Institutions for Adaptation: The Capacity and Ability of the Dutch Institutional Framework to Adapt to Climate Change

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1. General aims and outline of the research

1.1 Introduction

Project IC12 'Institutions for Adaptation' started in May 2007 as a part of the Dutch research Programme 'Climate Changes Spatial Planning' (CcSP). The project intends to study institutions developed to address climate change from the perspective of policy science, political science, law and institutional analysis. It aims to develop a method to assess the robustness of institutions to deal with climate change, and to provide other projects in the CcSP programme with this type of knowledge.

This is the first document produced by the project team. It aims to provide a research protocol to guide the team in its research work. It can also be used to inform direct stakeholders of the project on the detailed work plan. This document highlights the problem definition, the theoretical framework, the conceptual framework and the methodology for the research project.

Governmental institutions tend to create continuity in policy outcomes rather than change. They evolve at most incrementally to deal with societal problems. Since science provides information about the potential climate changes that will influence and challenge society, it becomes increasingly necessary to understand the capacity of institutions to deal with such structural changes. Against this background, this project aims to understand the capacity and ability of institutions to adapt to climate change. The research questions are:

- How can the adaptive capacity of Dutch institutions from local through to national level be assessed?
- What are the key implications of such an assessment?
- What general and specific recommendations flow from such an assessment, both in terms of theory and in terms of policy?

This assessment has normative and empirical components and will build on theories on multi-level and multi-actor governance, and institutional change. The focus will be on adaptation strategies, specifically in the policy fields of water, spatial planning, nature and agriculture in the Netherlands. The methodology of 12 steps includes, inter alia, (a) literature survey on the adaptive capacity of institutions and multi-level governance, (b) development of a multi-disciplinary method for assessing the adaptive capacity of institutions; (c) content analysis of Dutch national policies in the fields of water, agriculture, nature and spatial analysis; (d) case studies for in-depth empirical assessment; (e) comparative analysis; (f) assessment of the theoretical framework and lessons for addressing these issues; and (g) policy recommendations as to how general and specific challenges can be addressed.

1.2 Problem definition

Institutions are defined as: "systems of rules, decision-making procedures, and programs that give rise to social practices, assign roles to the participants in these practices, and guide interactions among the occupants of the relevant roles"(IDGEC Scientific Plan-

ning Committee 1999). The rules and roles are both formal and informal, visible and latent and conscious and unconscious (Arts 2006). On the one hand, institutions restrict the possibilities of people to act, while, on the other hand, they enable people to act (Sharpf 1997). In some literature, the term 'institutions' can also refer to 'organizations'. According to our definition, organizations are also created by institutions, (e.g. the Waterboard Law) but a specific organization (Waterboard Regge and Dinkel) is not an institution. If we mean organizations, we will use the terms 'organizations' or 'actors'.

Historically, institutions have evolved incrementally to deal with existing social problems. However, the nature of societal problems is changing as a result of the processes of globalisation and development. With the progress made in the natural sciences, we are able to predict, to a certain extent, in advance the potential environmental impacts of various human actions on society, for example, climate change. Are our institutions capable of dealing with this new knowledge about future impacts and, more importantly, with the impacts themselves? Are our institutions capable of dealing with the inherent uncertainty of the predictions?

The climate is not the only aspect in this world that is changing. We notice a number of societal trends – a shift towards individual responsibility to receive rain water on private property and to encourage individuals to seek insurance rather than depend on a safety net to be provided by the government; increasing pressure on rural land use because of urbanisation processes, together with development to combine land use functions; decisions to develop large scale housing projects that do not take into account the potential impact of climate change; and, inter alia, the development of innovative solutions such as floating houses and brackish agriculture. We also notice the development of new organizational arrangements, such as multilevel agreements between policy actors, a more horizontal approach to land use planning, and a shift form national to European nature policies. Obviously, the system we will try to study is a moving target, and the theoretical framework we use will have to be able to deal with this.

We believe that climate change is a multi-scale problem both in terms of administrative levels and in terms of time-scales. In other words, we see climate change not merely as a global problem (Willink 1991), but as both a systemic and a cumulative problem whose causes occur at all levels and whose impacts will be felt at all levels now and into the future[1].

Upscaling and centralization appear to be attractive policy strategies for dealing with climate change (Kwadijk, Klijn & Van Drunen 2006), because the problems have global causes as drivers and because of the need to deal with free riders. A global approach helps to create a level playing field. At the same time, action ultimately has to be taken

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[1] Turner II et al. (1990) argued that there were two types of global change – one that is systemic and one that is cumulative. Systemic impacts refer to processes with a direct impact on the global systems such as the emissions of greenhouse gases and land use change; and cumulative impacts are those where world-wide distribution of changes lead to major impacts. Kates and Wilbanks (2003) submit that while atmospheric processes can be seen as regional, emissions, impacts and responses could be seen as local. In effect, when one is referring to global concentrations and global mean temperature rise, one is referring to a global phenomenon.

in specific contexts and by people living in those contexts. This calls for downscaling the issue and understanding what sort of measures need to be taken in specific contexts. In the final analysis, it become critical to find the appropriate set of consistent and complementary measures that work at different administrative levels within different contexts that are conducive to changing human behaviour at those specific levels.

This approach is consistent with the trend in the social sciences to move from government to governance approaches, to move from discussion of hierarchical and well-institutionalized forms of government towards less formalized forms of governance in which networks and horizontal relations between interdependent actors have grown in importance (Hanf & Sharpf; Blatter 2003; Arts & Van Tatenhove 2005; Hajer & Wagenaar 2003; Rhodes 1997; Pierre 2000; Kooiman 1997). To approach persistent societal problems in a meaningful way, a growing number of scientific studies have paid attention to governance (Rhodes 1997; Pierre, 2000), or related concepts like network management (Kickert *et al.* 1997; Koppenjan & Klijn 2004) or deliberative policy making (Hajer & Wagenaar 2003; Fischer 2003). They form a reaction to the restrictions of a hierarchical method of steering that is founded on an instrumental way of reasoning, the gap experienced between the state and the civil society and the changing interdependencies in a network society (Van Gunsteren 1976; Castells 1996). Where government is visualised as a rigid, centralised, unitary, top-down process of providing rules in the public interest that have to be implemented at local level, governance[2] is seen as a flexible, diffuse, bottom-up and top-down process which allows for close interactions not only between the different levels of government but also with social actors (both commercial and non commercial entities) with vastly different interests (Krahmann2003). Governance and good governance[3] are often seen as key institutional settings for addressing problems. Multi-level governance[4] emphasises the diffuse and decentralised nature of governance as well as the need for links between all levels. However, governance approaches also face problems like inertia, syrupiness, suffocating consensus, and negotiated nonsense. [5] Multiple trade-offs may be made by multiple actors, leading to inconsistent decisions (Gupta 2004).

Based on the assumptions that climate change is a multi-scale problem, and that we are in the middle of a paradigm shift from government to governance, our starting points with respect to this project are:

- The need to adapt to climate change requires changes in the Dutch system of institutions for governing land use, nature, agriculture and water;
- Which institutions this concerns, and how they should be changed, is not yet known, and there is no assessment method for it;

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2 "Governance is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken" (Commission on Global Governance 1995).

3 Good governance is generally seen to include accountability; transparency; participation; effectiveness and efficiency; equity; and the rule of law. See e.g. Botchway (2001).

4 See, for example, Winter (2006).

5 See for example Termeer (2007).

- A method to assess the degree to which Dutch institutions are climate-proof can be developed, and is useful for prioritising institutional changes in order to adapt to climate change;
- Such an assessment method could, in principle, be also useful for other nations around the world;
- An institutional system that aims to deal with the problem of climate change needs to be a multi-level system: from local to global, aiming at short and long term impacts, with complementary and mutually consistent action taken at different levels;
- Such an institutional system is based on agreed upon and more disputable knowledge.
- The shift from government to governance causes threats, and at the same time it offers opportunities for adaptation to climate change;
- Climate change can be characterized as a complex, ill structured or wicked problem. Therefore, more horizontal forms of governance, inter-organizational cooperation and interactive policy processes are needed to deal with the growing complexity of such an ill-structured problem in an effective way;
- Smart or clumsy combinations of more informal adaptive bottom-up governance strategies and formal top-down government strategies provide good opportunities to deal with climate change.

Moving from these starting points, our project seeks to understand the adaptive capacity[6] of Dutch governance institutions to deal with the impacts of climate change. We prefer to use the term adaptive capacity over the term resilience[7], because the latter can cause misunderstandings on what is to change and what is to remain the same: is a system only resilient when it goes back to its original state (something that natural and human systems rarely do) or is it also resilient when it changes into a new state? The concept of resilience as developed in the ecological studies was found to be less useful as a focus of study in this project.

We focus only on the Netherlands, although in some instances we may have to refer to the European and global level, for example, when domestic policies flow from or conflict with European and international agreements, and because the success of some domestic policies may call for complementary changes in policies at European or global systems of governance. We focus on adaptation, although in some instances we may have to refer to emission reduction opportunities as well (for more detailed research questions and hypotheses see Section 1.4 and Table 3.1).

1.3 Objectives

This project has a general objective and two specific objectives. The general objective is to understand:

- The adaptive capacity of Dutch institutions to deal with climate adaptation;

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[6] Adaptive capacity is defined by IPCC WG II (2001) as “the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences”. It is closely related to several concepts such as coping ability, stability and robustness.

[7] Resilience can be defined as “capacity of a system to experience disturbance and still maintain its ongoing functions and controls” (Holling and Gunderson 2002).

- Whether the shift from a (presumed) hierarchical government to more diffuse multi-level governance improves the capacity to deal with climate adaptation on glocal (both global and local) environmental issues (generally characterised as low politics issues and unstructured problems);
- Or whether such problems can only be dealt with effectively through a highly centralised policy field with clear responsibilities delegated to all actors.

The specific objectives are to:

a) Contribute to science: Given that the project is multi-disciplinary and broad in scope, we expect to be able to contribute to the following theoretical frameworks:
   a. Contribute to the theory of *governance and institutions* in terms of the effectiveness, efficiency, robustness and legitimacy of new forms of governance in dealing with glocal, structural environmental problems; especially in terms of identifying the criteria of an adaptive institution;
   b. Contribute to the theory of *multi-level and multi-actor governance* in terms of assessing how responsibility is shared and/or delegated and how accountability is arranged between these various actors to deal with global, structural environmental problems; especially in terms of ensuring that problems are effectively addressed;
   c. Contribute to the assessment of whether the existing institutions 'fit' with the problem at hand, how institutions interplay with each other, whether instruments at individual level can be scaled up to national level and whether national instruments can be scaled down to local level (Young 2002); and
   d. Contribute to the methods of assessment and its elaborations in practice;
   e. Contribute to scientific developments within the Inter-governmental Panel on Climate Change (IPCC) and Institutional Dimensions of Global Environmental Change of the International Human Dimensions Programme (IHDP)[8];
b) Contribute to policy and institutional design: Given that the project focuses on the adaptive capacity of Dutch institutions from local to national level to cope with the impacts of climate change, the project aims at a:
   a. General assessment of the adaptive capacity of Dutch institutions at present to cope with the increasing knowledge on the impacts of climate change; and to diffuse the information to the necessary levels and actors;
   b. Specific assessment of the role and mandate of individuals, households, municipalities, waterboards, provinces, ministries and the parliament to deal with the problems;
   c. Specific assessment of new arrangements between or within these actors to increase adaptive capacity;
   d. Specific assessment of the lines of communication at horizontal, vertical and diagonal level to cope with the problems;

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[8] The International Human Dimensions Programme has established a programme called the Institutional Dimensions of Global Environmental Change. This programme published its research agenda in 1999 and has developed a conceptual framework, analytical themes and methodology to undertake research on the policy processes in relation to global environmental issues.

e. Specific recommendations to actors in specific spatial contexts to take measures to deal with the problems; based on extensive collaboration with other BSIK projects within the Netherlands.

1.4 Research questions

The overall research questions are:

- How can the adaptive capacity of Dutch institutions from local through to national level to deal with climate change be assessed?
- What are the key implications of undertaking such an assessment?
- What general and specific recommendations flow from such an assessment, both in terms of institutional design theory and in terms of policy?

There are three sets of sub-questions. The first, normative and theoretical set aims at describing criteria for a climate-proof institutional infrastructure. The second set of questions is empirical and investigates the current practices in the Netherlands, thereby identifying innovative opportunities to react to climate change. The third set consists of a confrontation of the outcomes of the first and second set of questions.

Normative questions:

1. What are the criteria for an institutional infrastructure that is able to react adequately to climate change and how can these criteria be measured?
2. What role does the development from government to governance play? What are the general expectations of 'governance style' public management? Is multi-level governance applicable to the issue of climate change? If governance is unavoidable (because either the policy system or the climate issue itself demands such an approach) how can it best be applied?
3. What does an effective and efficient climate policy in the sectors - water, nature, agriculture and urban development - imply for the development of spatial policy? To what new institutional arrangements do climate change-induced spatial claims lead? How do international instruments relate to national, regional and local policies? (Policies that are relevant at EU and international levels include regulations, directives and agreements on water (both fresh and coastal), agriculture, nature and the building sector.)
4. How does the concept of decentralisation in Dutch spatial policy relate to the centralised approach in climate policy? What are the differences between short-term and long-term policy goals?

Empirical questions:

5. How can one map the institutional context in the Netherlands? What are the most important adaptation strategies that should inspire changes in the institutional framework? What are the various institutions that should deal with climate change, and which ones actually do so?
6. How do (European), national, regional and local actors interpret climate policy? In which organizations is climate change on the agenda, one way or another? How do different stakeholders deal with possible risks? Are they using climate change scenario's? What time horizon do they use in their planning? Which actors are trying to integrate climate policy and spatial policy into existing institutions, and what are their

strategies (for example, at which administrative level, with what type of instruments)? Who is formally responsible for implementation of the most important adaptation strategies? Are there regional differences, for example regions in which climate change is higher on the agenda, or regions with innovative network approaches? Is there a consensus, or a structured debate towards consensus, about policy goals?

7. How does the current national spatial policy promote or hamper climate policy in the four sectors? Is the present institutional infrastructure able to integrate the new, climate-related spatial claims into spatial policy and practices? How can regional and local actors use and interpret the institutional framework of spatial planning to implement climate adaptation strategies? How do private and public actors deal with the possibilities and restrictions in practice and to what type of autonomous developments may this lead? What are the underlying patterns in the Dutch context? How does horizontal and vertical cooperation work in practice? Are citizens and the private sector involved? Are there indications that resources are taken care of (financial, knowledge)?

Concluding questions:

8. Considering the outcomes of the research, what are the strengths and weaknesses of the Dutch institutional infrastructure? What are the possibilities of the governance approach in the climate change domain? Can productive and unproductive approaches and/or tools be discerned in the current Dutch policy making practices?
9. What are the specific policy design issues that emerge from an analysis of the Dutch Institutional framework? What are the possible options and what are the challenges and bottlenecks?

1.5 Focus and Limits

We frame climate change as a glocal issue (sic), and at the same time we focus on the Dutch institutional infrastructure. There is a tension between these two choices. The focus on the Netherlands is a requirement of the Climate Changes Spatial Planning programme and is more or less justified when we focus on adaptation. However, given the size and political nature of the Netherlands, we will focus on the Netherlands in terms of empirical issues. Our literature survey and analysis will be grounded in international literature and experiences, EU (and international) legislation, since this has a major influence on Dutch institutions. We will also focus on the view of Dutch stakeholders on the relation between climate adaptation in the Netherlands and the rest of the world.

National climate policy includes energy policy, nature policy, agriculture, industry, urban infrastructure, waste, transport and water (VROM 2005b). Given the complex interaction between all these sectors both horizontally and vertically, and the wish of the Climate Change Spatial Planning programme to do an in-depth scientific study, this project will only focus on a limited number of policy sectors. Therefore, the project concentrates on adaptation in four sectors with a strong relation to spatial planning: water, agriculture (including biomass), nature and urban planning. This means that adaptation in other sectors such as industry and health, and mitigation policy including related sectors (energy, transport, industry and waste) cannot be dealt with in this project, even though they are scientifically interesting and socially relevant.

1.6 Structure of the Report

This report is structured as follows. Chapter 2 provides a brief theoretical and conceptual framework and introduces key terms. Chapter 3 explains the methodology to be used. Chapter 4 provides a time plan and organizational issues, such as cooperation within the CcSP programme. This report sets out the issues that Working Document 2 needs to deal with more in more detail.

2. Outline of a Conceptual Framework

2.1 Introduction

This chapter presents an outline of the conceptual framework for this research project. It presents some theoretical starting points and then presents the structure of the research project, the key impacts of climate change on the four sectors being studied, the types of responses that will be studied, the kinds of spatial claims made, and criteria for robustness of institutions to deal with adaptation to climate change.

It also introduces the key formal and informal institutions in the four sectors being studied, their main characteristics and a method for checking whether they meet the criteria for robustness to deal with adaptation to climate change.

The more detailed conceptual framework based on the literature review will be presented in Working document 2.

2.2 Key issues from a theoretical point of view

2.2.1 Relation between research problem and the theoretical literature

Given the structural changes occurring in our environment as a consequence of the activities of human society, it becomes pertinent to study whether existing institutions[9] have adaptive capacity to respond to these challenges. While in the theoretical world, we are witnessing a transition from government literature to multi-level governance theory[10], it becomes even more pertinent to understand whether such large-scale structural problems such as climate change can be effectively dealt with within a multi-level governance framework from local to national,[11] supranational[12] and international levels[13].

While the literature on multi-level governance systems is rich and developing rapidly, we see a number of scientific problems:

- First, complex interplay between multi-level governance actors is difficult to map and design. There are no clear hierarchies or starting points in such a system. Developing such interactive practices is in itself complicated and is context specific;
- Second, there are questions regarding the functioning of such a governance system. How will democratic values be preserved? Are we replacing technocracy and bureaucracy with a stakeholdercracy? Do participatory processes in themselves imply exclusion of some actors? How do we ensure accountability in a system where all

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9 See footnote 1 for definition.

10 See Van Kersbergen and Van Waarden (2001); Bache and Flinders (2004); Hooghe and Marks (2003).

11 See Lindblom and Woodhouse (1993).

12 See Jordan (2001); Rosamund (2000); Hooghe and Marks (2001).

13 Regime theory provides key insights into how regimes are formed and their effectiveness; see for example: Young, O. (2002b); Young and Von Moltke (1994); Miles et al. (2002); Keohane (1993); Krasner (1982).

actors have a role to play and where decision-making cannot always be traced to a single actor? Can such a system be transparent? Or is there so much information and so many relationships that actors get "papered" out? Will stakeholders only support the local good at the cost of the global good as much of the recent literature suggests?
- Third, even if one were to overcome such instrumental and normative design questions of an adaptive governance system, how can one ensure that political systems can learn and adapt, that they can institutionalise such processes? In many ways, this is a circular question, for all design issues are closely related to how institutions actually function and build upon their own strengths and weaknesses.

This project will use a multi-disciplinary framework to assess the governance questions raised above. It will use insights from political science, policy sciences and institutional theory and combine, where relevant, insights from law. This section will elaborate on the approach by systematically developing a step-by-step method to address the research questions elaborated in Section 1.

2.2.2 Policy context in the Netherlands[14]

In the Netherlands, (and many other countries as well), policymaking in the area of climate change is primarily sectoral and not spatial in nature; primarily centralised and not decentralised to local authorities. The notable exception to this is the attention that is paid to potential sea-level rise and its impact on coastal regions.

The division of authority between states, provinces and cities

The Netherlands is a decentralised unitary state. The unitary character is clear in that most of the tax returns go to, and most policy is made at, central government level. The decentralised character is evident from the consensus oriented policy process between government and other actors and since the formal centralized power of state is often not used (Huitema et al. 2003).

On climate change, the FNEPP (2001) states that there should be greater integration between environmental and spatial policy, between the policies developed by different administrative levels and that responsibility should be moved to lower levels of government. The central government develops strategic plans, climate goals, policies and mechanisms and has instruments for implementation. The provinces have limited powers on strategic planning and focus on specific issues like spatial planning. They may be responsible for redistributing subsidies from the central to lower governments. The municipalities may make strategic plans at local scale and may develop policies on spatial issues, construction and housing, transport, environment and municipal management. Most municipalities do not have their own budgets for climate change related issues. A more detailed analysis of the formal division of powers is undertaken in WD2.

Emission reduction and lower government policy

The Netherlands was one of the first countries to develop a national climate change policy. In 1990, it aimed to reduce national emissions of CO_2 at 1990 levels by 3-5% in

[14] Parts of the following section have been published in Gupta et al. (2007).

2000 (VROM 1990; Swager and Gupta 1990). A National Climate Policy Plan was drawn up in 1990 and follow-up plans were prepared regularly since then. However, fifteen years later, the targets for 2000 were not achieved and the emission levels of CO_2 were 6% higher in 2000 instead (Bollen et al. 2005).

As party to the Kyoto Protocol on climate change, the Netherlands is now legally bound to reduce its emissions by 6% in 2008-2012 with respect to 1990 levels. In 2005, the government assessed that it was likely to meet its Kyoto goals with a certainty of 90 % (VROM 2005a).

The current national climate policy (FNEPP 2001) aims for a safe and healthy environment, in an attractive living space without damaging global biodiversity and resources within 30 years. On climate change, the country moves from the starting point that global temperatures should not rise beyond 2 degrees above pre-industrial levels, and that Europe should reduce its emissions by 40-60% by 2030. The Netherlands aims to promote renewable energy; enhance energy efficiency and develop new energy technologies. For this a transition agenda has been developed (Task Force Energietransitie, 2006) and different sectors are now participating in this agenda.

In order to reduce its own greenhouse gas (GHG) emissions by 6%, i.e. about 200 Mt over five years, the government aims to reduce about 100 Mt via international project based emissions trading and 100 Mts via domestic action. The domestic target has been allocated in quantitative terms to various sectors and the responsible ministries and between domestic action and emission credits purchased abroad (VROM, 2006).

Since Dutch cities had units that emitted GHGs, good spatial policy and urban design could reduce GHGs at city level (Deelstra, 1991; Gupta, 1991). In 1993 the Ministry of Environment (VROM) and the Association of Dutch Municipalities (VNG) published a brochure focusing on local “climate change” policies and projects including, for example, the early environmental action plan of the Amsterdam Power Company, the E-Team in The Hague, Ecolonia - a housing project in Alphen aan de Rijn and the local environmental policy plans of Delft and Breda (VROM & VNG, 1993). The brochure was meant to encourage other cities to take similar action. Subsequently, 114 cities and 11 provinces joined the Climate Alliance, a network, to develop policies and learn from each other.

Local policymaking was promoted through the allocation of additional funding under the NEPP (e.g. BUGM for 1990-1995 and the VOGM for 1996-1998). In 1999, a national policy agreement on climate change, *Bestuursaccord Nieuwe Stijl* (BANS) was negotiated with about half of the 487 municipalities of the Netherlands and 12 Provinces (see Figure 1). The Cabinet provided a subsidy of 37 million Euros for this scheme in 2002 and an additional 6 million Euros annually in 2007 (Staatscourant, 2006). BANS covers 50% of the costs incurred by local government while the other 50% should come from EU, provincial, private or municipal funds.

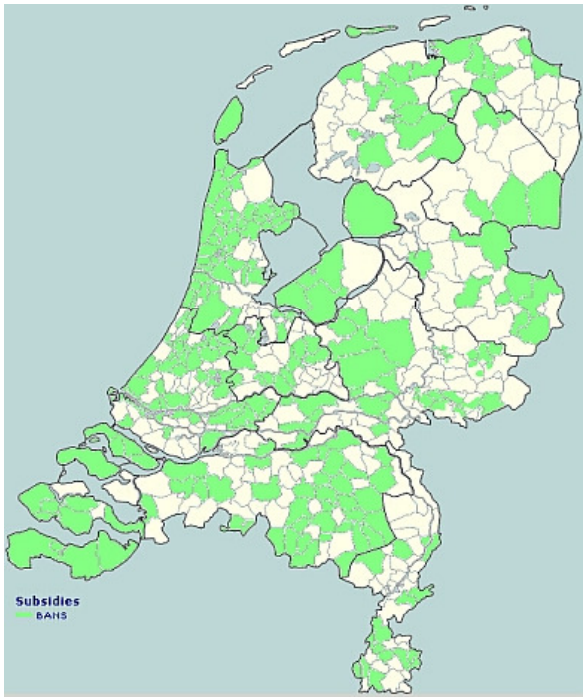

Figure 1: Municipalities participating in the BANS programme (source: www.SenterNovem.nl, July 2, 2007).

Figure 2.1 Municipalities participating in the BANS programme.

The BANS programme has seven themes - municipal buildings and installations; housing (new and existing); business (fixtures, fittings and business parks); agricultural sector; traffic and transport; sustainable energy; and international cooperation (Menukaart Klimaatbeleid BANS, SenterNovem, 2006). The local authorities can choose from a menu of policy options which fall into three different categories – active, front runner and innovative. 60% of the participating municipalities have a permanent budget for local climate policy. 20% of the municipalities calculate local GHG emissions, and 29% of the applicants for BANS subsidies have applied for measures that fall into the category of 'innovative policy'. However, as participation in the BANS programme cannot be enforced, mechanisms for monitoring and improvement are limited.

2.2.3 Adaptation and the Netherlands

The most important policy documents at the national level, which mention climate change are the Spatial Strategy *('Nota Ruimte'*), , and the National Water Management Agreement (*Nota Nationaal Bestuursakkoord Water*) and the Memorandum on Water Policy of the 21st Century (*Nota Waterbeleid van de 21e eeuw*). The latter policy document was adopted by all water management bodies in the Netherlands, the Water Boards who manage mainly regional water systems and the Directorate-General for Public Works and Water Management (Rijkswaterstaat) that manages large rivers and coastal defence. However, these policy documents and resulting activities are not an integrated part of coordinated climate policy with regard to spatial planning and adaptation in the Netherlands. At the national level an effort is now being made to arrive at an integrated policy in the Adaptation, Space and Climate programme (Adaptatie, Ruimte en Klimaat:

ARK). The ARK programme is a cooperation of the four departments that are most involved with long term spatial planning in the Netherlands: the Ministry of Housing, Spatial Planning and the Environment; the Ministry of Transport, Public Works and Water Management; the Ministry of Agriculture, Nature and Food Quality and the Ministry of Economic Affairs. This programme leads to interesting questions on the integration of legal frameworks and organizational strategies. True integration of sectoral policies takes place at the levels of provincial and municipal governments. When the research proposal for this study was formulated, the attention for climate change among these governments was still limited to a small group. At this moment (about two years later) the issue of climate change has risen to top priority for many provincial governments, while municipalities are still very hard to convince about the seriousness of the subject. Furthermore, the sustainability scale (*"duurzaamheidsmeter"*), for example, showed that only 40 out of 432 municipalities have a sufficient score on a list of sustainability indicators (De la Court 2005). The good news, of course, is that 432 of 467 municipalities participated in this voluntary national survey. Gradually, climate policy is gaining interest at the sub-national levels, leading to an even greater diversity in approaches. A comparative analysis of some cities in the Netherlands shows that while emission reduction is being prioritised, adaptation is still seen as less relevant.

Table 2.1 Comparative assessment of climate policy

City	Climate policy	Goal	Emission limitation	Adaptation projects
Amsterdam	Yes, active	Reduce 0.55Mt in 2010; 40% reduction for city in 2025/1990 Climate neutral municipal buildings and services by 2015	Yes	Yes
Rotterdam	Yes, part of air quality policy	Reduce emissions by 50% in 2020/1990	Yes, on energy	Yes
Eindhoven	Yes, active/ front runner	Climate neutral municipal buildings and services by 2020	Yes	No
Breda	Yes, active	Climate neutral municipal buildings and services in long-term through use of renewable energy Reduce emissions by 6% in 2010/1990	Yes	No
Leiden	Yes, active	CO_2 neutral municipal buildings and services by 2030. Reduce emissions by 6% in 2010/1990. 5% of total energy use is sustainable in 2010	Yes	Yes
Castricum	Yes, active	To contribute to Dutch Kyoto goals	Yes	No
Stede Broec	Yes, active		Yes	Yes

Source: Gupta et al. (2007).

Spatial planning in the Netherlands is important for implementing adaptation responses to climate change impacts. Anticipated national impacts of climate change, such as sea level rise, excessive rainfall, droughts, agricultural constraints, migration of species and

deterioration in water quality for both domestic and industrial uses all have spatial components and effects. Land use planning theory and spatial analysis have long moved towards issues of governance and issues of motivating societal acors by portraying inviting images of the future[15]. Spatial policy can contribute to the objectives of mitigation and adaptation policies, for example, by allocating space in land-use plans for anticipated floods, or by addressing the spatial implications of biodiversity or wind power. Hence, this proposal is first based on the idea that new spatial strategies may yield solutions to the problem of climate change. This project will thus examine, inter alia, the policy relevant recommendations flowing from spatial planning projects and integrate these into a multi-level governance analytical framework for studying the practical potential for designing new tailor-made policy options.

Second, although the majority of climate scientists expect human induced climate change in the coming decades and centuries, planning procedures from municipalities to national governments have a much shorter horizon. Industry and households may have longer time-horizons, but climate change does not seem high on their list of priorities. Given the huge uncertainties in the problem and in the way the international community is dealing with the problem, there are few incentives to institutionalise a multi-scale time planning process at consumer, producer or government levels. The future is not accessible for empirical research, hence, nothing can be proven in advance, and therefore, climate policy rests largely on human beliefs. When these beliefs lead to unpleasant conclusions, for example, that expensive investments in water infrastructure are necessary, or air traffic has to be restricted, the interest in the climate issue may be reduced. At the same time, climate scientists claim that it is important to act now[16], because otherwise the necessary space for adaptation becomes more limited, and the necessary emission targets will become entirely impossible.

Third, although the focus of our research is adaptation, in some cases it becomes very difficult to avoid taking emission reduction into account. For example, one may build south facing houses in such a manner that passive solar heating is optimalised. However, if in the meantime, the weather becomes warmer, house owners may start to invest in air conditioners to cool down the houses. Or one may invest heavily in wind energy as Breda is doing, but if wind patterns change, this may be a less useful investment. The literature shows that places that have invested in small scale wells as a buffer for water shortage, have suffered more as rainfall patterns have changed. We will explore the links between adaptation and mitigation options in our four sectors to the extent that these are also relevant for this study.

In our view, the spatial and time scales put a maximum strain on the concept of governance. Governance implies the possibility of more tailor-made solutions and more engagement from the people involved. It may also lead to endless postponement of decisions, to conservative choices, and to a situation in which each actor waits for other

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[15] Examples of these motivating images include the issue of “doorwerking”, the issue of consensus building, and the issue of discourses. See Healy (1993); Healy (1997); Healy (1999); Faludi and Korthals Altes (1994); De Roo (1996); De Roo (1999); Woltjer (2000); Teisman (1997).

[16] Kabat et al. (2005).

actors, sectors and/ or nations to act. Our intention is to develop a multilevel governance framework that balances top down and bottom up approaches in a way that is more likely to safeguard long term and large scale human interests. We also want to indicate, if necessary, where the limits of such multi-level policymaking are: for some problems in the climate domain, there may not be an easy solution at all.

2.2.4 Some notes on adaptation

Our research focuses on the adaptive capacity, and hence it may be appropriate to briefly discuss how adaptation is treated in the literature.

Adaptation is defined differently in the literature (Smit et al. 2000; Smithers and Smit 1997; Pielke 1998). IPCC defines adaptation as "*adjustments in ecological, social or economic systems in response to actual or expected stimuli and their effects or impacts. This term refers to changes in processes, practices and structures to moderate potential damages or to benefit from opportunities associated with climate change*" (IPCC 2001a).

Adaptation can occur locally, regionally, nationally, and at the European and global levels. It can occur individually or simultaneously. Adaptation has a remarkable time-scale, from micro, to short, medium and long term.

Adaptation can either be reactive or anticipatory, private or public, planned or autonomous.

- ***Reactive or Anticipatory*** Reactive adaptation takes place after the initial impacts of climate change have occurred. Anticipatory adaptation takes place before impacts become apparent. In natural systems, there is no anticipatory adaptation.
- ***Private or Public*** The distinction is based on whether adaptation is motivated by private (individual households and companies) or public interest (government).
- ***Planned and Autonomous*** Planned adaptation is consequence of deliberate policy decision, based on the awareness that conditions have changed or are expected to change and that some form of action is required to maintain a desired state. Autonomous adaptation involves changes that systems will undergo in response to changing climate irrespective of any policy, plan or decision. (IPCC 2001b).

While some authors like Olmos (2001) argues that planned, anticipatory adaptations that are undertaken by governments or NGOs as a policy initiative (as opposed to those that are autonomous and/or mainly reactive) are those that require the most attention, others argue that the distinction between autonomous and planned adaptation may not always be easy to make (Fankhauser et al. 1999). The evaluation of adaptation must address the following question: "to what extend does the adaptation reach its aims (moderate potential damages or benefit from from opportunities)?" (Smit et al.2000). Furthermore, it is important to assess not only the "best" adaptation options, but also what adaptations "fit best" in various settings.

Reactive (or autonomous) adaptation includes coping strategies that agents and institutions are likely to make in response to climate impacts after the fact (ex-post). These strategies merely require the decision maker to be aware of changes that have occurred. Both ex-ante and ex-post strategies have strengths and weaknesses. The effectiveness of reactive measures is dependent on resources at hand to cope with an event. The capacity to adapt autonomously depends on, among other things, institutional support, manpower,

financial and technological resources (see Ausubel, 1991; Yohe et al. 1996; Mendelsohn and Nordhaus 1999; Mendelsohn and Neumann 1999). However, Barnett (2001) argues that focusing policy on such autonomous adaptations is likely to be futile because there is no guarantee that the necessary processes that trigger adaptation, which are essentially governed by the "respective influences of biology and culture on human behavior" will occur. On the other hand, Mendelsohn (1999) emphasizes that sectors that can adjust quickly to climate change can adapt to climate as it unfolds.An alternative response strategy encompasses precautionary or planned (ex-ante) adaptations to climate change. Mendelsohn (1999) asserts that this type of adaptation should be more appropriately aimed at capital-intensive sectors (coastal sector, forestry). These sectors either take time to respond or are currently under stress due to other pressures, and any further exposure to climate change may push them over critical threshold boundaries. As Burton (1996) and Smit and Pilifosova (2001) outline, a planned approach to address climate impacts is sensible given that it can increase the efficiency and effectiveness of autonomous adaptation.

A planned approach also influences adaptations directly. Bryant and others (2000) argue that planned adaptations are called for through dynamic public policy and formulated on the basis of robustness, flexibility, and net benefits (Lewandrowski and Brazee 1993). Both ex-ante and ex-post adaptation measures can be implemented at numerous levels, including at the global, regional, or national level. It is further stressed that these can be assessed and incorporated in response strategies adopted by individuals or local communities (Fankhauser 1996; Smith 1997; Pielke 1998; UNEP 1998). Such adaptations have the potential to reduce long-term vulnerability as well as realize opportunities associated with climate change, regardless of autonomous adaptation (Smith 1997; Burton and others 1998; Fankhauser and others 1999).

Smit et al. (2000) add that the propensity of systems (e.g., socio-economic systems) to adapt is influenced by certain system characteristics that have been called "determinants of adaptation". These include terms such as "sensitivity," "vulnerability," "resilience," "susceptibility" and "adaptive capacity," among others. The occurrence as well as the nature of adaptations are influenced by these. As Smit et al. (2000) point out there is some overlap in the concepts captured in these terms. The same authors argue that sensitivity, vulnerability and adaptability capture the broad concepts.

Often the terms resilience and adaptive capacity are used interchangeably. The term resilience is drawn from the adaptive cycle seen in natural systems (for an exposition see Holling 1986). Walker, Carpenter, Anderies et al. (2002) state that resilience is the potential of a system to remain in a particular configuration and to maintain its feedbacks and function, and involves the ability of the system to re-organize, following disturbance-driven change. In this study we prefer, as stated before, to focus on the term adaptive capacity.

Effectiveness of adaptation:

Smit and Pilifosova (2001) mention that the three key terms above help with assessing impacts and vulnerabilities as well as evaluating development and response. They further mention three key issues for effective adaptation:

- Measures must reduce vulnerability of the system and build in the potential to anticipate to and act during future climatic changes;
- Measures must be congruent with local environmental conditions and the social needs of the local population;
- Responses and measures must be 'mainstreamed' into economic development and poverty eradication processes.

2.2.5 Formal and informal institutions

Our definition of institutions is very broad: "systems of rules, decision-making procedures, and programs that give rise to social practices, assign roles to the participants in these practices, and guide interactions among the occupants of the relevant roles". For practical reasons we will consider as institutions:

a) Discourses;
b) Principles;
c) Policies and laws; and
d) Instruments.

Each of these are associated with the following types of actors

- Government, provincial, local;
- NGO – environmental and other civil society actors and networks;
- Private – industry and retailers;
- Academic.

2.3 Key concepts and glossary of terms

In order to be able to address our key research question, we need to be able to understand some of the key terms. The following table explains key concepts, which we will debate upon in order to come eventually to a project group definition of terms in working Document 2.

Table 2.2 Some definitions of terms from the literature

Adaptation	"Adjustments in ecological, social or economic systems in response to actual or expected stimuli and their effects or impacts. This term refers to changes in processes, practices and structures to moderate potential damages or to benefit from opportunities associated with climate change" (IPCC WGII 2001).
Adaptive capacity	The general ability of institutions, systems, and individuals to adjust to potential damage, to take advantage of opportunities, or to cope with the consequences. MA Glossary, MEA. The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences (IPCC WG II 2001, IPCC WGI 2007).
Climate change	Climate change in IPCC usage refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage differs from that in the Framework Convention on Climate Change, where climate change refers to a change of climate that is attributed directly or indi-

	rectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods (IPCC WGI 2007).
Discourse	"A specific ensemble of ideas, concepts, and categorizations that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities" (Hajer 1995, p. 44).
Discursive intervention strategy	A specific form of an adaptation strategy (namely a language strategy), which is aimed at informal institutional change, that is, at changing the 'ways of doing things', such as customs, routines, traditions, working practices and social norms.
Glocal	Both local and global.
Governance	A style of governing in which networks and horizontal relations between interdependent actors have grown in importance. It forms a reaction to the restrictions of a hierarchical method of steering that is founded on an instrumental way of reasoning, the gap experienced between the state and the civil society and the changing interdependencies in a network society. Where government is visualised as a rigid, centralised, unitary, top-down process of providing rules in the public interest that have to be implemented at local level, governance is seen as a flexible, diffuse, bottom-up and top-down process which allows for close interactions not only between the different levels of government but also with social actors (both commercial and non commercial entities) with vastly different interests.
Institutional change	
Institutions	"Systems of rules, decision-making procedures, and programs that give rise to social practices, assign roles to the participants in these practices, and guide interactions among the occupants of the relevant roles" (IDGEC Scientific Planning Committee 1999). The rules and roles are both formal and informal, visible and latent and conscious and unconscious (Arts 2006). (Institutions are sedimented discourses).
Resilience	Capacity of a system to experience disturbance and still maintain its ongoing functions and controls (Holling 2002).
Sensitivity	The degree to which a system is affected, either adversely or beneficially, by climate-related stimuli.
Vulnerability	The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. [It] is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity (IPCC WGII 2001, IPCC WGII 2007).

2.4 Structure of the research framework

The conceptual framework of the project is illustrated in Figure 2.2. We will study institutional change over time and the changes in climate change over time. We will try to understand how institutions continuously respond to the changes in climate change.

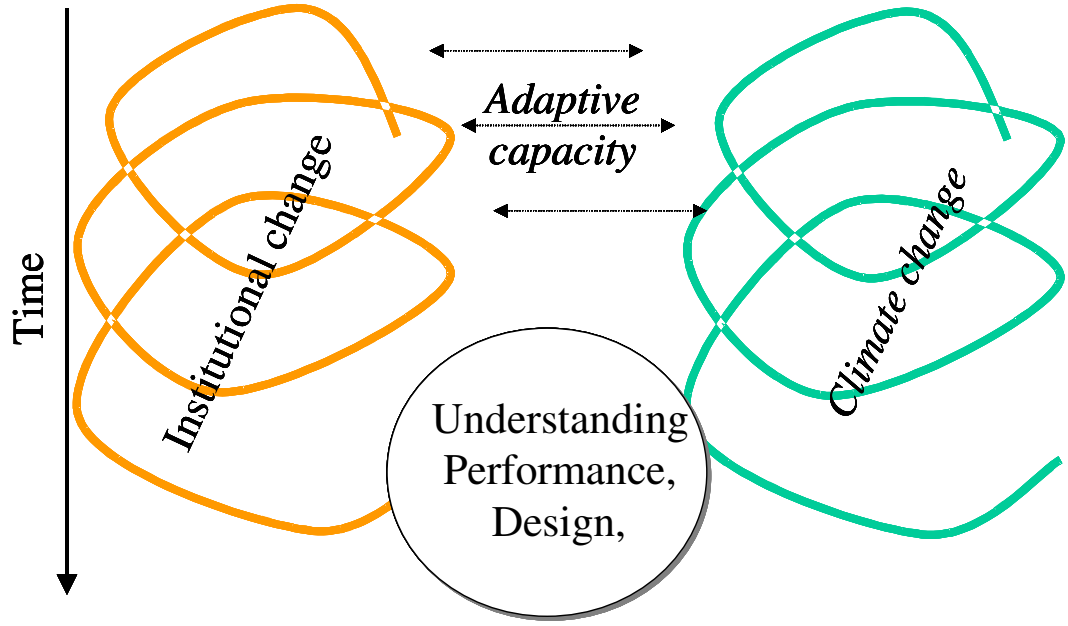

Figure 2.2 Conceptual framework of project.

The structure of the research framework is depicted in Figure 2.3. The project begins simultaneously at two ends. It briefly identifies the impacts on the Netherlands, then the impacts on the four sectors, the types of responses needed and the spatial claims made by each response. Simultaneously, based on this and a literature review, it develops criteria for assessing the robustness of institutions to deal with climate change. Also, it identifies the key Netherlands institutions in the four sectors that operate formally and informally. It then identifies the specific features of each of these institutions and then tests the robustness of these institutions.

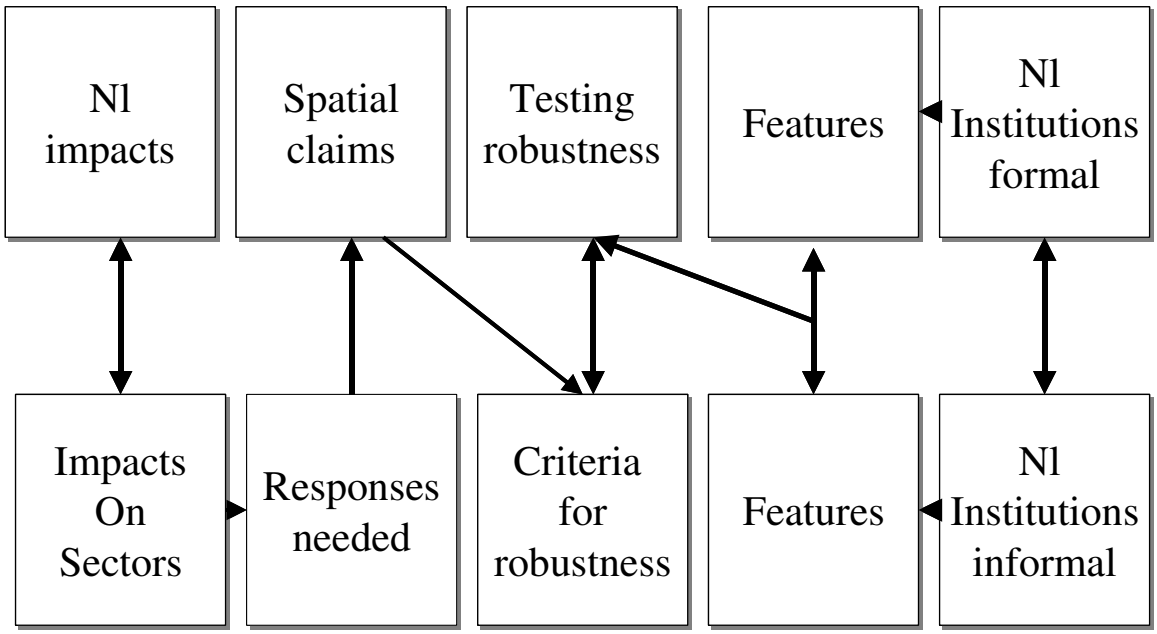

Figure 2.3 Research framework.

2.5 The Impacts of Climate Change on the Netherlands

2.5.1 Introduction

Any report that analyses the adaptive capacity of Dutch institutions to the problem of climate change needs to have a clear idea of the possible impacts of climate change on the Netherlands. This chapter highlights the latest information on impacts in general, and moves on to briefly discuss the impacts on the Netherlands.

2.5.2 Impacts of climate change

The IPCC WGII (2007) presents the following table on global impacts of climate change.

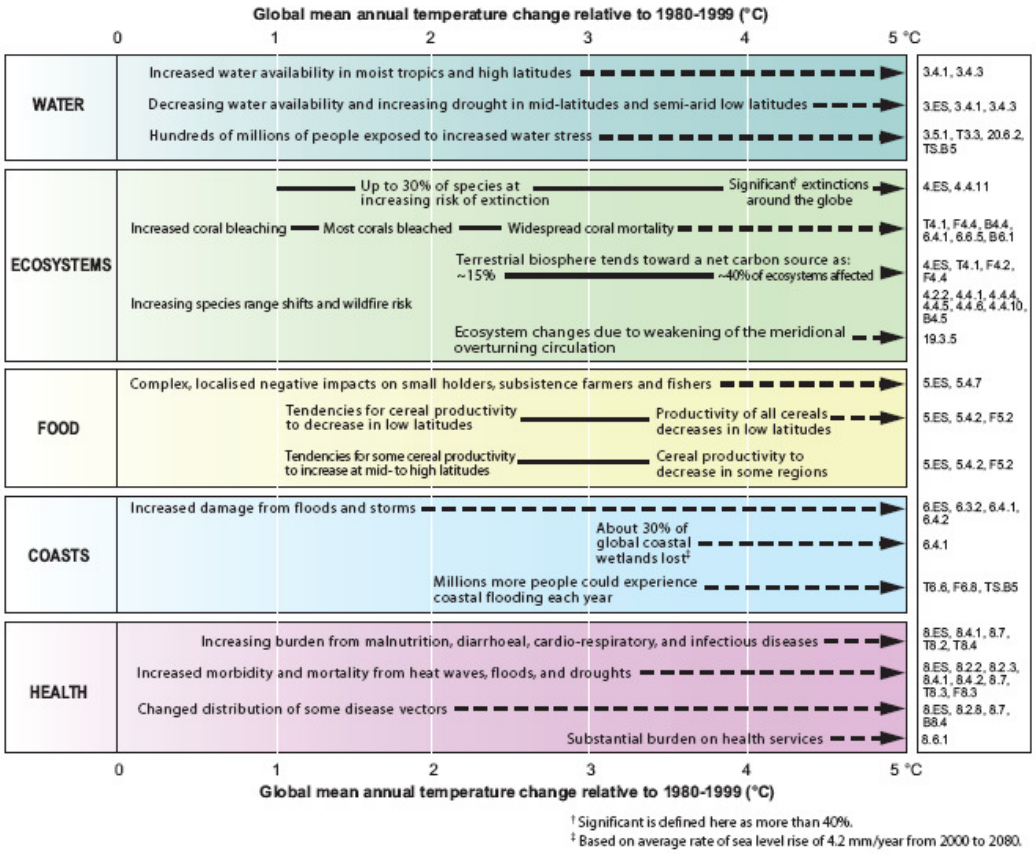

Figure SPM.2. *Illustrative examples of global impacts projected for climate changes (and sea level and atmospheric carbon dioxide where relevant) associated with different amounts of increase in global average surface temperature in the 21st century [T20.8]. The black lines link impacts, dotted arrows indicate impacts continuing with increasing temperature. Entries are placed so that the left-hand side of the text indicates the approximate onset of a given impact. Quantitative entries for water stress and flooding represent the additional impacts of climate change relative to the conditions projected across the range of Special Report on Emissions Scenarios (SRES) scenarios A1FI, A2, B1 and B2 (see Endbox 3). Adaptation to climate change is not included in these estimations. All entries are from published studies recorded in the chapters of the Assessment. Sources are given in the right-hand column of the Table. Confidence levels for all statements are high.*

Figure 2.4 Global mean temperature change relative to 1980-1999.

2.5.3 Impacts on the Netherlands

In anticipation of the IPCC report, the Netherlands KNMI prepared four scenarios for the Netherlands (see Figure below).

G	Moderate*	1°C temperature rise on earth in 2050 compared to 1990 no change in air circulation patterns in West Europe
G+	Moderate +	1°C temperature rise on earth in 2050 compared to 1990 + milder and wetter winters due to more westerly winds + warmer and drier summers due to more easterly winds
W	Warm	2°C temperature rise on earth in 2050 compared to 1990 no change in air circulation patterns in West Europe
W+	Warm +	2°C temperature rise on earth in 2050 compared to 1990 + milder and wetter winters due to more westerly winds + warmer and drier summers due to more easterly winds

* "G" is derived from "Gematigd" = Dutch for "moderate"

Figure 2.5 Schematic overview of the four KNMI climate scenarios.

Table 2.3 Impacts on the Netherlands in different scenarios.

		G	G+	W	W+
Global temperature rise		+1°C	+1°C	+2°C	+2°C
Change in air circulation patterns in Western Europe		no	yes	no	yes
Winter[3]	average temperature	+0.9°C	+1.1°C	+1.8°C	+2.3°C
	coldest winter day per year	+1.0°C	+1.5°C	+2.1°C	+2.9°C
	average precipitation amount	+4%	+7%	+7%	+14%
	number of wet days (? 0.1 mm)	0%	+1%	0%	+2%
	10-day precipitation sum exceeded once in 10 years	+4%	+6%	+8%	+12%
	maximum average daily wind speed per year	0%	+2%	-1%	+4%
Summer[3]	average temperature	+0.9°C	+1.4°C	+1.7°C	+2.8°C
	warmest summer day per year	+1.0°C	+1.9°C	+2.1°C	+3.8°C
	average precipitation amount	+3%	-10%	+6%	-19%
	number of wet days (? 0.1 mm)	-2%	-10%	-3%	-19%
	daily precipitation sum exceeded once in 10 years	+13%	+5%	+27%	+10%
	potential evaporation	+3%	+8%	+7%	+15%
Sea level	absolute increase	15-25 cm	15-25 cm	20-35 cm	20-35 cm

The HOT-4 project (Gupta et al. 2006) translated this into expected impacts for different sectors in the Netherlands (see table below).

Table 2.4 Impacts per sector on the Netherlands.

Table 4. Indicators and impacts relevant for the Netherlands at different mean global temperature rise compared to pre-industrial level (with and without adaptation).

Type	Indicator	Description	+1° C	+2° C	+3° C
Sectoral					
Fresh water	River discharge: design discharge	Higher winter discharge; increase of the design discharge	-	-	--
	River discharge: low flow	During the summer lower discharge, causing problems for navigations and power plants (shortage of cooling water), salt water intrusion	-	-	--
	Precipitation: 10-day precipitation sum	Waterlogging regional system; possible local water excess		-	--
	Precipitation deficit	Water shortage in the regional system		-	--
Ecosystem	Trees and plants	Physiology, phenology and distribution changes	-	-- Ed	--- Ed
	Mammals	Impacts on mammals	na	na	na
	Birds	Impacts on birds	-	--Ed	---Ed
	Marine species	Obvious in the North Sea, but also elsewhere in the oceans.	-	Ed	Ed
Health	Heat wave mortality	Mortality that can be attributed to heat waves	- aa/pa	-- pa	--- pa
	Lyme disease	Infectious disease spread by ticks	- pa	--- pa	--- pa
	Allergies	Increase in allergies because of pollinating season.	- na	-- na	-- na
Coastal zone	Coastal squeeze	Area between sea and coast shrinks	-	--ed	---ed
	Flooding	Increased risk of coastal flooding	0	pa	pa
	Salt water intrusion	Increased salt water intrusion	-	-- pa	--- pa
Tourism	Tourism climatic index	Tourism becomes attractive	+	++	+++
	Length of the outdoor recreation and tourism season	Recreation months increases	+	++	+++
	Frequency of the 11 city skating event	Frequency decreases	-	--	---
Agriculture	Crop productivity	Adapts to change in weather	0	-/+	-/+
	Damage from extreme weather events	Increase in magnitude and frequency	0	na	na
	Commodity prices	Price changes on world market → switching to other suppliers (countries), composition food products changes; could benefit the Netherlands	0	0/+	0/+
Systemic					
Extreme events	Frequency and intensity may increase		0/-	0/-	0/-
Abrupt events	WAIS, GIS could melt		na	na	na
Solidarity					
Internation al solidarity		Water and food access may decrease; impacts of SLR on low-lying countries	0/-	-	--

N.B. The temperature rise is for global mean temperature rise since pre-industrial levels.

The report also indicated the conditions under which impacts could be “dangerous” for the Netherlands. HOT-4 (Gupta et al. 2006) downscales impacts to the Netherlands as follows:

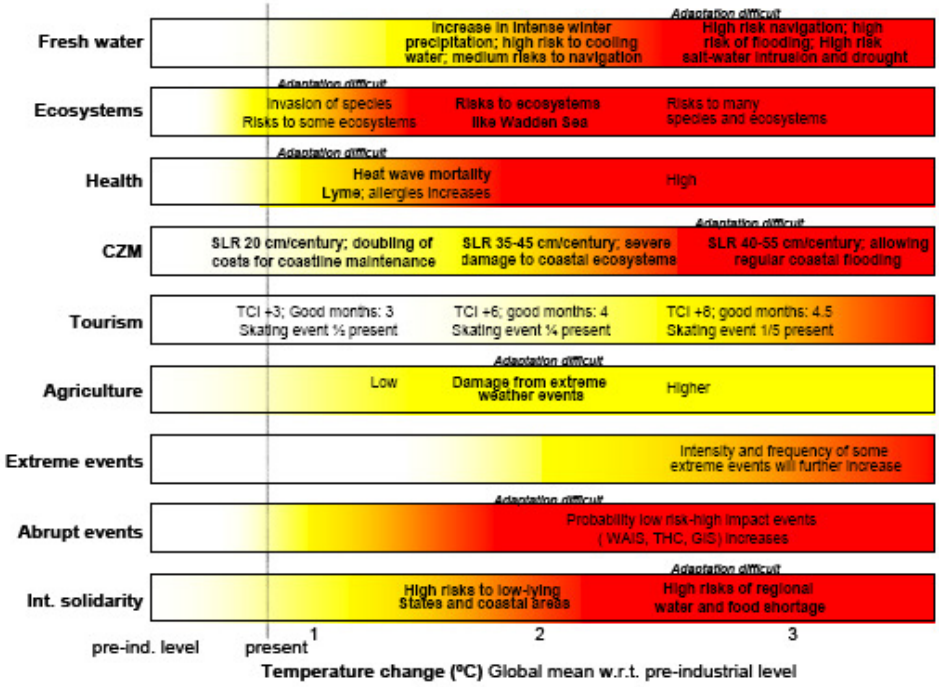

Figure 2. 'Burning Embers' figure for impacts relevant to the Netherlands (updated).

Figure 2.6 Burning embers figure for impacts relevant to the Netherlands.

Gupta et al. (2006) also looked at how residents would look at the issue. Before residents and politicians are likely to act they may ask the following questions (see Figure below).

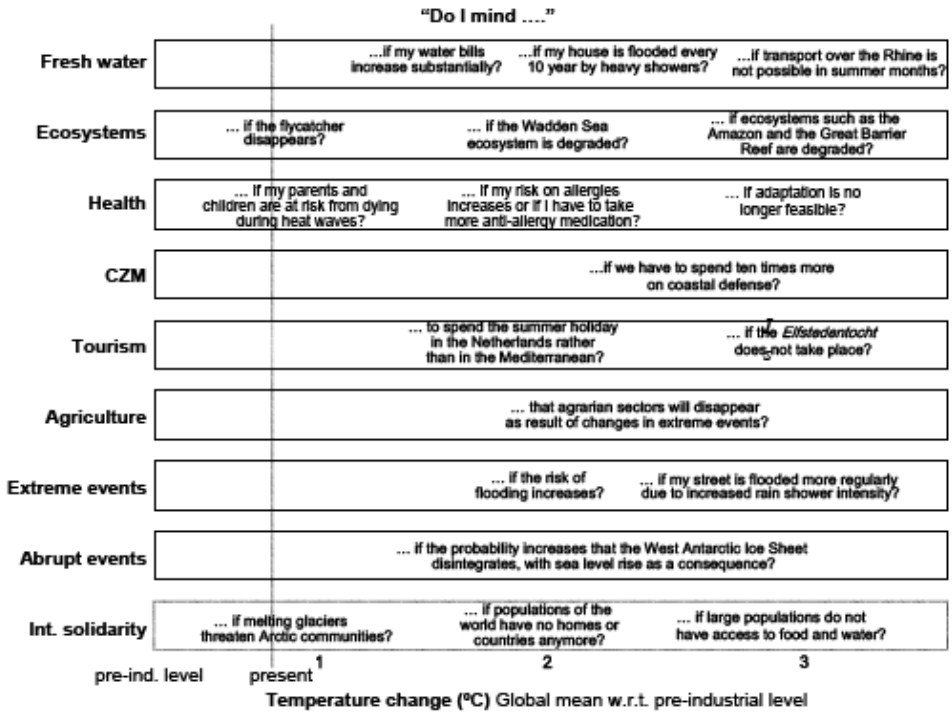

Figure 3. 'Burning Embers' figure highlighting issues of relevance for Dutch residents.

Figure 2.7 Burning embers figure highlighting issues of relevance for Dutch residents.

2.5.4 Impacts on the four sectors in this project

This project focuses on four sectors and the following table highlights the key impacts on those sectors that will be dealt with in this project. As a starting point, we believe that the key impacts on the four sectors within the Netherlands are those presented in the table below, but we intend to verify this along the course of this project.

Table 2.5 Impacts on the sectors studied in this report.

Sectors	*Impacts*
Water	River discharge
	Precipitation changes
	Drought
	Salt water intrusion
Nature	Migration
	Impacts of extremes
	Impacts on phenology, physiology of plants and trees
Agriculture	Crop productivity
	Damage from extreme weather events
	Commodity prices and world markets
Spatial planning	Water impacts
	Heat

2.6 Types of responses

The types of responses to the impacts of climate change on the sectors include:

a) The responses identified by the existing adaptation projects in the Climate Changes Spatial Planning programme (of which this study is also a part). These include the response strategies identified by the Hotspots projects. A first overview of these responses has been collected for the 'Routeplanner' project. Their results are presented shortly in Table 2.2. In project IC12, we will use this list for a general check on institutional consequences;
b) Complex problems often call for new institutional arrangements to deal with these problems. The project group will brainstorm on these and try and identify these also through the content analysis, literature and case studies.

Table 2.6 96 adaptation options identified in the Routeplanner project (emphasized in green the adaptation strategies on which we intend to focus).

Sector	Subsector	nr.	Adaptation option name
Agriculture	General	01	Adjusting crop rotation schemes and planting and harvesting dates
Agriculture	General	02	Choice of crop variety and genotype
Agriculture	General	03	Development and growing of crops for biomass production
Agriculture	General	04	1. Soil moisture conservation practices
Agriculture	General	05	Irrigation
Agriculture	General	06	Self sufficiency in production of roughage
Agriculture	General	07	2. Water storage on farmland
Agriculture	General	08	Subsoil drainage of peatlands
Agriculture	General	09	3. Insurance
Agriculture	General	10	Changes in farming systems
Agriculture	General	11	4. Water management and agriculture
Agriculture	General	12	5. Regional adaptation strategies for the fen meadow area
Agriculture	General	13	6. Relocation or mobilization of farms
Agriculture	General	14	Floating greenhouses
Agriculture	General	15	7. Land use change
Agriculture	General	16	8. Adaptation strategies to salinization of agricultural land
Agriculture	Forest	17	Increasing genetic and species diversity in forests
Agriculture	Forest	18	Introduction of southern provenances of tree species and drought resistant species
Agriculture	Forest	19	9. Limiting the import of timber
Agriculture	Forest	20	Retention of winter precipitation in forests
Agriculture	Forest	21	Acceptation of changes in species composition in forests
Agriculture	Fishery	22	Adjusting fishing quota
Agriculture	Fishery	23	Adaptation of target species and fishing techniques
Agriculture	Fishery	24	Introduction of ecosystem management in fishery
Agriculture	Fishery	25	Eco-labelling and certification of fish

Sector	Subsector		Adaptation option
		nr.	name
Agriculture	Fishery	26	Reallocation of mussel nursery plots
Agriculture	Fishery	27	Aquaculture on former grassland
Nature	Nature	28	10. Design and implementation of ecological networks (The National Ecological Network - NEN)
Nature	Nature	29	11. Establishment and management of protected areas
Nature	Nature	30	Artificial translocation of plant and animal
Nature	Forestry	31	Afforestation and mix of tree species
Nature	Forestry	32	Adjustment of forest management
Nature	Agriculture	33	12. Implementation of effective agri-environmental schemes
Nature	Water management	34	13. Integrated nature and water management
Nature	Water management	35	14. Integrated coastal zone management
Nature	Water management	36	Restoration of ecosystems directly depending on water quantity and quality
Nature	Society	37	Monitoring nature, interpreting changes and informing
Nature	Society	38	Educational programs
Nature	Finance	39	15. Development of financing mechanisms
Water	Spatial concept	40	16. "More space for water", "Water management 21st century" – water storage and water retention
Water	Spatial concept	41	17. Risk based allocation policy
Water	Spatial concept	42	Moving powerplants to coast (cooling water)
Water	Spatial concept	43	18. Spatial planning of locations for powerplants (nuclear in particular)
Water	Spatial concept	44	Compartmentation of low-lying parts of the Netherlands
Water	Spatial concept	45	Allow transgression of sea in wide dune areas, allow wash over of dikes
Water	Spatial concept	46	19. Widening the coastal defence area (in combination with urbanisation and nature)

Sector	Subsector	nr.	Adaptation option name
Water	Spatial concept	47	Reconnecting water systems in Delta area (e.g. Volkerak Zoommeer and Oosterschelde)
Water	Spatial concept	48	Fresh water storage to flush brackish water out during dry periods
Water	Spatial concept	49	Higher water level IJsselmeer
Water	Spatial concept	50	Maintain higher water table to prevent salt water intrusion
Water	Spatial concept	51	Relocation of fresh water intake points
Water	Spatial concept	52	Reclamation of (part of) southern North Sea
Water	Spatial concept	53	20. Abandoning of the whole of low-lying Netherlands
Water	Technological solution	54	Increase sand suppletions along coast
Water	Technological solution	55	Re-enforcement of dikes and dams, including 'weak spots'
Water	Technological solution	56	21. Adapted forms of building and construction
Water	Technological solution	57	22. Adaptation of highways, secondary dikes to create compartments
Water	Technological solution	58	Protection of vital objects
Water	Technological solution	59	Protection of vital infrastructure
Water	Technological solution	60	Enhancing capacity of sluices and weirs
Water	Technological solution	61	23. Artificial reefs along the coastline & development nature conservation values
Water	Technological solution	62	De-salinization
Water	Technological solution	63	Reduction salt water tongue

Sector	Subsector		Adaptation option
		nr.	name
Water	Social, policy	64	24. Stimulate economic activity in other parts (eastern and northern) of the Netherlands
Water	Social, policy	65	25. Risk management as basic strategy
Water	Social, policy	66	Evacuation plans
Water	Social, policy	67	Creating public awareness
Water	Social, policy	68	26. New institutional alliances
Water	Social, policy	69	Private insurances against inundations and/or drought related damages
Water	Technological solution	70	Reduce wastewater discharge during drought periods
Energy & Transport	Energy	71	Adapt regulations such that a higher discharge temperature is allowed
Energy & Transport	Energy	72	Sluices
Energy & Transport	Energy	73	Lowering the discount factor for project appraisal
Energy & Transport	Energy	74	Building stronger wind turbines
Energy & Transport	Energy	75	Construct buildings differently in such a way that there is less need for air-conditioning/heating
Energy & Transport	Energy	76	Constructing more stable overhead electricity transmission poles
Energy & Transport	Energy	77	Adapt to mitigation strategies
Energy & Transport	Energy	78	Use improved opportunities for generating wind energy
Energy & Transport	Energy	79	Use improved opportunities for generating solar energy
Energy & Transport	Energy	80	Planting of biomass crops
Energy & Transport	Energy	81	Development of cooling towers

Sector	Subsector		Adaptation option
		nr.	name
Energy & Transport	Transport	82	Development of more 'intelligent' infrastructure that can serve as early warning indicator
Energy & Transport	Transport	83	Improvement of vessels
Energy & Transport	Transport	84	Change modes of transport and develop more intelligent infrastructure
Energy & Transport	Infrastructure	85	Increase standards for buildings as to make them more robust to increased wind speeds
Housing & Infrastruc-ture	Spatial	86	27. Design spatial planning – construct new housing and infrastructure
Housing & Infrastruc-ture	Spatial	87	28. Make existing and new cities robust - avoid 'heat islands', provide for sufficient cooling capacity
Housing & Infrastruc-ture	Design	88	29. Design houses with good climate conditions (control) – 'low energy'
Housing & Infrastruc-ture	Water management	89	Water management systems: revision of sewer system
Housing & Infrastruc-ture	Water management	90	30. Water management systems: options for water storage and retention in or near city areas
Housing & Infrastruc-ture	Water management	91	31. Water management systems: emergency systems revision for tunnels and subways
Housing & Infrastruc-ture	Design	92	New design of large infrastructure
Health		93	Improved air conditioning in nursery homes or hospitals
Health		94	Measures for preventing climate related diseases
Health		95	Improvement of health care for climate related diseases
Recreation & tourism		96	Design infrastructure for recreation and tourism – coastal areas

2.7 Spatial claims

We also need to understand the new spatial claims of adaptation strategies. These include:

a) Coastal squeeze: this refers to the fact that preparing for climate change may lead to reduced possibilities for use of the coastal areas (mainly less urban and industrial possibilities);
b) Less space for urban expansion along riversides and in low areas (below sea level), because risks in these areas will increase;
c) New claims for green/blue space (= vegetation and water bodies) in urban areas to mitigate the urban heat effect;
d) A move of industries to invest on higher grounds, for example, in Brabant, Limburg and Eastern parts of the Netherlands;
e) More room for nature: With increased space for water to overflow into agricultural land more room may become available for aquatic ecosystems to develop. This will obviously be at the expense of agricultural land;
f) New spatial claims for growing bio energy fuels; mainly expected in less valuable agricultural land such as wet areas or areas with restrictions due to nature claims;
g) Revival of agricultural crops such as potatoes and wheat when they are driven westwards because of droughts in Southern and Eastern Europe.

This list may become longer as adaptation research is expected to evolve rapidly during the coming years. A final overview will be based on information from other CcSP projects.

2.8 Design of the assessment framework for adaptive capacity

Adaptation can be of six types. It can be planned or autonomous, reactive or anticipatory, public and/or private. In order to assess the adaptive capacity of institutions, a conceptual framework will be debate by the project team and developed, based on the literature, and will contain the following elements:

- An updated working definition of the concept adaptive capacity;
- The dimensions of adaptive capacity, eg variety, learning capacity, leadership;
- Criteria to judge these dimensions;
- Factors/conditions that are expected to enhance or hinder these dimensions.

The assessment framework will be presented in Working document 2, as a part of the theoretical framework.

3. Methodology

3.1 Introduction

This section explains the methodology of this project in further detail. It first discusses the literature review, then the content analysis, the general evaluation of the institutional framework, the criteria for the case studies, the choice of case studies, the workshop on the case studies, the comparative assessment and the final integrated analysis.

The following figure provides a clear idea of the structure of the research.

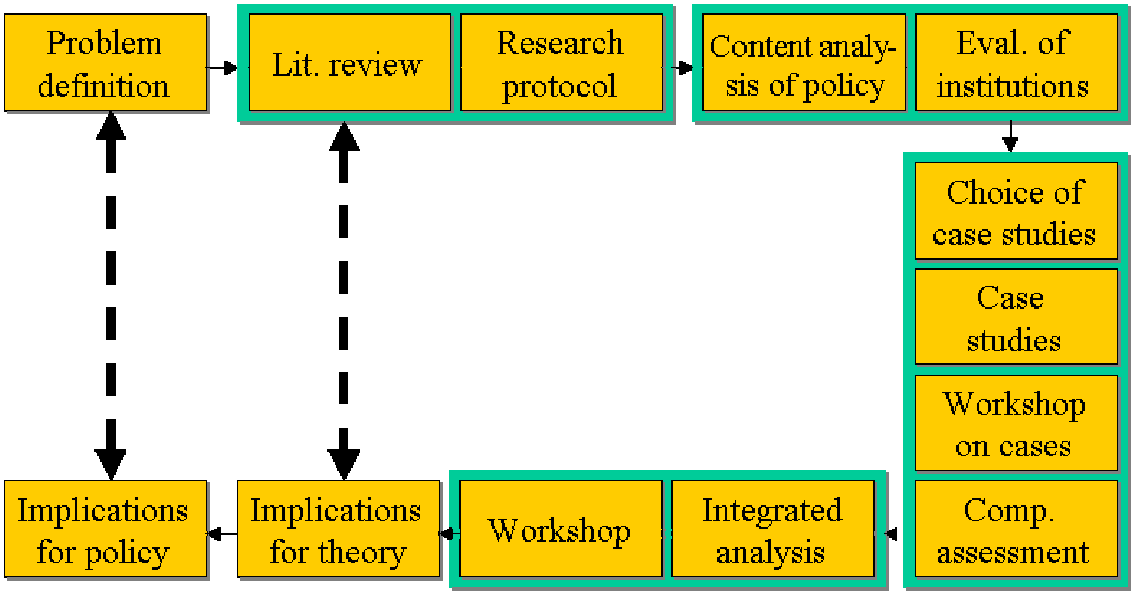

Figure 3.1 The structure of the research.

3.2 Brainstorm to develop conceptual framework

To develop the conceptual framework of this research, the team decided to organise an intensive brainstorm session supported by electronic Group Systems methodology. The Group Decision Room (GDR) session was organised on the 24th of January 2008, at Nijmegen University. The central aim was to define and work out one of the central concepts of this research, namely the concept of 'adaptive capacity'. See Appendix I for the detailed agenda of the GDR session. This brainstorm session will feed the work for WD2.

3.3 Log frame approach with detailed research questions

This paragraph introduces the log frame approach to identify the key questions and sub-questions and sub-sub questions to answer the main research question. The questions entered in the framework below are a rough first version. The log frame will be adapted and completed in Working Document 2. After the table has been completed, both general interview questions for the stakeholders and specific interview questions for the case study stakeholders will be formulated.

Table 3.1 A log-frame approach to identify the key questions and sub-questions.

Log frame approach	Main questions and hypotheses	Subsidiary questions	Method
Main Question	**How can the adaptive capacity of Dutch institutions from local through to national level be assessed? What are the key implications of such an assessment? What general and specific recommendations flow from such an assessment, both in terms of theory and in terms of policy?**	**See Subsidiary questions**	
Hypotheses	An institutional system that aims to deal with the problem of climate change needs to be a multi-level system because all the different levels are closely linked to each other. Climate change can be characterized as a complex, ill structured or wicked problem. Therefore, more horizontal forms of governance, inter-organizational cooperation and interactive policy processes are needed to deal with the growing complexity of such an ill-structured problem in an effective way. The shift from government to governance is a period of transition or a twilight zone, in which old institutions exist next to new ones, and struggle with each other for dominance (Teisman and Edelenbos). Attempts to restore hierarchy are accompanied by experiments with interactive and multi-actor arrangements (consisting of	a. Can isolated responses work? Do they need to be embedded within a system? Do these approaches need to be coordinated and centralised? Can decentralised authorities react appropriately and adequately? b. Why is response to climate change impacts more difficult? Is the wicked character of the problem relevant for institutional solutions? c. What are the implications of the shift from government to governance for the adaptive capacity of the Netherlands? When did this transition start? What does it mean in terms of transfer of responsibilities to other actors? What does it mean in terms	Questionnaires and stakeholder interviews at different levels of governance and literature. Q &S Lit survey and content analysis

	different governmental levels and of both public and private organisations). The institutional transition of government to governance provides good opportunities to deal with climate change. The institutional framework in its transitory phase will not be sufficient to solve all climate problems.	of transfer of resources? What does it mean in terms of capacity building? d. Is the institutional transition providing more opportunities for dealing with the problem? e. What are the key challenges of the transitional phase and how can these be addressed?	 Q & S Q & S
Subsidiary Questions	How can the adaptive capacity of Dutch institutions from local through to national level to deal with climate change be assessed? What are the key implications of undertaking such an assessment? What general and specific recommendations flow from such an assessment, both in terms of institutional design theory and in terms of policy?	What criteria should be developed? Should a systems approach or an institutional approach be applied? Should a qualitative or quantitative method be used? What are the implications of the choice of the methodology? How can such an assessment be tested? How can such an assessment approach be applied? How can the data collected be analysed?	Lit. Lit. Lit. Lit. Test of assessment? Q & S; data collection Lit.
Normative questions	1. What are the criteria for an institutional infrastructure that is able to react adequately to climate change and how can these criteria be measured? Such criteria include efficiency, effectiveness (both short and long-term), legitimacy and robustness. 2. What role does the development from government to governance play? What are the general expectations of 'governance style' public management? Is multi-level governance applicable to the issue of climate change? 3. What does an effective and efficient climate policy in the sectors - water, nature, agriculture and urban development imply for the development of spatial policy? (Policies that are relevant at EU and	See above How can sectoral policies and spatial policies be linked? To what new spatial claims does climate change lead? How do international instruments relate to national, regional and local policies? Is it possible on the basis of a discourse-theoretical framework to develop a typology of discursive intervention strategies (i.e. language strategies, a specific form of adaptation strategies), which are aimed at informal institutional change?	Lit. Lit. and Q & S Lit. and Q & S Lit. and Q & S

	international levels include regulations, directives and agreements on water (both fresh and coastal), agriculture, nature and the building sector.) 4. How does the concept of decentralisation in Dutch spatial policy relate to the centralised approach in climate policy? What are the differences between short-term and long-term policy goals?	(pre-scriptive/ normative question) And subsequently, how to implement these adaptation strategies? Is it necessary to develop something like a 'climate change steering philosophy'? Or put differently, to what extent and in what way can top-down and bottum-up steering philosophies be combined? (this is also a pre-scriptive/normative question)	Lit and Q & S
Empirical questions	5. How can one map the institutional context in the Netherlands? What are the various institutions that deal with climate change?	Identify the organizational framework for adaptive policy in the Netherlands?	Content analysis and lit.
		Study the policy framework for adaptive response in the Netherlands?	Content analysis
	6. How do (European), national, regional and local actors interpret climate policy?	How do different stakeholders deal with possible risks? Which actors are trying to integrate climate policy and spatial policy and what are their strategies (for example, at which administrative level, with what type of instruments)? Are there regional differences, for example regions in which climate change is higher on the agenda, or regions with innovative network approaches?	Q & S
	7. How does the current national spatial policy promote or hamper climate policy in the four sectors?	Is the present institutional infrastructure able to integrate the new spatial claims into spatial policy and practices? How can regional and local actors use and interpret the institutional framework of spatial planning to implement climate adaptation strategies? How do private and public actors deal with the possibilities and restrictions in practice and to what type of autonomous developments may this lead? What are the underlying patterns in the Dutch context?	Q & S

Concluding questions	8. Considering the outcomes of the research, what are the strengths and weaknesses of the Dutch institutional infrastructure? What are the possibilities of the governance approach in the climate change domain? Can productive and unproductive approaches and/or tools be discerned in the current Dutch policy making practices? 9. What are the specific policy design issues that emerge from an analysis of the Dutch Institutional framework? What are the possible options and what are the challenges and bottlenecks?	Which discourses and discursive politics have produced the institutional arrangements and organisational practices that have to deal with the impacts of climate change? (evaluation question)	

3.4 The literature survey

The literature survey will study governance, multi-level governance, institutional analysis, knowledge management, spatial policy, urban and rural policy on climate change; and the theories that need to be focused on in particular. We will look at the literature published in journals like Global Governance, Global Environmental Governance, International Environmental Agreements Politics, Law and Economics, work published in journals on water, agriculture, urban areas and the work of the Intergovernmental Panel on Climate Change. This will be the actual step of analysing theories and empirical evidence from a comprehensive literature survey. The literature survey and the research protocol will be conducted simultaneously, as the literature will help us develop our criteria for an effective institutional infrastructure (see Working Document 2). The literature survey will also examine national and local policies undertaken in different parts of the world on the climate change issue to see if lessons can be drawn for the Netherlands.

Based on the research in this document we will select the materials to be covered in the literature survey. We expect that it will cover:

a) Adaptation and resilience literature;
b) Institutional analysis;
c) Systems analysis; and
d) Transition analysis.

The research protocol (Working Document 1) and the literature survey (Working Document 2) together will aim to address the first two normative research questions. The focus of the literature survey will be to understand how governance systems respond to external stimuli – in this case – climate change.

3.5 Content analysis

The purpose of content analysis is to understand the policy and legal documents that structure the institutional process in the Netherlands. It will:

a. Assess the content of the policy and legal documents of relevance to the project for example:
   - Spatial strategy, spatial legislation and policy and debates around new forms of legislation;
   - Agricultural legislation from EU and national levels;
   - Memorandum on Water Policy of the 21st Century; water legislation and policy at national, regional and local level;
   - EU and national legislation on nature: Birds and Habitats directives, Natura 2000;
   - Adaptation, Space and Climate Programme (ARK);
   - Secondary literature on policy integration and conflicts between sectoral policies.
b. Elaborate on the existing institutional framework to respond to climate change in the Netherlands based on content analysis;
   - Horizontal relations: How do policy documents stipulate that governance actors should relate to each other at the horizontal level? Do spatial policy departments have to have regular contact with the other departments working on adaptation to climate change? How does this influence the way incentives and disincentives are

designed? In whose jurisdiction does the proposed policy fall? How can better incentives be designed?

- Vertical relations: How do policy documents stipulate that EU and national policy are translated into provincial and local policy? How does this further percolate down to provinces and municipalities? Is such a percolation necessary? What are the processes for cooperation? How can the process of cooperation and implementation be improved? What relationships are envisaged towards the EU and international level in each of these fields?
- Diagonal relations: How do policy documents envisage that the actors at each level deal with non-governmental (profit and non-profit) actors? Do they have formal contact points? Do they make voluntary agreements with them? What are the mechanisms to hold them accountable?

3.6 General Evaluation of the Dutch Institutional Framework

Based on the work done in step 3, this work package will aim to address questions 3 and 4 and set the stage for answering question 6. It will also do the groundwork for assessing the adaptive capacity of Dutch institutions *on paper* to deal with the impacts of climate change. With regard to our assessment of the Dutch institutional structure, we will follow two routes, or perhaps better: approaches, namely (1) a top-down/formal institutional evaluation approach, and (2) a more bottom-up/ informal institutional evaluation approach. However, critical to our assessment of the general institutional framework is to understand the objective of such an approach. These objectives and questions will be formulated in the conceptual framework (Working document 2).

3.7 Advisory committee to test ideas

We will invite a group of people from the field to test our ideas in the project. At a project level, we have identified the following people as a possible group to test our ideas:

Table 3.2 Potential candidates for the Advisory Committee.

Naam	Organisatie
Niels Nijmeijer	Waterschap Rivierenland
Leo Santbergen	Waterschap Brabantse Delta
Hasse Goosen	Provincie Zuid-Holland
Annemarie Moons	Provincie Brabant
Willem van Douwen	Gemeente Alkmaar
	Gemeente Tilburg?
Hans ten Hoeve	Ministerie van VROM
Simone Huijs	Ministerie van LNV
Hermine Erenstein	NIROV
Jolle Landman, Michael van Buuren Willem Oosterberg	RIZA Deltaris Waterdienst
Via Bart van Tooren	Natuurmonumenten
Via Jeroen Veraart	Landbouw organisatie
Govert Geldof	Geldof BV
Wim Drossaert	Syncera Water BV
Via Peter van Oppen	Stedebouwer

A series of 4-6 meetings will be planned in congruence with expected progress of the project. Two of these meetings will be part of the workshops in which results are communicated to a wider audience.

3.8 Case studies

3.8.1 Method of case studies

The case studies will be conducted in accordance with a protocol developed in advance and will involve data collection, stakeholder identification, interviews and questionnaires. In the case studies we will analyse the incentives and disincentives[17] that institutions provide to modify human behaviour, prior to conducting a SWOT[18] analysis of the institutions. Each case study will have its own specific questions and will also assess:

a) The role, cooperative styles and policy approaches of actors at the national level in the preparation of such a decision;
b) The role, cooperative styles and policy approaches of actors at the provincial level;
c) The role, cooperative styles and policy approaches of actors at the local level;
d) How stakeholders and private actors were consulted and their opinions incorporated into the decision-making process; [19] and
e) What were the views of the stakeholders and were these opinions conducive to addressing the specific problem in question and the problem of climate change in general.

3.8.2 Inventory of possible case studies

As we cannot analyse the adaptive capacity of every single Dutch institution in-depth, we will identify four case studies for more detailed research as part of the empirical analysis in this project. The PhD project that is conducted parallel to this research project will undertake an unspecified number of additional case studies. At present, we have made an inventory of possibly interesting case studies and expect that the final choice will depend on Step 4 of this project. These cases include:

5.1 **Distribution of public and private responsibilities**: Driven by ideas from New Public Management, responsibilities are increasingly shifting to the private sphere. For example, the responsibility for receiving rainfall and dealing with the related groundwater is being transferred to the owners of private land. A June 2006 draft bill before Parliament ("*Wetsvoorstel Gemeentelijke Watertaken*", zie: Kamerstukken II, 2005-2006, 30 578, nrs. 1-4) proposes that house and landowners are respon-

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[17] The analysis of the incentives and disincentives provided by the policies and laws to influence human behaviour will be carried out in accordance with the approach provided for by IDGEC Scientific Planning Committee (1999).

[18] A SWOT analysis refers to an analysis of the Strengths, Weaknesses, Opportunities and Threats of a particular institution, organisation or situation. The purpose of undertaking such an analysis is to understand how to design tailor-made solutions that capitalise on the opportunities, using the strengths of the unit studied, while minimising the exposure to threats.

[19] The analysis of public participation in policymaking will use insights developed in two recent publications: Kasemir et al. (2003); and Hisschemöller et al. (eds.) (2001).

sible for receiving rain water and channeling it into the ground water flows. Questions are: Is this the first of such transfers to individual responsibility? How will these institutional changes work out in the long term? How efficient, effective, legitimate and robust are these changes? How has accountability been arranged? (see Appendix II for more elaboration of this case study).

5.2 **Practices of selecting sites for urban expansion**: In recent years, several new instruments have been introduced to foster the integration of water management policies in Dutch spatial planning. Most of these instruments are aimed at facilitating communication amongst the agencies and stakeholders involved. On the regional level, provinces together with water boards and municipalities have developed regional River Basin Visions (*Stroomgebiedsvisies*). Most water boards have developed maps on which they have indicated limitations to or possibilities for urban expansions taking account of the characteristics of the water system (W*aterkansenkaarten*). On the local level, many municipalities have developed Urban Water Plans (*stedelijke waterplannen*). Finally, there is a legal obligation for a Water Assessment (*Watertoets*) in the process of developing new spatial plans. In spite of this whole range of new policy instruments, there are some eye-catching practices in spatial planning, which are often perceived to be contradictory to the objectives of Dutch water policy. For example, the Dutch government has selected new sites for urban expansion in some of the most flood prone areas (*Vinex wijken*). A positive example may be the project launched by the city of Groningen called 'Lake city' (*Meerstad*) which aims to use the available water and nature to create aesthetic added value for housing complexes. What conclusions can be drawn about the effectiveness of Dutch spatial planning and water management institutions in developing adaptation strategies to climate change? How could such effectiveness be improved?

5.3 **Practices of accommodating higher river discharges**: A number of cities in the Netherlands are threatened by flooding from large rivers, and at the same time their expansion is limited by safety requirements. Well-known examples are Deventer, Kampen and Nijmegen. To anticipate impacts of climate change, the national policy innovation of Space for the River is aimed at creating more space for the Dutch main rivers in order to enlarge their discharge capacity. Area-based policies and development planning have been introduced to develop integral plans that meet the strict national safety requirements as well as regional and local needs such as urban expansion. However, managing the increasingly complex networks around river safety issues is a difficult task for the Ministry of Transport, Public Works and Water Management. Furthermore, successful cooperation between the involved parties is hindered by different problem perceptions and perspectives. A case study will show the interplay and resulting dilemmas between the levels of the national river policy and local urban planning policy, including participatory processes.

5.4 **Practices of blue services**: Water managers generally use a wide range of strategies to realize their multiple water management objectives, such as improving water quality, controlling water levels, and realizing safety against flooding. They may try to acquire land which is situated along the waters or impose regulations on riparian owners and water users. In some areas in the Netherlands, water managers have applied a new strategy recently: they have bought water services provided by land-

owners, mostly farmers. In these cases water managers pay land-owners for accepting incidental inundations, and for storing water. One example of these blue services are the agreements between the Water board Regge and Dinkel and farmers along the Dinkel stream. Another example is the agreement between the Waterboard Delfland and owners of greenhouses on the storage of water. What have been the experiences with these public-private agreements, and to what extent have they been helpful in realising adaptations to climate change? What are the possibilities for using similar strategies in other parts of the Netherlands? How do EU economic regulations interfere with these new policy arrangements?

5.5 **Re-defining public and private responsibilities in flood management**: Traditionally, the Dutch government has always played a central role in flood protection. Safety is considered as a public good which legitimises governmental intervention. In recent times, however, several developments have led to a redefinition of public and private responsibilities. First, water managers are developing the flood risk approach. In this approach risk is defined as the probability of flooding times the potential damage of flooding. The consequence of realizing this approach would be a differentiation of safety standards. Citizens of the urbanized Randstad, then would enjoy better flood protection than farmers in one of the northern provinces. Secondly, the Dutch government has launched a debate on the possibilities for introducing a system of flood insurance. Partly based on experiences gained in other countries, such as the UK and US, the Ministries are talking now with representaties of the insurance industry. People who live in flood prone areas, probably would have to pay higher insurance contributions than those who live in less vulnerable areas. Will the introduction of a system of flood insurance be helpful in realizing adaptations to climate change or will such as system undermine solidarity and the effectiveness of our water management institutions?

5.6 **The new legal regime for spatial planning**: The Dutch Spatial Planning Act is currently under revision. In the new act (de *Nieuwe Wet op de Ruimtelijke Ordening*) the roles of provinces, municipalities and the national government have changed. One of the objectives of this new legislation is to facilitate the transition from classical spatial planning (*toelatingsplanologie*) to development planning (*ontwikkelingsplanologie*). The national government will impose less stringent regulation on regional and local government agencies. As a consequence, subnational governments receive more freedom to adapt to local circumstances, and to develop their own spatial visions. To what extent do these changes in the spatial planning institutions facilitate or hinder adaptations to climate change?

5.7 **Implementation of plans for a 'Climate Landscape'** in the 'Land of Heusden and Altena': bioenergy, wind energy, alliances of public and private partners.

5.8 **To build or not to build in riverbeds**: Extremely high river discharges in 1993 and 1995 made clear that the Dutch rivers need more space, in order to guarantee safe living areas behind the river dikes. Climate change is expected to cause more of these extreme situations in the future. The policy document 'Space for the Rivers' (1997) aimed to enlarge river discharge capacity and also contained the decision to avoid all building activities in riverbeds. This made the status of existing structures unclear: under this regime, it was unattractive to invest in them. It also inhibited

innovative experiments with water-resistant constructions. The 'Space for the Rivers' policy was evaluated in 2005, which resulted in a more flexible 'Policy for Large Rivers', signed by the two Ministries in 2006. As a part of this policy, municipalities are allowed to experiment with new constructions in 15 specified areas (the EMAB project).

5.9 **The Hot Spots project**, a part of the Climate Changes Spatial Planning programme, will conduct a number of practical studies in several areas in the Netherlands. Each of these studies will take some institutional questions on board to inform this study IC12. Also, one or more case studies may be conducted in cooperation with the Hot Spots project. A promising option is the Biesbosch/Haringvliet project. The Biesbosch area is an important wetland that has been acknowledged as one of the areas under the EU Habitats directive. It is also an attractive area vor recreation and on top of that, innovative solutions are being sought for problems of water quantity as well as water quality. The area may provide space to accommodate extreme river discharges from Rhine and Meuse. Restoration of the natural tide regime (including, to a certain extent, salinization) may help restore biodiversity. Although the Biesbosch is a geographical unit, many different organizations have interests in the area and many institutions are at work at the same time. How do the organizations with a common stake in the future of the Biesbosch try to formulate solutions the problems of climate change, and how do they use the institutional framework?

In addition to the above case studies proposed in the project proposal, two new case studies were suggested by the team. These include:

5.10 **Case study IJsseldelta Zuid (***(demonstration project/hotspot Routeplanner, and important project in the context of the new Space for the River policy - hence elaboration of options 5.3 and 5.9).* In the region of IJsseldelta Zuid, in the short term (to 2015), deepening the summer bed of the IJssel will be sufficient to cope with the rising river discharges. On the long term, however, it will be necessary to create a bypass of the river IJssel to solve the 'bottleneck' at Kampen. Due to the limited financial budget, the deepening of the summer bed and not the bypass is part of the Space for the River programme. But as creating a bypass is the most sustainable option with also a major water-lowering effect (about 60 cm), and as three other important and far-reaching spatial developments are planned in the area (the construction of the Hanzelijn railway, the urban development of the city of Kampen, and the broadening of a local highway), the province of Overijssel has taken the initiative to develop an integrated spatial Masterplan for the IJsseldelta Zuid region with the cooperation of all the involved local and regional stakeholders and central government partners (integrated area development). The aim of the Masterplan is to replace the deepening of the summer bed with the construction of a bypass (which will then become the short term measure), and in this way the province not only aims to create a more robust and safe situation, it also aims to improve the spatial quality of the area.

5.11 **Case study Noordwaard/ Biesbosch:** *(demonstration project/hotspot Routeplanner, and important project in the context of the new Space for the River policy - hence also elaboration of options 5.3 and 5.9).* The Noordwaard is an agricultural polder situated in the municipality of Werkendam, and surrounded by the Brabantse,

Dordtse and Sliedrechtse Biesbosch. Unlike the bypass in IJsseldelta Zuid, the 'Ontpoldering Noordwaard' measure is part of the Space for the River programme. In case of a high river discharge, a large part of the Noordwaard will flood so as to protect densely populated areas upstream (the cities of Gorinchem and Werkendam particularly). This will probably happen a few times a year, and transform the area radically. For example, the current form of agriculture, arable farming, will no longer be possible, and many farmers will have to leave the area. With the 'depoldering' of the Noordwaard, the current safety level of this polder (a chance of flooding 1:2,000 years) will no longer be realised. The whole polder will become situated on the river side of the dike, instead of on the land side of the dike as it is now, and as a result, besides a new spatial plan for the Noordwaard also a totally new safety concept has to be developed. In June 2005, the then Secretary of State for Public Works and Water Management, Melanie Schultz, designated the river-widening measure 'Ontpoldering Noordwaard' as a Space for the River lead project with the Rijkswaterstaat as its initiator. As a consequence, the planning phase could start even before the approval by the Cabinet of the Strategic Spatial Decision on Space for the River. At this moment, the planning phase is still running.

In the Routeplanner, both the IJsseldelta Zuid and the Noordwaard projects are referred to as 'case studies' and/ or 'hotspots'. These projects have been selected by the CcSP programme as hotspots according to the following criteria: policy (opportunities and constraints in the field of climate change); support (supported by several administrative levels); communication (appealing to a wide public; effects of climate change are clarified); and the action perspective (without climate change the project would have been interpreted differently). The Biesbosch and Kampen-IJsseldelta projects are in the top five, as these are considered to be good examples of 'climate-proof strategies', and "provide a good indication of the opportunities and threats resulting from climate change" (Climate changes Spatial Spanning (CcSP), Living with Water (LwW), Habiforum, & CURNET, 2007, February, p. 27).

3.8.3 Criteria for case study selection:

There are a number of possible case studies that can be undertaken in the course of this research as is shown in the former section. We will select four of five case studies based on the following criteria:

1. The case study reflects a combination of innovative (new approaches not tried in the past) and non-innovative solutions (extension of existing approaches);
2. The events to be studied are in different stages of execution (time variable);
3. The case studies take place at different levels of the spatial scale;
4. Some case studies are linked with existing projects financed by BSIK and some are independent of such projects;
5. The case studies are potentially useful for an institutional analysis of the polity, policy and politics[20];
6. The case studies allow for spread between the sectors - agriculture, nature, water and urban and each case study deals with more than one sector;

[20] Polity=political structures; policy=political content; politics=political processes.

7. The problem is important for the Netherlands and the Dutch stakeholders; and
8. The case study has a potential for testing the stress between governance and government.

The choice of case studies is postponed until after the conceptual framework has been finalized, and the advisory committee will be asked for comments before the definitive choice for the set of case studies is made.

3.9 Dutch workshop on case studies

The results of the case studies will be presented at a national workshop to discuss the implications of these for policy and to test the results. About 20 stakeholders per case study will be invited to discuss the results.

3.10 Comparative assessment of the case studies

Although we expect that the case studies will focus on different issues, there will a common framework of analysis, which will allow us to compare these cases and see if we can identify trends, weaknesses, strengths, opportunities, and threats; and whether it is possible to come up with both specific and general recommendations for the future.

3.11 Integrated analysis

This step will aim to combine the analysis in the previous parts of the research to develop a qualitative model. This urgent step satisfies a crucial requirement, as identified by IDGEC: 'the construction of "stand alone" qualitative models should yield important understandings of the role of institutions in global environmental change and may well provide data that are useful in the construction of integrated models. Modelling of institutional systems should also provide at least contingent generalisations (…) as the basis for institutional design principles and innovations that may lead to improvements in the performance of environmental institutions at all societal levels'. The qualitative model should present the key elements of the research and the causal relationships between them.

3.12 Dutch workshop 2 on research results

In this step, the results of the completed research will be presented at a national workshop aimed at both providing insights and at learning from the interactions with stakeholders from different parts of society.

3.13 Recommendations for theory

The focus in this step is to analyse what has been learnt and what can be generalised for theory forming in the area of institutional analysis and governance. The results of the project will be presented at an international political science seminar to discuss the implications for theory forming.

3.14 Recommendations for policy

The focus in this step is to identify all the recommendations that emerge from this research and based on a set of two workshops to identify ways and means to improve these policy recommendations.

3.15 Writing and editing

This final stage of the research focuses on putting all the materials together in an integrated and comprehensive report in both English and Dutch; and publishing key findings in Dutch and English language journals and policy newsletters.

3.16 The PhD project and integration in the project design

The project title is: When innovative adaptation strategies meet institutions. The main research question and subquestions are:

How can barriers for implementation of adaptation strategies be overcome?

- Are there barriers, and if so, what kind of barriers are they?
- How can we understand these barriers; which patters or mechanisms are behind these barriers?
- How can these barriers be overcome?

The proposal for the PhD research is still under development and will be evaluated in the normal procedures of the WIMEK research school. A summary of the research strategy as it has been planned at this moment:

- A qualitative phase with interviews to make an inventory of possible barriers;
- A quantitative survey to investigate which of these barriers are most often recognized in the field;
- Two case studies with a systems approach to model the mechanisms behind some of the barriers;
- An experiment to overcome some of these barriers using action research methodology.

The goal of the PhD project is not only to contribute to the general goals of the IC12 project, but also to provide an education for the PhD student to become a good researcher and to develop her own views. Because of this, the PhD project will have its own dynamics, so it is loosely coupled to the rest of the research. The PhD project will focus more on the innovative institutional arrangements, add to the overall literature review and also profit from it, provide extra case studies, and will provide more detailed insight into the mechanisms behind implementation of adaptation strategies.

For more information about the PHD project, see the posters in Appendix II.

4. Planning and organizational issues

4.1 Introduction

This section presents the timetable and outputs of this research, the cooperation with other CcSP projects, knowledge transfer to stakeholders and knowledge transfer to the scientific community.

4.2 Timetable and outputs

The project aims to have a numbe of deliverables as shown in the table below. Since the project started on 1 May 2007, but the contractual procedures were finalised only in end November, we have a new planning for the project.

Table 4.1 Timetable and outputs.

WD	Focus	Planned Month	Revised month	Project leader	Participants
1	Research Protocol	5	March 08	Joyeeta Gupta and Katrien Termeer	All core team members
2	Literature survey	5	April 08	Joyeeta Gupta and Katrien Termeer	All core team members
3	Content analysis	7	May 08	Judith Klostermann	Wageningen University, Delft University
4	Evaluation *de facto*	10	June 08	Judith Klostermann	All core team members
5	Case study 1	14	Nov 08	Sander Meijerink	VU-IVM (postdoc)
6	Case study 2	14	Nov 08		Wageningen (Klostermann)
7	Case study 3	14	Nov 08		Nijmegen (Van den Brink)
8	Case study 4	14	Nov 08		Nijmegen (Van den Brink
9	Workshop report 1	15	Nov 08	Judith Klostermann	Wageningen University
11	Comparative case study	17	Jan 09	Sander Meijerink	All core team members
12	Integrated analysis	24	March 09	Joyeeta Gupta and Katrien Termeer	All core team members
13	Workshop report 2	26	May 09	Judith Klostermann	

14	Recommendations for theory	28	June 09	Joyeeta Gupta	All core team members
15	Recommendations for policy		June 09	Katrien Termeer	All core team members
16	Complete PhD	48*	June 10	Katrien Termeer	Wageningen, VU-IVM

We expect to have the following scientific outputs:

- One article in Dutch on Dutch water policy and links with climate policy; and
- Two articles in international scientific journals (for example Environmental Sciences, Global Environmental Change and Global Governance), for example one on EU climate change and non-climate change policy; and
- A PhD report/book after four years.

The first scientific output of the project is a Special Issue on The Multi-Level Governance Challenge of Climate Change, *Environmental Science*s, 4(3), 1-7; edited by J. Gupta and published in 2007.

We expect to have the following policy outputs:

- Assessment of the adaptive capacity of the Dutch institutional framework to deal with the impacts of climate change; and
- Recommendations on how this can be improved.

4.3 Cooperation with other CcSP projects and related programmes

The project visualises four moments, one each year when the project developments will be discussed with other key projects in order to ensure that they profit from each other (see Figure 3). With the hotspots project there will be a close cooperation in the case studies of both projects. This will be coordinated by Judith Klostermann.

Table 4.2 Links with other CcSP Projects

Project nr.	Project title	Details
A2	EHS	This project studies the adequacy of the Ecological Network Structure in the Netherlands from the viewpoint of climate change. New strategies developed in this project may feed into our project to be tested in the conceptual framework.
A7	Rhine	This projects researches strategies to deal with climate change in river management. New strategies developed in this project may feed into our project to be tested in the conceptual framework.
A 10	Hotspots	The hotspots research could be linked to our research in specific case studies.
A 12	Agriculture	This projects researches strategies to deal with climate change in agriculture. New strategies developed in this project may feed into our

		project to be tested in the conceptual framework.
IC 3	Lands	Spatial integration of land claims at the national level and assessment of the conflicts to which this may lead. This project may provide clues on generalizability of our cases, because it reveals spatial conflicts throughout the Netherlands.
IC 11	Socio-economic Scenarios	In the development of socio-economic scanarios certain assumptions are made about national and EU policies. Our project will be assessing to some extent the nature of such policies and may provide useful feedback to IC11.

Living with Water programme: the project 'Changing gears in water governance' (Bestuurlijk schakelen in het waterbeheer) will study decision making processes of Dutch governments involved in water management. Dutch water policy has shifted from primarily technical measurements in the water system itself towards more spatial solutions, in order to enlarge the resilience of the water system. This means that water boards have to enter the arena of spatial claims and that they have to come to agreements with, for example, farmers, recreation enterprises, municipalities and citizens about the use and management of their territory. The project has to deliver a number of strategies for water managers to deal with the new situation. The outcomes of this project are relevant for our research and vice versa, so we will inform the project leader of our progress and follow theirs.

4.4 Knowledge transfer to and from stakeholders

The end users are mainly policy makers at local, regional, national and EU level. Private actors such as project developers, farmers and their associations, and relevant NGO's will be consulted in the project. This will be coordinated by Katrien Termeer and Judith Klostermann.

The project visualises five sets of interviews with stakeholders at global through to local levels. This is part of the data collection process and it will also inform interviewees about the project. Interviewees will be provided with a fact sheet on the relationship between climate change and spatial policy to get the discussion moving, and will be eventually provided a copy of the working document that refers to the interview with them. Communication will also take place through the planned publications in the policy journals.

The usable results of the project will include policy recommendations. These policy recommendations will be focused at the following actors:

a) Municipalities;
b) Provinces;
c) Central Government Ministries;
d) Waterboards;
e) NGOs;
f) Industry;
g) European Union;
h) International negotiations.

The process of translating these recommendations into policy will consist essentially of two steps:

a) Providing the appropriate stakeholders with information about the policy instruments;
b) Debating such instruments in the context of the two workshops.

4.5 Knowledge transfer to the international scientific community

The project anticipates that through the scientific publications (see Section 6A), the research will be able to communicate the results to the scientific community. It is also anticipated that the research team will provide results to the scientific community through participation in at least two international and national conferences. This will be coordinated by Joyeeta Gupta.

This project is closely linked to ADAM – Adaptation and Mitigation – financed by the EU FP 6. The project leader is a key member of that project and is looking in particular at the relationships with other EU policy areas. The specific sub-project can be easily linked to this project and lead to cooperative research. The Adam Research is to some extent used as a co-funding to ensure that the projects are linked together. This will be coordinated by Joyeeta Gupta

This project is closely linked to the NWO-LOICZ- project 'Institutional dynamics: continuity and change in water management and spatial policy in Dutch coastal and riverine areas', which is carried out at the Radboud University Nijmegen. The objective of this research is to develop a theory of long-run institutional dynamics which can be used to understand better how the water and spatial management of Dutch coastal and riverine areas has changed in the last 50 years, and which will give an insight into the forces and constraints which will influence changes in that management in the coming 50 years. Those insights will be used to construct a strategic approach to integrated water and land-use management in riverine areas, an approach which can be adapted to the specific circumstances. The research will be carried out through two linked subprojects. One is retrospective, an analysis of land-sea interactions and how policies have changed in reaction to 'shock events' in the second half of the 20th century. The other is prospective, examining proposals for water policy in the 21st century and new policy arrangements for integrated water and spatial management. This research is carried out by Margo van den Brink and Sander Meijerink. Since both researchers are part of the project team, the knowledge and insights produced within this project will be an important input for the research protocol and literature survey. This will be coordinated by Sander Meijerink.

This project is closely linked to the EU Asia-Link Project. In that project we will develop networks, papers and curriculum on the issue of policymaking at local through to national levels in several countries including the Netherlands. A special issue on local climate change policy is currently being prepared for Environmental Sciences. Joyeeta Gupta is working on that project and can bring research materials from that project into this one; and share the results of this in the other project. In particular, we could use the scientific results of this project to develop teaching materials on the issue for other countries. This will be coordinated by Joyeeta Gupta.

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Appendix I IC-12 GDR-bijeenkomst

Nijmegen, donderdag 24 januari, 10:00-16:00 uur

Visa Skills Lab, Thomas van Aquinostraat 5.0.13 (begane grond)

De eerste centrale vraag van IC-12 is: How can the resilience and adaptive capacity of Dutch institutions from local through to national level be assessed? Doel van deze bijeenkomst is om het conceptuele kader rondom deze vraag te ontwikkelen. Als ingang zullen we het hebben over adaptive capacity. Wat betreft resilience kunnen we besluiten of: a) het een beter concept is, b) een nevengeschikt concept is of c) een dimensie van adaptive capacity.

De volgende vragen staan centraal:

1. Wat is 'adaptive capacity' van instituties met betrekking tot klimaatadaptatie?
2. Wat zijn de belangrijkste dimensies op basis waarvan we adaptive capacity gaan beoordelen?
3. Hoe kunnen we deze dimensies vertalen in 'meetbare' criteria?
4. Van welke factoren verwachten we dat ze de adaptive capacity positief dan wel negatief beïnvloeden?

Natuurlijk is er rondom het concept adaptive capacity al heel veel voorwerk gedaan. Zie bijvoorbeeld het working document en de ppt van onze bijeenkomst in juli. Ook hebben we allemaal nog onze eigen literatuur daarover. Het is de bedoeling dat we dit allemaal gebruiken om tot aanscherpingen van het concept te komen. Dus, lees dit nog eens door, haal de belangrijkste elementen eruit en neem het mee.

AGENDA EN DRAAIBOEK

10:00-10:15 Introductie en toelichting door Katrien

10:15-10:30 Warming-up

- *Titel persbericht afronding IC-12 project in 1 zin?*
- Draaiboek: eerst typt iedereen zijn/haar titel van het persbericht van IC-12 in, daarna kijken we bij elkaar (-iedereen 'submit' zijn/haar zin) en bestaat er de mogelijkheid opmerkingen plaatsen bij de verschillende titels van persberichten. De GDR-tool is de *Private List* van de *Categorizer*.

10:30-11:00 RONDE I - Definitie 'adaptive capacity'

- *Wat is 'adaptive capacity' van instituties met betrekking tot klimaatadaptatie?*
- Draaiboek: eerst typt iedereen zijn/haar ideeën in (met behulp van de Private List van de Categorizer). De volgende stap is deze ideeën in een gezamenlijke lijst te zetten, dus bij elkaar kijken (-iedereen 'submit' zijn/haar beste idee/definitie, en dat wordt herhaald tot alle mogelijke definities van adaptive capacity in 1 gezamenlijke lijst staan). Ook kunnen dan opmerkingen geplaatst worden (bijvoorbeeld uitleg van een bepaalde definitie) en eventuele overlappende definities samengevoegd worden. Aan het eind van deze ronde besluiten we gezamenlijk met welke definitie we verder gaan vandaag, dus welke we verder gaan uitwerken in de volgende rondes. De GDR-tool voor ronde I is opnieuw de *Private List* van de *Categorizer*.

11.00-12.00 RONDE II- Dimensies 'adaptive capacity'

- *Wat zijn de belangrijkste dimensies op basis waarvan we 'adaptive capacity' gaan beoordelen?*
- Draaiboek: Niet alleen gaan we in ronde II de dimensies van onze definitie van adaptive capacity in kaart brengen, we gaan bovendien bepalen welke van deze dimensies we het belangrijkst vinden, welke we dus mee gaan nemen naar de volgende ronde en zullen gaan operationaliseren. De GDR-tool die we hiervoor gebruiken is de *Vote* (-deze tool biedt niet de mogelijkheid van een *Private List*). → Dus: (1) nadat we met elkaar de dimensies van adaptive capacity hebben geïnventariseerd, zal (2) een stemronde plaatsvinden waarin we op basis van een 10-puntsschaal rapportcijfers geven aan de verschillende dimensies. Daar volgt dan een bepaalde rangorde uit. (3) Deze ronde eindigt met de beslissing welke van deze dimensies (bijvoorbeeld de top 3 of de top 5) we meenemen naar ronde III om te operationaliseren (we kunnen er daarom niet teveel meenemen, dan duren de volgende twee rondes te lang en zijn ze ook niet meer overzichtelijk; het is om diezelfde reden handig de dimensies heel kort te omschrijven in 1 a 2 woorden en zo nodig via het comment scherm meer uitleg te geven; een ander belangrijk aandachtspunt is het abstractieniveau van de verschillende dimensies).

12.00-13.00 RONDE III - Criteria 'adaptive capacity'

- *Waaraan kun je de 'adaptive capacity' van instituties meten? Aan welke criteria / elementen?*
- Draaiboek: in deze ronde gaan we de gekozen dimensies uit ronde II verder uitwerken/ operationaliseren. De GDR-tool is de *Categorizer*. Per dimensie kan iedereen criteria/elementen aanleveren, er is ook nog een categorie 'algemeen'. De dimensies worden gevisuali-

seerd als categorieën ('emmertjes'), en per categorie kan iedereen nu criteria/elementen noemen op basis waarvan deze dimensies 'gemeten' kunnen worden. Ook hier is het handig om de criteria kort te omschrijven en zo nodig via het comment scherm meer uitleg te geven.

13:00-14:00 Lunch: bespreking planning e.d.

14:00-15:30 RONDE IV - Factoren die 'adaptive capacity' beïnvloeden

- *Van welke factoren verwachten we dat ze 'adaptive capacity' bevorderen?*
- Draaiboek: ronde IV gaat over de onafhankelijke variabelen, welke dus invloed hebben op adaptive capacity. Heel concreet gaan we in deze ronde de verschillende criteria zoals we die hebben bepaald in ronde III verder uitwerken door te inventariseren hoe ze positief dan wel negatief beïnvloed worden. De GDR-tool is *Alternative Analysis*. We gaan allereerst samen een lijst maken van de factoren waarvan we verwachten dat ze adaptive capacity bevorderen (dus per criterium gaan we dat bepalen). Vervolgens gaan we allemaal 10 punten verdelen (stemmen) en op deze manier een rangorde aanbrengen.

- *Van welke factoren verwachten we dat ze barrières vormen voor adaptive capacity?*
- Draaiboek: ook hier is de GDR-tool *Alternative Analysis*. Alleen nu gaan we samen een lijst maken van factoren waarvan we verwachten dat ze een barrière vormen voor adaptive capacity (dus per criterium uit ronde III gaan we dat bepalen). Vervolgens gaan we allemaal 10 punten verdelen (stemmen) en op deze manier een rangorde aanbrengen.

15:30-16:00 Afsluiting & vaststellen agenda volgende bijeenkomst

Appendix II Posters on PHD project

Nederland klimaatbestendig

Institutionele barrières voor innovatieve adaptatieoplossingen

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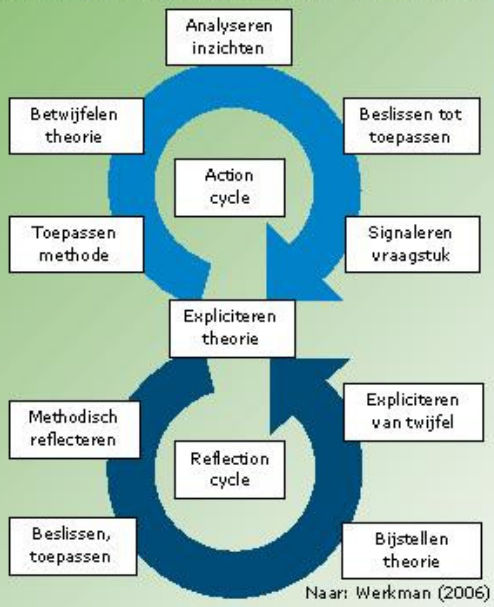
Probleem
Klimaatverandering staat hoog op de politieke agenda.

Enerzijds is er beleid om de uitstoot van broeikasgassen te verminderen.

Anderzijds wordt gezocht naar adaptatieoplossingen om de gevolgen van klimaatverandering op te vangen en Nederland klimaatbestendig te maken.

Voorbeelden van innovatieve oplossingen zijn drijvende kassen, meer ruimte voor waterberging en wonen op hoger gelegen gebieden.

Deze technische adaptatieoplossingen stuiten bij de uitvoering vaak op sociale en bestuurlijke barrières.



Naar: Werkman (2006)

Onderzoeksvraag
Welke barrières ervaren beleidsmakers bij de uitvoering van innovatieve adaptatieoplossingen?

Methode
Door na te gaan welke patronen eraan ten grondslag liggen wordt onderzocht welke mogelijkheden er zijn om die barrières te doorbreken.

- Reflectief handelingsonderzoek
Dit complexe vraagstuk wordt onderzocht aan de hand van een wisselwerking tussen actie, reflectie en kennisgeneratie.

- Systeem denken
Patronen worden zichtbaar gemaakt door mechanismen te beschrijven en te visualiseren.

Literatuur
- Scharpf (1997)
- Weick (1994)
- Senge (1992)
- Werkman (2006)

Dit onderzoek is onderdeel van Klimaat voor Ruimte project IC12: Institutions for adaptation.
Uitgevoerd bij de vakgroepen bestuurskunde en aardsysteemwetenschappen.
Promotoren: Prof.dr.ir. Katrien Termeer & Prof.dr. Pavel Kabat
Oktober 2007 - 2011

WAGENINGEN UNIVERSITY
WAGENINGEN UR

‘Het mag niet van Europa’?
Nieuwe bestuurlijke arrangementen en EU regelgeving

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In toenemende mate probeert de overheid samen met private actoren in **nieuwe bestuurlijke arrangementen** publieke belangen te realiseren.

Probleemstelling

Traditionele vormen van sturing blijven echter een rol spelen en zijn niet altijd makkelijk te veranderen. In veel gevallen lijkt met name **Europese regelgeving** grenzen te stellen aan deze nieuwe arrangementen.

De ontwikkeling van nieuwe arrangementen binnen deze EU kaders gaat dan ook gepaard met **onzekerheid, ambiguïteit** en **discussie**.

Onderzoeksvraag

Welke rol speelt bestaande EU regelgeving bij het realiseren van nieuwe bestuurlijke arrangementen?

Op welke wijze wordt omgegaan met de ambiguïteit en onzekerheid bij het toepassen van deze regels?

Normatief raakt dit onderzoek aan het vraagstuk van de locatie van de **legitimiteit** van het beleid. Ligt deze aan de input of outputzijde?; bij publieke of private partijen?; en/of op het lokale of Europese niveau?

Middels **casestudy onderzoek (‘process-tracing’)** zal een antwoord op deze vragen worden gezocht.

De Casus Groene Diensten

Door het beheer van het landschap uit te besteden aan boeren (groene diensten) kunnen overheden beter en eenvoudiger voldoen aan de toenemende vraag naar een aantrekkelijk landschap. Boeren kunnen daarnaast hun bedrijfsvoering verbreden. De afgelopen jaren zijn verschillende initiatieven van 'groene diensten' opgezet.

De vraag of hiermee de interne markt verstoord wordt en aan de **EU staatssteun** eisen moet worden voldaan leidde tot veel **discussie** tussen verschillende overheden. De verschillende partijen hadden **verschillende interpretaties** van de staatssteun eisen.

Wellicht nog meer dan de staatssteun eisen zelf (waaraan uiteindelijk voldaan moest worden), heeft deze discussie de totstandkoming van deze initiatieven ernstig gefrustreerd. In een enkel geval duurde het meer dan drie jaar voordat er duidelijkheid was over de wijze waarop de 'groene diensten' konden worden uitgevoerd.

Dit onderzoek wordt uitgevoerd over de periode september 2007-2010
Promotor: Prof. Dr. Ir. Katrien Termeer

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