

JPI Climate

Connecting Climate Knowledge for Europe

Approach and results of Mapping National Research programmes

May 2011

The approach of JPI Climate. A Message from JPI Climate members on how we view our collaboration.

Actually, to us one of the main strengths of our JPI is not only what it has produced up to now in written documents but the process we have engaged in of building a strong group with a mutual understanding how to shape our JPI, developing a common idea of the main challenges and integration perspectives for our future collaboration. We jointly worked on shaping our JPI based on the notion that a strong joint vision shared by as many participants as possible is essential. That is why we put considerable effort into preparing the common ground for our collaboration. It has emerged as a joint endeavour which is uniquely positioned in Europe to tackle the grand challenge of climate change by “Connecting climate knowledge for Europe”. During our collaboration our confidence has grown that our JPI will be able to live up to its high ambitions of strengthening interdisciplinary integration in climate research and at the same time enhancing the connectivity of climate knowledge with society and the policy interface.

Intensive exchange and joint preparation

Since the early phase of our JPI, we have been in continuous, intensive exchange via mail, phone, telephone and video and personal face to face meetings (dating back to the year 2009). This is also illustrated by the fact that we have had a whole series of meetings to discuss the JPI as a whole. These consultations greatly helped shape our SRA and also helped produce other products that go well beyond required maturity indicators as illustrated in certain templates. The development of the SRA for our JPI is based on extensive consultations and an intensive dialogue on numerous working sessions between the initiators in order to discuss strengths and weaknesses of the current situation, developing a joint vision on future opportunities and the necessary steps to implement them.

The workshops

The JPI Climate workshops involved a large number of stakeholders and experts from different countries and scientific communities:

1. Workshop “JPI Climate Proposal” in Berlin, 23/24 April 2010
2. Workshop “Strategic Research Agenda” in Brussels, 5/6 October 2010
3. Workshop “Process on Strategic Research Agenda” in Vienna, 24/25 January 2011
4. Workshop “Process on Strategic Research Agenda” in Brussels, 30/31 March 2011

This process has had strong impact on the development of our SRA in an integrated manner and is documented in some of the collective tangible results our JPI has delivered to date:

SRA, Vision Document, Integration concept and Joint Research Areas.

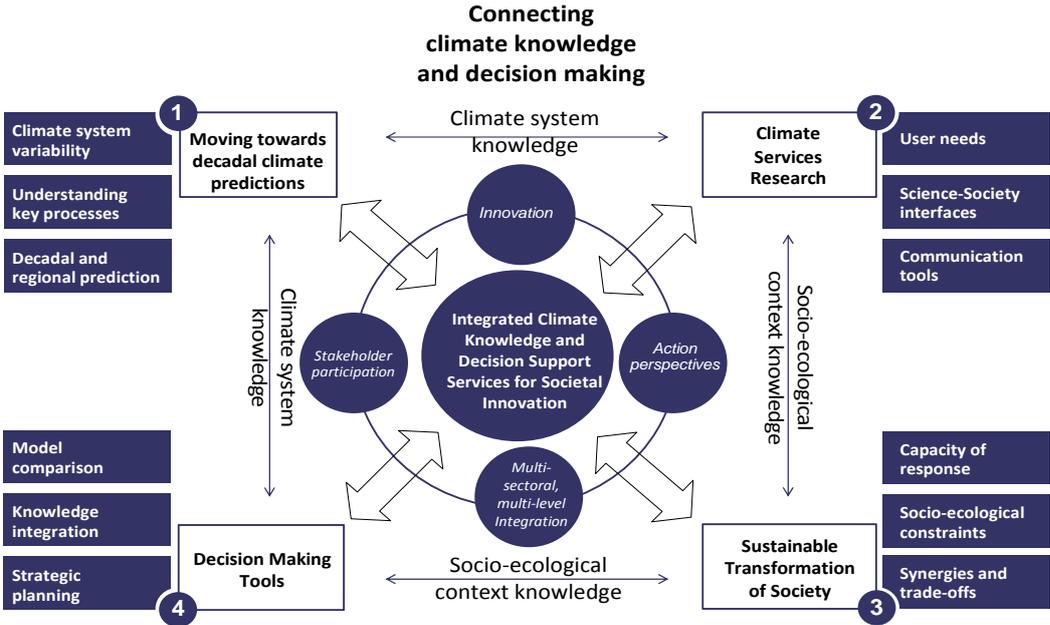
The fruitfulness of our intensive discussion is also reflected in the fact that we jointly worked out a joint vision (see vision document and graphic representation of our integrative concept) and on top of our SRA have identified Joint Research Areas (see documentation at the end of the SRA).

These documents not only illustrate but prove that our intensive and ongoing exchange is fruitful. In fact the joint effort we engaged in goes way beyond a compiling a series of documents, a simple mapping of research activities or editing different desk top analyses by a single bureau or a leading country.

Integration concept

The interactively developed design of the JPI with four interconnected modules which are grouped around a core is one of the central results of our productive interaction. This visualisation powerfully demonstrates that we have already made a huge progress towards a European integrated approach since starting our collaboration.

The core reads as a mission statement of our JPI and has been intensively discussed: Integrated climate knowledge and decision support services for societal innovation.



Conclusion

We are convinced that the extensive, equal, trustful and open exchange and joint work in our JPI provides us with a very strong basis and in fact puts us in a unique position. No other European Initiative is currently as well prepared as ours to make the ambition come true of: Connecting climate knowledge for Europe.

1) We share a strong vision on the JPI Climate for Europe which we jointly developed and are committed to. We are united by the motivation and our joint idea for “Connecting Climate knowledge” as is demonstrated in our ongoing, intensive and fruitful collaboration with a large group of committed countries, institutions and experts.

2) We have what it takes in terms of know how, know who, know what and last but not least in our implementation power: The quantity in budget and in countries as well as the scientific quality and critical mass. Proof of the pudding is the SRA. Our vision is documented and our strength is illustrated a.o. by the analysis of the country involvement in FP7 in the field of climate research and our mapping of activities and budgets.

The intensive, open collaboration process in jointly developing JPI Climate distinguishes our JPI from other initiatives and is one of our core strengths. We together built a joint vision and a mutual understanding of goals that will be an asset in our future collaboration. JPI Climate is in a unique position to serve the goal of “Connecting climate knowledge for Europe”.

1 Mapping exercise for JPI Climate

Climate change is a complex reality, which affects European society at large. Understanding and responding to climate change requires coordinated and large-scale European efforts, in research, innovation and in governance.

The JPI Climate provides the platform where these objectives can be met, aligning national research priorities according to a jointly agreed Strategic Research Agenda (SRA) with the aim of complementing and supporting initiatives at the European level (ERANETs, FP8, Climate KIC, ESFRI Projects). JPI Climate facilitates the coordination, collaboration and exploitation of synergies while working against fragmentation and duplication of efforts.

1.1 Connecting Climate Knowledge for Europe: our response to the status quo

The Title of our JPI reflects what we regard vital for climate research to do: Connecting climate knowledge for Europe to tackle weaknesses we observe in the current research landscape. By “Connecting“we imply three ways of connecting

- Better connections between the Countries. Current research efforts often are fragmented along national boundaries and not well coordinated. This argument is explored also in the introduction of our SRA, to exploit and create new synergies.
- Better connections between the disciplines and with other relevant societal actors.
- Better connectivity of climate knowledge to enhance its societal relevance.

These strategic overall goals correspond to four central weaknesses we identified in our analysis of European Country research. These weaknesses encompass weak interdisciplinarity, fragmentation of research efforts, loss of possible synergies and low return on investment of research in terms of its societal relevance and contribution towards policy and decision making.

Need for interdisciplinarity and current status of this in Climate Research

Much has been said about the need for interdisciplinarity. In fact, the orientation of European Research funding towards the grand challenges is a major step ahead – since it contributes to overcoming thinking in disciplinary categories.

A very recently published study of Andreas Bjurstrom and Merritt Polk (2011 “Climate change and interdisciplinarity: a co-citation analysis of IPCC Third Assessment Report”,

SCIENTOMETRICS Volume: 87 Issue: 3 Pages: 525-550) presents an analysis of the IPCC Third Assessment Report as to the interdisciplinarity of the involved research and (based on 6417 references of the 96 most frequently used journals) comes to the conclusion that the IPCC assessment of climate change “ is multidisciplinary in character where the physical, biological, bodily and societal dimensions are clearly separated”. The authors state: "It is concluded that interdisciplinarity is not a prominent feature of climate research. The significance of this finding is explored, given that the problem scope of climate change necessitates interdisciplinarity." As stated in the title of the JPI we aim at connecting climate knowledge - across disciplines, by amongst other things defining joint research areas and working around a core which aims at interdisciplinary integration.

As to the societal relevance, in recent time the insight has grown that future efforts should focus not primarily on new research insights as such, but at the same time on new ways of orienting research towards societal challenges (instead of many see Vellinga). Ever growing numbers of scientific publications have not led to a parallel increase in problem solving capacity of scientific research.

2 Results from the mapping exercise

2.1 The Mapping Survey

In order to get a structured overview of research programmes in the JPI member and observer states a mapping survey was conducted. The Mapping survey was prepared using a questionnaire which covers quantitative and qualitative information to climate-related research programmes. The survey was sent to all interested partners. A total of 41 programmes were received from eleven countries.

These countries are:

- (1) Austria
- (2) Belgium
- (3) Denmark
- (4) Finland
- (5) France

- (6) Germany
- (7) Ireland
- (8) Italy
- (9) Netherlands
- (10) Norway
- (11) Sweden
- (12) UK

For some countries the survey coverage was known to be partial, i.e. not all existing research programmes were represented and not all existing research programme has a known budget. The reports were analysed in order to illustrate climate change research in each country and to produce a general picture of climate change research in JPI Climate member and observer states. The full overview of the mapping results is to be found in appendix 1: tables per country and appendix 2: collated data from the country into one overview.

2.2 Future Mapping Actions

This first-stage of the Mapping aimed at identifying relevant research programmes in the field of Climate Change Research and providing information on funding in this area. It is proposed to pursue this exercise with (1) widening the extent of the survey ensuring full coverage of all research programmes using on a more-targeted approach based on the programmes identified via the Country summaries; (2) more in-depth surveys collecting information on call procedures and project management, projects etc. The aim is to generate a “research programme database” which will be an up-to-date and dynamic tool for the JPI Climate.

3 Conclusions on the Mapping survey and additional data on Country participation in FP7

Our analysis of the mapping shows that the countries that are involved in JPI Climate really are the parties that can make a difference. We list a great number of diverse and ongoing research programmes that receive considerable funding from their respective countries. This mounts up to the sum of approx. 150 M Euro per year being spent in research programmes

in the area of climate change. The table at the end of this document gives a brief overview of the budgets committed in 41 programmes. This overview is by no means exhaustive (this was not our intention in the first place) but we conducted this survey to have an overview of the most relevant ongoing programmes with respect to the four strategic areas we identified in the SRA of our JPI which are well described elsewhere.

3.1 Which areas are covered in the Country Programmes?

As to the programmes presented, one conclusion is very evident: most of the programmes (24) (still) run in the “classical knowledge domains” of climate science and modelling, corresponding to our module 1. Much fewer programs are dedicated to one of the other modules, be it 2, 3 or 4. Only two programmes NERC in the UK and CSC in Germany focus exclusively on Climate Services which are dealt with in our Module 2. Module 3 is central in two programmes in Austria proVision and Italy’s Sino Italian Cooperation. Special attention for module 4 also is only given in two programmes, namely the Finnish Low Carbon Economy programme and (partially) in the Belgium Climate and Atmosphere Programme.

Interestingly, on the other side, a small number of programs cover a somewhat broader range of modules (about 6 of the 41 programs appear to have the broader focus, amongst them are Austria’s ACRP, Finland’s FICCA, Irelands CCRP, Frances GICC, United Kingdoms Living with Climate Change and the Dutch Programme Knowledge for Climate). Altogether thus only a small number of programmes are broader in their interdisciplinary scope. Given these observations, collaboration on the European level would greatly increase efficiency for many partners, since our JPI covers all four modules equally. This means that a significant progress can be made by tackling climate knowledge needs with the integrated approach that we have chosen. Countries will be able to profit from the exchange considerably and synergies are obvious.

The overview shows that a wide array of relevant questions is being addressed in the different countries involved and many central issues as well as aspects of more individual interest are being covered. There is thus a certain diversity of ongoing research. Whilst to some this might at first glance seem a weakness, our JPI sees this as an asset to transform our diversity into strength – by enabling exchange of the best ideas and results and creating synergies by sharing resources, infrastructures and ideas.

Connecting our resources is vital because obviously, no countries can tackle the challenge of climate change alone. European contributions are even more urgently needed now to add new perspectives to overcome the impasse we have seen emerging and persisting in the recent climate negotiations COP15 and COP16. These illustrated that sub-global alliances have an important role to play in generating new momentum and possibilities for solutions.

3.2 Have we selected the right partners?

Our group of countries at European level covers accounts for the vast majority of research funding in FP7 projects (budgetwise and as to number projects we are involved in).

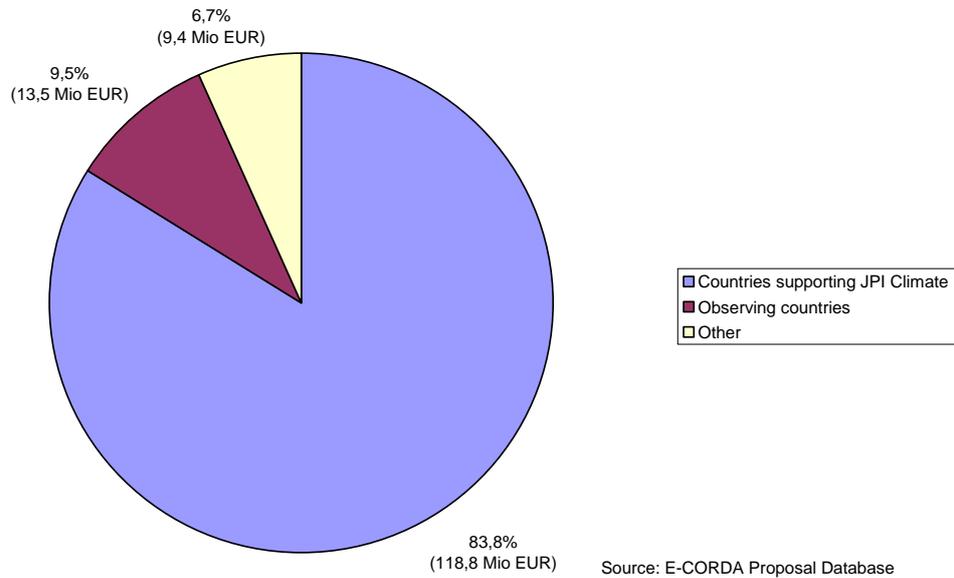
Based on a query into the E-Corda Proposal Database we examined the Calls ENV.2007-2010 in the Sub-activity 6.1.1 – the result is shown in the diagram below.

Our analysis shows that supporter countries Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Sweden, and UK alone account for 118,8 Mio Euro Budget in this sub-activity. This amounts to more than 83% of European research funding in this sub-activity.

Adding the observing countries of the JPI to the analysis adds yet another 9.5%. This figures show thus, that the countries involved in JPI together stand for 93% of budget received in the past three years. There is no reason to suspect any major changes of these numbers in the near future.

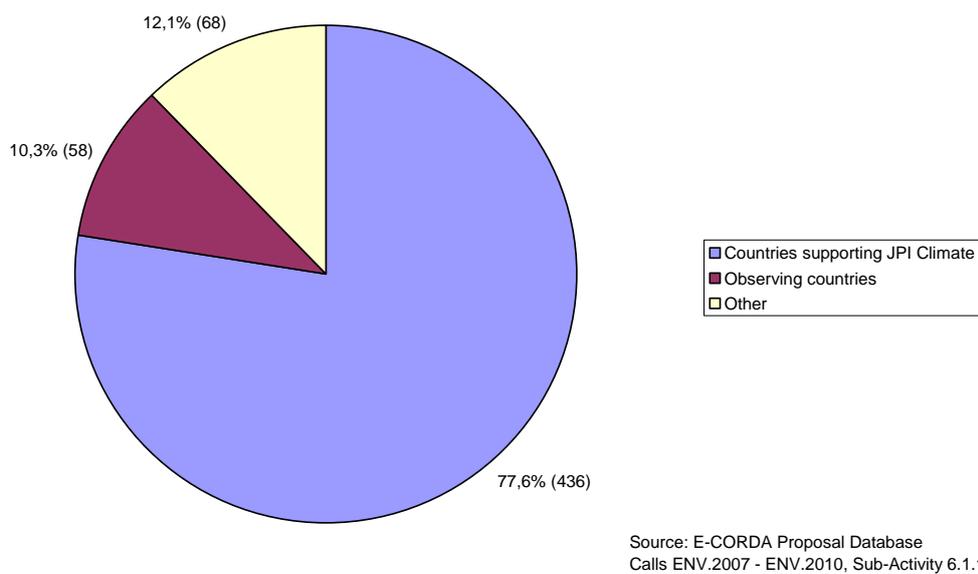
We conclude that the composition of JPI Climate is very strong as to the research budgets committed by the ERA.

**EC contribution for FP7 climate research projects 2007-2010
(EU-27 + Associated countries)**



Another diagram shows the number of projects our supporting countries are involved in. The conclusion is similar to the first one:

**Number of partners in FP7 climate research projects 2007-2010
(EU-27 + Associated countries)**



The countries involved in JPI Climate as supporters (12) account for almost 78% of projects and the observer countries add to this another 10%. In sum, we thus achieve around 88% of project partners (as a proxy of relevance in a project). These numbers reinstate the observations made as to the budgetary relevance of our partnership.

3.3 Results of a short analysis of participation of countries in European Climate research 2007-2010

An additional short analysis of participation of countries in European Climate research is based on a count of countries in the "Research Area Climate change in the Catalogue of FP7 projects 2007 - 2010 in COOPERATION Theme 6- Environment (Including Climate Change)".

They show the following: The Top 3 countries are Germany, UK and France. Italy (23), Netherlands (21) are on numbers 4 and 5.

Thus, the European Top 5 countries are in the JPI Climate as member states. We differentiate between big, middle and small players. The big five are on board of JPI Climate. The middle range: Our analysis shows the JPI members Belgium, Austria and Norway take same place with engagement in 15 projects (also 15 projects have each Norway, Sweden, Denmark, Switzerland). Finland accounts for 10 projects. Given that we have the Scandinavian countries on board, we have a very strong composition of countries for the JPI.

We also have some smaller players on board, Ireland as member state and Slovenia as supporter. This makes for a good mix of large, medium and small players.

Only Greece (12) and Spain (19) are middle range countries not on board. However, we do have Italy and Slovenia involved as representing Southern Europe.

Remaining are numerous smaller players, there are approximately another 50 countries involved, mostly just in one or two projects. Given that we already have four smaller players on board, the added value of involving more small players was judged to be low.

In addition we have a good geographical spread covering a broad range of climatic variations and situations in Europe (coastal and mountainous Countries), North and South.

Source: Research Area Climate change in the Catalogue of FP7 projects 2007 - 2010 in COOPERATION Theme 6- Environment (Including Climate Change).

4 Conclusion: Our Initiative in the light of these results

JPI Climate aims to respond to the needs of policy and decision makers and the European society at large for knowledge-based information and services to address climate change. The main objective of this programme is to provide integrated climate knowledge and decision support services for societal innovation. Understanding and responding to climate change requires coordinated and large-scale European efforts, in research, innovation and in governance.

4.1 Strategic Research Agenda

JPI Climate is innovative in its interdisciplinary approach in connecting natural- with socio-economic sciences and it is guided, coordinated and managed through a flexible collaborative governance mechanism.

The JPI Climate's Strategic Research Agenda will be a dynamic agenda, which will initially focus on four interconnected modules. Together these modules are designed to generate topical knowledge that will support the development of a climate-friendly and climate-proof European society. They do not intend to capture all aspects of the climate problem, but reflect the initial priorities of the participating countries as to salient climate knowledge. The modules are complementary to and connect other areas of research covered by national and international programmes.

The main added value of the JPI Climate is to enhance the connectivity between the currently fragmented climate research, learning and innovation. Greater integration will be secured in three domains:

Society: connecting scientific insights with the demands of policy makers, decision makers and other stakeholders from local to international levels, leading to more effective policies;

Science: connecting different disciplinary approaches in natural and social sciences leading to interdisciplinary research efforts of higher quality and relevance;

Europe: connecting top researchers and research groups from different European countries, leading to high quality and efficient research efforts, long term collaborations and a stronger global position.

4.2 Modules

The JPI Climate is built upon four modules. The four modules form the backbone of the Strategic Research Agenda of JPI Climate:

1. **Moving towards reliable decadal climate predictions:** Existing climate projections already provide useful information for planning in government, business and society. There remains a clear challenge to deliver tailored climate information, including uncertainties. The extent to which climate prediction is possible on shorter- and longer time scales needs to be further explored. Climate science will generate enhanced understanding of key processes, feedbacks and system (in)stability, with large potential benefits for society and economy. JPI Climate, as a platform for coordinating science on climate predictions across Europe, offers an important advance on current mainly national activities.
2. **Researching and advancing climate service development:** Climate services produce science-based client-oriented information about projected regional climatic changes and regional and sectoral impacts. They should be based on a good understanding of the stakeholder needs, and provide easy access to up-to-date information and expertise regarding specific policy or research questions. Strengths, limitations and uncertainties about current knowledge should be adequately communicated, in support of robust decision-making. JPI Climate will bring interaction between the emerging national and climate services European initiatives. The definition and alignment of a climate impact research agenda is beyond the scope of JPI Climate at this stage. However, the climate services module will include climate change impact research at the level of aggregating and integrating the results from existing national and European research efforts and making them accessible in support of the core objective.
3. **Understanding sustainable transformations of societies in the face of climate change:** It is widely recognized in Europe that responding effectively to the long-term challenge of climate change will require fundamental transformations of our production and consumption patterns, as well as the way we deal with climate change related risks in spatial and sectoral planning. Understanding of societal transformation processes is needed to stimulate and govern the innovations that are needed to achieve a climate-

4. **Improving tools for decision-making under climate change:** Connecting complex scientific knowledge to decision-making requires practice-oriented methods. These include scenarios in support of policy development, integrated assessment models, guidance tools, methods for evaluating response options, or tools for spatial assessment. Such tools will be further developed, compared and applied in close interaction and dialogue between researchers and stakeholders at different levels. The JPI Climate provides a forum within which tools from across Europe can be brought together and strengthened.

APPENDIX 1: OVERVIEW OF RESEARCH PROGRAMMES PER COUNTRY

Please note: this mapping overview is not exhaustive; it will be treated as living document.
Status of this overview per May 2011.

Austria

Specific Funding Instrument/Activity	Austrian Climate Research Program (ACRP)
Specific Objectives	<p>The Austrian Climate Research Programme (ACRP) was created in 2008 under the auspices of the Austrian Climate and Energy Fund (Klima- und Energiefonds), and is a broad policy initiative promoting climate-related and energy-related research in Austria. The ACRP provides a conceptual and institutional framework for supporting climate research in Austria with the following main objectives:</p> <ul style="list-style-type: none"> • Coordinating and strengthening existing climate research in Austria, and integrating it into international research networks; • Promoting climate research that produces useful results for Austria's scientific, business and public policy communities; • Identifying research on climate issues with potential for international recognition and leadership; and • Strengthening Austria's capacity for advanced (interdisciplinary) analysis and integrated assessment in areas of relevance for policy-making. <p>In meeting these objectives, the ACRP pursues two interconnected activities. It supports and funds climate research by issuing regular calls for research proposals. In addition, the ACRP is planning to initiate a platform – the ACRP Forum – to ensure the integration, mutual cooperation, external visibility and international outreach of ACRP-funded research activities. ACRP activities are guided by an international steering committee.</p> <p>The ACRP focuses on issues of climate change and its impacts, adaptation, mitigation, and their mutual interrelation.</p> <p>Thematic areas within 4th call (2011)</p> <ul style="list-style-type: none"> • Understanding the climate system and consequences of climate change (25%) • Responding to Austria's policy community (35%) • The human dimensions of climate change (30%) • Governing the transition (10%)
Funded by	Climate and Energy Fund
Duration	Launched in 2008; 4 th call 2011
Budget	4 M € (4 th call 2011)
Module	1, 2, 3, 4

Specific Funding Instrument/Activity	proVision (provision for nature and society)
Specific Objectives	<p>proVision investigates the impact of climate change on ecosystems, regional development and quality of life. Focusing on sustainability, it is aimed at making knowledge available for solving the most urgent problems in provision for nature and society: adaptation to climate change and its consequences, suitable life and work models, responsible use of natural and industrial resources, and environmental protection. Transdisciplinarity is the guiding research principle. Scientific work is carried out with non-scientific partners also involved in generating knowledge by contributing their way of approaching problems, expertise and experience to research, thus maximising efficiency.</p> <p>proVision projects are proactive, take the ethical dimension into consideration and use participative methods. The programme seeks to establish long-term cooperation between science and practice that will provide solutions for politics, business and society; designs models for collaboration between research and educational establishments, and is committed to equal opportunities for men and women.</p> <p>Promoting cooperation with national, European and international research programmes with a similar focus, proVision also supports Austrian researchers involved in international research projects.</p>
Funded by	Ministry of Education, Science and Culture
Duration	2004-2013
Budget	12.1 M € (1 st phase 2004-2006), 2 nd and 3 rd phase ?
Module	3

Specific Funding Instrument/Activity	StartClim
Specific Objectives	<p>The research programme StartClim was launched in 2002 by the climate research initiative AustroClim and is a flexible instrument which funds short term projects on an annual basis. Being short term but regular it can respond very quickly to pressing issues within the realm of climate change.</p> <p>Within the StartClim-projects new topics which are related to climate and climate change should be looked at from various perspectives and through integration from various scientific disciplines.</p> <p>StartClim2010: Adaptation to climate change - contributions to the preparation of a national climate change adaptation strategy</p>
Funded by	Various ministries and others
Duration	Launched in 2002; annual calls
Budget	120.000 € (annually)
Module	2, 3, 4

Belgium

Specific Funding Instrument/Activity	'Climate and Atmosphere' – SSD - Science for a sustainable development (there is also 'Energy' SSD).
Specific Objectives	The objectives of the SSD programme are to preserve and develop the scientific potential in various strategically important areas, with the objective of reducing scientific uncertainties and anticipating future needs for knowledge. It aims to scientifically support the authorities of the country for the preparation, implementation, and follow-up of a supranational, federal, regional, or local policy in and between these areas. It contribute to developing scientific knowledge and instruments (models, concepts, indicators, etc.) aiming to the analysis of processes, the study of impacts; the development, follow-up, and evaluation of (existing and/or future) policy measures. promote dialogue and information exchange between scientists, decision-makers, and other involved actors at all levels of the country as well as in a European and international context.
Funded by	Belgian Science Policy Office (BELSPO)
Duration	2005-2012
Budget	65 M €
Module	1 (and partly 4)

Denmark

Specific Funding Instrument/Activity	Climate and climate adaptation (Theme under the Danish Council for Strategic Research Programme Commission on Sustainable Energy and Environment)
Specific Objectives	Funding for strategic research projects in climate adaption regarding e.g. coast protection; climate sensitive industries such as agriculture and forestry; sewerage and building; urban infrastructure; health and prevention etc. Research should contribute to greater understanding of how human activities in interaction with natural processes affect the climate. The challenge is to increase the proportion of renewable energy and reduce dependence on fossil fuels and ultimately to create a renewable and environmentally sustainable energy system
Funded by	The Danish Council for Strategic Research
Duration	2009 - ? (Funding decided yearly; a funded project, alliance or centre will last from 5 to 7 years)
Budget	Approx. 5 M € per year
Module	1

Finland

Specific Funding Instrument/Activity	FICCA - National basic research programme on climate change
Specific Objectives	FICCA will generate scientific knowledge of climate change – its effects and management. FICCA promotes multidisciplinary expertise and research environments in order to intensify research into climate change and achieve synergy benefits.
Funded by	Academy of Finland
Duration	2011-2014
Budget	12 M € for national projects (+ a few million Euros for international joint projects)
Module	1,2,3,4

Specific Funding Instrument/Activity	Low Carbon Economy (national programme related to climate change)
Specific Objectives	Tekes plans new programmes in cooperation with business organisations and associations, companies, universities, research institutes and those involved in public administration. The Low Carbon Economy Programme is not yet launched.
Funded by	Tekes – the Finnish Funding Agency for Technology and Innovation
Duration	2011-2014
Budget	A few tens of millions euro
Module	4

France

Specific Funding Instrument/Activity	Research Programme Global Environmental Changes & Societies (GEC&S)
Specific Objectives	The emphasis is on projects of proven usefulness in terms of understanding the processes underlying GECs and supporting better governance of these environmental issues. The main objectives of the GEC&S programme are: i) adaptation and mitigation issues, ii) social and human dimensions, iii) multi-disciplinary approaches and information systems, iv) tools and indicators for use at global and regional scales, v) contribution to ICSU (International Council for Science) international programmes on earth system and global sustainability research.
Funded by	ANR and partner institutions (mainly permanent personnel costs)
Duration	3 years
Budget	75 M € (full costs)
Module	1

Specific Funding Instrument/Activity	Research programme Gestion et Impacts du Changement Climatique (GICC) (Management and Impacts of Climate Change (including adaptation issues))
Specific Objectives	The objectives of the programme are to develop knowledge to back public policies on climate change for France. The programme focuses on impacts of climate changes as well as on mitigation and adaptation. This requires the mustering of research teams from a wide range of academic fields: on the one hand, the physical and biological sciences for a better knowledge of the impacts and, on the other, social sciences to explore mitigation and adaptation possibilities.
Funded by	MEEDDM
Duration	1999 - onward
Budget	2 M € / year (not including permanent staff costs)
Module	1,2,3,4

Specific Funding Instrument/Activity	Research Programme Les Enveloppes Fluides et l'Environnement (LEFE) (Liquid coatings and the environment)
Specific Objectives	The objectives of LEFE are (1) to increase fundamental knowledge in various physical, chemical and biological processes in the atmosphere and oceans and their interactions with land surfaces and ecosystems, (2) to develop and operate state-of-the-art observation systems and prediction models.
Funded by	CNRS/INSU and partner institutions
Duration	2006-2011 (5 years)
Budget	100 M € in total including permanent personnel costs
Module	1

Specific Funding Instrument/Activity	French Climate Modelling Infrastructure
Specific Objectives	France supports the development and use of 2 global climate models: one developed at IPSL (Institut Pierre Simon Laplace) and one at Meteo France and Cerfacs. These models represent the complexity of the Earth climate system. They are extensively used for climate projections (IPCC AR4, AR5) and to investigate mechanisms of climate variability. Global climate models are used for impact studies and to force regional models.
Funded by	A consortium of institutions : CNRS, CEA, Meteo France, Cerfacs
Duration	Started in the 1980s
Budget	~10 M€/year including permanent staff and computing power
Module	1,2,3

Germany

Specific Funding Instrument/Activity	C3Grid-INAD – Towards an infrastructure for general access to climate data
Specific Objectives	The aim of the project C3Grid is to extend the existing infrastructure to the demands of the climate community. The datapool will be enlarged at least by the data of the IPCC AR5 simulations as well as satellite data of observations. Within the project diagnostic workflows will be developed and implemented. A Community Grid Support Center will establish user support with the handling of the Grid-network. The project will enhance and facilitate the cooperation of researchers at different institutions.
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2010-2012
Budget	3 M €
Module	1

Specific Funding Instrument/Activity	CSC – Climate Service Center
Specific Objectives	CSC provides knowledge of climate system, data of regional climate simulations and long term monitoring data in Germany of different climate variables. Additionally CSC supplies processed climate indices and extreme values, figures and animations of regional model data. CSC supports use and interpretation of climate simulations and climate monitoring data and helps to access database and to assist data transfer. CSC facilitates the exchange of information between climate experts and projects and attends the discussions if desired. CSC offers a broad service, which involves climate data and climate knowledge.
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2009-2013
Budget	20 M €
Module	2

Specific Funding Instrument/Activity	KLIMZUG – Managing Climate Change in the Regions for the Future
Specific Objectives	CSC provides knowledge of climate system, data of regional climate simulations and long term monitoring data in Germany of different climate variables. Additionally CSC supplies processed climate indices and extreme values, figures and animations of regional model data. CSC supports use and interpretation of climate simulations and climate monitoring data and helps to access database and to assist data transfer. CSC facilitates the exchange of information between climate experts and projects and attends the discussions if desired. CSC offers a broad service, which involves climate data and climate knowledge.
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2008-2014
Budget	80 M €
Module	4

Specific Funding Instrument/Activity	MiKlip (Decadal Climate Prediction)
Specific Objectives	MiKlip will develop a system for climate predictions for up to a decade ahead. Its numerical prediction model will be started from the recently observed climate state in order to forecast the near future under influences from both natural variability and anthropogenic climate change. The MiKlip decadal predictions will be improved significantly during its four-year lifetime, because supporting research will be conducted across all of MiKlip. The final goal of MiKlip is to establish a decadal climate prediction system that can then be applied by an operational agency such as the German meteorological service DWD. To obtain this final goal, MiKlip must tackle four broad research challenges concerning: (i) the initialisation of climate models for decadal prediction, including the creation of effective ensembles of prediction runs; (ii) the incorporation of those processes in climate models that are important for the realistic representation of decadal climate variability, and the understanding of the important processes in the numerical prediction system; (iii) the exploration of predictive skill on the regional scale; and (iv) the systematic evaluation of a decadal climate prediction system.
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2008-2014
Budget	80 M €
Module	4

Specific Funding Instrument/Activity	IAGOS (In-service Aircraft for a Global Observing System)
Specific Objectives	IAGOS is a design study framed in FP6. The main objective is to install new instruments in airplanes of the civil aviation in order to take measurements of the composition of the atmosphere, aerosols, clouds and condensation trails. Important features of IAGOS are the certification of the measurement instruments on the long-haul aircrafts of Airbus and the transmission of the measurement data in realtime to meteorological organisations. The challenge of IAGOS is a transformation of single research projects regarding aircraft measurements to a sustainable global measurement infrastructure.
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2011-2015
Budget	5 M €
Module	1

Specific Funding Instrument/Activity	ICOS (Integrated Carbon Observation System)
Specific Objectives	<p>ICOS is a new European Research Infrastructure for quantifying and understanding the greenhouse balance of the European continent and of adjacent regions. It was realized early that, high precision long-term carbon cycle observations form the essential basis of carbon cycle understanding and that these observations must be secured beyond the lifetime of a research project. ICOS aims to build a network of standardized, long-term, high precision integrated monitoring of: atmospheric greenhouse gas concentrations of CO₂, CH₄, CO and radiocarbon-CO₂ to quantify the fossil fuel component ecosystem fluxes of CO₂, H₂O, and heat together with ecosystem variables. The ICOS infrastructure will integrate terrestrial and atmospheric observations at various sites into a single, coherent, highly precise dataset. These data will allow a unique regional top-down assessment of fluxes from atmospheric data, and a bottom-up assessment from ecosystem measurements and fossil fuel inventories.</p>
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2011-2014
Budget	4 M €
Module	1

Specific Funding Instrument/Activity	IPCC AR 5 Data pool
Specific Objectives	<p>Installation and operation of the German data pool as part of the international IPCC-AR5 (IPCC Fifth Assessment Report) data federation. The project will close the gaps within the provided service form WDCC/DKRZ regarding the German contribution to IPCC-AR5 data pool. The planned work comprises integration of the network, the filling with data and user support.</p>
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2009-2014
Budget	2.5 M €
Module	1

Specific Funding Instrument/Activity	CMIP5 consortial calculations
Specific Objectives	The CMIP5 consortial calculations provides a German contribution to the data base for the IPCC-AR5 (IPCC Fifth Assessment Report) and a data base for national developments of adaptation- and mitigation strategies through "state-of-the-art" global and regional climate projections. Model calculations will be conducted, data- and model infrastructure will be consolidated and model data base will be built up. Documentation, archiving and quality control of the data will be taken at the WDCC (World Data Center Climate). Developments of products regarding data access and user support are further work packages.
Funded by	Federal Ministry of Education and Research (BMBF)
Duration	2010-2012
Budget	1 M €
Module	1

Ireland

Specific Funding Instrument/Activity	CCRP - Climate Change Research Programme
Specific Objectives	CCRP focuses mainly on four areas: Greenhouse gas (GHG) management systems, Ireland and future climate, Climate solutions and transition management, Trans-boundary air pollution/Short life climate forcers.
Funded by	Department of Environment + central funding
Duration	2008-2013
Budget	18 M €
Module	1,2,3,4

Italy

Specific Funding Instrument/Activity	Strategic Programme for Sustainable Development and Climate Change
Specific Objectives	The Strategic Programme for Sustainable Development and Climate Change aims to support research on climate, climate change, climate protection, vulnerability and impacts assessment and in particular on climate observations and modelling (from simple linear models to general coupled atmosphere-ocean models), on study of innovative instruments for Kyoto Protocol implementation and of soil carbon sinks, on vulnerability assessment research including coastal areas and marine ecosystems, on socio-economic impacts of climate change on energy, industry, insurance, transport and tourism, soil degradation, water ecosystem, biodiversity, human health, human settlements, marine biology, forestry, agriculture, and on special geographic focus on coastal zones, oceanic zones and the Mediterranean Area.
Funded by	Italian Ministry of Environment, Land and Sea (Ministero dell'Ambiente e della Tutela del Territorio e del Mare - MATTM); Italian Ministry of Education, University and Research (Ministero dell'Istruzione, dell'Università e della Ricerca - MIUR); Italian Ministry of Agriculture Food and Forestry Policies (Ministero delle Politiche Agricole Alimentari e Forestali - MIPAAF).
Duration	2005 – onward
Budget	11 st phase: 3 years (26,855,758.75 € for 9 projects and 27,098,493.49 € for the CMCC, Euro-Mediterranean Centre for Climate Change)
Module	1,3,4

Specific Funding Instrument/Activity	AgroScenari- Adaptation scenarios of Italian agriculture to climate change
Specific Objectives	Agrosценari is a large research project which aims to identify, by assessing their sustainability, measures of adaptation to climate change for some major Italian agricultural production systems. Agrosценari will deal with two separate horizons in the process of adaptation, a short-term one (5 years), and a long-term one (30 years). Agrosценari is subdivided into nine research lines dealing with different topics.
Funded by	Italian Ministry of Agriculture Food and Forestry Policies
Duration	2008-2013
Budget	8.225.524,00€
Module	1,3,4

Specific Funding Instrument/Activity	Sino-Italian Cooperation Program for Environmental Protection
Specific Objectives	<p>The goal of the Sino-Italian Cooperation Program for Environmental Protection is to help China to improve its environment, support its sustainable development and promote the cooperation between enterprises of the two countries. Over the past eight years, IMELS has implemented 80 projects in China in collaboration with the Chinese Government departments, universities, research institutes and enterprises. Through pilot projects, cooperative research and environmental protection capacity building, it covered a number of fields related to sustainable development and climate change adaptation.</p> <p>Cooperative research is another important part of the Sino-Italian Cooperation Program. Capacity Building, was proposed and added later. It now plays an essential role in the Program.</p>
Funded by	Italian Ministry of Environment, Land and Sea
Duration	2000 – onward
Budget	about 336,000,000.00 € (so far)
Module	1,3

Netherlands¹

Specific Funding Instrument/Activity	Water and Climate
Specific Objectives	<p>Water and changes in the hydrological cycle are therefore high on the international scientific and political agendas. The hydrological cycle is also a determinant of the climate system. Internationally organised explorations of gaps in our understanding of the global climate system repeatedly point to water-related processes, such as the role of water vapour and clouds in the enhanced greenhouse effect, continental drought and the role of vegetation in this, dynamics of extreme precipitation, and the role of water in the tropospheric and stratospheric circulations. In climate research, a far greater understanding of circumstances underlying climate variability is needed. This would allow the extent of intrinsic predictability in relation to the water cycle - including trends and the consequence for the weather and weather extremes - to be better determined. This last aspect should be studied at different scales (local, regional, global). The theme Water and Climate wants to contribute to greater (innovative) insights into the fundamental principles underlying climate extremes, flood security, fresh water supply (for example as drinking water and in agriculture), changing ecosystems and the boundaries of the intrinsic predictability of fluctuations and trends in the climate. The theme will also contribute to knowledge development that benefits the manageability and controllability of water systems. This will ultimately lead to more efficient policies in all of these areas.</p>
Funded by	NWO (The Netherlands Organization for Scientific Research).
Duration	2011-2014
Budget	5 M €
Module	1, 3 and 4 (partly)

¹ Please note, the Netherlands have indicated further relevant programmes (Climate Changes Spatial Planning/ Climate variability/ Feedback mechanisms in the climate system/ and more information on these programmes will be included in the next update of this overview) .

Specific Funding Instrument/Activity	Knowledge for Climate (KfC)
Specific Objectives	<p>Knowledge for Climate is the Dutch national research program that aims to develop the knowledge needed to climate-proof the Netherlands. It relates to regional, national and international adaptation strategies with a time horizon of up to 2050 and in certain cases up to 2100. Its mission is to develop the scientific and applied knowledge required for climate-proofing the Netherlands and to create a sustainable knowledge infrastructure for managing climate change.</p> <p>The program focuses on a limited number of areas, the so-called hotspots. These areas are important, either because of the large investments made in them or because of their relatively high vulnerability to the consequences of climate change.</p> <p>Furthermore, the focus is on eight specific adaptation themes: water safety, freshwater supply, climate-proofing rural areas, climate-proofing urban areas, infrastructure & networks, climate projections, governance, and decision support tools.</p>
Funded by	Ministry of Economic Affairs and Ministry of Infrastructure and Environment
Duration	2008 – 2014
Budget	50 M €
Module	1, 2, 3 and 4 (partly)

UK

Specific Funding Instrument/Activity	Joint Weather & Climate Research Programme (JWCRP)
Specific Objectives	The ambition of the JWCRP has the following principal objectives: (i) To ensure that the UK has access to internationally competitive tools and infrastructure for maintaining its world-leading national capability in observing, understanding, modelling and predicting weather and climate, and their impacts, (ii) to enable closer collaboration between NERC and the Met Office by working to eliminate existing barriers, to align more closely their respective research activities, and to ensure effective participation in relevant new research programmes from both organisations, (iii) to propose new activities to address critical gaps in the existing national portfolio of weather and climate research and to be actively involved in promoting and developing those activities and (iv) to develop mechanisms to promote the more effective pull through of research and development into improved weather and climate forecasts.
Funded by	Natural Environment Research Council (NERC) & the UK Met Office
Duration	2009 – onward
Budget	n.s.
Module	1

Specific Funding Instrument/Activity	Next Generation Weather & Climate Prediction (NGWCP)
Specific Objectives	This programme is essential to ensuring that the UK has access to world class tools for climate prediction in the future. A second strand of this action supports research to develop and evaluate methods for initialization of climate predictions, addressing issues of coupled data assimilation and the design of ensembles. For predictions of regional climate on seasonal to decadal timescales, much of the signal comes from internal variability of the system, rather than changes to anthropogenic forcing. Hence climate predictions on these timescales inherently need to be initialised with the observed climate state. The science of how to do this is at a very early stage of development and a number of fundamental questions must be answered in order to derive the most possible information from the available observations. The development of properly initialized climate predictions is central to exploiting the opportunities to improve climate models and predictions that arise from the wealth of new observations from Earth-based and space-based platforms.
Funded by	Natural Environment Research Council (NERC), UK Met Office, Science and Technology Facilities Council (STFC)
Duration	2010 – 2014
Budget	5 M €
Module	1

Specific Funding Instrument/Activity	Aerosol Properties, PRocesses And InfluenceS on the Earth's climate (APPRAISE)
Specific Objectives	This programme looks at the science of aerosols and their effects on climate, because understanding atmospheric aerosols is one of the most important ways we can improve models of likely climate change, particularly at regional scales. APPRAISE will help us understand and quantify how aerosols affect the Earth's radiation budget, by scattering and/or absorbing radiation, influence clouds, and hence indirectly affect climate and the hydrological cycle and contribute to feedback processes between land, the biosphere and climate.
Funded by	Natural Environment Research Council (NERC)
Duration	2005 – 2014
Budget	5.5 -6.5 M €
Module	1

Specific Funding Instrument/Activity	Flood Risk from Extreme Events (FREE)
Specific Objectives	FREE is research to predict floods minutes to weeks and seasons to decades ahead. The programme uses environmental science to investigate the physical processes involved in generating extreme events, so they can be better forecasted. The FREE programme will research what causes and propagates floods, so helping to forecast and quantify flood risk, and inform our society about the likely effects of climate change. FREE brings researchers in the hydrological, meteorological, terrestrial and coastal oceanography communities together in an integrated research programme for the first time.
Funded by	Natural Environment Research Council (NERC)
Duration	2005 – 2010
Budget	8.5 M €
Module	1

Specific Funding Instrument/Activity	Storm Risk Mitigation through Improved Prediction & Impact Modelling
Specific Objectives	Storms have had an increasing social and economic cost over recent years and are likely to be a main cause of loss of life or assets in the UK over the next few decades. The Storm Risk Mitigation through Improved Prediction and Impact Modelling programme aims to improve short and longer term forecasting of storms and their impacts on catchments and coasts.
Funded by	Natural Environment Research Council (NERC)
Duration	2009 – 2013
Budget	4.8 M €
Module	1

Specific Funding Instrument/Activity	RAPID-WATCH
Specific Objectives	RAPID-WATCH, building on RAPID (The Rapid Climate Change programme), will deliver a decade-long time series of the strength and structure of the Atlantic Meridional Overturning Circulation (MOC). These observations, in conjunction with other relevant research and data, will be used to determine and interpret recent changes in the Atlantic MOC, to improve assessment of the risk of rapid climate change due to MOC change, and to investigate the potential for predictions of the MOC and its impacts on climate.
Funded by	Natural Environment Research Council (NERC)
Duration	2007 – 2013
Budget	n.s.
Module	1

Specific Funding Instrument/Activity	Quantifying and Understanding the Earth System programme (QUEST)
Specific Objectives	The QUEST programme is assimilating scientists' knowledge of the Earth as an integrated system. It aims to substantially improve predictions of global environmental change. The programme has three main themes: (i) The contemporary carbon cycle and its interactions with climate and atmospheric chemistry, (ii) the natural regulation of atmospheric composition on glacial-interglacial and longer time scales, (iii) the implications of global environmental changes for the sustainable use of resources.
Funded by	Natural Environment Research Council (NERC)
Duration	2003 – 2010
Budget	25 M €
Module	1

Specific Funding Instrument/Activity	Quantifying uncertainty in predictions of climate change & climate impacts
Specific Objectives	This research programme aims to produce methods for quantifying uncertainty in predictions of regional and local climate change and climate impacts. The problem of quantifying uncertainty is generic and important, as decision makers are developing policy on the basis of climate predictions, without adequate strategies for handling the significant uncertainties involved. It is also relevant to predictions of impacts; eg effects of land use change on flood generation, ground stability or ecosystems. The overall programme objective is to develop and test methods to combine observations and models to quantify the uncertainty in predictions of regional and local climate change, including changes in extreme events and climate impacts, especially for the next few decades. This research programme supports a collaborative research project 'End-to-end Quantification of Uncertainty for Impacts Prediction' (EQUIP) to address its objectives, brings together experts across a range of relevant disciplines and will also involve a broad network contributing to the project.
Funded by	Natural Environment Research Council (NERC)
Duration	2009 – 2011
Budget	1.6 M €
Module	1

Specific Funding Instrument/Activity	Aerosols & Clouds
Specific Objectives	The overarching aim of the Aerosols and Clouds programme is: "To reduce the uncertainty in estimates of radiative forcing and climate feedbacks relating to aerosol and cloud processes through focused laboratory and theoretical studies." Of particular interest is improving knowledge of the following key core physical and chemical processes: (i) Quantification of indirect effects of aerosols on the radiative forcing due to their interaction with clouds and the underlying cloud/aerosol processes and (ii) ice particle processes in deep frontal, convective clouds and cirrus clouds.
Funded by	Natural Environment Research Council (NERC)
Duration	2010 – 2014
Budget	3.5 M €
Module	1

Specific Funding Instrument/Activity	Arctic Research Programme
Specific Objectives	The Arctic is a region of higher than average climate change and is predicted to remain so. It represents a critical region for global environmental change and one where the UK has significant strategic interests. Understanding the drivers and feedbacks of rapid climate change in the Arctic, and predicting their scale and rate on timescales from months to decades, represents a major and urgent global scientific challenge of great societal importance. The overarching aim of this programme is: "To improve our capability to predict changes in the Arctic, particularly over timescales of months to decades, including regional impacts and the potential for feedbacks on the global Earth System."
Funded by	Natural Environment Research Council (NERC)
Duration	2010 – 2014
Budget	17 M €
Module	1

Specific Funding Instrument/Activity	Changing Water Cycle
Specific Objectives	<p>The programme will work to understand how local to regional scale hydrological and biogeochemical processes are responding and will respond to changing climate and land use, together with their consequent impacts on the sustainable use of soil and water and investigate the consequences of the changing water cycle for water-related natural hazards, including floods and droughts, improving prediction and mitigation of these hazards.</p> <p>This programme will address the urgent needs to understand the changes taking place now; predict changes that will take place over the next few decades; and, through the Living With Environmental Change programme (LWEC), work with partners to build resilience, mitigate problems, and develop adaptive solutions.</p> <p>It will have global dimensions and dimensions that focus specifically on the UK/European region and certain overseas regions. The location of the overseas regions will be determined in consultation with potential partners.</p>
Funded by	Natural Environment Research Council (NERC)
Duration	2009 – 2013
Budget	11.5 M €
Module	1

Specific Funding Instrument/Activity	Understanding & Predicting the Ocean Surface Boundary Layer
Specific Objectives	<p>The overarching objective of the Ocean Surface Boundary Layer programme is: "To build on recent UK scientific and technological advances to develop a fundamental improvement in weather and climate prediction on timescales from a few days to centuries." In particular, the goal of this programme is to develop improved parameterisations of the physical processes that control transport and exchange of heat, water and biogeochemical tracers within and across the OSBL. The parameterisations must be based on fundamental physical understanding and observation, and be suitable for global predictive Earth system modelling on timescales of days to decades. Parameterisations must be implemented and their performance evaluated in global ocean and Earth system models. A number of scientific and technological building blocks for such an approach have been developed in recent years in the UK community, but an integrated approach to prediction of ocean boundary layer processes does not yet exist.</p>
Funded by	Natural Environment Research Council (NERC)
Duration	2010 – 2014
Budget	4.3 M €
Module	1

Specific Funding Instrument/Activity	Living with Environmental Change
Specific Objectives	The 10-year programme aims to optimise the coherence and effectiveness of UK environmental research funding and ensure government, business and society have the foresight, knowledge and tools to mitigate, adapt to and capitalise on environmental change. The Living with Environmental Change programme responds to 6 strategic challenges: (i) climate change, (ii) ecosystem, (iii) sustainability, (iv) health, (v) infrastructure, and (vi) social.
Funded by	Various (inc Natural Environment Research Council, NERC)
Duration	2010 – 2019
Budget	n.s.
Module	1

Specific Funding Instrument/Activity	NERC Knowledge Exchange Funding
Specific Objectives	<p>There is a growing interest from decision-makers to understand the impacts of climate change. Climate change is likely to result in changes to environmental processes (e.g. flooding and geological hazards) which will affect society in addition to changing temperature and weather patterns. The NERC science research community can offer expertise across the full range of the environmental processes likely to be affected by climate change.</p> <p>NERC are considering how the knowledge exchange funding stream can be used to connect NERC-funded science to those organisations that will develop climate services in the UK (inc. The UK Met Office). An important part of this is the UK Climate Projections (http://ukclimateprojections.defra.gov.uk/) which are publicly funded (DEFRA) and produced by the UK Met Office in partnership with NERC-funded organisations. In addition, the UK private sector regards the development of climate services as an important economic opportunity.</p>
Funded by	Natural Environment Research Council (NERC)
Duration	2010 – onward
Budget	n.s.
Module	2

Joint activities by Denmark, Finland, Iceland, Norway, Sweden

Specific Funding Instrument/Activity	The Top-level Research Initiative (TRI) sub-programme: Effect Studies and Adaptation to Climate Change
Specific Objectives	<p>The TRI sub-programme "Effect Studies and Adaptation to Climate Change" aims to improve knowledge about society's capacities for adaptation, and the risks and opportunities that the effects of climate change may bring the Nordic region. The aim of the programme is to increase the scientific quality, efficiency, competitiveness and visibility of Nordic research through enhanced collaboration between Nordic countries.</p> <p>The programme operates with two specific funding instruments to achieve its goals: the "Nordic Centres of Excellence (NCoE)" and the "Nordic Researcher Networks" grant schemes. A NCoE/network consists of prominent research groups from at least three Nordic countries.</p> <p>A NCoE or Network within this programme is expected to cover topic areas of one or several of the following keywords:</p> <ul style="list-style-type: none"> - Adaptation supported by effect studies - Adaptation to the consequences of climate change concerning land, coastal areas, or cities - Opportunities that climate change might open for the Nordic countries <p>Effects of climate change can include impacts on nature, ecosystems, society and economy.</p> <p>The Programme is a combination of natural/technical science and social science/ humanities, and interdisciplinary applications will be encouraged. Participants from industry, policy makers and societal actors should be included in the NCoE/network when relevant. Societal impact is important.</p>
Funded by	The TRI is jointly funded by the Nordic Council of Ministers, the national funding agencies in the Nordic region (Sweden, Norway, Finland, Iceland and Denmark), and the Nordic Research and Innovation funding bodies (NordForsk, Nordic Energy Research, Nordic Innovation Centre)
Duration	The Top-level Research Initiative will last for five years, and the first calls for proposals opened in 2009. The NCoEs funded within the sub-programme will however start their activities late 2010 and run for five years.
Budget	<p>The Top-level Research Initiative: DKK 400 million over five years (Euro 50 million)</p> <p>The sub-programme "Effect Studies and Adaptation to Climate Change" 100 million NOK (Euro 12 million), of which:</p> <p>The NCoE call: 90 MNOK (Euro 11 million)</p> <p>The Researcher networks call: 7.8 MNOK (Euro 0,97 million)</p>
Module	1,2,3

Specific Funding Instrument/Activity	The Top-level Research Initiative (TRI) sub-programme: Interaction between Climate Change and the Cryosphere
Specific Objectives	<p>The main objectives of the Top-level Research Initiative (TRI) sub-programme “Interaction between Climate Change and the Cryosphere” (ICCC) are to reinforce Earth System research cooperation in the Nordic region and beyond, to improve our understanding of the cryosphere stability and dynamics, to specify cryosphere parameters in the Earth System models and to support science driven questions of high interest to society, science, industry and/or national infrastructure. The subprogramme utilises the funding instrument “Nordic Centres of Excellence (NCoE)” to achieve its goals. A NCoE consists of prominent researcher groups from at least three Nordic countries.</p> <p>It is expected that the NCoEs address the following issues:</p> <ul style="list-style-type: none"> - The NCoE should target at science driven question(s) of high interest to society, science, industry and/or national infrastructure. New, versatile and innovative approaches are strongly encouraged. An interdisciplinary component must be present. - The focus of the programme is on the Nordic and Arctic regions - Modelling at different levels is an important tool for understanding the cryosphere and its link to other aspects of the Earth system - The research in the NCoE can include measurements and analysis of new or existing data with the purpose of elucidating science question(s) of interest. This can include measurements and analyses to understand cryospheric processes or to describe climate parameters for the present and future of the cryosphere–climate (change) interaction. - International collaboration both within and outside the Nordic countries. - Advanced climate modelling is an integrated part of the TFI activities, and interaction with and input to other TFI sub-programmes is encouraged - i.e. Nordic cooperation in advanced climate modelling - The NCoE can cooperate with industry and industry-related research institutes
Funded by	The TRI is jointly funded by the Nordic Council of Ministers, the national funding agencies in the Nordic region (Sweden, Norway, Finland, Iceland and Denmark), and the Nordic Research and Innovation funding bodies (NordForsk, Nordic Energy Research, Nordic Innovation Centre)
Duration	The Top-level Research Initiative will last for five years. The NCoEs funded within the sub-programme will however start their activities late 2010 and run for five years.
Budget	The Top-level Research Initiative: DKK 400 million over five years (Euro 50 million) The sub-programme “Interaction between Climate Change and the Cryosphere” 100 million NOK (Euro 12 million), of which: The NCoE call: 95 MNOK (Euro 11.5 million)
Module	1

APPENDIX 2: COLLATED OVERVIEW OF ALL INVOLVED COUNTRIES

Table of funding of national research programme

Country	Programme	Modules	M € / year	M € / year / country	Notes
Austria	proVision	3	n.s.		
"	StartClim	2,3,4	0,12		
"	Austrian Climate Research Program	1,2,3,4	4,00	4,12	
Belguim	Climate and Atmosph. SSD	1, 4	9,00	9,00	
Denmark	Climate and Climate Adaptation	1	5,00	5,00	
Finland	FICCA	1,2,3,4	3,00		
"	Low Carbon Economy progr.	4	n.s.	3,00	a few tens of M €
France	GEC&S	1	25,00		incl. personal costs
"	GICC	3,4,2,1	2,00		still running
"	LEFE	1	20,00		
"	French Climate Modelling Infrastr.	1,2,3	10,00	57,00	incl. personal costs
Germany	KlimZug	1	13,00		
"	C3Grid	1	1,00		
"	CSC	2	4,00		
"	MiKlip	1	5,00		
"	IAGOS	1	3,00		
"	ICOS	1	4,50		
"	IPCC AR 5 Datenknoten	1	0,50		
"	CMIP5 Konsortialrechnung	1	0,33	31,33	
Ireland	CCRP	1,2,3,4	3,60	3,60	8 M € for 2011-2013
Italy	Sustainable Development and CC	1,3,4	n.s.		54 M € for 2005-2008
"	AgroScenari	1,3,4	1,64		
"	Sino-Italian Coop. Progr. for Env.Pr.	3	n.s.	1,64	336 M € since 2000
Netherlands	Knowledge for Climate	1,2,3,4	7,00		
"	Water and Climate	1	1,25	8,25	
UK	JWCRP	1	n.s.		
"	NGWCP	1	0,88		
"	APPRAISE	1	1,00		
"	FREE	1	1,40		
"	Storm Risk Mitigation	1	0,84		
"	RAPID-WATCH	1	n.s.		
"	QUEST	1	3,00		until September 2011
"	Quantifying uncertainty in predictions	1,2	0,47		
"	Aerosol & Clouds	1	0,60		
"	Arctic Research Programme	1	3,00		
"	Changing Water Cycle	1	2,00		
"	Ocean Surface Boundary Layer	1	0,76		
"	Living with Environmental Change	1,2,3,4	n.s.	13,95	
Multi-nat.initiative: DK,FI,IS,NO,SW	Effect Studies + Adaptation to CC	1,2,3	2,40		
"	Interaction between Climate Change and the Cyrosphere	1	2,40	4,80	

Sum (Million € per year)

141,69