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CIRCLE CA

Climate Impact Research Coordination for a Larger Europe

Deliverable I.b-1

Report on the current state of pertinent national research programmes in Europe

Extended Programme Scientific Content Report

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1. Introduction

According to the CIRCLE- Description of work, the objective of this report is *to review and analyse the main driving forces that trigger Climate Change impact assessment and adaptation-related research in the participating programmes. This involves looking at research priorities in relation to issues, disciplines, methods, work programme contents (if applicable), and links between the programmes and national and European climate change research. Priorities are investigated in terms of geoclimatic conditions and scientific choices, with emphasis on natural science versus socio-economic aspects.*

Output: Del. I b-1 Extended Programme Scientific Content Report

This deliverable is one of the elements of Vertical Workpackage I (LEARN). It provides a more in-depth picture of certain informations collected in the 'Report on the current state of National Research Programmes on Climate Change Impacts and Adaptation in Europe' (CIRCLE Deliverable I.a.1, 'Extended Country Report' - ECR, 2006, http://www.circleera.net/uploads/media/CIRCLE_Del_Ia1_Extended_Country_Report_1stISSUE_Final_DRAFT.pdf), hereinafter referred to as ECR. It contributes to reflections that will form the basis of the following CIRCLE documents: report II c-1 (Report on current understanding and research practices related to socio-economic aspects of Climate Change Impacts including recommendations for future related research), the Position Paper on tangible short- and medium-term approaches for topical transnational research coordination (Output Task II d), the Mission Paper (Output Task II e), and also the reports issued in the framework of Task III a (Mutual adjustments of the research agendas of participating research programmes) and Task III b (A posteriori clustering of selected research projects).

To a lesser extent, this report integrates into the results of tasks II b: Differences and similarities of the participating research programmes and the consequences thereof; IV b: Install an umbrella activity for the creation of topical work programmes for transnational calls based on scientific scopes common to several partners of CIRCLE; 4a: Identification of a community of CIRCLE users, stakeholders, audiences and I e: Key facts of networks, organisations, and various kinds of programmes on Climate Change Impacts and related topics. The report should assist the WP3 GROUP (Support groups within the consortium, such as neighbouring countries which want to address similar issues related to their geo-climatic or socio-economic situation). Lastly, this report is an element supporting the work of the group for partner consultation on scientific COntent and the policy COntext (COCO group).

The report probes and describes the orientations of the scientific research programmes and the influence of the policy context in its broader sense on how research objectives and orientations are defined in the field of climate change..

This report aims to examine the range of scientific priorities. The following questions are addressed:





- **Are scientific priorities influenced by policy orientations and by which ones?**
- **On what subjects are the various CIRCLE partners working and how are they working?**
- **In which fields are the CIRCLE partners specialised?**
- **What is the range of expertise ?**

Research on the scientific content and its policy context is thus indispensable. It is the subject of this report.



1.1 Methodology

The approach adopted in this report involves two steps. The first, «prognostic» step is to determine and to map priorities and policy context on the basis of information supplied by the managers of the national research programmes. The second, «diagnostic» step is to reach the same objectives on the basis of the range of expertise observed among the research institutes.

1.2 Data collection

The first approach is based on information collected via two questionnaires.

The ECR comprises all the information available on the whole consortium and also on other European countries. Collected at the beginning of 2006 thanks to a questionnaire, the information covers areas of scientific expertise and also selection and evaluation procedures, etc. The derived report (Del Ia-1) will be updated periodically over the entire duration of CIRCLE.

A second questionnaire (Extended Programme Scientific Content Report) has been prepared on the basis of the ECR results in order to complement them. In relation to scientific content, this report essentially contains information on research into socio-economic issues and information on disciplines; in relation to the policy context, it deals with the influence of this context on the scientific content. The questionnaire was distributed during the autumn of 2006 and the data were collected between October and December 2006. All CIRCLE contractors responded but the observers did not. The compiled answers to this questionnaire are provided in the annex to this report.

The second approach is more qualitative. A brief inventory has been made of activities described on the websites of major institutions identified in the ECR. This overview is presented at the end of the report.

Reliability of the collected data

Despite the special care given to their preparation, the questionnaires lend themselves to different interpretations of the terms employed. Different CIRCLE partners have interpreted differently terms such as topics, disciplines, constraints, incentives, etc.

It is also hard to estimate with a questionnaire the importance given to the policy context which rather needs to be guided through open questions and interviews.

Lastly, some research programmes were terminated and others started during the period between the two questionnaires making impossible to get a picture of the whole cycle of each programme: from the identification of priorities, calls for proposals, running projects to dissemination of results.



1.3 Method of analysis

To provide an analysis of the data that is both comprehensive and discriminating, we have used the principal components analysis¹. Among its advantages, this technique enables us to sort complex information despite data set diversity, to compare information on the different research programmes, and finally, to project results graphically and thus to visualise relationships between analysis criteria such as topics, disciplines, constraints, and triggers among the various programmes. This technique also makes it possible to establish research programme profiles and to situate them with respect to each other according to the analysis criteria. In addition, this technique enables us to interpret the results in terms of real relationships between observations (topics, disciplines, constraints, triggers) and between programmes.

This technique, however, has its limitations. One concerns the quality of the available information: in keeping with the garbage in, garbage out principle, comparing very dissimilar data sets can weaken the quality of the results.

1.4 Thread of the report

The report first presents in table form the profiles of the different research programmes. Here it is already possible to compare the programmes as regards their research topics, geographical scope, etc. Then the focus shifts to identifying similarities and differences between programmes per input category (topic, discipline, incentive).

To make the report easier to read, a discriminating variable is taken into account. The results of the principal components analysis are thus presented successively under the headings topics, programmes, disciplines, and research orientation according to the scientific context.

A partial interpretation is proposed at each step, followed finally by an overall interpretation.

¹ Principal component analysis (PCA) is a mathematical procedure that transforms a number of (possibly) correlated variables into a (smaller) number of uncorrelated variables called *principal components*. The first principal component accounts for as much of the variability in the data as possible, and each succeeding component accounts for as much of the remaining variability as possible.

The objectives of the PCA are :

- To discover or to reduce the dimensionality of the data set.
- To identify new meaningful underlying variables.



2. RESULTS – the first questionnaire

2.1 Orientation of the national research programme

Although the research programmes deal essentially with climate change impacts, many of them also focus on climate research, vulnerability and adaptation². The majority of these research programmes (out of a total of 17) are top-down, seven of them are mixed, and only one is bottom-up.

Table 1 : Research orientation.

Source: ECR.

	National Programme on climate research	National Programme on impacts assessment	National Programme on adaptation	Top-down research orientation	Bottom-up research orientation
AUSTRIA – Floodrisk	✓	✓	✓	✓	
AUSTRIA – Provision	✓	✓	✓	✓	✓
AUSTRIA – Startclim	✓	✓	✓	✓	
BELGIUM – Ssd	✓	✓	✓	✓	
FINLAND – Fppgc	✓	✓	✓	✓	
FRANCE – Gicc		✓	✓	✓	✓
GERMANY – Deklim (A & B)	✓	✓	✓	✓	✓
GERMANY – Glowa		✓	✓	✓	
HUNGARY – Nkth	✓	✓		✓	
IRELAND - ERDTI	✓	✓		✓	✓
ISRAEL – EVIAC		✓	✓	✓	
ITALY – Spsdcc	✓	✓		✓	
NETHERLANDS – KvR	✓	✓	✓	✓	✓
NORWAY – Norklima	✓	✓	✓		✓
PORTUGAL – Climate Change	✓	✓		✓	
SWEDEN – Climate 2004	✓	✓	✓	✓	✓
SWEDEN – Climatools			✓	✓	✓
Total	13	16	13	16	8

² Being considered as out of the scope of CIRCLE, an analysis of the importance of mitigation related activities within the national research programmes has not been assessed in this report.



2.2 Basic climate research

Research on the climate system is not a focus for CIRCLE, but it is however still a component of the majority of CIRCLE partner programmes.³

Table 2: Basic climate research.

Source: ECR.

	Climate Science observations	Climate Science modelling
AUSTRIA – Floodrisk	✓	✓
AUSTRIA – Provision	✓	✓
AUSTRIA – Startclim	✓	✓
BELGIUM – Ssd	✓	✓
FINLAND – Fppgc		✓
FRANCE – Gicc ⁴		
GERMANY – Deklim	✓	✓
GERMANY – Glowa		
HUNGARY – Nkth	✓	✓
IRELAND – Erdti	✓	✓
ISRAEL – Eviac		
ITALY – Spsdcc	✓	✓
NETHERLANDS – KvR	✓	✓
NORWAY – Norklima	✓	✓
PORTUGAL – Climate Change	✓	✓
SWEDEN – Climate 2004		✓
SWEDEN – Climatools		
<i>Total</i>	11	13

³ The impact and adaptation research community is the the first potential user of knowledge generated by climate modelling, scenarios development, monitoring and systematic observations. Therefore, it seems relevant to assess whether this issue is part or not of the main orientations of national research programmes.

⁴ Climate science research is addressed by upstream research programmes managed directly by the Research Ministry and ad hoc scientific commissions.



2.3 Research on impacts

Research on impacts is central in CIRCLE The research concentrates on socio-economic aspects (88% of the programmes), water (88%), biodiversity (76%), and somewhat less on soils (71%) and human settlements (71%).

It can almost be said that each programme has a distinct research profile. Some of them promote all impact research areas (Gicc-FR, Provision-AT, Spsdcc-IT, Climate Change-PT, Norklima-NO, Ssd-BE), while others concentrate on certain impact fields (Fppgc-FI, Floodrisk-AT, Startclim-AT). Climatools does not focus on impacts.

Table 3: Research on impacts.

Source: ECR.

	5 Impacts on socio-economic issues	Impacts on soil	Impacts on water	Impacts on biodiversity	Impacts on glaciers	Impacts on human health	Impacts on human settlements	Impacts – others issues
AUSTRIA – Floodrisk	✓		✓				✓	
AUSTRIA – Provision	✓	✓	✓	✓	✓		✓	✓
AUSTRIA – Startclim	✓			✓		✓		
BELGIUM – Ssd	✓	✓	✓	✓	✓	✓	✓	
FINLAND – Fppgc	✓		✓		✓	✓		✓
FRANCE – Gicc	✓	✓	✓	✓	✓	✓	✓	✓
GERMANY – Deklim (A & B)	✓		✓	✓			✓	✓
GERMANY – Glowa	✓	✓	✓					✓
HUNGARY – Nkth	✓	✓	✓	✓			✓	✓
IRELAND – Erdti		✓	✓	✓		✓		
ISRAEL – Eviac	✓	✓	✓	✓		✓	✓	
ITALY – Spsdcc	✓	✓	✓	✓		✓	✓	✓
NETHERLANDS – KvR	✓	✓	✓	✓			✓	✓
NORWAY – Norklima	✓	✓	✓	✓	✓		✓	
PORTUGAL – Climate Change	✓	✓	✓	✓		✓	✓	
SWEDEN – Climate 2004	✓	✓	✓	✓			✓	
SWEDEN – Climatools								
Total (number and % of total programmes)	15 – 88%	12 – 71%	15 – 88%	13 – 76%	5 – 29%	8 – 47%	12 – 71%	8 – 47%

⁵ Exemples and analysis of socio-economic issues are to be found in the taskIIC final report.





2.4 Research on adaptation

Overall, adaptation-related research is less represented than impact-related research (Figure 1). Relatively developed impact research is associated with relatively developed adaptation research.

Adaptation research concentrates on agriculture and forestry, biodiversity, water, natural disasters, and transport. Impact research in these areas is already quite developed and adaptation research accompanies it. In other areas, however, such as energy, tourism, building, and risk transfers, adaptation research is poorly developed. Currently four programmes are not sponsoring adaptation-related research (Climatools-SE, Spsdcc-IT, Climate Change-PT, Eviac-IL) and one programme is sponsoring adaptation research only in relation to health (Erdti-IR). No programme encompasses all fields but several programmes cover a broad range of research fields (Provision-AT, Deklim-GE, Glowa-GE, Norklima-NO, Gicc-FR).

Table 4: research on adaptation.

Source: ECR.

	Adaptation to natural disasters	Adaptation for risk transfer issues	Adaptation in water issues	Adaptation in biodiversity issues	Adaptation in agriculture and forestry issues	Adaptation in tourism issues	Adaptation in human health issues	Adaptation construction issues	Adaptation in energy issues	Adaptation in transport issues
AUSTRIA – Floodrisk	✓	✓	✓		✓		✓	✓		✓
AUSTRIA – Provision	✓	✓	✓	✓	✓	✓				✓
AUSTRIA – Startclim		✓								
BELGIUM – Ssd	✓		✓	✓	✓		✓			
FINLAND – Fppgc					✓	✓			✓	
FRANCE – Gicc	✓		✓	✓	✓	✓	✓		✓	✓
GERMANY – Deklim (A & B)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GERMANY – Glowa	✓		✓	✓	✓	✓	✓	✓		✓
HUNGARY – Nkth				✓						
IRELAND - Erdti							✓			
ISRAEL – Eviac										
ITALY – Spsdcc										
NETHERLANDS – KvR	✓	✓	✓	✓	✓			✓		✓
NORWAY – Norklima	✓		✓	✓	✓	✓		✓	✓	✓
PORTUGAL – Climate Change										
SWEDEN – Climate 2004				✓	✓					
SWEDEN – Climatools	✓					✓	✓	✓		



Total (number and %)	9 – 53%	5 – 29%	8 – 47%	9 – 53%	10 – 59%	6 – 35%	7 – 41%	6 – 35%	3 – 18%	7 – 41%
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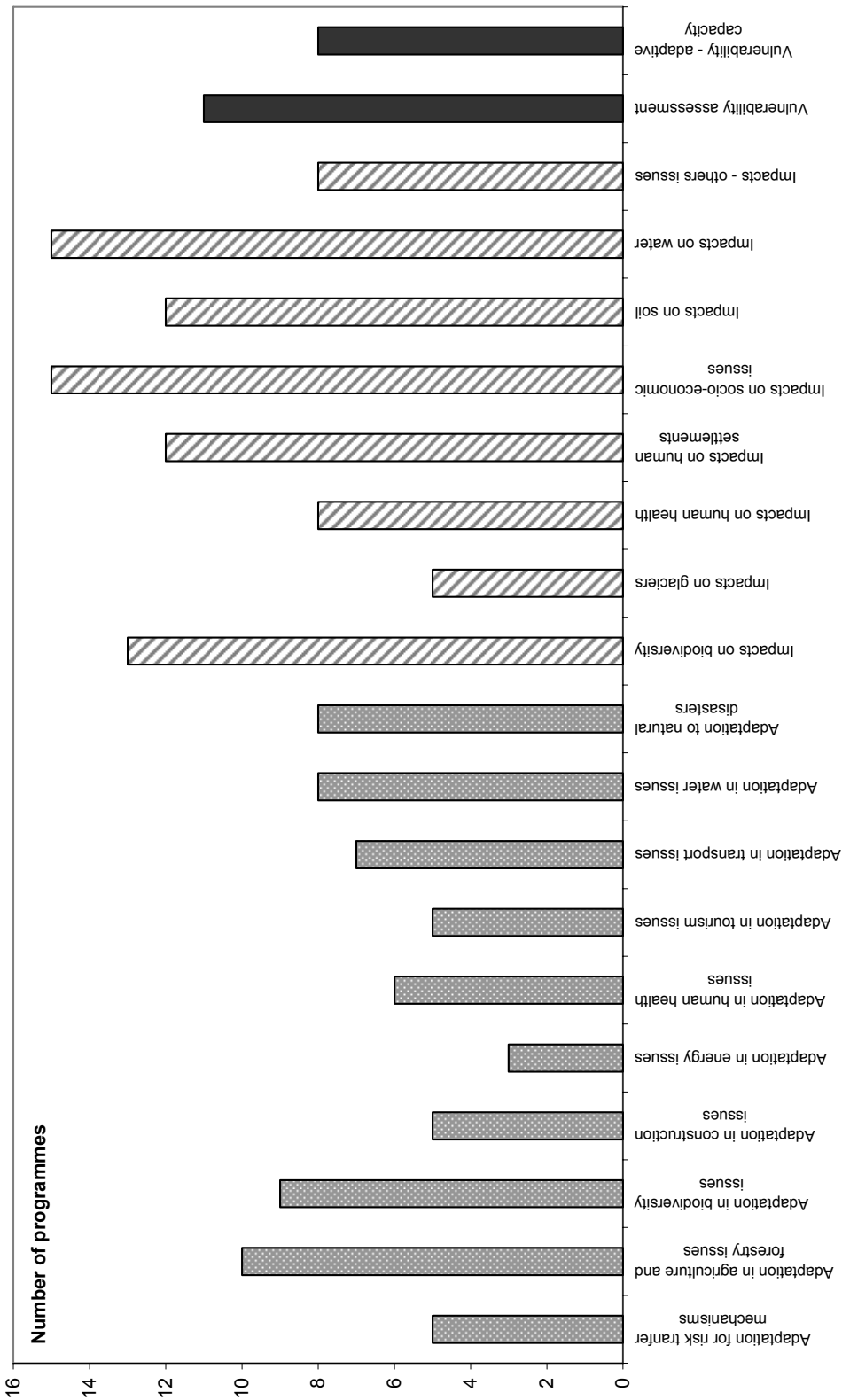
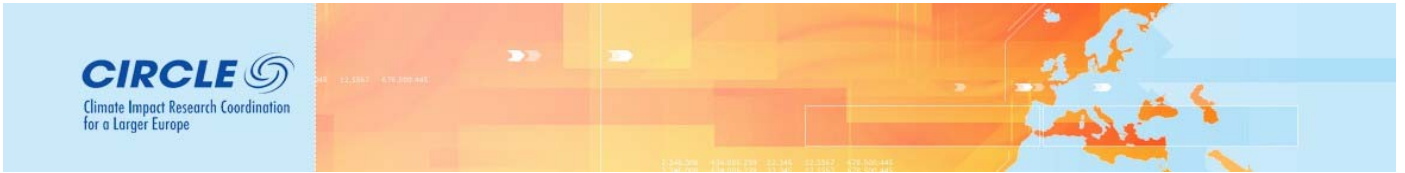


Figure 1. Number of programmes promoting research on impacts, adaptation and vulnerability.





Source : ECR.

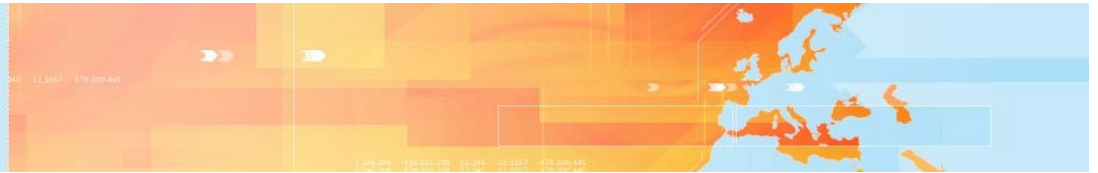
2.5 Vulnerability research

Two-thirds of the programmes sponsor vulnerability research, and most of them focus on vulnerability assessment rather than on developing the relative adaptation capacity.

Table 5 : Research on vulnerability.

Source: ECR.

	Vulnerability assessment	Vulnerability - adaptative capacity
AUSTRIA – Floodrisk	✓	✓
AUSTRIA – Provision	✓	✓
AUSTRIA – Startclim		
BELGIUM – Ssd	✓	
FINLAND – Fppgc		✓
FRANCE – Gicc		
GERMANY – Deklim (A & B)	✓	✓
GERMANY – Glowa	✓	✓
HUNGARY – Nkth		
IRELAND - Erdti		
ISRAEL – Eviac	✓	
ITALY – Spsdcc	✓	
NETHERLANDS – KvR	✓	✓
NORWAY – Norklima	✓	✓
PORTUGAL – Climate Change	✓	
SWEDEN – Climate 2004		
SWEDEN – Climatools	✓	✓
Total (number and %)	11 – 65%	8 – 47%



2.6 Research in geographically distinct zones

Generally speaking, only about a third of the programmes focuses on specific geographic zones. The main focus is on coastal areas and plains. The tendency is to link the research to the geographical features of the country concerned (coast and plains for the Netherlands and Belgium, with additionally the sea for Israel and Portugal; mountains and glaciers for Austria).

Table 6 : research in geographical distinct zones.

Source: ECR.

	Coastal zones	Mountains	Lowlands	Ocean	Glaciers and sea ice	Small islands
AUSTRIA – Floodrisk		✓	✓			
AUSTRIA – Provision		✓	✓		✓	
AUSTRIA – Startclim		✓	✓			
BELGIUM – Ssd	✓		✓	✓	✓	
FINLAND – Fppgc	✓			✓		
FRANCE – Gicc	✓	✓	✓			
GERMANY – Deklim (A & B)	✓	✓	✓	✓		
GERMANY – Glowa						
HUNGARY – Nkth						
IRELAND - Erdti	✓					
ISRAEL – Eviac	✓		✓	✓		✓
ITALY – Spsdcc	✓			✓		
NETHERLANDS – KvR	✓		✓			
NORWAY – Norklima						
PORTUGAL – Climate Change	✓		✓	✓		
SWEDEN – Climate 2004						
SWEDEN – Climatools						
Total (number and %)	9 – 53%	5 – 29%	9 – 53%	6 – 35%	2 – 12%	1 – 6%



3. PROJECTIONS

Projecting the research topics

A principal components analysis was applied to the data of Tables 2-6. Figure 26 shows that the impact topics are grouped together in the same zone (x-axis positive, y-axis positive), which means they are often considered together in research programmes. Only the health impacts research field appears more specific and is not present in all programmes. The adaptation topics are also grouped together in a certain zone (around positive x-axis), different from the impact topics zone because of the absence of adaptation topics in some programmes (Table 4). In relation to health, for example, the programmes tend to sponsor impact research rather than adaptation research. Moreover, the rationale of the programmes is more topic-related than geographic.

The deductions based on an analysis of the table are confirmed by the graph.

Projecting the research programmes

Figure 3, an other result of the PCA, should be read by projecting it onto Figure 2. The majority of the programmes are located around the positive y-axis. This reveals that the majority of programmes gives priority to impact and adaptation issues and lesser importance to geographical issues. Most programmes focus on impact issues (water, socio-economic aspects) and somewhat less on vulnerability and adaptation (agriculture, biodiversity, water). Yet specificity in one field does not mean that other fields are absent.

As a graphic result of the analysis, Figure 3 divides the programmes into three groups. One group consists of Climate2004 (SE), Provision (AU), Glowa (DE), Erdti (IE), Norklima (NO), and Fppgc (FI); a second is composed of Nkth (HU), Gicc (FR), KvR (NE), and Deklim (GER); the third comprises Spdccc (IT), Climatools (SE), and Climate Change (PT). Startclim (AU), Ssd (BE), Eviac (IS), and Floodrisk (AU) each have different profiles.

The figure also reveals the different profiles of the programmes of a same country (Germany, Austria, Sweden).

⁶ The figures that contain projected results in the following text are organised through an axis 1 that is abscissa (x-axis) and an axis 2 that is ordinate (y-axis).

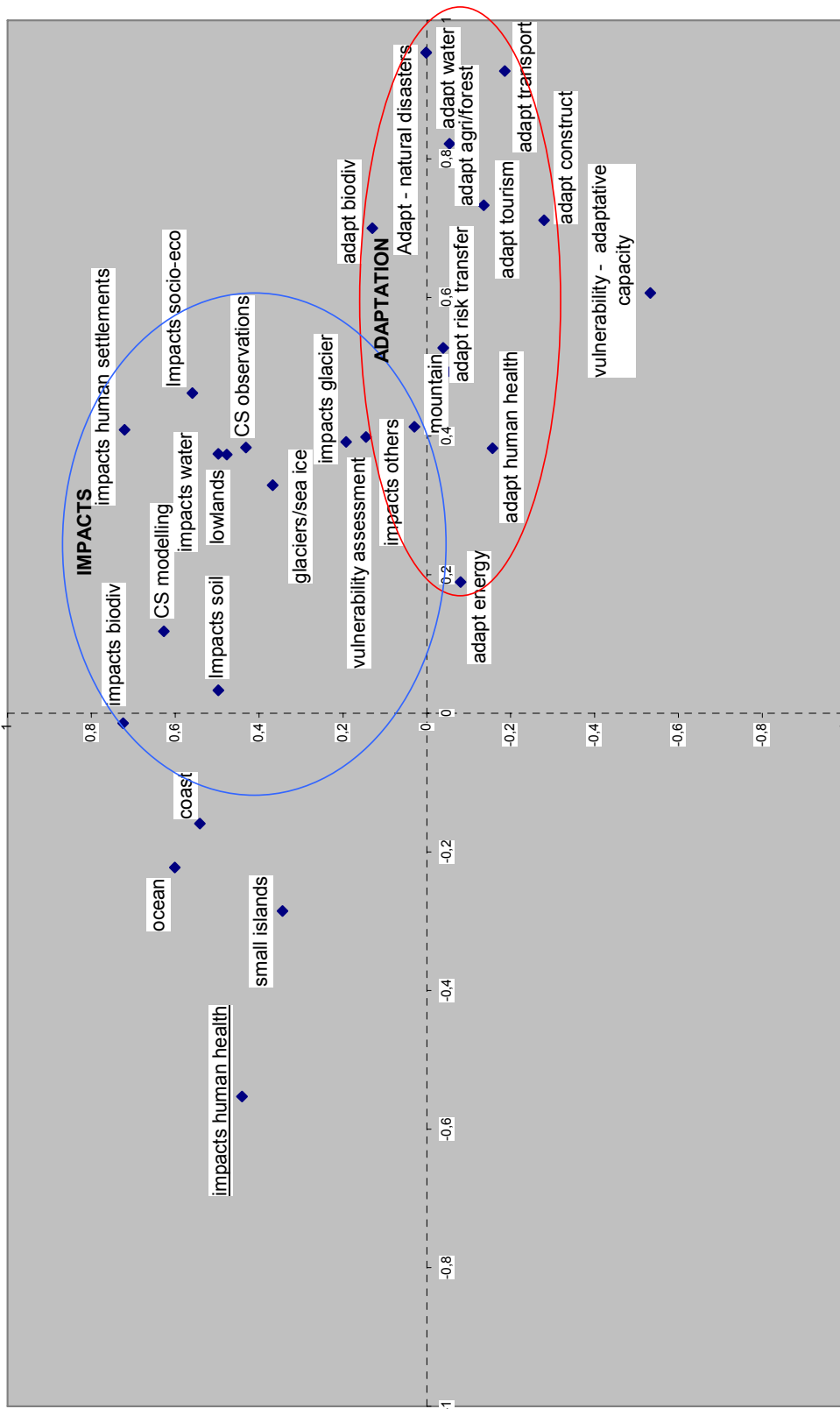
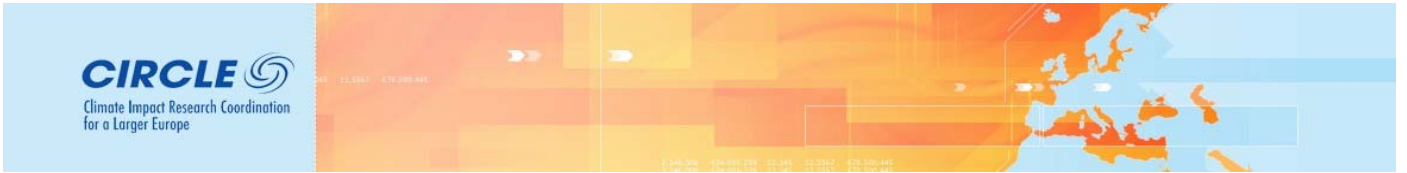


Figure 2. Projection of topics.



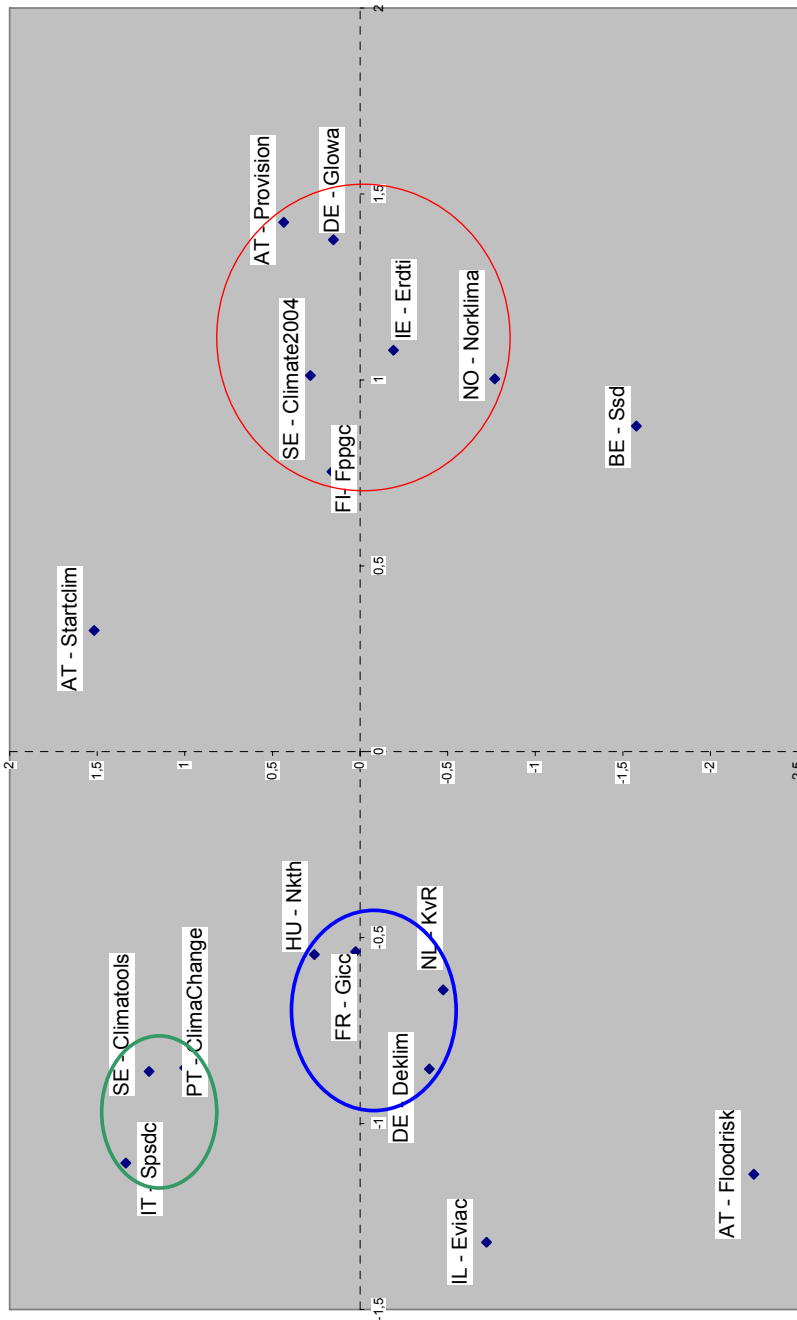
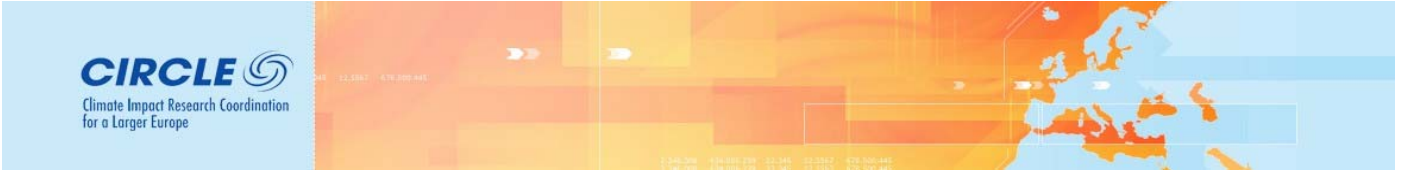


Figure 3. Projection of research programmes.



4. RESULTS – the second questionnaire

Research by discipline

The quality of the data, which depends on an upstream factor (the sometimes different respondents' understanding of the terms used in the questionnaire), limits the deepness of the interpretation of the results. The ECR supplies information on topics, whereas the second questionnaire focuses on disciplines. One of the reasons for taking disciplines into account is their habitual use in the systems used internationally to classify research scientifically. Each respondent's understanding of the fields underlying a discipline is subject to lengthy debate. For example, the Gicc (FR) failed to respond because the disciplines defined in the questionnaire don't coincide with the definitions of the research sponsored by the programme in this case. Nevertheless, this information makes possible a first easy comparison of the research sponsored by the CIRCLE partner programmes with that sponsored by non-CIRCLE countries.

Only four disciplines are addressed by over two-thirds of the research programmes: atmospheric sciences, social sciences, ecology, and hydrology (Table 7 and Figure 4). These might be described as priority disciplines having a broad scope and corresponding more or less with the topics addressed in the national programmes and mentioned in the ECR. The importance of other disciplines, however, is worth stressing (56%). This means that the disciplines considered do not encompass the totality of the research sponsored by the CIRCLE partner programmes.



Table 7 : Disciplines.

Source: Second questionnaire – Annex I.

	Economics	Social Sciences	Engineering	Atmospheric Sciences	Earth Sciences	Ecology	Oceanography	Glaciology	Forestry Sciences	Agriculture Sciences	Town and Country Planning	Development Studies	Hydrology	Biology	Others disciplines
AUSTRIA – Floodrisk	✓	✓	✓	✓		✓					✓		✓		✓
AUSTRIA – ProVision	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓		✓
AUSTRIA – Startclim		✓		✓						✓					✓
BELGIUM – Ssd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
FINLAND – Fppgc		✓	✓	✓					✓	✓			✓	✓	✓
FRANCE – Gicc ⁷															
GERMANY – Deklim				✓	✓	✓	✓	✓							✓
GERMANY – Fksk	✓	✓	✓	✓		✓			✓	✓	✓		✓	✓	✓
GERMANY – Glowa	✓	✓	✓	✓	✓	✓						✓	✓	✓	✓
HUNGARY – Jap	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
HUNGARY – Otká	✓	✓	✓	✓	✓	✓			✓	✓			✓	✓	
<i>Ireland</i>	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
ISRAEL - Eviac					✓	✓					✓				
ITALY – Spsdcc				✓			✓		✓	✓			✓		✓
NETHERLANDS - KvR	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓		✓
NORWAY – Norklima	✓	✓		✓	✓	✓	✓	✓					✓		
PORTUGAL – Climate Change			✓	✓	✓	✓	✓		✓	✓			✓		
SWEDEN - Climate2004		✓							✓	✓	✓				
SWEDEN – Climatools	✓	✓									✓				✓
Total	10	13	7	14	10	12	5	4	10	11	9	3	12	6	11
	56	72	29	78	56	67	28	22	56	61	50	17	67	33	61
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%

⁷ The lack of data from Gicc is not due to the lack of answers (like Ireland and more or less the same for Climatools) but to the research structure inside the Gicc, which does not support disciplinary research.

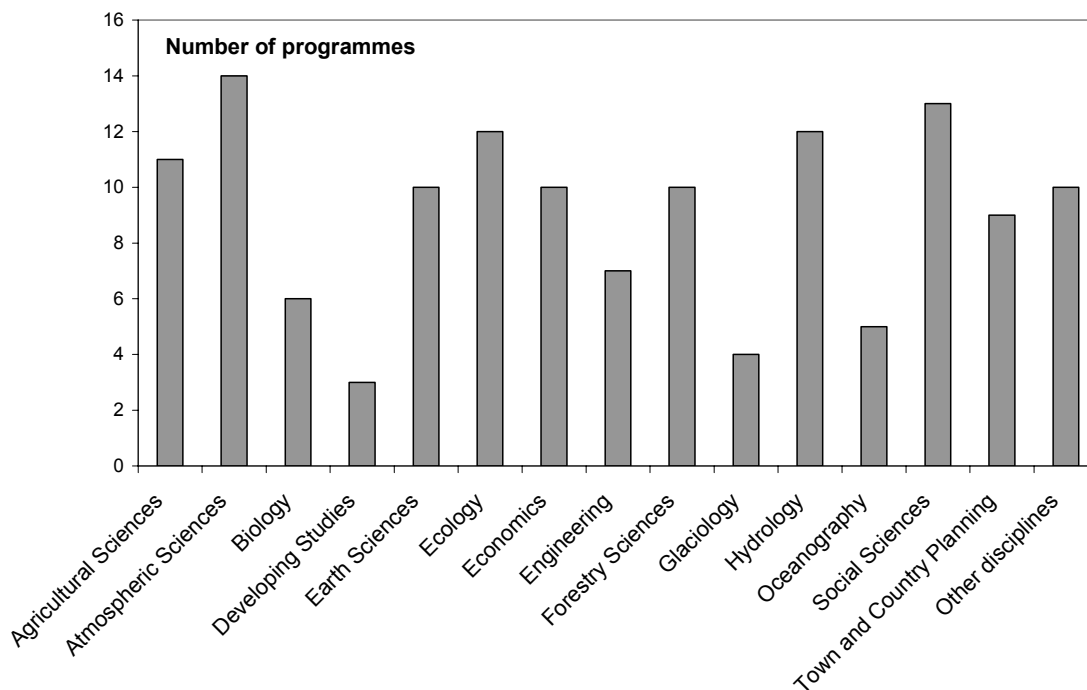


Figure 4. Number of programmes promoting research disciplines.

Source: Second questionnaire – Annex I.

Orientation of the research

The various programme managers were asked the question: «How does far your programme promote the following activities: inter- and multidisciplinary research (very, moderately, not relevant), trans-disciplinary research ... ?» It was possible to answer: no importance, moderate, or great. The answers to the questionnaire thus depend heavily on each programme manager’s perception.

Considerable differences are noted as regards the importance given to various activities (Table 8). Interdisciplinary/multidisciplinary⁸ research is given great importance in a great majority of programmes and appears only once as unimportant. Transdisciplinary research appears to have considerable importance for slightly over half of the programmes. Yet for slightly less than half it is deemed unimportant. The question linked transdisciplinary research with stakeholders, and this may have influenced its perception, since the programmes that do not sponsor this type of research are essentially ones promoting a top-down approach. Academic expertise is given great importance in eleven programmes and moderate importance in three others (total: 18). This leads to the conclusion that research on climate change impacts is principally based on academic resources. Technological

⁸ A definition of those concepts can be found in the 2nd questionnaire in the Annex.



innovation has a moderate impact on research orientation, except in Italy, where it is very important. Strategy development (notably for adaptation) is given considerable importance in all programmes and is strongly linked to stakeholder involvement even though this involvement is given less importance. Application-oriented research is given great importance. Half of the programmes show insufficient interest in public relations, to which only a few programmes give great importance. In this case, there is almost always a link with stakeholder involvement⁹. Half of the programmes give moderate importance and half of them give great importance to international collaboration. Collaboration with developing countries, as already seen in the ECR analysis, is not very much implemented. At programme level, it can be said that if a country has more than one research programme, the programmes then cover most research orientations. Among the countries having only one programme, only the Netherlands and Norway have single programmes covering almost all research orientations. Each country thus has a different research orientation profile. The particularity of Italy is explainable by its decision structure.

⁹ For some this link means to include stakeholders in the programme steering committee, for others it is just to get the knowledge of what the interest from a user's side would be. We have to be aware that there are different levels of including stakeholders.



Table 8 : Orientation of research.

Source: Second questionnaire – Annex I.

	Inter & multidisciplinary research	Transdisciplinary research	Academic capacity building	Non-Academic capacity building	Technological innovation	Strategy development	Stakeholder involvement	Implementation oriented to research	Public relations measures	International collaboration	Cooperation with developing countries	Others
AUSTRIA – Floodrisk	☑	☑	✓	✓	✓	☑	☑	☑	☑	✓		
AUSTRIA – ProVision	☑	☑	☑	☑		☑	☑	☑	☑	☑	✓	
AUSTRIA – Startclim	✓					✓	✓	✓	✓			☑
BELGIUM – Ssd	☑	☑	✓			☑	✓	☑	✓	✓		
FINLAND – Fppgc	☑		☑		✓		✓			☑		
FRANCE – Gicc	☑	☑				☑	✓	☑		✓		
GERMANYDE – Deklim	☑		☑		✓	✓	✓	✓	✓	✓		
GERMANYDE – Fksk	☑	☑	☑	☑	☑	☑	☑	☑	✓	✓		
GERMANYDE – Glowa	☑	☑	☑	☑	☑	☑	☑	☑	✓	☑	☑	
HUNGARY – Jap	☑	☑	✓	✓	☑	☑	✓	✓		✓		
HUNGARY – Otka	✓		☑		✓			✓		✓		☑
<i>Ireland</i>	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
ISRAEL – Eviac	☑		☑			☑	✓					
ITALY – Spsdcc					✓							☑
NETHERLANDS - KvR	☑	☑	☑	✓	✓	☑	☑	☑	☑	☑		
NORWAY – Norklima	☑	✓	☑			✓	✓	✓	✓	☑	✓	
PORTUGAL – Climate Change	✓		☑		✓			✓	✓	☑	✓	
SWEDEN – Climate 2004	☑		☑							✓		
SWEDEN – Climatools	☑	☑			✓	☑	☑	☑		☑		
Total (upon 18) blank	1	8	4	12	7	5	4	4	8	3	14	
Total (upon 18) ✓	3	1	3	3	8	3	8	6	7	8	3	
Total (upon 18) ☑	14	9	11	3	3	10	6	8	3	7	1	3

blank: not relevant, ✓ : moderately relevant, ☑ : very relevant



Influence of the policy context on research orientation

An attempt was made to measure the importance of the various factors influencing research orientations in four particular contexts, designated as driving forces. For each driving force the question was, for example: «Is the policy context of climate change a driving force for adaptation research?».

Public awareness (or opinion) (Table 9, Figure 5) is one of the defined driving forces.¹⁰ Among the various factors that orient research, climate-change impact assessment is seen as being influenced by public opinion in half of the programmes. This factor is also considered to be influenced by two other driving forces: the policy context of climate change and the sector-related policy context.

In four programmes public opinion is not deemed to have an influence. Only in a few programmes public awareness is seen as influencing a majority of research-orienting factors (Climate Change (PT), Startclim (AU), Norklima (No)).

¹⁰ The level of influence of public awareness on research orientations would have been differently assessed in the answers. Public awareness being considered either as a direct driving force or as an indirect driving through policy-makers.



Table 9 : Driving Force : Public Awareness.

Source: Second questionnaire – Annex I.

Public awareness	Regional focus	Sectoral focus	National impact assessment	Research on adaptation	Climate system analysis	Climate impact assessment	Vulnerability assessment	Generic science	Not important
AUSTRIA - Floodrisk						✓			
AUSTRIA - Provision	✓					✓	✓		
AUSTRIA - Startclim	✓	✓	✓	✓		✓	✓	✓	
BELGIUM - Ssd		✓		✓					
FINLAND - Fppgc									✓
FRANCE - Gicc									✓
GERMANY - Deklim									✓
GERMANY - Fksk	✓			✓		✓	✓		
GERMANY - Glowa	✓			✓		✓			
HUNGARY - Jap						✓			
HUNGARY - Otka						✓			
ISRAEL - Eviac									✓
ITALY - Spdccc	✓	✓			✓	✓			
NETHERLANDS - Kvr	✓								
NORWAY - Norklima		✓	✓	✓	✓		✓		
PORTUGAL - Climate Change	✓	✓	✓	✓		✓	✓		
SWEDEN - Climate 2004			✓						
SWEDEN - Climatools	✓	✓		✓			✓		
Total (upon 18)	8	6	4	7	2	9	6	1	2

A second driving force (Table 10, Figure 5), the policy context of climate change¹¹, plays a role influencing climate change risk assessment in most programmes. Exceptions include Gicc (FR), Fppgc (FI), Startclim (AU), and Climate 2004 (SE). All programmes that see the policy context of climate change as having an influence on climate change impacts also consider this influence on regional and sectoral focuses. Analysis of the climate system appears as an influenced factor in half of the programmes and is tightly linked to climate impact assessment.

At programme level, lastly, the policy context of climate change plays an influencing role in Provision (AU), Kvr (NL), Climatools (SE), Fksk, and Glowa (GER).

¹¹ This category applies to the national and international context set by processes and programmes like IPCC, IGBP, IHDP, etc and the international conventions (UNFCCC, Kyoto Protocol and Rio Conventions, etc.).

**Table 10 : Driving Force : Climate Change Policy Context.**

Source : Second questionnaire – Annex I.

Climate Change Policy Context	Regional focus	Sectoral focus	National impact assessment	Research on adaptation	Climate system analysis	Climate impact assessment	Vulnerability assessment	Generic science	Others	Not important
AUSTRIA - Floodrisk			✓			✓				
AUSTRIA - Provision	✓	✓	✓	✓	✓	✓	✓			
AUSTRIA - Startclim										✓
BELGIUM - Ssd	✓	✓	✓		✓	✓		✓		
FINLAND - Fppgc				✓					✓	
FRANCE - Gicc									✓	
GERMANY - Deklim					✓	✓	✓	✓		
GERMANY - Fksk	✓	✓		✓		✓	✓	✓		
GERMANY - Glowa	✓	✓		✓		✓	✓	✓		
HUNGARY - Jap	✓	✓			✓	✓				
HUNGARY - Otká	✓	✓			✓	✓				
ISRAEL - Eviac			✓	✓		✓				
ITALY - Spsdcc		✓			✓	✓				
NETHERLANDS - Kvr	✓	✓	✓	✓	✓	✓	✓			
NORWAY - Norklima			✓		✓	✓		✓		
PORTUGAL - Climate Change	✓	✓	✓			✓	✓			
SWEDEN - Climate 2004				✓	✓					
SWEDEN - Climatools		✓		✓						
Total (upon 18)	8	10	7	8	9	13	6	5	2	1

The sectoral policy context¹² (Table 11, Figure 5) also acts as an influencing driving force on factors such as climate change impact assessment (two-thirds of the research programmes), the regional focus, or adaptation research (half of the programmes).

At programme level, KvR (NL), Jap (HU), and Norklima (NO) view this driving force as having an influence on most research-orienting factors. Two programmes (Floodrisk and Startclim – AU) do not see this driving force as having an influence.

¹² For example: agriculture, energy, human health, trade, defence, employment, migrations, sustainable development, cooperation development, etc.



Table 11 : Driving Force : Sectoral Policy Context.

Source : Second questionnaire – Annex I.

Sectoral Policy Context	Regional focus	National impact assessment	Research on adaptation	Climate system analysis	Climate impact assessment	Vulnerability assessment	Generic science	Others	Not important
AUSTRIA - Floodrisk									✓
AUSTRIA - Provision	✓				✓	✓			
AUSTRIA - Startclim									✓
BELGIUM - Ssd			✓		✓	✓			
FINLAND - Fppgc			✓						
FRANCE - Gicc								✓	
GERMANY - Deklim					✓	✓	✓		
GERMANY - Fksk	✓		✓		✓		✓		
GERMANY - Glowa	✓		✓						
HUNGARY - Jap	✓	✓		✓	✓		✓		
HUNGARY - Otka	✓	✓		✓			✓		
ISRAEL - Eviac		✓	✓		✓				
ITALY - Spsdcc	✓			✓	✓				
NETHERLANDS - Kvr	✓	✓	✓	✓	✓	✓			
NORWAY - Norklima	✓	✓	✓		✓	✓			
PORTUGAL - Climate Change		✓			✓	✓			
SWEDEN - Climate 2004					✓				
SWEDEN - Climatools	✓		✓						
Total (upon 18)	9	6	9	4	11	6	4	1	2

The fourth driving force considered is existing expertise and knowledge (Table 12 and Figure 5). The most strongly influenced factors are climate system analysis (over half of the programmes) and climate impact assessment (half of the programmes). Adaptation research, on the other hand, is influenced in only a fourth of the programmes. It represents the only influenced factor, however, for Fppgc (FI). Only KvR (NL) views all factors as being influenced by this driving force. All of the German programmes see the sectoral focus, climate system analysis, and science in general as being influenced by this driving force.

Table 12 : Existing Skills and Knowledge.

Source : Second questionnaire – Annex I.





Existing Skills and Knowledge	Regional focus	Sectoral focus	National impact assessment	Research on adaptation	Climate system analysis	Climate impact assessment	Vulnerability assessment	Generic science	Not important
AUSTRIA - Floodrisk		✓				✓			
AUSTRIA - Provision			✓		✓				
AUSTRIA - Startclim					✓				
BELGIUM - Ssd	✓				✓			✓	
FINLAND - Fppgc				✓					
FRANCE - Gicc			✓						
GERMANY - Deklim		✓			✓			✓	
GERMANY - Fksk		✓			✓	✓		✓	
GERMANY - Glowa		✓			✓	✓		✓	
HUNGARY - Jap	✓		✓			✓			
HUNGARY - Otka	✓		✓			✓			
ISRAEL - Eviac				✓		✓			
ITALY - Spsdcc					✓	✓			
NETHERLANDS - Kvr	✓	✓	✓	✓	✓	✓	✓	✓	
NORWAY - Norklima					✓	✓		✓	
PORTUGAL - Climate Change	✓			✓	✓		✓		
SWEDEN - Climate 2004					✓				
SWEDEN - Climatools									✓
Total (upon 18)	5	5	5	4	11	9	2	6	1



5. PROJECTIONS

Projecting research orientations influenced by the policy context

A principal components analysis was applied to the data of Tables 9-12. The graphic results are presented in Figures 6-9. As figures 2 and 3, these figures have to be read by axis, the axis 1 (or axis 3) is the x-axis (abscissa) and the axis 2 (or axis 4) is the y-axis (ordinate).

Figures 6 and 7 describe the factor projections. Figure 6 shows an important correlation between the various factors influenced by the policy context of climate change and by the sectoral policy context. Existing expertise and knowledge is another factor showing this close correlation. Public awareness follows a different logic, as shown by its place in the graph, with the exception of the climate system analysis and climate impact assessment factors. Therefore, there is an influencing driving force logic. Figure 4 illustrates another logic. In this case, the factors lie close to each other and the driving forces don't. Again we observe proximity between climate impact assessment and climate system analysis, both of these being distant from adaptation research.

In order to link factors and programmes, Figure 8 must be read with Figure 6 projected into it. This exercise shows that public awareness follows its own logic, characteristic of Startclim (AU). Most of the other programmes are correlated with the other driving forces, with the exception of Gicc (FR) and Fppgc (FI) which do not consider the driving forces to have an influence. On this basis, it can also be said that Glowa (GER), Fksk (GER), Provision (AU), and Ssd (BE) have similar driving forces. Figure 6 should be read with Figure 4 projected into it. This shows that Fppgc (FI) and Climatools (SE) consider adaptation research as an influenced factor, that the German programmes (Glowa, Deklim, Fksk) consider scientific research in general as an influenced factor, and lastly that the Hungarian programmes, Startclim (AU), and Spsdcc (IT) are attentive to climate system research.

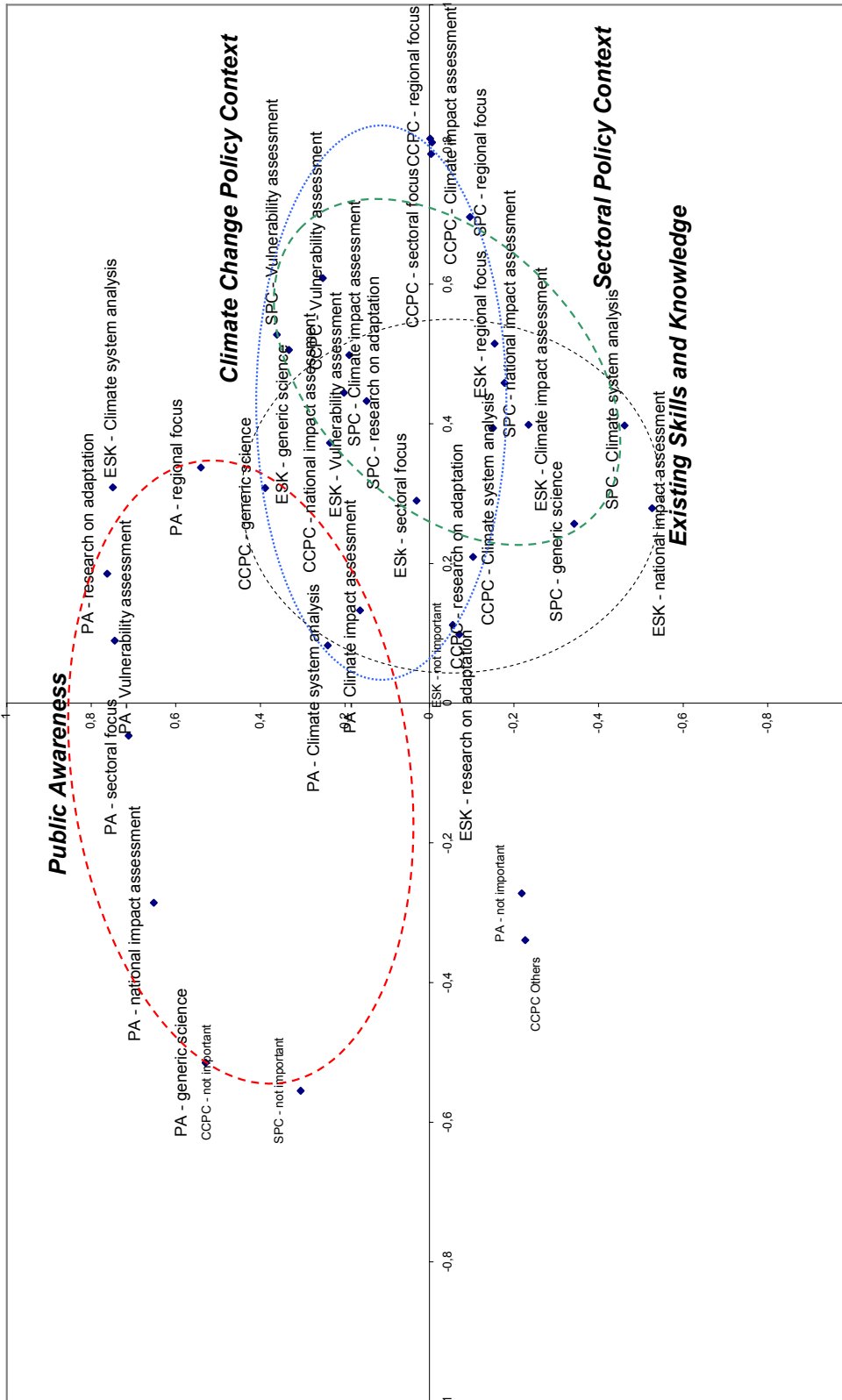
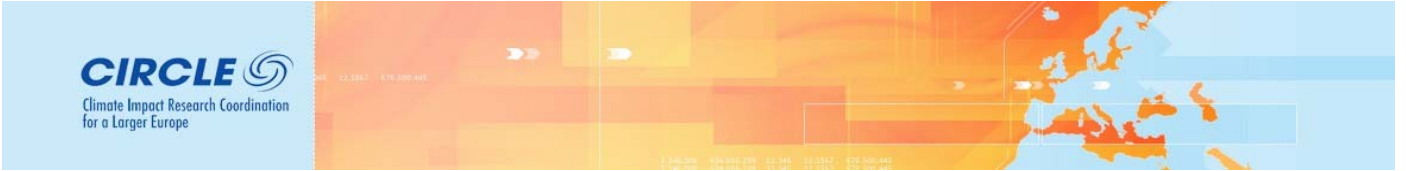
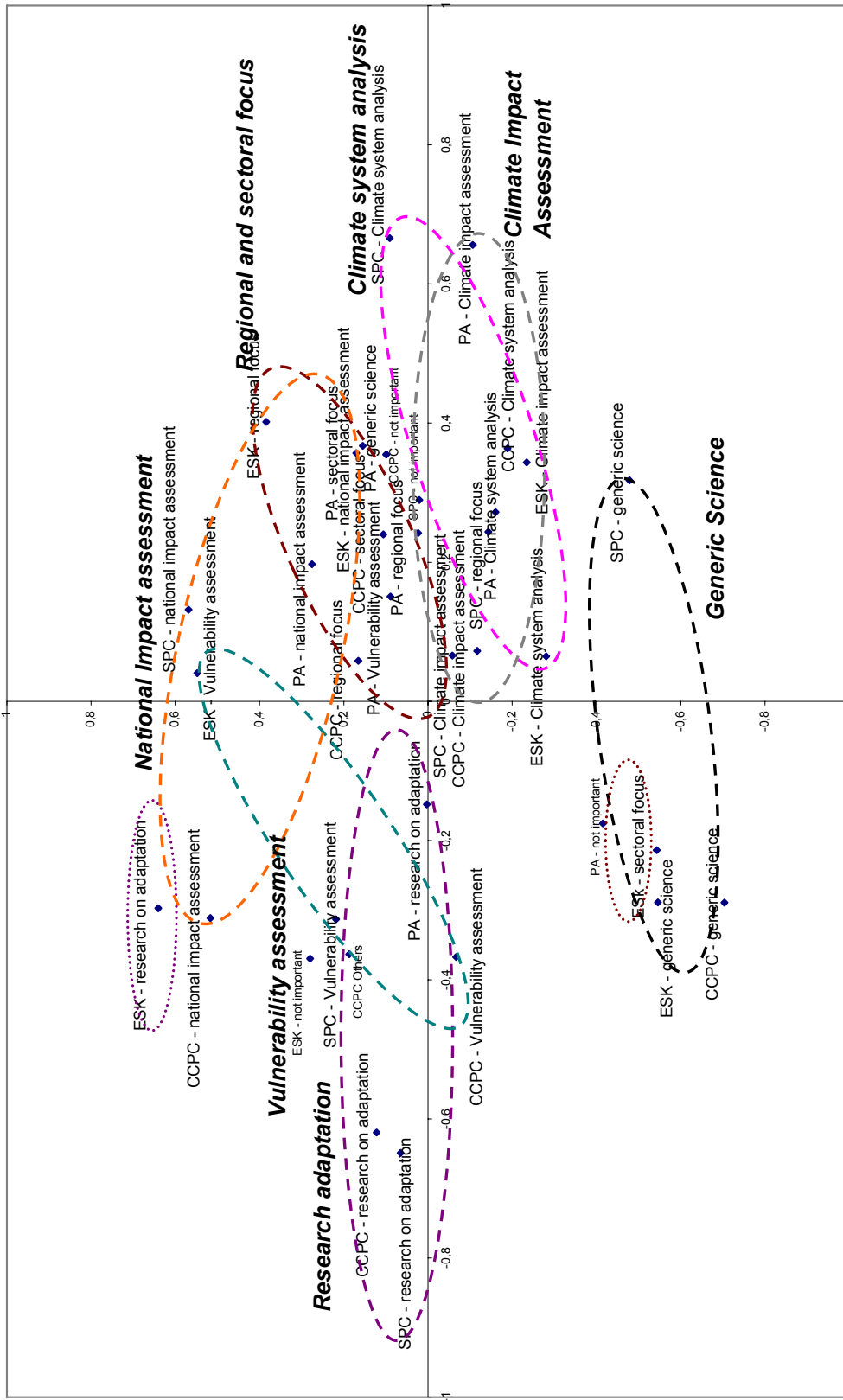


Figure 6. Projection of driving forces. Axis 1 and 2.





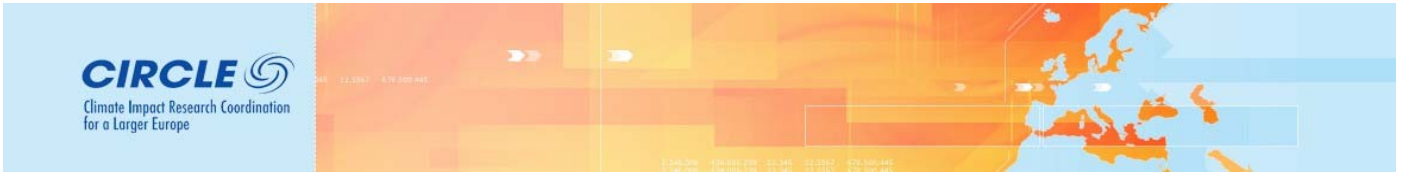


Figure 7. Projection of driving forces. Axis 3 and 4.

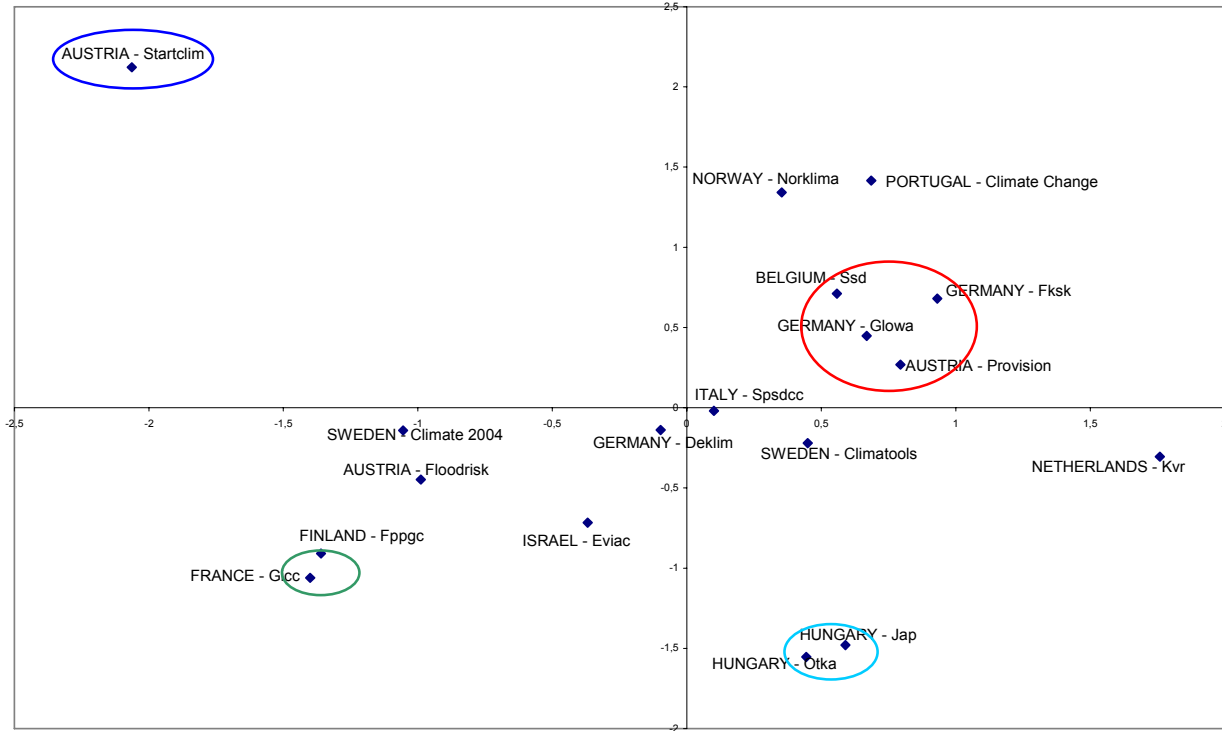


Figure 8. Projection of research programmes. Axis 1 and 2.

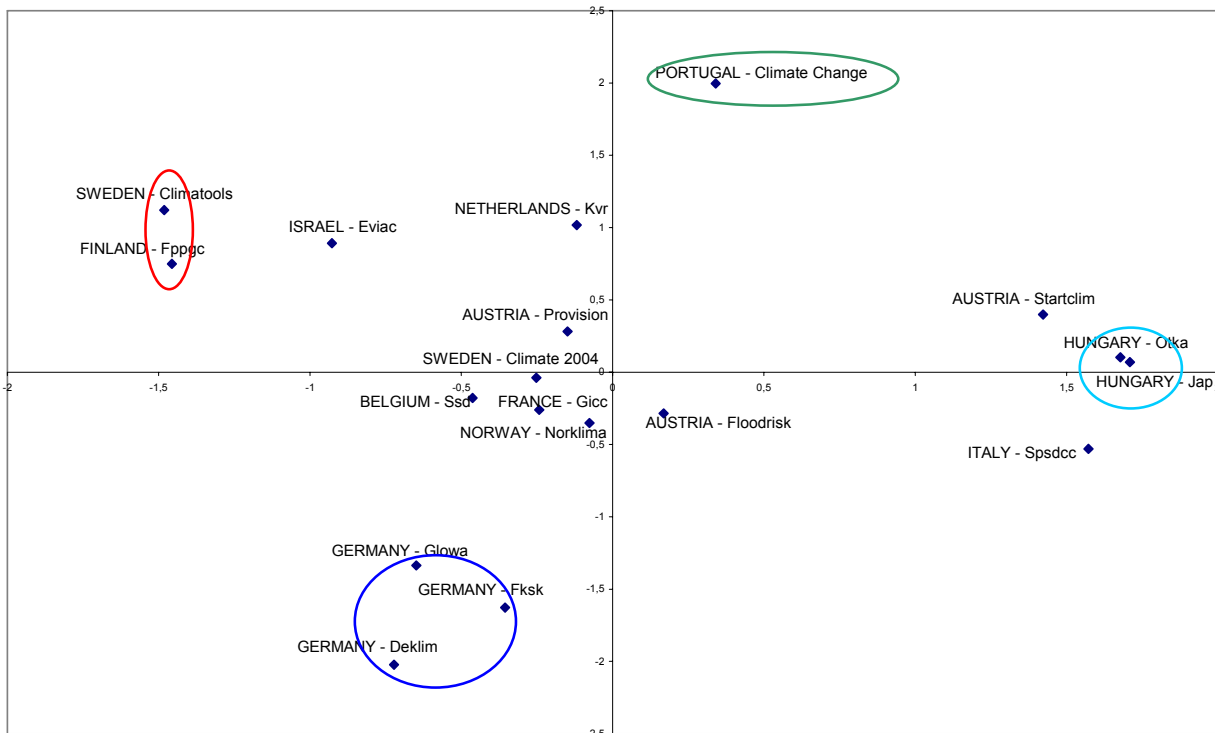




Figure 9. Projection of research programmes. Axis 3 and 4.

Influence of the policy context research area definitions

Here the driving forces are identical to those presented above, but the factors are chosen so as to define research fields¹³.

The policy context of climate change (Table 13) is seen as having a great influence in the case of climate system modelling (three-fourths of the programmes are concerned), adaptation to natural disasters (more than half), adapting water management, nature conservation, vulnerability assessment and adaptation capacities, impacts on aquatic systems and biodiversity, (not quite half of the programmes). Each factor was seen at least three times as being influenced.

Whereas Startclim (AU) does not view any factor as being influenced, Provision (AU), Fppgc (FI), Spdccc (IT), KvR (NL), and Deklim (GER) are the programmes that view the political context of climate change as a driving force influencing a majority of factors.

¹³ For more details on the methodology used to determine these factors, see the 2nd questionnaire in the annex.



Table 13 : Driving Force : Climate Change Policy Context.

Source: Second Questionnaire – Annex I.

Climate Change Policy Context	Observations	Modelling	Socio-economic	Soil degradation	Water ecosystems	Biodiversity	Glacier and permafrost melting	Human Health Impacts	Human Settlements	Social cohesion	Natural disasters	Risk Transfer mechanisms	Water management	Nature preservation	Agriculture / forestry	Tourism	Human Health Adaptation	Construction	Energy supply	Transport	Vulnerability assessments	Adaptive capacity assessments	
AUSTRIA - Floodrisk		✓																					
AUSTRIA - Provision			✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓						✓	✓
AUSTRIA - Startclim																							
BELGIUM - Ssd	✓	✓			✓	✓		✓															
FINLAND - Fppgc		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓			✓	✓	✓			✓
GERMANY - Deklim	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GERMANY - Fksk		✓	✓		✓					✓	✓	✓	✓	✓			✓	✓			✓	✓	✓
GERMANY - Glowa		✓	✓		✓					✓	✓	✓	✓	✓			✓				✓	✓	✓
HUNGARY - Jap		✓	✓			✓					✓			✓					✓				
HUNGARY - Otka		✓	✓			✓								✓									
ISRAEL - Eviac		✓	✓	✓	✓			✓					✓	✓									✓
ITALY - Spsdcc	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓		✓				✓		✓	✓	✓
NETHERLANDS - Kvr	✓	✓	✓			✓	✓		✓		✓	✓	✓	✓	✓				✓	✓	✓	✓	✓
NORWAY - Norklima	✓	✓				✓	✓		✓		✓	✓	✓	✓									✓
PORTUGAL - Climate Change								✓								✓	✓						
SWEDEN - Climate 2004	✓	✓												✓									
SWEDEN - Climatools		✓						✓	✓							✓	✓	✓					
Total (upon 17)¹⁴	6	14	10	3	8	8	5	8	5	4	10	5	9	9	5	4	5	3	5	3	6	9	

¹⁴ For each questions regarding table 13, Gicc (France) responds that none was relevant.





The sectoral policy context (Table 14) is seen as a driving force influencing factors such as adapting water management, impacts on aquatic systems, socio-economic impacts, adaptation in agriculture and forestry (for all of these fields more than half of the programmes are concerned), and adaptation to natural disasters. Each factor is considered influenced, but sometimes only once (climate system observations, impacts on glaciers and permafrost melting). Whereas Startclim (AU) considers that no factor is influenced, Ssd (Be), KvR (NL), Spsdcc (IT), Fppgc (FI), Norklima (NO), Provision (AU), and Fksk (GER) view a majority of factors as being influenced, especially impacts on aquatic ecosystems, adapting water management, and adapting agriculture.



Table 14 : Driving Force : Sectoral Policy Context.

Source : Second questionnaire – Annex I.

Sectoral Policy Context	Observations	Modelling	Socio-economic	Soil degradation	Water ecosystems	Biodiversity	Glacier and permafrost melting	Human Health Impacts	Human Settlements	Social cohesion	Natural disasters	Risk Transfer mechanisms	Water management	Nature preservation	Agriculture / forestry	Tourism	Human Health Adaptation	Construction	Energy supply	Transport	Vulnerability assessments	Adaptive capacity assessments	
	AUSTRIA - Floodrisk			✓					✓			✓	✓	✓									
AUSTRIA - Provision		✓	✓		✓			✓	✓	✓	✓	✓	✓		✓	✓						✓	
AUSTRIA - Startclim																							
BELGIUM - Ssd			✓		✓	✓		✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
FINLAND - Fppgc			✓	✓	✓	✓					✓	✓	✓		✓	✓		✓	✓	✓		✓	✓
GERMANY - Deklim				✓	✓						✓	✓	✓		✓	✓			✓	✓		✓	✓
GERMANY - Fksk		✓	✓	✓	✓				✓		✓	✓	✓		✓	✓		✓					✓
GERMANY - Glowa			✓		✓								✓										
HUNGARY - Jap				✓	✓					✓	✓		✓		✓								
HUNGARY - Otka		✓	✓	✓	✓				✓		✓		✓	✓	✓				✓				
ISRAEL - Eviac			✓										✓	✓				✓					
ITALY - Spsdcc			✓	✓	✓	✓	✓	✓			✓		✓			✓	✓		✓	✓	✓	✓	✓
NETHERLANDS - Kvr	✓	✓	✓			✓			✓		✓	✓	✓	✓	✓				✓	✓	✓	✓	✓
NORWAY - Norklima			✓	✓	✓	✓		✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PORTUGAL - Climate Change					✓			✓						✓	✓								
SWEDEN - Climate 2004													✓					✓	✓			✓	✓
SWEDEN - Climatools				✓	✓							✓	✓							✓			
Total (upon 17)	1	4	11	8	12	5	1	6	5	3	9	6	14	6	10	7	4	5	8	7	6	6	6





Among the four driving forces analysed in this section of the report, public awareness is viewed by the CIRCLE partners as the least pertinent. Public awareness (public opinion) (Table 15) is seen as having an influence in the case of adaptation to natural disasters and adaptation of water management. Each factor is viewed as being influenced but sometimes only once (climate system modelling) or twice (observing the climate system). This illustrates public interest in spectacular events (natural disasters) and water-related problems (people probably remember past floods) and also public lack of interest in nonsensational scientific subjects. Whereas Startclim (AU) view practically all factors as being influenced in this case, KvR (NL) is the only other programme to find this driving force pertinent for a majority of factors. Fppgc (FI) and Spdccc (IT) do not view any factor as being influenced; this reflects a chosen approach to orienting national research.



Table 15 : Driving Force : Public Awareness.

Source : Second questionnaire – Annex I.

Public awareness	Observations	Modelling	Socio-economic	Soil degradation	Water ecosystems	Biodiversity	Glacier and permafrost melting	Human Health Impacts	Human Settlements	Social cohesion	Natural disasters	Risk Transfer mechanisms	Water management	Nature preservation	Agriculture / forestry	Tourism	Human Health Adaptation	Construction	Energy supply	Transport	Vulnerability assessments	Adaptive capacity assessment
AUSTRIA - Floodrisk					✓				✓		✓		✓									
AUSTRIA - Provision					✓	✓	✓				✓	✓			✓	✓			✓			
AUSTRIA - Startclim			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BELGIUM - Ssd					✓			✓		✓	✓		✓	✓		✓			✓	✓		
FINLAND - Fppgc																						
GERMANY - Deklim								✓	✓				✓				✓	✓	✓			✓
GERMANY - Fksk			✓		✓				✓	✓	✓		✓		✓	✓					✓	
GERMANY – Glowa			✓		✓				✓	✓	✓		✓								✓	
HUNGARY - Jap						✓		✓			✓					✓	✓					
HUNGARY - Otka			✓					✓					✓				✓		✓			
ISRAEL - Eviac	✓																					
ITALY - Spsdcc																						
NETHERLANDS - Kvr		✓	✓			✓			✓		✓		✓	✓					✓	✓	✓	✓
NORWAY - Norklima											✓							✓				
PORTUGAL - Climate Change			✓					✓	✓		✓						✓					
SWEDEN - Climate 2004							✓	✓	✓		✓	✓			✓	✓	✓				✓	
SWEDEN - Climatools	✓																					
Total (upon 17)	2	1	6	1	6	4	3	7	7	4	11	3	8	3	4	6	6	3	6	4	4	3





The fourth driving force is existing expertise and knowledge (Table 16). The influence of this driving force is important for most programmes only in the fields of climate system modelling, impacts on aquatic ecosystems, and adaptation to natural disasters. Half of the programmes see an influence on factors such as observation of the climate system, socio-economic impacts, impacts on soil degradation, on biodiversity, adapting water management, and adapting agriculture. Each factor is mentioned as being influenced, but sometimes only twice (adaptation of tourism and in health-related matters). Whereas Eviac (IS) – a programme that just got started – does not consider any factor to be influenced except adaptation of water management, Climate Change (PT) sees almost all factors as being influenced. Provision (AU), Fppgc (FI), Spsdcc (IT), KvR (NL), and Norklima (NO) view a majority of factors as being influenced, especially impacts on biodiversity, impacts on ecosystems, socio-economic impacts, and adaptation of agriculture.



Table 16 : Driving Force : Existing Skills and Knowledge.

Source : Second questionnaire – Annex I.

Existing skills and knowledge	Observations	Modelling	Socio-economic	Soil degradation	Water ecosystems	Biodiversity	Permafrost melting	Human Health Impacts	Human Settlements	Social cohesion	Natural disasters	Risk Transfer mechanisms	Water management	Nature preservation	Agriculture / forestry	Tourism	Human Health Adaptation	Construction	Energy supply	Transport	Vulnerability assessment	Adaptive capacity assessment
AUSTRIA - Floodrisk		✓		✓					✓		✓											
AUSTRIA - Provision	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓						
AUSTRIA - Startclim	✓	✓																				
BELGIUM - Ssd	✓	✓			✓	✓						✓									✓	✓
FINLAND - Fppgc		✓		✓	✓	✓	✓				✓	✓	✓	✓	✓			✓		✓		
GERMANY - Deklim	✓	✓									✓		✓					✓	✓			
GERMANY - Fksk	✓	✓		✓	✓						✓	✓	✓		✓			✓				
GERMANY - Glowa		✓			✓								✓									
HUNGARY - Jap	✓		✓	✓				✓			✓				✓							
HUNGARY - Otka		✓		✓	✓						✓				✓							
ISRAEL - Eviac													✓									
ITALY - Spsdcc	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓		✓							
NETHERLANDS - Kvr			✓			✓	✓	✓			✓	✓	✓	✓	✓				✓	✓	✓	✓
NORWAY - Norklima	✓	✓	✓		✓	✓	✓			✓				✓	✓				✓		✓	✓
PORTUGAL - Climate Change	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SWEDEN - Climate 2004			✓	✓	✓	✓				✓												
SWEDEN - Climatools		✓	✓			✓		✓			✓			✓			✓				✓	✓
Total (upon 17)	9	13	8	9	10	9	5	5	3	3	10	5	8	5	9	2	2	4	4	3	5	4





Projecting definitions of research areas influenced by the driving forces

A major components analysis was applied to the data of Tables 13 through 16. The graphic results are presented in Figures 10-13. As figures 2 and 3, these figures have to be read by axis, the axis 1 (or axis 3) is the x-axis (abscissa) and the axis 2 (or axis 4) is the y-axis (ordinate).

Factor projection is described in Figures 10 and 11. Figure 10 shows that overall, research areas are not all subject to the same influences. Transport, biodiversity and energy supply share common driving forces, very different from those affecting social cohesion or health. Public opinion again appears as a driving force having its own distinct logic. The areas most representative of this driving force are the most spectacular and/or sensational ones, i.e. natural disasters, water, and soil degradation. As expected, the less spectacular ones: assessing the adaptation capacity and modelling are the least representative area influenced by public opinion. Figure 11 shows only that the driving forces influencing water management research are not the same as those influencing health impact research.

In order to link factors and programmes, Figure 12 must be read with Figure 10 projected into it. Again, this demonstrates the distinct logic of public opinion, specific to the Austrian programme Startclim. The other programmes show no special correlation with certain research fields, except for Fppgc (FI), which correlates with adaptation capacity assessment, and KvR (NL), which considers a considerable number of influences. Figure 13 must be read with Figure 11. This shows that a majority of programmes is subject to essentially the same driving forces and that the German programmes are deeply involved in all aspects of water management. Provision (AU) seems to have the same driving forces as Climatools (SE), but this conclusion should be tempered by the fact that Climatools does not view any research area as being influenced by the defined driving forces.

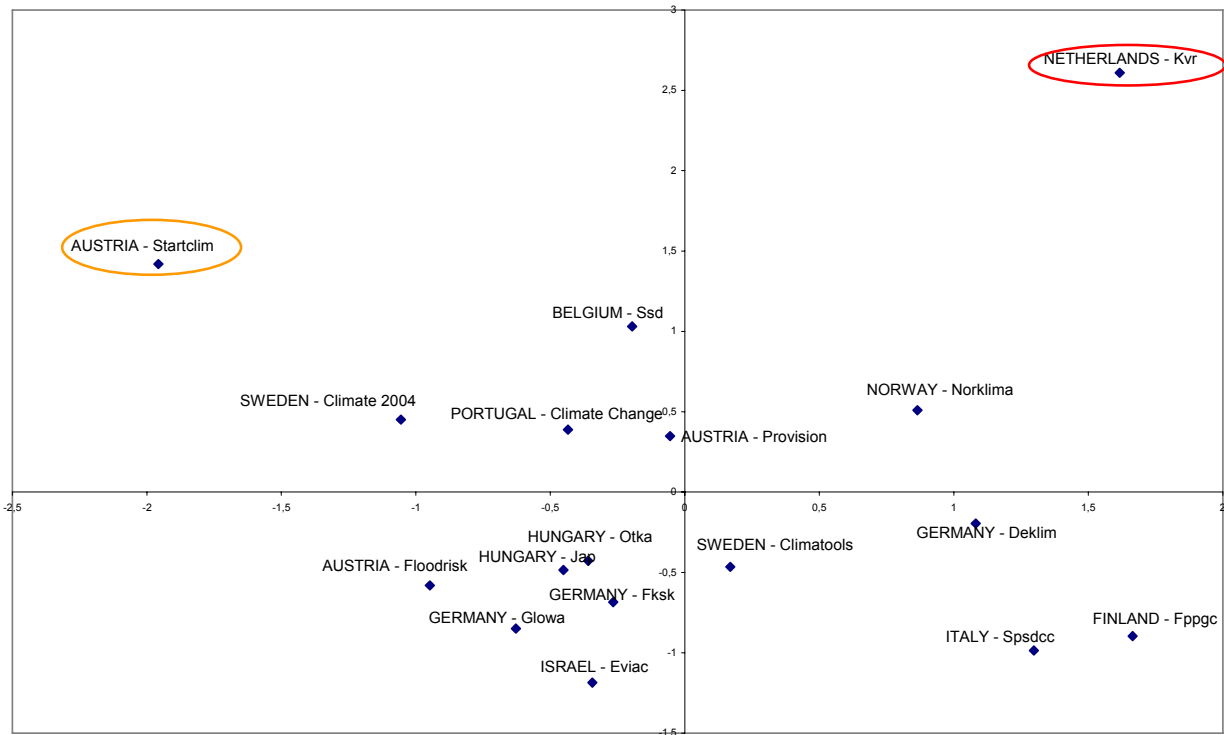
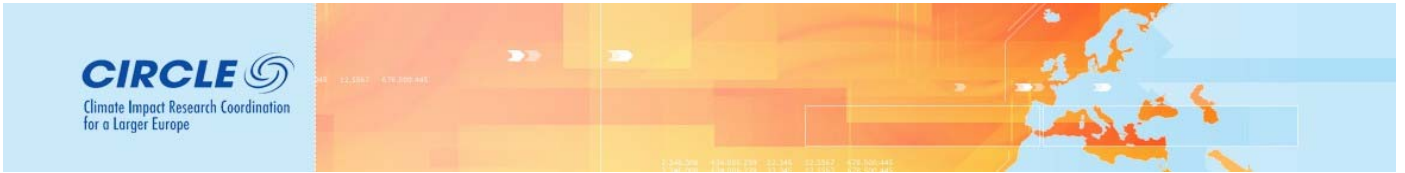


Figure 12. Projection of research programmes – axis 1 and 2.

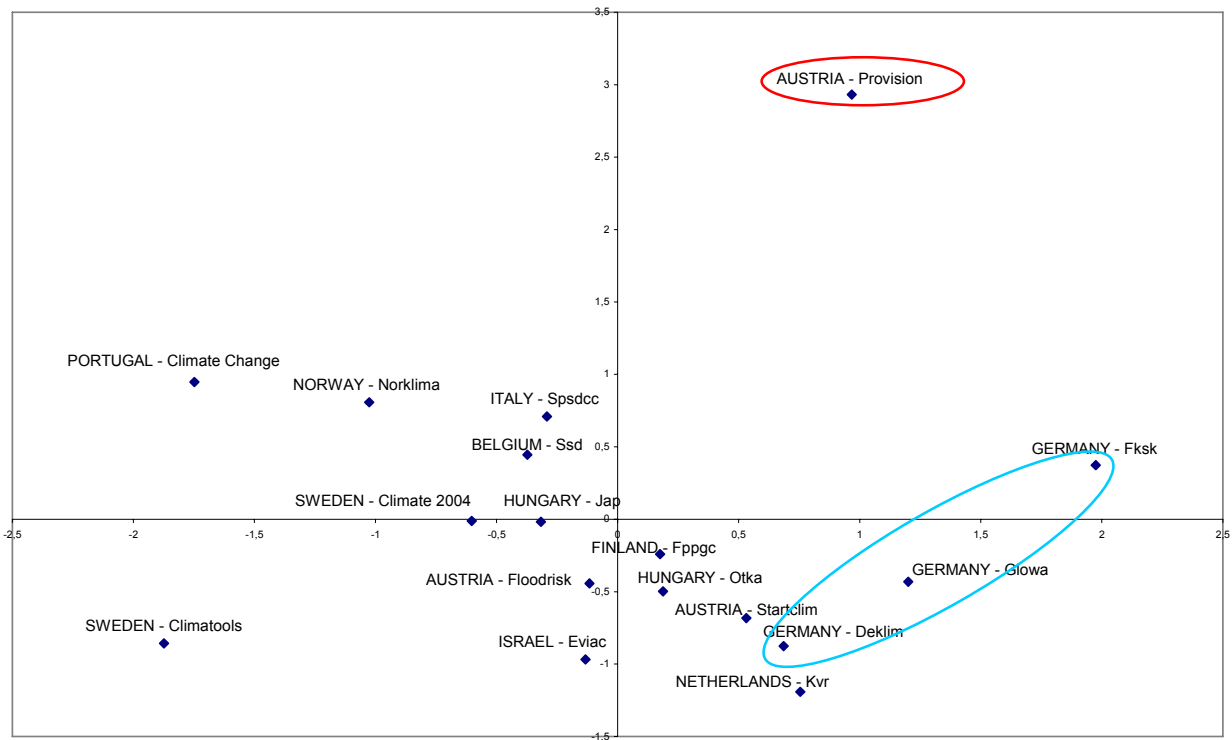


Figure 13. Projection of research programmes – axis 3 and 4.





Environmental policy and key actors

Table 17 shows where the impulse to launch the different programmes originated. Usually, the incentive is top-down (role of governmental administrations), but there are also bottom-up incentives (questions raised by the scientific community), followed by incentives from policymakers. Questions raised by the private sector are very pertinent to the elaboration of the Dutch and German research programmes and pertinent to the Austrian programmes and the Swedish programme Climate 2004. Except in the case of Hungary, it is possible to draw the same conclusions for the various programmes regarding the pertinence of incentives from NGOs and the media. There is a strong drive to integrate stakeholders, the scientific community, and policymakers. Lastly, the need to collaborate at the national and international levels proves pertinent to a majority of programmes, especially the German, Finnish, Dutch, and Austrian programmes.

On the other hand, stakeholder integration seems absent from programmes such as Climate Change (PT), Gicc (FR), Fppgc (FI), and Climatools (SE)¹⁵, and moderately present in Ssd (BE), Eviac (IS), Spdccc (IT), Otko, Jap (HU), and Norklima (NO).

¹⁵ See footnote 6.



Table 17 : Key actors.

Source : Second questionnaire – Annex I.

Questions raised by	Scientific community	Private sector	NGOs	Within the media	Political decision-makers	Governmental administration	By need for collaboration at national and international level
AUSTRIA – Floodrisk	✓	✓	☐	✓	✓	☐	✓
AUSTRIA – Provision	☐		☐	☐	✓	✓	☐
AUSTRIA – Startclim	☐	✓	✓	✓	✓	☐	
BELGIUM – Ssd	☐			✓	✓	☐	✓
FINLAND – Fppgc	☐				✓	☐	☐
FRANCE – Gicc	✓				☐	☐	
GERMANY – Deklim	☐	☐	✓	✓	☐	☐	☐
GERMANY – Fksk	☐	☐	✓	✓	☐	☐	☐
GERMANY – Glowa	☐	☐	✓	✓	☐	☐	☐
HUNGARY – Jap	☐			✓	✓	☐	✓
HUNGARY – Otka	☐			✓	✓	✓	✓
ISRAEL – Eviac	☐		✓			☐	
ITALY – Spsdcc	✓	✓			☐	☐	
NETHERLANDS – Kvr	☐	☐	✓	✓	☐	☐	☐
NORWAY – Norklima	☐	✓			☐	☐	✓
PORTUGAL - Climate Change	✓				☐	☐	✓
SWEDEN - Climate 2004	✓	✓	✓	☐	✓	✓	✓
SWEDEN – Climatools					✓	☐	✓
Total blank (upon 18) :	1	9	9	7	1		4
Total ✓ (upon 18) :	5	5	7	9	9	3	8
Total ☐ (upon 18) :	12	4	2	2	8	15	6

Research Institutions

The approach adopted in this section is diagnostic to the extent that an attempt has been made essentially to identify the research fields of the scientific institutions of the CIRCLE member countries, on the basis of information derived from the ECR. Table 18 shows how markedly the different countries differ as regards the number of research institutions concerned, independently of differences in population size among the member countries. Research is usually on a national scale. Only Austria and Italy are currently sponsoring research at the international level. The Netherlands, on the other hand, have emphasised regional integration of their national research.

Table 18 : Research institutions.

Source : ECR.

Country	Number of Institutions	International research	National research	Regional research
Austria	10	2	8	
Belgium	7		7	
Finland	10		5	
France	10		10	1
Germany	13		13	
Hungary	5		5	
Ireland	5		5	
Israel	5		4	
Italy	3	3	3	
Netherlands	9		9	9
Norway	10		10	
Portugal	8			
Sweden	6			

Determining the fields of expertise of these institutions is a more difficult exercise, as the relevant information is heterogeneous. Language, the problem of the semantics used to describe research projects, the difficulty of collecting data from non-partner institutions closely associated with CIRCLE are as many reasons for limiting the objectives of this approach.

It can be said, however, that the various institutions linked to the CIRCLE partners essentially span the whole field of climate change impact research.





6. Conclusions

At the level of research areas, this analysis enables us to define groups of similar programmes or to perceive pre-existing groups of common research fields.

CIRCLE related activities are often full part of large programmes covering the whole research spectrum from basic climate system to impact and adaptation research. Whereas some research programmes are characterised by a core of strong basic science, others invest heavily on multidisciplinary application oriented research.

A recent tendency is felt on the emergence of stand-alone programmes on adaptation.

It appears that research on impacts is more developed than research on adaptation and that some programmes do not privilege geographical zones, identified as their own country main vulnerable areas.

The links between CIRCLE and mitigation related research have not been analysed in the framework of the present Del-Ib report. Nevertheless, the importance the CIRCLE countries attach to mitigation versus adaptation supporting research is worth to be further assessed.

As regards how the policy context influences research orientations, the situation is less clear. The difficulty of interpreting national positions does not facilitate the task. Yet it may be asserted that the global climate change context and the sector-related policies that it will affect have a strong influence on research orientation choices for most of the programmes. The available expertise in the field also influences the orientation of many programmes.

The main difficulty of task I-b resides in processing and interpreting both quantitative data (scientific content) and qualitative data (policy context). Above that, giving a picture of the research landscape, the principal component analysis does not reflect recent changes in the policy context.

The principal component analysis proved to be suitable to handle and visualize a huge amount of multi-dimensional programme related information but the method relies on the quality of provided information and therefore on the univocal interpretation of questions.



7. Recommendations

The aim of this report was to review and analysis the Scientific Content and Policy Context of CIRCLE related programmes. The report suggests that beneath the diversity of scientific and policy orientations displayed by these research programmes, there exist common points such as, among them, numerous research activities on socioeconomic impacts or research on impacts on water resources. The report does not make possible to highlight fine relations between programmes activities. This possibility would however be highly recommendable and favoured by introducing more convergent data sharing and data collection approaches.

Data sharing

An extension of del1b activities would then be to develop a database enabling to sort or retrieve specific information from standardized stored data. It should contain the data of the ECR (in its latest available version), the second questionnaire (Scientific Content and Policy Context) and also data collected at the level of European projects and initiatives (Del. I.e-1, I.e-2). Lastly, insofar as possible, the database should identify projects (and researchers, potential experts) within the research programmes. A modular demand-driven searchable database that would meet CIRCLE members needs is recommended.

Data collection approaches

It is important in the future (for instance, at the time of updating) to promote and use prognostic as well as diagnostic approaches more widely so as to reach a greater level of comprehensiveness. We realized that collecting comparable information from URL of major CIRCLE related institutions is quite difficult because of their relative heterogeneity. A solution would be, notably, to make use of information gathered in the framework of del III c.

Regarding information on the policy context that might influence priorities in different countries, open questions and inetrvIEWS seem rather appropriate than a questionnaire. In preparation of the CIRCLE mission paper, the DLR performed such interviews that complement this report.



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