources	Website	[1] http://www.climateuk.net/
	Literature	<p>[2] UKCIP (2011). <i>Making progress: UKCIP & adaptation in the UK</i>. Oxford, UK, UK Climate Impacts Programme: 99.</p> <p>[3] Bauer, Anja & Steurer, Reinhard (2012). <i>Multi-level governance through regional adaptation partnerships</i>. In: Institute for Environmental Studies (IVM), VU University Amsterdam, Online Proceedings of the Symposium 'The Governance of Adaptation', http://www.adaptgov.com/download-papers/ [Symposium 'The Governance of Adaptation', Amsterdam, 22-23 March 2012]</p> <p>[4] Bauer, Anja & Steurer, Reinhard (2012). <i>Regional adaptation partnerships in Canada and the UK: Catalysts for policy innovation or talking shops?</i>, Draft prepared for the Climate Policy Innovation Workshop, 28-29 June 2012, Cambridge, the UK</p>
	Interviews	[5] Nine interviews with representatives from Defra, UKCIP, the managers of three partnerships and key partners in 2011

Royal Netherlands Meteorological Institute (KNMI, The Netherlands)		
General	General description	The KNMI is the Dutch public agency for weather, climate research, and seismology mainly concerned with weather forecasts and warnings, but also serving as research and information center for national data more generally. ^[1,7]
	Thematic focus	<ul style="list-style-type: none"> natural science research, both fundamental and applied research on mitigation and adaptation issues focused on climate systems (observations, modeling, understanding, and predicting changes) further thematic foci: weather and seismology
	Constitution	<ul style="list-style-type: none"> founded by Royal Decree on 31 January 1854; first Director General: C.H.D. Buys Ballot duties are set forth in KNMI Act (Wet op het KNMI) accepted by the Dutch Parliament in 2002 agency under the Ministry of Infrastructure and the Environment (IenM)
	Objectives	<ul style="list-style-type: none"> "[t]o develop the scientific and applied knowledge required for climate-proofing the Netherlands and to create a sustainable knowledge infrastructure for managing climate change"^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> located in De Bilt, with liaison office in The Hague; Director General: dr. ir F.J.J. Brouwer total staff: ca. 200, 60% permanent, 40% temporary employees^[8] 6 management departments: strategy, international relations, internal and external communication, personnel and organization, finance, and facilities^[1] 3 topical departments: Weather Service, Climate and Seismology, and Information and Observation Services and Technology^[1] Program Board composed of ministry representatives (IenM, Ministry of Housing, Spatial Planning and the Environment, Ministry of Defense, Waterdienst), interest groups (Branchevereniging Weerproviders), and external researchers (ECMWP, TNO, UU), meets three times a year; oversees content and implementation of KNMI's Multiannual Program and Annual Programs in terms of research and services^[1,8] KNMI Board (<i>KNMI-Raad</i>) composed of external scientists, provides technical quality reviews, meets twice a year; monitors the scientific quality of KNMI's research and its products according to the current scientific State of the Art^[1,7]
	Funding	<ul style="list-style-type: none"> mainly provided by the Government, additionally: external project funding until 2018 KNMI's ministerial agency support will be reduced by 12.5% and from 2013 onwards non-core services for national government entities will have to be commissioned on a commercial basis^[5]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> accountable to the Ministry of Infrastructure and the Environment annual reports on research and advice activities^[1,5] report based self-evaluation of research every three years^[1,5] external evaluation of research every six years^[7] Review by Program Board: implementation of Multiannual Program and Annual Programs^[1] Review by KNMI Board: scientific quality of KNMI's work and products^[1,7]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> about 70% of KNMI's scientific work is determined by KNMI itself and is oriented toward the state of international and Dutch climate research^[5,8] about 30% of the scientific work is determined in close interaction with the Ministry of Infrastructure and the Environment, other Dutch ministries, and increasingly other stakeholders via Program Board, meetings, workshops, and personal contacts^[5,8]
	Main KB activities (core activities in bold)	<p>KBA1: Knowledge needs and research gaps identification</p> <ul style="list-style-type: none"> identify knowledge needs in specific (joint) projects on climate change, e.g., ("Bridging the gap between stakeholders and climate modelers" through workshops with stakeholders)^[8]

	<p>KBA2: Coordination and networking activities</p> <ul style="list-style-type: none"> • coordinate and match Dutch and international scientific peers via: <ul style="list-style-type: none"> • scientific colloquia and workshops^[1] • PCCC (see separate profile), i.e. a communication network between Dutch university and non-university research institutes • Climate Dialogue Website which provides a platform for (climate) scientists to discuss about climate change issues of interests to scientists, policy, and the general public^[4] <p>KBA3: Compiling and translating scientific information</p> <ul style="list-style-type: none"> • deliver 'customized information' to clients in user-benign forms, e.g. via Climate Service Desk^[5] • provide scientific research and communication on climate data and on climate model runs, e.g. Climate Services^[1] • compile information on climate research and information on international climate policy from different scientific perspectives, e.g. for dissemination through PCCC^[2] <p>KBA4: Capacity building</p> <ul style="list-style-type: none"> • occasionally organizes workshops and trainings for the ministry and, within the frame of PCCC, for further stakeholders <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • staff members advice national decision-making on climate related issues, the IPCC or KNMI reports, e.g., personal contacts with the Minister of Infrastructure and the Environment^[1,5,8] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • issue press releases, newsletter, and the KNMI webpage • web-based science communication: e.g., jointly co-organize and support Climate Dialogue website via discussion platform and PCCC to improve the public communication of Dutch climate research via popular science reports, climate diary, media contacts • 'popular science' publications for broader public which present scientific information on Dutch climate, e.g., Climate Atlas and topic-related brochures
Main tangible outputs	<ul style="list-style-type: none"> • research and project reports, (scientific) articles, posters, PhD theses • 'popular science' outputs: e.g. Climate Atlas (a publication which presents the Dutch climate in the period 1981-2010)[4], popular science reports (via PCCC)^[2] • brochures, newsletters and press releases^[1] • tools, e.g. Data Centre (website with a compilation of data from observations and computational models), Climate Dialogue website, PCCC^[1,2,4,5]
Target groups	<ul style="list-style-type: none"> • politicians and administration: mainly on the national, partly also on the local level^[8] • national and international scientific institutions and researchers^[8] • general public^[8] • NGOs^[8] • media^[8]
Policy process	<ul style="list-style-type: none"> • Problem identification^[8] • Policy formulation^[8]

Effectiveness	Saliency	<ul style="list-style-type: none"> close ties with the ministry: interaction in meetings on research program, in concrete projects, and via the liaison office in The Hague^[8] increasingly tailor the presentation of climate information toward stakeholders' needs^[8] <p><i>Moderately important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> strongly highlights independence and the scientific quality of its climate research^[5,8] emphasizes that it provides purely scientific information and does not interfere with policy-making by not giving concrete recommendations^[8] communication of uncertainties of models and findings (as essential part of 'proper' science communication)^[8] internal and external review processes assure the scientific quality of KNMI's findings^[1,5,8] adherence to the Dutch Academy of Science's (KNAW) scientific quality criteria^[8] peer-reviewed journal articles & PhD theses & authorships and review activities within IPCC^[1] cooperate with (inter)national scientists in national and international climate research efforts and networks^[1,8] <p><i>Important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> 'open data policy', e.g. via specific websites and tools, like Climate Explorer (web site providing climate data and research tools)^[8] projects and their findings are made publicly available via the KNMI website, publications, as well as in annual and scientific reports^[1,5,7,8] few information on funding, internal processes, institutional affiliations or responsibilities <p>Stakeholder participation:</p> <ul style="list-style-type: none"> integration of climate scepticism via Climate Dialogue website <p><i>Moderately important dimension</i></p>
Sources	Website	<p>[1] http://www.knmi.nl/index_en.html</p> <p>[2] http://www.klimaportaal.nl</p> <p>[3] http://www.klimaatportaal.nl/pro1/general/start.asp?i=0&j=0&k=0&p=0&itemid=724</p> <p>[4] http://www.climatedialogue.org/</p>
	Literature	<p>[5] KNMI (ed.): KNMI ANNUAL REPORT 2011 – Delivering all year round, available at: http://www.knmi.nl/bibliotheek/jaarverslag/annualreport2011.pdf (accessed on 13th November 2012)</p> <p>[6] Organigram KNMI 14-10-2012, available at: http://www.knmi.nl/about_knmi/orgaeng.pdf (accessed on 13th November 2012)</p> <p>[7] KNMI (ed.): Triennial Scientific Report – 2007-2009. KNMI Research, available at: http://www.knmi.nl/research/biennial/Triennial_Report_2007-2009.pdf (accessed on 13th November 2012)</p>
	Interview	<p>[8] Interview with representative</p>

Stockholm Environment Institute (SEI, Sweden, international)		
General	General description	The Stockholm Environment Institute (SEI) is an independent, international research institute providing advice in the broader field of environmental change and development.
	Thematic focus	<ul style="list-style-type: none"> environment & development issues; core themes: managing environmental systems; reducing climate risk; transforming governance; and rethinking development; specific activity areas: water resources & air pollution, energy, sustainability modeling & vulnerability assessments, renewable energy & sustainable sanitation concerning CC: both mitigation and adaptation natural and social scientific perspective local, national, regional and global levels mix of long-term, strategic and short-term, operational
	Constitution	<ul style="list-style-type: none"> founded 1989, as a foundation under public law by the Swedish Government, through a parliamentary decision made in 1988^[1,3] independent trust status, i.e. non-profit & non-partisan research institute^[1,3] name and mission relate to the 1972 UN Conference on the Human Environment in Stockholm^[1,6]
	Objectives	<ul style="list-style-type: none"> to bring about “change for sustainable development by bridging science and policy... by providing integrated analysis that supports decision makers”^[1] <p>specifically:</p> <ul style="list-style-type: none"> to design, develop & implement effective and equitable strategies for adaptation and mitigation in developing & developed countries for sustainable human development to improve governance for sustainable livelihoods through fostering learning & collective action within civil society, markets & the public sphere to adopt new development visions & pathways for governing the globalized economy and environment^[4]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> overall staff: ca. 200 (excl. affiliated researchers); Executive Director: Johan L. Kuylenstierna^[1,6] 7 main locations, each with acting director & additionally linked offices: <ul style="list-style-type: none"> 4 under the SEI foundation (in Sweden): SEI Stockholm (headquarters, staff: 73), SEI Asia (Bangkok, staff: 15), SEI Africa (Dar es Salaam, staff: 3), SEI Oxford (staff: 20) 3 separate independent entities (that nevertheless sit under SEI umbrella and are governed by same Board of Directors): SEI Tallinn (staff: 22), SEI York (staff: 34), SEI US (at Tufts University, staff: 32) SEI Board: 7 international independent and ex officio members from science, politics and society (Chair: Kerstin Nibleaus) appointed by the Swedish Government for up to 4 years, overall management matters Science Advisory Council: operational from 2012, with 8–12 leading international scientists, appointed by invitation from the SEI Board & the Swedish Minister for the Environment, provides strategic advice on research priorities, oversees SEI’s scientific achievements^[1] 4 Thematic Teams: which work under 5-year strategies (2010-2014)^[5], partly across locations: managing environmental systems; reducing climate risk; transforming governance, rethinking development
	Funding	<ul style="list-style-type: none"> total budget (2011) of ca. € 12 M with major share for Stockholm office operations (ca. 50%)^[4] core funding from Ministry of the Environment: ca. € 1.4 M p.a. (down from 100% in early years)^[3,6] total funding sources by sector: bilateral agencies (esp. SIDA) (32%), government (24%), multilateral agencies (15%), research institutions & NGOs (12%), private sector (11%), foundations (4%), universities (2%), banks & financial institutions (<1%)^[4] SEI York is self-funded & SEI US & Tallin are based on independent foundations

	<p>Accountability, reporting and evaluation</p>	<ul style="list-style-type: none"> • Science Advisory Council oversees scientific strategy & achievements • in 2010, three evaluations by Swedish Research Council Formas on policy relevance, scientific quality etc.^[3]; Swedish International Development Cooperation Agency (SIDA) on supported activities; and Statskontoret on relevance for Swedish Government • internal assessment project on “Getting to Policy Impact” to identify factors for SEI success (scientific credibility, policy relevance & stakeholder legitimacy, effective communication) • under development: web-based platform on planning, monitoring, evaluation and communications (PMEC) for SEI, funders and interested actors to oversee activities and performance
	<p>Definition of thematic focus (“agenda setting”)</p>	<ul style="list-style-type: none"> • overall strategic directions developed in consultation process with ca. 50 research partners, staff & stakeholders around the world (interviews, group meetings & online survey) • advice from the scientific AB informs 5-year strategies • additionally: project-based specification of topical foci with public & private partners, stakeholders and funders^[1,5]
<p>Knowledge brokerage</p>	<p>Main KB activities (core activities in bold)</p>	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • peer coordination, e.g. networking events targeting research & development organisations for enhanced knowledge generation & scope of policy impacts, e.g. “Planet under Pressure” conference^[6,2] • develop strategic partnerships with stakeholders (national, regional, global policy makers, businesses, NGOs etc.) for enhanced learning and impact (collaborative research projects), e.g.: <ul style="list-style-type: none"> • Sumernet (a cross-country partnership with policy makers), with 3C, the global initiative of business leaders , UNEP Collaborative Centre on climate adaptation • through the weADAPT platform for sharing knowledge on adaptation^[1,5] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • conduct integrated socio-economic (impact) assessments, e.g. analysis of the possible consequences of biofuel on food security & ecosystems • (co)develop global and regional models of climate, economy and impacts • contribute to international assessments (on energy, water, air and CC etc.) & dialogue processes, e.g. the Global Environmental Outlook, Rio+20 <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • conduct trainings and seminars for decision makers, e.g. seminar Climate-Smart Agriculture • conduct trainings and seminars for journalists (for “multiplication,” i.e. enhanced strategic relationships with communication partners in North and South)^[5] • develop decision support tools (e.g. model-based ecological footprint and material flow analyses in Resources and Energy Analysis Programme, Global Air Pollution Forum Emission Manual)^[1,5] <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • provide policy analysis and support on low carbon development pathways, the green economy, or sustainable consumption & production • support dialogue on concepts that enter into international treaties • evaluate and disseminate knowledge on the impact of action plans, governance arrangements, and practices for sustainable development to key stakeholders and policy makers^[1,5] <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • researchers (esp. director & senior researchers) serve as members to committees, boards and panels to (the Swedish) government^[6] • researchers negotiate international agreements as part of Swedish delegation and advised the Swedish government during its European Union presidency in 2009-10^[1,3,6]

		<p>KBA7: Public outreach</p> <ul style="list-style-type: none"> disseminate information (on activities and project outputs) to public and media mainly via its webpage as well as classical & social media: twitter feed, feature articles in scientific magazines, blog articles, impact stories, interviews with researchers conduct seminars and conferences for the public (e.g. SEI York 2012 Seminar: Can Technology Save the Planet?) or lectures for students at universities^[1,6]
	Main outputs	<ul style="list-style-type: none"> series of working papers, research reports, project reports, policy briefs press releases, newsletter, blogs, videos, social media etc. (IT-based) decision support tools
	Target groups	<ul style="list-style-type: none"> scientists policy makers: national (esp. Swedish) governments and government agencies (e.g. SIDA) and global organizations (e.g. UNFCC Secretariat) media NGOs^[5] newly broadened to private sector (from large global corporations to local businesses) informed general public^[4]
	Policy process	<ul style="list-style-type: none"> awareness-raising, agenda-setting, esp. through assessments and capacity building activities policy formulation processes, e.g. in Committees or (UNFCCC) delegations and esp. for the Swedish government, esp. in the form of impact research
Effectiveness	Saliency	<ul style="list-style-type: none"> collaborative research with user groups & stakeholders “institutional vicinity” to policy arenas, e.g. via regional offices that enable more direct access to decision makers^[4,5,6] and through close personal links of staff members to national & international policy arenas (esp. Swedish government / ministries, climate negotiations, development cooperation projects (SIDA))^[6] most activities “on demand” consultancies, strategically approached with applied and synthesizing research^[1,3,5] proactive science-to-policy communication for enhanced visibility of research to enhance relevancy^[5] evaluations (internal and external) on policy impact of SEI’s work attested political relevance and influence: e.g. ranked among world’s top-ten environmental think tanks in 2010 and 2011^[1,6] and was described as taking a “policy-oriented research approach” that “satisfactorily met the public policy needs of the Government of Sweden”^[3] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> work draws on internal (scientific staff, partly still with affiliations to universities) and external (through partnerships) inter- and multi-disciplinary science^[5,6] internal research quality review (Scientific Advisory Council) and externally through features in high quality peer-reviewed journals (e.g. Nature), or in-house journal, Climate and Development with ISI-ranking^[3,4,5] – with publications winning plaudits (2 “top ten publications on sustainability” in 2011)^[1] low level of government funding & necessity to compete with other research institutes for external funding enhances academic research independence and quality^[6] sees itself as: “an honest broker [...] a research institute committed to rigorous and objective scientific analysis to support improved policymaking”^[1,5,6] <p><i>important dimension</i></p>

	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • active dissemination strategy (own PR section): interviews, comments, press releases, newsletter, promotion, blog articles, videos, use of social media; accessible & online information on projects and outputs (in English and beyond) • range of information on internal processes, e.g. annual reports & 5-year strategy <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • “highly collaborative” approach with “stakeholder involvement” to explicitly consider local knowledge and values^[1] <p><i>moderately important dimension</i></p>
Sources	Websites	<p>[1] http://www.sei-international.org</p> <p>[2] http://www.beijer.kva.se/</p>
	Literature	<p>[3] The Swedish Research Council Formas (2010). Evaluation of research Conducted by the Stockholm Environment Institute. URL: http://wwwold.formas.se/upload/dokument/SEI_utvardering.pdf</p> <p>[4] SEI (2011): Annual Report 2011. Retrieved from: http://www.sei-international.org/mediamanager/documents/Publications/SEI-AnnualReport-2011.pdf</p> <p>[5] SEI (2009): Strategy 2010-2014. Retrieved from: http://www.sei-international.org/mediamanager/documents/SEI-Strategy-2010-2014.pdf</p>
	Interviews	[6] Interview with representative
		[7] Interview with SEI expert

Tyndall Centre for Climate Change Research (UK, international)		
General	General description	The Tyndall Centre is a research network for integrated transdisciplinary climate change research connecting 8 UK-based (university) research institutions plus the Fudan Tyndall Centre at Shanghai University, China.
	Thematic focus	<ul style="list-style-type: none"> integrated climate-change research (mitigation and adaptation) esp. policy dimension national and international level long-term, strategic
	Constitution	<ul style="list-style-type: none"> established in 2000 based on a temporary contract between the UK Natural Environment Research Council (NERC), Economic and Social Research Council (ESRC), and Engineering and Physical Sciences Research Council (EPSRC) until 2004 (prolonged until 2010)
	Objectives	<ul style="list-style-type: none"> to act as an “internationally recognised source of high quality and integrated climate-change research, and to exert a seminal influence on the design and achievability of the long-term strategic objectives of national and international climate policy”^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> the Tyndall Centre Consortium encompasses 9 partner universities in the UK and China, Tyndall Teaching (teaching network of 5 UK-located institutes) & Tyndall Researchers Network (TyReNe supporting Tyndall & affiliated contract researchers & PhD students) organized around 4 research themes, partly in consortia with international partners: Cities & Coasts; Energy & Emissions; Governance & Behaviour; Water & Land; Fudan with own research portfolio: Societal Role of High Emission Groups; Elemental Nitrogen Cycling; Water Security management at University of East Anglia (UEA), Norwich, at School of Environmental Sciences; Director: Prof. Corinne Le Quéré; responsible for medium & long-term policy & strategy, research coordination, administration, business & government liaison, communication^[1,6] 2 regional offices at University of Manchester, Institute of Science and Technology (UMIST) & University of Southampton, Southampton Oceanography Centre (SOC) Tyndall Council: 28 members (theme coordinators & representative of core partner Universities), 2 meetings per year (1 in conjunction with Tyndall Assembly), internal management body responsible for medium & long-term policy & strategy^[1] Tyndall Assembly: consultative annual forum composed of all Tyndall Centre staff, researchers, PhDs, stakeholders associated with Tyndall, Advisory Board, Supervisory Committee (until 2010: Research Council) representatives^[1,5,6] Advisory Board: 24 independent members with senior positions in business, government, science and civil society, monitors research quality e.g. approves research strategy^[1,4,6] Supervisory Board (until 2010): annual meetings with representative from each funding Council, monitors progress & (output) performance measures of the Centre. [restructured after 2010]^[1,8,6]
	Funding	<ul style="list-style-type: none"> 2000-2010: seed funding from UK Research Councils (NERC, ESRC, EPSRC) with additional support from the Department of Trade and Industry (DTI);^[1,4,8] <ul style="list-style-type: none"> total 2000/01 – 2004/05: £ 10 (ca. € 12.3) M (50% from NERC, 35% from EPSRC) allocation: 3 funding rounds (35% -50% -15%) subject to internal (Tyndall Centre's partner) as well as external (scientists & research groups) competition^[4,5,6] £70,000 (ca. € 86,000) p.a. from DTI for initial 3 years additional funding from national & international sources (research grants etc.)^[6] since 2010+: mainly external funding (collaborative project grants based) & host university's budgets (e.g. “in kind” contribution, esp. UEA)^[8,2] Fudan Tyndall Centre in China funded by Chinese central government (commitment for 15 years) & City of Shanghai^[1,8]

	<p>Accountability, reporting and evaluation</p>	<p>until 2010, mainly towards Research Councils:</p> <ul style="list-style-type: none"> • demanded supervising bodies (Supervisory & Advisory Boards, General Assembly etc.) to oversee research • annual reporting requirements (quarterly reports from each project) • 5-year evaluation process: formal evaluation by Research Councils in 2004 as basis for second 5-year funding contract^[1,8,6] <p>since 2010:</p> <ul style="list-style-type: none"> • internal accountability within the Tyndall network^[8] with project-based reporting requirements • remaining supervisory roles for (new) supervisory Board, Scientific Advisory Board & General Assembly
	<p>Definition of thematic focus (“agenda setting”)</p>	<ul style="list-style-type: none"> • initial mandate set by Research Councils in 1999 tendering process^[6] • subsequent strategies (with main tasks, purpose & objectives and research themes) based on consultation within & outside Tyndall Centre and approved by Advisory Board^[1,4,6] • researchers from inside the consortium (partly outside) may propose & specify collaborative research projects fitting the Tyndall Centre research themes^[1,4] • partly consultancy “on demand” to governmental and non-governmental organizations • since 2010: overall strategy internally set: Assembly & Advisory Board
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Knowledge brokerage</p>	<p>Main KB activities (core activities in bold)</p>	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> • jointly identify research gaps (within the Tyndall network and beyond), e.g. elaboration of report “Climate change: what we know and what we need to know” (2001) reflecting on IPCC-AR3 findings and gaps^[5] <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • peer coordination: nationally, esp. within Tyndall network and beyond and internationally in research consortia, e.g. under the Global Climate Forum (see separate profile) • coordinate with user groups in policy or industry and stakeholders more generally e.g. <ul style="list-style-type: none"> • collaborative research, e.g. UK Infrastructure Transitions Research Consortium (ITRC) with partners in government and industry^[1] • projects with “consultative groups”, e.g. “Redesigning the coast” workshop series (with CSERGE) for knowledge and information exchange between scientists, government, NGOs, citizens about impacts of CC on coastal communities^[1,5,8] • co-organize exchange events and activities, e.g. international conference “climate change and the built environment” (2002) for information exchange between researchers, designers & regulators^[4] or Business Liaison program as organized exchange with UK business & industry community at selected trade events & conferences or seminars <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • develop scenarios and models of potential futures of the climate, economy, transport or energy use, e.g. UKCP02 climate scenarios (see separate profile)^[1,4] • develop integrated assessments on CC impacts, adaptation and vulnerabilities (considering socio-economic aspects) to inform policy decisions in cities, economic sectors, coasts, national & international policy, <ul style="list-style-type: none"> • e.g. as basis for technical and policy options to adapt (“sustaining the coastal zone” research theme), the “Stern” report, CLIMSAVE (cross-sectoral, EU FP7), or CIAS (Community Integrated Assessment System)^[1,5] • compile easy to read formats for different user groups and the public, e.g. working papers, fact sheets, newsletters, popular science journals, briefing notes for decision makers^[1,4,5]

		<p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • develop decision support tools, e.g. for adaptation of coastal areas, cities (ARCADIA) or national infrastructure transition (ITRC)^[1,5] • conduct workshops and trainings for policy makers and other stakeholders e.g. on scenario development for assessment teams of UNEP's "Assessments of Impacts of and Adaptation to Climate Change in Multiple Regions and Sectors" (AIACC)^[1,4] or on "Integrated Approaches to Climate Change Management" in development planning, projects and policy^[4,5] • provide advice to, and exchange with, media for effective science communication, e.g. joint media & environment program for exchange between media representatives & researchers^[1,4] <p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • analyse and evaluate environmental policies and planning (outcomes) based on integrated assessments, e.g. <ul style="list-style-type: none"> • analysis of COP outcomes; assessment of the cost of the Kyoto Protocol for the US Economy^[4,5,8] • UK Infrastructure Transitions Research Consortium: analysis, planning & design of UK national infrastructure <p>KBA6: Personal policy advice and consultation</p> <ul style="list-style-type: none"> • individual members engage in governmental Committees or Boards • individual researchers "conduit" to Defra (2-6 months stays in policy team, or as CSA (see separate profile))^[1,8] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • public dissemination of research outputs through online (newsletters) or print media (esp. UK press), radio (interviews etc.) and TV-based information campaigns, e.g. within the British Council's ZeroCarbonCity Campaign on environmental issues • public talks, science cafes, Christmas show for school children; teachers' packs; art & CC exhibitions • interdisciplinary seminar series at Tyndall Centre partner institutes, e.g. UEA^[1,4,5,7]
Main outputs		<ul style="list-style-type: none"> • working papers, technical reports, fact sheets for (early) access to results from, and summaries of, research projects • briefing notes for decision makers^[1,4,5] • newsletter, press releases • decision support tools for climate, resource or land-use scenario generation & simulation
Target groups		<ul style="list-style-type: none"> • policy makers (communal, municipal, national, international) • business and ENGOs • scientists • media (in general and as professionals) • public more broadly
Policy process		<ul style="list-style-type: none"> • strong overall profile for agenda-setting and awareness-raising regarding issues of CC impacts, risks, vulnerabilities and adaptation (esp. based on scenario and model development)^[3] • individual activities within projects (esp. at local levels) relevant for policy formulation and evaluation, e.g. climate mitigation and adaptation strategies at coasts

Effectiveness	Saliency	<ul style="list-style-type: none"> • solutions-focused approach, with integrated, inter- and transdisciplinary CC research, “meaningful to stakeholders and informing to policymakers”^[1,5,7] • partly, “on demand” and user-tailored research, e.g. in the form of consultancies for government agencies, NGOs or business • partly, participatory approach with new methods of stakeholder involvement and informing (virtual-reality sessions)^[5] • Advisory Board with representatives from relevant user groups (business, government, and civil society) • Climate Policy Workshop • “personalized access” to government, e.g. via individual researchers “conduit” to ministerial departments <p><i>moderately important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> • high profile researchers (also in senior scientific advisory board & general assembly) • work based on peer reviewed science^[1,4] • use and continuous improvement of integrated climate models and data • regular internal and external supervision & review of research quality, e.g. through Advisory Board and Research Councils (until 2010) • political independence through core funding from research foundations (e.g. Research Councils, national and international research programs and grants) <p><i>important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • reports easily accessible on website • more scattered and less direct access to information on internal processes (esp. regarding the new organizational set-up)^[1,8] <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • partly, active promotion of mode 2, transdisciplinary approaches in multiple projects, e.g. by involving local citizens^[1,8,7] • General Assembly with stakeholder representation • research as effectively mediating between divergent views, e.g. issues of air traffic, shale gas^[8] <p><i>moderately important dimension</i></p>
Sources	Websites	<p>[1] http://www.tyndall.ac.uk/</p> <p>[2] http://www.nerc.ac.uk/research/sites/collaborative/tyndall.asp</p>
	Literature	<p>[3] Lövbrand (2011). “Co-producing European climate science and policy: a cautionary note on the making of useful knowledge” in <i>Science and Public Policy</i>, 38(3), April 2011, 225-236</p> <p>[4] Tynd-All Newsletter No. 2 (Winter 2001/2002). URL: http://www.tyndall.ac.uk/sites/default/files/Tynd2a.pdf</p> <p>[5] Tynd-All Newsletter No. 5 (Autumn 2002). URL: http://www.tyndall.ac.uk/content/issue-5-december-2002</p> <p>[6] Select Committee on Science and Technology. Appendices to the Minutes of Evidence. APPENDIX 55 (2003). Supplementary memorandum submitted by the Tyndall Centre. URL: http://www.publications.parliament.uk/pa/cm200203/cmselect/cmsctech/55/55ap67.htm</p> <p>[7] Tyndall Centre (ed.) (2006) <i>Truly useful ... doing climate change research that is useful for both theory and practice</i>. Tyndall Centre, UK, May 2006, 44p.</p>
	Interview	<p>[8] Interview with representative</p>

United Kingdom Climate Impact Programme (UKCIP, United Kingdom) (1997-2011 ¹⁷)		
General	General description	The UK Climate Impacts Programme (UKCIP) is an advisory service that coordinates research on impacts of CC in the UK and provides support and advice for public and private decision makers to assess and adapt to these impacts.
	Thematic focus	<ul style="list-style-type: none"> adaptation: CC impacts in the UK, vulnerabilities, adaptation needs and strategies for public and private organizations local, regional and national levels mostly operational, projections: long-term
	Constitution	<ul style="list-style-type: none"> established in 1997 by the UK government (Department of the Environment, Transport and the Regions, DETR)^[2] as an autonomous unit at the Environmental Change Institute at the University of Oxford^[2] 3 programming periods (1997-2002; 2002-2005; 2005-2010), based on a contract with DETR/Defra (Department for Environment, Food and Rural Affairs)^[2,6] from October 2011 on, main agendas for delivering Defra's work on adaptation went to the Environment Agency; since then, UKCIP works as a research unit of the Environmental Change Institute at the University of Oxford
	Objectives	<ul style="list-style-type: none"> initial objective was to facilitate stakeholder-led integrated assessments of the impacts of CC in the UK by providing operational coordination between impact studies, setting up stakeholder engagement and providing integration tools.^[2,6,7] from 2005 on, the objective was expanded to include the facilitation of adaptation, i.e. helping organizations develop and implement adaptation strategies and actions, and supporting new legislative requirements associated with adaptation.^[2,7]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> UKCIP Programme Office: <ul style="list-style-type: none"> based at the University of Oxford's Environmental Change Institute 2010: 17 staff members, director: Dr. Chris West Advisory Panel (initially Steering Committee): comprising key stakeholders from government departments and other agencies, the business world and NGOs; discusses the work and direction of the program^[4,6] Science Advisory Group (initially Science Panel): specialist researchers to oversee the scientific integrity of the work and tools^[4,6] User Forum where stakeholders share experience biennially and advise the Programme Office about their needs^[6]
	Funding	<ul style="list-style-type: none"> mainly funded by Defra (from 2007 on through the Adaptation to Climate Change Programme (ACC)) budget: for the contracting period 2002-2005: £ 1.8 (ca. € 2.2) M^[4], for the contracting period 2005-2010: £ 1 (ca. € 1.2) M p.a.^[2,7] other contributors: the Devolved Administrations, Environmental Change Institute (Oxford University) and the Government's Knowledge Transfer Partnership scheme^[6] assessments and studies facilitated and coordinated by UKCIP are funded by various public and private stakeholders (e.g. regional authorities, statutory providers)^[6]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> UKCIP reports twice a year to Defra external evaluation at completion of 1st and 2nd contracting periods^[4,7] "self-evaluation" report in 2011^[2]

¹⁷ This profile covers the UKCIP as implemented during its first phase from 1997 to 2011. During that time, the program was mainly financed by the UK government. From 2011 on, the tasks of UKCIP in delivering UK's adaptation policy were transferred to the Environment Agency. UKCIP now exists as a research unit of the Environmental Change Institute at the University of Oxford.

Knowledge brokerage	<p>Definition of thematic focus (“agenda setting”)</p>	<ul style="list-style-type: none"> • a working program defined the objectives and activities of UKCIP for the contracting period • UKCIP mostly responds to Defra objectives and stakeholder requirements^[4] • thematic shift to advice on, and support for, adaptation action emerged from UKCIP^[7] • further impulses through the Climate Change Act in 2008, which created increased demand for advice and support from stakeholders to undertake adaptation assessments and actions^[7]
	<p>Main KB activities (core activities in bold)</p>	<p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • coordinate, assist and foster stakeholder-led research studies <ul style="list-style-type: none"> • regional and sectoral assessments, e.g. regional CC scoping studies in regions of England, Scotland and Wales (together with the Regional Climate Change Partnerships (RCCPs) (see separate profile)), e.g. REGIS and Defra’s cross-sectoral studies^[2] • offer on-going support and guidance to both the research teams and project funders, e.g. review proposals, interview consultants, sit on steering committees or provide technical reviews^[2,4] • facilitate the establishment and support the work of RCCPs (see separate profile) <ul style="list-style-type: none"> • support RCCPs in scoping studies • guide RCCPs’ work, e.g. via UKCIP representative in steering or advisory committees • serve as Secretariat for ClimateUK, the umbrella organization for the RCCPs (until 2011) • set up the UKCIP/RCCP Business and Climate Change Adaptation Forum, i.e. an online community which serves to share experience, knowledge, publications and plans with respect to the impacts of CC on business^[1] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • contribute to development of national set of climate projections (UKCIP02, UKCP09) • provide socio-economic scenarios for the UK (on the basis of the IPCC scenarios)^[7] • publish CC information on behalf of the UK Government • provide summary reports on (latest) research on CC impacts^[2,7] • conduct sectoral studies (e.g. Modeling Natural Resource Responses to Climate Change (Monarch), build knowledge for a changing climate (BKCC)^[6] and case studies on how businesses, local authorities and others adapt to CC^[2] <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • develop a wide portfolio of decision support tools and guidance that should help organisations identify how they might be affected by CC and what they can do to minimise their risks or exploit the opportunities^[2] • run training workshops on projections and core tools (e.g. UKCP09, UKCIP Adaptation Wizard; Local Climate Impacts Profile) and other key areas of UKCIP’s work (e.g. National Indicator 188; SMEs and businesses; Adaptation Reporting Power; Departmental Adaptation Plans).^[2] • conduct remote trainings through webinars (e.g. on Adaptation Wizard) and online learning modules (e.g. on UKCP09, adaptation for business and organization, adaptation reporting power)^[2] • run ad-hoc workshops for external organisations^[2] • manage the UKCP09 helpdesk for users^[2] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • UKCIP Enews – monthly e-newsletter with a particular focus on UK activities (over 8000 subscribers in 2011)^[2] • UKCIP Climate Digest – monthly digest of 4–6 adaptation-relevant academic papers Stakeholders are notified via enews, with a link to the Climate Digest web page^[2] • deliver presentations to a wide range of audiences (ca. 80-100 presentations per year)^[6] • Twitter and Facebook (since 2010/11)^[2]

	<p>Main tangible outputs</p>	<ul style="list-style-type: none"> integrated tools for research on CC impacts: scenarios /projections (UKCIP02, UKCP09, socio-economic scenarios) and methodologies (e.g. costing the impacts of CC)^[1,2] tools to help users assess their vulnerability, identify their key climate risks, develop adaptation actions and strategies and/or evaluate their current adaptation activities <ul style="list-style-type: none"> e.g. Adaptation Wizard, AdaptME toolkit, BACLIAT Business Areas Climate Impacts, CLARA (Climate Adaptation Resource for Advisors) Assessment Tool, LCLIP (Local Climate Impacts Profile)^[1,2] guidance and briefing notes, e.g. AdOpt databases on research activities, adaptation actions, impacts of climate and news of CC activities, e.g. BRAIN (Base for Research, Adaptation, Impacts and News)^[1,2] online training courses scientific publications, popular scientific publications^[2]
	<p>Target groups</p>	<ul style="list-style-type: none"> national and Devolved Administrations, esp. Defra, others: Department of Health, Ministry of Defence^[2] local government^[7] regional administrations and partnerships^[7] agencies^[7] businesses and business-oriented organizations, especially statutory undertakers (e.g. water companies)^[7] general public and media
	<p>Policy process</p>	<ul style="list-style-type: none"> major role in awareness-raising on CC impacts, vulnerabilities and adaptation^[2,5]; performs functions of problem definition and agenda-setting especially via its projections and tools also targets the stage of policy formulation, for example when assisting in the formulation of adaptation strategies
<p>Effectiveness</p>	<p>Saliency</p>	<ul style="list-style-type: none"> work plan stakeholder-led (Defra and others) ^[2] stakeholder-led research studies in which stakeholders or partners commission the research and determine the research agenda, thus ensuring that it meets their needs^[6,7] Advisory Panel and User Forums contribute stakeholder views to the work of UKCIP and give direction to UKCIP^[6] tools are informed by both academic research and practitioner input, e.g. the UKCP09 scenarios are advised by the “UKCP09 Users’ Panel” as one of three management groups that oversees & informs the development and delivery of UKCP09; members of the Users’ Panel selected based on their expertise and ability to represent the needs of their respective communities or sectors^[1] “learning through doing culture”^[2,7]: stakeholder workshops and feedback used to develop tools and recommendations and test their utility^[2,6] sustained user interaction contributes to the use of the information and tools (e.g. projections)^[2] <p><i>important dimension</i></p>
	<p>Credibility</p>	<ul style="list-style-type: none"> international peer review, for example for the UKCP09 scenarios a scientific peer review of undertaken by 38 scientists from 7 countries; concluded credible methodologies and very high standard of work, but also high complexity and requirement of guidance on use of data^[2] wide use of scenarios (UKCP02, UKCP09) which serve as common frameworks for UK’s activities on CC impacts and adaptation^[2,7] evaluation of the UKCIP in 2004/5, including a scientific and technical review ^[4] tools are informed by both academic research and the input of practitioners being seen as independent from policy “has allowed UKCIP to play better the ‘honest broker’ or ‘critical friend’ role”^[2] <p><i>important dimension</i></p>

	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • high degree of accessibility of information and tools on the website, active dissemination strategy • information on processes and organization – medium transparency <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • facilitate stakeholder-led research • broad client and partner base: UKCIP works with and addresses different public and private decision makers and institutions <p><i>less important dimension</i></p>
Sources	Website	[1] http://www.ukcip.org.uk/
	Literature	<p>[2] UKCIP (2011). <i>Making progress: UKCIP & adaptation in the UK</i>. Oxford, UK, UK Climate Impacts Programme: 99.</p> <p>[3] UKCIP Working programme 2005-2010</p> <p>[4] Whitelaw, Alan, Zofia Stott, Oliver Greening, Sue Postle Hammond, and Andy Shaw. (2006). <i>Review of UKCIP. Final Report</i>. Surrey: ESYS Consulting.</p> <p>[5] Swart, Rob, Robbert Biesbroek, Svend Binnerup, Timothy R. Carter, Caroline Cowan, Thomas Henrichs, Sophie Loquen, Hanna Mela, Michael Morecroft, Moritz Reese, and Daniela Rey. (2009). <i>Europe Adapts to Climate Change. Comparing National Strategies</i>. Helsinki: Partnership for European Environmental Research.</p> <p>[6] Hedger, Merylyn McKenzie, Connell, Richenda, Bramwell, Penny (2006). "Bridging the gap: empowering decision-making for adaptation through the UK Climate Impacts Programme", in <i>Climate Policy</i> 6: 201-215.</p>
	Interviews	[7] 2 interviews with representatives of UKCIP; 1 interview with representative of Defra

UK Government Chief Scientific Advisers (CSAs)		
General	General description	The (Government) Chief Scientific Advisers ((G)CSA) serve as the principal source of guidance and counsel to the British Prime Minister, government departments and wider Government on science and technology-related activities and policies.
	Thematic focus	GCSA not thematically bound, but focuses on: <ul style="list-style-type: none"> • broader questions of scientific method, risk and uncertainty as well as opportunities in terms of current issues such as CC, security, energy, food, water, health and migration^[1,4] • regarding CC: focus on both mitigation and adaptation • international, national, and devolved levels • urgent concerns as well as mid- to long-term considerations • CSA bound to range of authorities of respective department
	Constitution	<ul style="list-style-type: none"> • GCSA appointed by Prime Minister for 6 years; for departmental CSA, different terms for roles and appointment apply (internal vs. external) depending on host department^[6] • first GSCA appointed in 1964; since 2011, every government department has its own Chief Scientific Adviser (CSA)
	Objectives	<ul style="list-style-type: none"> • contribute “to good policy development and delivery and sound government”^[4] by ensuring “that the best science and engineering advice is brought to bear effectively on Government policy and decision-making”^[1] • moreover, to ensure that “UK science and engineering enjoy a leading place on the world stage” esp. on global issues^[1]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • GCSA position currently held by Sir John Beddington (until 2013, thereafter: Sir Mark Walport) <ul style="list-style-type: none"> • heads the <i>Global Science and Innovation Forum</i>, a vehicle for cross-governmental information and exchange • co-chairs the <i>Council for Science and Technology (CST)</i>, a 14 headed independent advisory body on science and technology policy to the Prime Minister & First Ministers of Devolved Administrations^[4] • Government Office for Science (GOScience): provides “institutional basis” for GCSA; located in the Department for Business, Innovation and Skills (BIS) • Briefings, Guidance and Secretariat (BGS) team and 3 Global Issues Teams (Energy, Food & Environment; Health & Biotechnology; Civil Contingencies): located at GOScience; give advice to the (G)CSAs, support (with guidelines) and annually evaluate the work of Scientific Advisory Committees across government • Chief Scientific Advisers Committee (CSAC): cross-departmental forum made up of all departmental CSAs; chaired by GCSA; holds 4 formal meetings per year & informal breakfast and monthly lunchtime meetings^[1,5]
	Funding	<ul style="list-style-type: none"> • public; host departments cover CSAs and support staff salaries^[7]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • the GCSA is directly accountable to the Prime Minister and Cabinet and reports to the Cabinet Secretary; departmental CSAs to the Secretary of State or the Minister

Knowledge brokerage	Definition of thematic focus	<ul style="list-style-type: none"> • advice “on demand” to relevant governmental actors (incl. “emergency” advice) • on more long-term issues, independent agenda-setting by (G)SCAs themselves
	Main KB activities (core activities in bold)	<p>KBA1: Identification of knowledge needs and research gaps</p> <ul style="list-style-type: none"> • <i>GCSA</i>: develop a UK research strategy on new knowledge, technologies & techniques for integrated food research & innovation which addresses the science fragmentation across government and Devolved Administrations • <i>CSAs</i>: ensure departmental “horizon scanning” activities to identify relevant science and engineering evidence and advice^[5] <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • organize informational exchanges with various stakeholder bodies in meetings, dialogues and workshops, e.g.^[4,5] <ul style="list-style-type: none"> • foresight workshops on land use futures • Pairing Scheme for dialogue between MPs & scientists (with GOScience & Royal Society)^[4] • “Blackett Reviews”, i.e. a GCSA-initiated process for government to engage with academia and industry to address specific scientific and/or technical questions primarily in the security domain^[1,4,8] <p>KBA3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • contribute to Council for Science and Technology (CST) reports, e.g. “Improving innovation in the water industry: 21st century” and “A national infrastructure for the 21st century challenges and opportunities”^[4] <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • provide guidance & best practice for departments, e.g. <ul style="list-style-type: none"> • Foresight Toolkits & Networks to strengthen future thinking capability & share best practice within and across government^[4] • pilot scheme for civil servants spending time in academia to increase their understanding of academic research in practice <p>KBA6: Personal consultation and policy advice</p> <ul style="list-style-type: none"> • GCSA advises the Prime Minister and Cabinet and responds to requests from Parliamentary Select Committees on use of science and engineering across government • CSAs and CSAC give advice to Secretary of State, other Ministers & departments on issues of global impact or those which affect many or all government departments (e.g. energy)^[4,5] • (G)SCA participate in Scientific Advisory Group for Emergencies (e.g. 2009: swine flu)^[4] <p>KBA7: Public outreach</p> <ul style="list-style-type: none"> • work actively with the media to ensure that the scientific method, risk and uncertainty are understood by the public^[4] • inform public (but also peers and politicians) through speeches at scientific conferences or through radio and TV (e.g. BBC) interviews, e.g. in the context of Climategate (2009) to regain public confidence in climate science^[1,4] • write public articles (e.g. editorials) • GOScience hosts information portal on “The science of climate change”
	Main tangible outputs	<ul style="list-style-type: none"> • press releases (articles, comments or interviews) • advice letters and reports (e.g. on science budget spending)^[3] • Blackett Reviews
	Target groups	<ul style="list-style-type: none"> • <i>GCSA</i>: esp. Prime Minister, Cabinet and broader public (esp. through media) • <i>CSAs</i>: mainly government departments • <i>in general</i>: scientists, media

	Policy process	<ul style="list-style-type: none"> relating to the assignment to target public opinion, a key focus is awareness-raising and agenda-setting (of a more strategic kind) in the direct interaction with policy makers, (G)CSAs also target policy formulation and implementation
Effectiveness	Saliency	<ul style="list-style-type: none"> close institutional, and partly even physical, vicinity to circles of decision-making, e.g. CSAs situated in governmental departments, GCSA reporting to Cabinet Secretary etc. close working relationship with Science Minister, and direct contact with Secretaries of State & other Ministers across Whitehall & to Devolved Administrations, e.g. through CSAC^[1,4,5] “Blackett Reviews:” fresh thinking approach w/ engagement of key stakeholders from multiple science disciplines, policy and industry^[1,5] <p><i>important dimension</i></p>
	Credibility	<ul style="list-style-type: none"> authoritativeness of (G)CSAs: renowned scientists, with relevant scientific background & expertise^[6] explicit “Guidelines on the Use of Scientific and Engineering Advice in Policy Making”^[1,5] <p><i>moderately important dimension</i></p>
	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> active communication with the intention to inform national opinion^[5] <p>Stakeholder participation:</p> <ul style="list-style-type: none"> occasional networking and engagement with key stakeholders from science, policy and industry (e.g. “Blackett Reviews”)^[1,5] <p><i>less important dimension</i></p>
Sources	Website	<p>[1] http://www.bis.gov.uk/go-science/chief-scientific-adviser</p> <p>[2] http://www.bis.gov.uk/go-science/science-in-government/chief-scientific-advisers</p>
	Literature	<p>[3] CSA: Advice on the Science and Research Budget (11 June 2010)</p> <p>[4] Government Office for Science (2010). Annual Review.</p> <p>[5] Government Office for Science (2011). CSAs and their officials - an introduction.</p> <p>[6] House of Lords Science and Technology Select Committee: The Role and Function of Chief Scientific Advisers. Oral and written evidence</p> <p>[7] Department for Environment, Food and Rural Affairs (2012). Annual Report and Accounts 2011–12. Accounts presented to the House of Commons pursuant to Section 6(4) of the Government Resources and Accounts Act 2000</p> <p>[8] Government Office for Science (2011). <i>Blackett Review of High Impact Low Probability Risks</i>.</p>

US National Climate Assessment (NCA, USA)		
General	General description	The US National Climate Assessment (NCA) is a continuing, inclusive national assessment process ^[4] that synthesizes relevant (national, regional and sectoral) science and information on potential consequences of climate change in the US NCA delivers status reports on climate change science and impacts to the President, Congress as well as local and regional decision makers and citizens. ^[1,3]
	Thematic focus	<ul style="list-style-type: none"> • both mitigation & adaptation (& beyond)^[1] • nationally relevant current and projected (25-100 years) trends in global CC (human-induced & natural)^[3] • its effects on the natural environment as well as different sectors such as agriculture, energy, land & water resources, transportation, human health & welfare, social systems & biodiversity^[1,4] • nationally, regionally and locally
	Constitution	<ul style="list-style-type: none"> • activity of United States Global Change Research Program (USGCRP) • by presidential initiative in 1989 and congressional mandate in 1990 (Global Change Research Act) • first assessment in 2000 (2nd in 2009; 3rd planned for 2013)^[1]
	Objectives	<ul style="list-style-type: none"> • “to enhance the ability of the United States to anticipate, mitigate and adapt to changes in the global environment.”^[5] • to serve as important resource for understanding & communicating CC science and impacts in the US • to help decision makers design adaptation policies, help citizens prepare for CC impacts, and make everyone understand how their everyday decisions impact the climate and the environment^[1,4]
Institutionalization	Organizational structure	<ul style="list-style-type: none"> • USGCRP National Coordination Office (director: Kathy Jacobs, also assistant director for Climate Assessment & Adaptation, White House Office of Science and Technology Policy) <ul style="list-style-type: none"> • staff: 9, coordinate & catalyze stakeholder networks (NCAnet) to facilitate NCA within & across the 8 regions • and several sectors: Human Health, Land Use and Land Cover Change; Agriculture; Forestry; Ecosystems and Biodiversity; Water Resources; Energy Supply and Use; Transportation Urban Infrastructure and Vulnerability; Rural Communities Biogeochemical Cycles; Oceans and Marine Resources; Tribal, Indigenous, and Native Lands and Resources Coastal Zone; Adaptation and Mitigation; and intersections across these • National Climate Assessment and Development Advisory Committee (NCADAC): <ul style="list-style-type: none"> • established in 2010 under the Department of Commerce • chair: Jerry Melillo; 2 vice chairs, 10 executive secretariat members; 32 (international) academic committee members (appointed for a period of 3 years); 15 federal (non-voting) ex-officio members (with at least one representative from each of USGCRP participating departments and agencies) • serves as core body responsible for overall National Climate Assessment: report drafting (by 2012) and final synthesis & summary (by 2013) ^[1,3,4] • members selected and appointed by the Secretary of Commerce, meets at least once/year, supported by NCA staff • organized in 15 Working Groups (short-term, ad hoc, also with non-NCADAC members) concerned with preparatory work on specific issues relating to contents and process (e.g. drawing guidelines for activities in network) • NCA Author Team: established by NCADAC; made up of Convening Lead Authors and Lead Authors; organized around (recently) 30 Chapters of the final assessment report • Interagency National Climate Assessment (“INCA”) working group: 28 members; coordinates across federal agencies and provides intellectual input into overall assessment strategy, e.g. operating plans

		<ul style="list-style-type: none"> • Designated Federal Officer: federal employee designated by the Under Secretary to coordinate staffing support for the Committee (meeting/agenda approval & preparation)^[3] • through its network of networks (NCAnet), NCA draws on the expertise of self-organizing teams: groups of individuals or organizations working on a particular assessment topic (with guidance from NCADAC working groups)
	Funding	<ul style="list-style-type: none"> • ca. € 770,000 p.a. to fund and administratively support the Committee^[3] • provided by National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center; additional funding from NOAA at discretion of its Under Secretary^[3] • participatory elements (input in regions and sectors) to assessment as in-kind or externally funded contributions;^[6] in 2000 each region & sector was sponsored by a federal agency^[1]
	Accountability, reporting and evaluation	<ul style="list-style-type: none"> • NCADAC reports to USGCRP through the Under Secretary of Commerce for Oceans and Atmosphere^[3] • draft reports are reviewed by scientists and experts inside & outside the federal government, the National Academy of Sciences & the public^[4] • evaluation of participation process internally (by NCA team) & externally (e.g. by the National Research Council or another independent evaluator)^[6]
Knowledge brokerage	Definition of thematic focus ("agenda setting")	<ul style="list-style-type: none"> • Section 106 of GCRA clearly states mandate for assessment, i.e.: • input into overall assessment strategy, e.g. operating plans, by Interagency National Climate Assessment ("INCA") working group
	Main KB activities ¹⁸ (core activities in bold)	<p>KBA1: Identification of research needs and gaps</p> <ul style="list-style-type: none"> • elaborate and evaluate the current state of scientific knowledge in relation to climate impacts and trends to inform (federal) climate science priorities and investments for "usable science for sustainable communities"^[1,4] <p>KBA2: Coordination and networking</p> <ul style="list-style-type: none"> • develop long-term partnerships with non-governmental (esp. non-federal) actors and entities to leverage external stakeholder expertise for assessment reports and web products ("networks of networks", NCAnet) • foster technical input teams in regions and sectors, which may submit technical inputs for consideration in drafting the NCA reports • open meetings of NCADAC, regional and sectoral workshops, listening sessions at professional society meetings etc. <p>KBA 3: Compilation and translation of scientific knowledge</p> <ul style="list-style-type: none"> • compile integrated (scale-sensitive) assessment reports based on synthesis of relevant climate science & information from multiple scientific sources and lay knowledge^[1,4] • provide web-based information to support decision-making processes within and among regions and sectors <p>KBA4: Capacity building and decision support</p> <ul style="list-style-type: none"> • build assessment capacities in regions and sectors and support climate-literacy and skilled use of NCA through, <ul style="list-style-type: none"> • e.g. technical workshops, web-based information in support of decision-making within/among regions & sectors • e.g. guidance (through information documents) for autonomous technical input to report^[1,4]

¹⁸ Note: The listed KB activities mainly refer to the current report drafting phase (i.e. up to 2013). Compared to previous phases, the process has now substantively broadened the range and continuity of brokerage activities beyond science compilation & report drafting.

	<p>KBA5: Policy analysis, evaluation and development</p> <ul style="list-style-type: none"> • evaluate national policy progress on adaptation and mitigation, also considering (the implications of) alternative policy options <p>KBA7: public outreach (core responsibility of the coordination office)</p> <ul style="list-style-type: none"> • broad portfolio of activities to communicate findings of the Assessment & to engage the public in a long-term conversation about the CC topic • e.g. public talks and meetings, media & congressional briefing, social media, website, speakers bureau, seminar series, conferences and tradeshows to interest public in NCA^[5,6]
Main outputs	<ul style="list-style-type: none"> • national assessment report (published every 4 years) with 8-page synthesis documents for each of the (currently 30) chapters^[1] • independent 8 regional and sectoral assessment reports (7 sectors & their cross-cuts) • newsletter & other readable formats, webpage for information dissemination
Target groups	<ul style="list-style-type: none"> • tribal, local, state, regional & federal (political) decision makers & implementers <ul style="list-style-type: none"> • Congress, President and federal agencies (incl. key committees in the House & Senate) • federal administration (e.g. White House) • regions: Alaska and Arctic; Northwest; Southwest, Great Plains, Midwest, Southeast and Caribbean; Northeast; Hawaii & Pacific Islands • scientists & researchers in federal and other government research institutions • foreign governments & international organizations (e.g., IPCC, UNFCCC, World Bank) • private (non-governmental) sector: <ul style="list-style-type: none"> • private business actors in sensitive sectors (e.g. construction, health, agriculture, water, defense & energy etc.) • religious and social leaders, activists, entertainment industry • environmental organizations, civic society • scientists (global change & climate science), science “translators” & consultants • students of all ages & their educators • the public & key intermediaries, incl. national, local, regional news and social media^[1,3,6]
Policy process	<ul style="list-style-type: none"> • with its long-term perspective (25-100 years) the NCA is most relevant for awareness-raising and agenda-setting • evaluation of existing policies and assessment of alternative policy options make the NCA additionally relevant for policy formulation and policy evaluation
Effectiveness	<p>Saliency</p> <ul style="list-style-type: none"> • strong commitment to being “useful to decision-makers and the general public in a wide range of sectors and at multiple levels”^[5] • vicinity to end users (policy makers) through organizational set up and output design: <ul style="list-style-type: none"> • research questions to be answered <i>qua</i> governmental mandate • NCADAC composed of federal representatives (as core users) • link with decision makers at lower levels through “networks of networks”^[3] • involvement of end users (e.g. water resource managers, farmers, and decision makers) in all stages of the assessment for useful final outcome^[1,6] <p><i>important dimension</i></p>
	<p>Credibility</p> <ul style="list-style-type: none"> • A major principle of the NCA process is to be “grounded in the best available science” that is “authoritative and credible”^[5] • high ratio of academic participants in committee & staff, particularly among authors • embeddedness in NGCRP & links to national research institutions • NCADAC’s work has to comply with the NOAA’s Information Quality Act Guidelines^[3] • internal and external peer review of draft report (scientists/experts) from the federal government, the National Academy of Sciences & the public^[4] <p><i>important dimension</i></p>

	Legitimacy	<p>Transparency:</p> <ul style="list-style-type: none"> • active communication of assessment activities and outputs • background material, e.g. on organizational structure, statutes etc. accessible^[5,6] <p>Stakeholder participation:</p> <ul style="list-style-type: none"> • efforts to establish a “truly [...] participatory process”^[1] and follows an “engagement strategy” for more stakeholder participation & communication in overall process^[6] • generally: all stakeholders may contribute in writing or reviewing to NCA process (e.g. NCADAC meetings) & products^[6] <p><i>moderately important dimension</i></p>
Sources	Websites	<p>[1] http://www.globalchange.gov/</p> <p>[2] http://www.climate-science.gov/</p>
	Literature	<p>[3] US Department of Commerce (2011). <i>Amended Charter of the National Climate Assessment and Development Committee</i>. http://www.globalchange.gov/images/NCA/ncadac%20charter.pdf</p> <p>[4] NCA US (2012). <i>Factsheet</i>. URL: http://downloads.usgcrp.gov/fact_sheets/NCA-Fact%20Sheet-1-17-2012.pdf</p> <p>[5] NCA (2011a) <i>Strategy – summary</i>. URL: http://www.globalchange.gov/images/NCA/nca-summary-strategy_5-20-11.pdf</p> <p>[6] NCA (2011b) <i>Engagement Strategy</i>. URL: http://www.globalchange.gov/images/NCA/nca-engagement-strategy_5-20-11.pdf</p>

Annex

Annex 1: Overview pre-selected cases for research in WP2

Name ¹⁹	Country
1. Research institutions engaged in KB activities	
1.1 Research institutes at universities	
Danish Centre for Environment and Energy at Aarhus University (DCE)	DK
<i>Center for International Climate and Environmental Research (CICERO)</i>	NO
Centre for Climate Science and Policy Research, CSPR / Tema Institute	SE
<i>United Kingdom Climate Impact Programme at the ECI, University of Oxford (UKCIP, until 2017)</i>	GB
Alaska Center for Climate Assessment and Policy (ACCAP)	US
Center for Global Change Science at MIT (CGCS)	US
1.2 Non-university research institutes and think tanks	
<i>AdaptiveFutures P/L / Coastal Zone Management</i>	AU
adelphi	DE
Ecofys	DE
<i>ecologic Institute</i>	DE
Institute for Ecological Economy Research (IÖW)	DE
<i>Potsdam Institute for Climate Impact Research (PIK)</i>	DE
Wuppertal Institute for Climate, Environment, and Energy	DE
<i>International Institute for Applied System Analysis (IIASA)</i>	INT
<i>Stockholm Environment Institute</i>	SE
AEA Technology plc	GB
Chatham House "Royal Institute of International Affairs"	GB
Center for Climate and Energy Solutions (C2ES)	US
Environmental Defense Fund (EDF)	US
<i>National Commission on Energy Policy</i>	US
1.3 Departmental research institutes and state agencies	
Canadian Centre for Climate Modelling and Analysis of the Fed. Dep. Environment (CCCma)	CA
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	AU
<i>Competence Centre for Climatic Consequences and Adaptation, KomPass</i>	DE
<i>Institute of Agricultural Climate Research of BMELV (Thünen Institute)</i>	DE
La Agencia Estatal de Meteorología (AEMET)	ES
<i>European Commission Joint Research Centre (JRC), Climate Change Unit (CCU)</i>	EU
European Environment Agency (EEA)	EU
French Environment and Energy Management Agency	FR
<i>Finnish Environment Institute (SYKE)</i>	FI
<i>National Institute for Environmental Studies (NIES)</i>	JP
<i>Royal Netherlands Meteorological Institute (KNMI)</i>	NL
<i>Netherlands Environmental Assessment Agency (PBL)</i>	NL
<i>Met Office – Hadley Centre</i>	GB
UK Environment Agency (EA)	GB
National Oceanic and Atmospheric Administration (NOAA)	US

¹⁹ Cases in *italics* have been selected in a next sampling round where profiles have been drafted based on desk work; cases that are additionally in **bold** mark the final sample for the compendium.

1.4 Networks of research organizations	
<i>National Climate Change Adaptation Research Facility (NCCARF, 2007-2012/13)</i>	AU
<i>Center for Climate Systems Modeling at ETH Zurich (C2SM)</i>	CH
Excellence cluster „Integrated Climate System Analysis and Prediction“ of University Hamburg & MPI (CliSAP)	DE
German Climate Consortium (DKK)	DE
National Committee for Global Change Research (NKGCF)	DE
<i>Centre for Regional Change in the Earth System (GRES)</i>	DK
Climate KIC of European Institute of Innovation and Technology	EU
Partnership for European Environmental Research (PEER)	EU
<i>Global Climate Forum (GCF)</i>	INT
Institute for Global Environmental Strategies (IGES)	INT
<i>Tyndall Centre for Climate Change Research</i>	GB (INT)
Board on Atmospheric Sciences and Climate of the US NRC	US
1.5 Thematically focused (climate) research programs	
<i>Climate Adaptation Flagship of CSIRO</i>	AU
KlimaZwei focus area under FONA of the BMBF (2008-2011)	DE
<i>KLIMZUG - Managing climate change in the regions for the future (2008-2014)</i>	DE
<i>Climate Changes Spatial Planning Research Programme (2004-2011)</i>	NL
<i>Knowledge for Climate Research Programme (2008-2014)</i>	NL
Climate Change and Impacts in Norway (NORKLIMA, 2004-2013)	NO
Swedish Climate Change Adaptation Programme (Mistra-SWECIA)	SE
Adapting to Climate Change Programme of Defra (ACC)	GB
Living with Environmental Change Programme (LWEC)	GB
Global Change Research Program (GCRP)	US
2. Scientific advisory bodies	
2.1 Standing scientific advisory bodies	
<i>Advisory Group on Climate Change Research and Policy (Occc)</i>	CH
<i>Advisory Council on Global Change (WBGU)</i>	DE
German Advisory Council on the Environment (SRU)	DE
Scientific and Technical Advisory Panel of the Global Environment Facility (STAP)	INT
<i>Committee on Climate Change (CCC) including the Adaptation Sub-Committee (ASC)</i>	GB
President's Council of Advisors on Science and Technology	US
2.2 Ad hoc scientific advisory bodies	
Parliamentary Group on Climate Change	CH
<i>Ethics Commission on a "Safe Energy Supply" of the German Federal Government</i>	DE
<i>Danish Commission on Climate Change Policy (DCCCP)</i>	DK
Swedish Special Commission on National Strategy for Adaptation 2005-2007: Klimat- och sårbarhetsutredningen'	SE
<i>Obama's Interagency Climate Change Adaptation Task Force</i>	US
2.3 Chief Scientific Advisors	
<i>Chief Government Advisor on Climate and Related Issues during Germany's EU Council/G8 Presidency (H. J. Schellnhuber)</i>	DE
Chief Scientific Adviser to the Government of Ireland	IE
<i>Chief Scientific Adviser to HM Government and government departments ((G)CSA)</i>	GB

3 Scientific advisory processes	
3.1 Policy-driven expert assessment processes	
Assessment: From Impacts to Adaptation: (2007)	CA
Assessment of the Effects of Climate Change in the Netherlands, Routeplanner-Project (2007)	NL
<i>UK Climate Change Risk Assessment</i> (CCRA)	GB
<i>National Assessment on Climate Change</i> (NACC)	US
3.2 Collaborative planning fora with participation of scientists	
<i>Regional Adaptation Collaboratives</i> (RAC)	CA
German Action Programme for Adaptation to Climate Change (2011)	DE
<i>German Strategy for Adaptation to Climate Change</i> with input through Klimzug and KomPass (2008)	DE
Transdisciplinary Panel on the Energy Change by Institute for Advanced Sustainability Studies (IASS)	DE
interministerial Coordination Forum on Adaptation, advised by the Coordination Unit for Research in Climate (KFT)	DK
<i>EC Roadmap 2050</i>	EU
Plan Climat France	FR
<i>The Delta Programme</i> , new-style Delta Plan	NL
<i>Regional Climate Change Partnerships</i>	GB
4. IT-based information exchange platforms (and advise tools)	
<i>Swiss Forum for Climate and Global Change</i> (ProClim)	CH
<i>Climate Service Center</i> (CSC)	DE
DINAS-COAST - Dynamic and Interactive ASsessment of National, Regional and Global Vulnerability of COASTal Zones to Climate Change and Sea-Level Rise (e.g. PIK)	DE
Southern German Climate Bureau - „Sueddeutsches Klimabüro“	DE
Shared Environmental Information System of the EC (EU-SEIS)	EU
HINKUmappi online service of SYKE	FI
<i>Platform Communication on Climate Change</i> (PCCC)	NL
ClimateSouthwests' tools	GB
<i>UKCIP's Adaptation Wizard</i>	GB
<i>UKCIP's Local Climate Impacts Profile</i> (LCLIP)	GB
RealClimate - commentary site of US climate scientist	US

Annex 2: Instructing questions for KBI profile research

Name of the case (country / EU / international)		
General	General description	Brief summary of the case (type of KB, i.e. the program/project/organization/tool ...) based on the overall assessment of the case
	Thematic focus	Which knowledge needs are addressed? (mitigation a/o adaptation; natural a/o economic a/o social dimensions; local a/o national a/o international; strategic a/o operational, i.e. short-term, implementation-oriented focus; etc.)
	Constitution	<ul style="list-style-type: none"> • year of establishment • “as ...” (legal form: public vs. private) • “through/by...” (way of establishment, e.g. directive/law/decision)
	Objectives	What exactly is the pursuit of the case (as of self-description: objective, mission, mandate)?
Institutionalization	Organizational structure	Information on (staff/organizational) composition and mode of operation: <ul style="list-style-type: none"> • divisional structure; core, managing, affiliated (staff-) members and partners • constitutional bodies (e.g. steering committee, scientific advisory body etc.) and their roles
	Funding	Internal funding vs. external funding [budget in €]
	Accountability	Accountability, reporting and evaluation (<i>To whom, by whom, how, when, on what?</i>)
Knowledge brokerage	Agenda-setting	<i>Who</i> sets the thematic focus for the KB institution and <i>how</i> (process)? (e.g. demand-driven vs. supply-driven, internal vs. external etc.)
	Main KB activities	Relevant activities w/ potential for societal/political “end user” (beyond “pure research”), e.g. <ul style="list-style-type: none"> • identify knowledge and research needs to enable targeted and usable research and outreach • coordinate research activities or network between knowledge providers and users ... • compile and translate scientific information • decision support • policy analysis, evaluation and development • personal policy advice • public outreach
	Main outputs	“Tangible products” for users a/o clients (e.g. “paper” or screen or tools)
	Target groups	Who are the intended “users”/clients? (primary vs. secondary target groups)
	Policy process	At which stage are KB activities situated along the <i>policy cycle</i> ? <ul style="list-style-type: none"> • problem identification or awareness raising; policy formulation, implementation or evaluation • “degree of policy vicinity” (remote applied research vs. drafting of policies)
Effectiveness	Saliency	<ul style="list-style-type: none"> • By which strategies and measures does the KB institution strive to produce results that are relevant and “usable” to politics and/or society? • How important is the (perceived) user relevance for the design and activities of the KBI?
	Credibility	<ul style="list-style-type: none"> • By which strategies and measures does the KBI strive to prove its (scientific) authority and technical trustworthiness? • How important is the (perceived) credibility for the design and activities of the KBI?
	Legitimacy	<ul style="list-style-type: none"> • By which strategies and measures does the KBI strive to ensure its transparency and the fairness of its KB activities? • How important is the (perceived) legitimacy for the design and activities of the KBI?

