



Climate Change Adaptation and Flooding Scenarios in the Baltic Sea: A Comparative Study of Models of Stakeholder Involvement and Public Participation in Sweden and Denmark.

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Abstract

One common idea within participation theory is the need for new approaches in decision making that emphasize a two-way interaction between decision makers and the public as well as deliberation among participants. Citizens should be given the opportunity to weigh evidence, discuss and debate potential decision options and possibly arrive at mutual agreements by which all parties can abide. The demand for sound scientific information and public participation is particularly great especially in adapting to some of the impacts of climate change such as floods due to sea level rise. The uncertainties and the socially sensitive nature of such risk, makes it important for all relevant stakeholders to be involved.

This study draws on two research projects carried out in Sweden and Denmark with the intention of engaging stakeholders in finding suitable ways of adapting to climate change. The two cases that have been selected for this study include the SEAREG (Sea Level Change Affecting the Spatial Development in the Baltic Sea Region) and the BALTCICA (Climate Change: Impacts, Costs and Adaptation in the Baltic Sea Region). Using a comparative case study method, this thesis looks into the design of participatory processes and the conceptions that underlie them, as well as the consequences on the active participation of other stakeholders with a particular focus on the public. Some of the main differences on the extent of public participation between these projects are sorted out and compared using theoretical perspectives from participation theory. Both cases cut across the local and national scales of decision making and use flooding scenarios in communicating with the public. However, the design of these scenarios as well as the participatory models differ.

Key words: climate change adaptation, public participation, Stakeholder involvement, risk management, opening up and closing down.

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Chapter 1

Introduction

Climate change constitutes one of the greatest risks mankind faces in an uncertain future, its consequences shall be felt by almost every part of the world at varying levels depending on the degree of vulnerabilities and exposure. Sea level rise, changing storm frequency and intensity, coupled with increased river discharges puts at risk low lying locations of floods that may not only destroy human life but also the environment. There is therefore a need for all relevant stakeholders to be involved in finding ways of mitigating and adapting to such future dangers. Depicting future events with certainty is not an easy task; hence any strategies aimed at adapting to the future are uncertain and difficult. This notwithstanding, the world cannot just sit and fold its arms without taking any appropriate steps in addressing the situation. With the help of future scenarios, future events such as floods and sea level rise can be forecasted and communicated to the public and other stakeholders despite the uncertainties. Scenarios therefore help in engaging all relevant stakeholders especially during participatory events. In all these uncertainties, the lay public or citizens are the one to bear the consequences hence, it is therefore necessary for the affected public to be involved in the management of such future risks. However the manner in which these participatory events are organized sometimes hampers full and open participation of the public. This to some extent could be attributed to the way other stakeholders are conceived. From the point of view of scientists, industry and even some authorities, the public's perception and rejection of certain risks is sometimes seen as based on ignorance and bias. Such a point of view has been contrasted by sociologists such as, Ortwin Renn, Andreas Klinke, Andrew Stirling, Brian Wynne as well as Ulrich Beck. They all agree that timely and broad based stakeholder involvement is a vital ingredient for effective environmental assessment as it is for project planning, appraisal and development in general. Authors such as Ortwin Renn and Andreas Klinke have even gone further to propose or lend support to new methods and approaches of stakeholder engagement that would enable the active participation of the lay public. Some of these models include citizen conferences and citizen juries/panels, just to name this few. They argue such methods are more appropriate and particularly suited to enable a maximum participation of the public during deliberations. This is in contrast with relatively older or

standard methods such as roundtable conferences, seminars and interviews. Another interesting point of note here is the fact that, while many social scientist would prefer the relatively new methods in engaging the public in deliberations, natural scientist in most cases will stick to the older or standard methods as mentioned above. Such difference in choices also coincides with the differences in the audiences to such events. Projects involving the lay public will prefer newer methods of stakeholder engagement where as those excluding the lay public will go for the older methods. Are such choices due to negative conceptions of the lay public or a matter of priority? The Baltic Sea area, just as any other area in the world is threatened by some of the impacts of climate change. This therefore creates a course for concern especially among coastal dwellers that are more vulnerable to risks such as floods. Due to the uncertainties and complexities surrounding the climate change science, managing the risks becomes difficult. As a result, a certain perception of fear is created among the public. Involving the public will therefore provide an opportunity for such perceptions to be taken into consideration as well as clarifying fears since most of these risks, may produce far reaching impacts both to human beings as well as the natural environment.

1.1 Aim and Research Questions.

Arguments for public participation and stakeholder involvement have gained prominence in risk management literature. Such arguments have mostly been amplified especially by the occurrence of deadly disasters that have actually exposed the limitations of human knowledge and the reliance on science to solve society's problems. The Bhopal gas disaster and the Chernobyl nuclear crisis triggered lots of discourses on human reliance on science. Social scientists have referred to such incidents to back-up their claims for the inclusion of the lay public in the assessment and management of environmental and health risks. For this reason, different risk management approaches as well as different participatory designs and models have been proposed in order to enable and maximize the public's participation. However, despite the plethora of such approaches, the exclusion of the public in certain events has sometimes been criticized as being due to negative conceptions about the public. Such conceptions include the fact that issues of risk management are too complex for the understanding of the lay public. This thesis seeks to look into the relationship between such conceptions and the design of participatory models especially in the area of climate change within the Baltic Sea region. Two main questions will be looked into, that is;

How are models of public participation or stakeholder involvement organized in the area of climate change adaptation? Is there a relationship between conceptions of flood risk and stakeholders, and the design of participatory models?

To help in the accomplishment of this task, two cases will be explored, they are the SEAREG (Sea level Change affecting the spatial development in the Baltic Sea region) and the BALTCICA (Climate change Impacts, costs and adaptation in the Baltic Sea region) which are two of several other regional projects aimed at involving relevant stakeholders in adopting suitable adaptation strategies around the Baltic Sea Region.

1.2 Structure of Thesis.

This thesis will begin with a presentation of the Baltic Sea region with particular emphasis on the projections of expected future climatic changes. It continues with a literature review that highlights some of the main arguments on climate change adaptation, risk perception as well as the importance of public participation in risk management. The following chapter describes some of the methodological tools of the thesis and its general design as well as an overview of the selected cases. This thesis continues with the theoretical framework which is based on theories of public participation and the various risk management strategies as proposed by Renn and Klinke. A comparative analysis of the two cases selected for this thesis continues from there with arguments structured around the research questions and this follows with discussions and a general conclusion.

Chapter 2

Background

The Baltic Sea drainage basin covers an area 1739,000 km². This is shared by 14 countries with a total population of about 84 million people. These countries include Belarus, Czech Republic, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia, Slovakia, Sweden and Ukraine (BALTEX¹).

The Baltic Sea region is not immune to global influences related to the wide spread emissions of green house gases. Therefore climate change in this region is also related to global events. Future projections of the probabilities and impacts of climate change have been based both on global climate models and regional climate models and emission scenarios for green house gases and aerosols (HELCOM, Thematic Assessment 2007). Such projections and emission scenarios have been developed using assumptions of future human behavior and the amount of green house gases emitted.

2.1 Projections of Future climate in the Baltic Sea basin.

About half of the Baltic Sea is ice covered in winter, however following future projections; climate change will likely affect the regional sea ice and water temperatures as well as sea level with a projected dramatic decrease in ice cover over the next 100 years. It is estimated that towards the end of the 21st century, most parts of the Baltic Sea would become ice free with a decrease of the ice season of the northern and central parts of the Baltic Sea ranging from 1-3 months. The north eastern part of the Baltic Sea basin is projected to warm more than the western part. Both the winter and the summer seasons are expected to experience an increase of temperatures leading to a retreat of snow and ice and a substantial increase in air temperatures over the sea (HELCOM Thematic Assessment 2007).

Annual mean sea surface temperatures are projected to increase by 2-4 degrees Celsius, between 1961-1990 and 2071-2100, with May and June experiencing the strongest temperature increase in the southern and central Baltic. This will also lead to changes in sea level even though not anticipated to be geographically uniform. By the year 2100, areas such as the Gulf of Finland would experience a relative rise in sea level (HELCOM Thematic Assessment 2007). Erosion and transport of sediments would increase due to high sea levels induced by storm surges, ice-free sea and unfrozen sediments. Summer river flows are projected to decrease by 16% while winter river flows will increase by 54% compared to the current climate, with a higher frequency in the occurrence of medium to high river flows. What this therefore suggests is that there shall be a higher risk of floods during the winter season. Following such projections above, changes in climate will lead to wetter winters as well as warmer and drier summers with a higher risk of floods during the winter season and a higher risk of droughts and water scarcity during the summer season. Such a situation exposes coastal areas within the Baltic Sea to the risk of floods.

From the above therefore, some projections of future expected climatic changes for the Baltic Sea have been presented, however, since I am looking into two cases that are focused on Sweden and Denmark, it is worthwhile for me to explain the flood risk vulnerabilities of these two countries.

2.2 Flood Risk Vulnerability of Sweden and Denmark.

Both Sweden and Denmark are expected to witness an average temperature rise of about 3-5 degrees by 2080 which is slightly higher than the global mean of about 1.8-4.0. According to the Rossby Center, future climates in Sweden will be both warmer and wetter leading to an increase in run-off of about 5-24% towards the end of the 21st century, (*The Rossby Center is Sweden's Meteorological and Hydrological Institute's, -(SMHI) climate modeling research unit*).

In Sweden, no national strategies have been put in place to deal with climate change adaptation, hence leaving vulnerable and affected communities to deal with the issue of climate change adaptation in a rather dispersed manner (SEAREG, www.gtk.fi). Even though some communities are yet to pay attention to the impacts of climate change, other municipalities such as those located along the Mälaren valley have collaborated on plans to expand provisions of discharge from Lake Mälaren to prevent flooding. Kristianstad, which is probably the lowest point in Sweden (2.4m. below sea level), is one of the most vulnerable

cities at risk of floods. The authorities here have been putting in enormous efforts at reducing the risk of floods, some of which include expanding enclosures within embankments as well as improving existing embankments (European Environmental Agency, Report No 8/2009).

The situation may be a little more serious in Denmark, with a coastline of about 1800km protected by dykes or other forms of coastal protection and has 80% of its population living in urban areas near the coast (Danish Coastal Authority). This puts low-lying areas especially many of the coastal cities near larger river estuaries at risk of floods.

With projections of future rise in sea levels due to increased precipitation, there is an increased probability that most Danish towns located near the coast will experience floods. Due to such flood risks there is therefore a need for the drainage systems to be renovated. Another major risk associated with climate change will be the scarcity of water both for household use as well as for agricultural purposes. This will be caused by warmer summers with risk of heavy down pour and longer periods without precipitation or drought.

Judging from such projections above, future weather conditions for the Baltic Sea area or more precisely for both Sweden and Denmark will be far more different from what we are witnessing today. However, such weather changes are expected to come with both risks and new opportunities. It is therefore necessary for society to design adequate policies in order to reduce or adapt to such risks as well as exploit some of the opportunities. This therefore calls for collective efforts from all stakeholders and sectors of the society. The following sections will review the relevant literature which center around, climate change and adaptation, risk perception literature as well as a review of how stakeholder involvement is organized in both Sweden and Denmark.

Chapter 3

Literature Review

This literature review begins with a summary of some of the main arguments in climate change adaptation literature, most particularly, the definition of climate change adaptation, basic questions on climate change adaptation and the various forms of adaptation to climate change. So far, most of the risk of climate change has mostly been perceived by the public through descriptions of future events, such risk perceptions however has an impact on policy, thus the review continues by looking into some of the main aspects of risk perception and how this relates to policy. The last part of this literature review ends with a presentation of how stakeholder involvement is important to both Sweden and Denmark.

3.1 Climate Change and Adaptation.

Human beings as well as other living species have had to adapt to different environmental conditions. Mankind has even seen the extinction of certain species and the emergence of others while other species have had to migrate to far away areas where they can find favorable conditions whereas others have had to evolve and develop new features in order to cope or adapt to new conditions. This therefore means that, adaptation is not a new phenomenon and as long as life continues on earth, living organisms will have to adapt to new and changing conditions.

Adaptation is a common term that has been used differently in different fields of study. Natural scientists would refer to adaptation as a phenomenon wherein species and organisms adapt to changing living conditions around their environment. In the social sciences, adjustments made by individuals and collective behaviors of socio-economic systems are referred to as cultural adaptation (Smith et al 2000).

Coming back to adaptation to climate change, several definitions have been put forward by different authors. However, Smith et al. (2000) identify some of the main similarities and

differences that underlie these definitions. According to them, one main similarity among these various definitions is the reference to climate change as adjustments in social and economic structures of systems as well as adjustments in system responses to climate stimuli such as floods and sea level rise. On the other hand, the main difference is the manner in which the main questions of climate change adaptation are treated. The main questions being adaptation to what, who adapts and how?

Without getting into all these debates, what matters most is the fact that people, socio-economic sectors, natural systems, practices, processes, or structure of systems etc, will have to adapt to vulnerabilities as well as opportunities and climate variability's (Smith et al, 2000). The definition of adaptation to climate change retained for this study is that employed by the IPCC. The IPCC defines adaptation as, "Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, TAR, 2001¹).

This definition goes further to distinguish various types of adaptation which include anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation, (IPCC, TAR, 2001¹).

Autonomous adaptation takes place independent of external intervention. In the case of climate change, they mostly occur in reaction to climate stimuli such as sea level rise, for example plants developing longer roots or sending their roots deeper into the soil to tap water in periods of drought. Another method of autonomous adaptation is the case of initiatives by individuals or corporations triggered by market or welfare changes due to climate change. Autonomous adaptation occurs naturally without any intervention from public agencies, for instance the purchase of insurance to safeguard against uncertainties and its consequences. On the other hand, planned adaptation can either be a reactive or an anticipatory response to climate stimuli. Examples include the building of dykes and sea walls and others to protect against floods. It mostly involves the design of policies and strategies either in anticipation or in reaction to some impacts of climate change.

Adaptation may be motivated by both private and public interest. Individuals and corporations depending on their interests may choose to embark on private adaptive strategies irrespective of others. An example here is the case of a farmer that introduces drought resistant crops in his farm or the case of a house owner who decides to reinforce the foundation of their house to protect against it collapsing as a result of floods (Smith et al, 1996).

Planned or public interests adaptation which involves both anticipatory and reactive measures is also undertaken by government agencies; for example designing new rules for the deliverance of building and construction permits, enforcement of road infrastructures as well as providing alternatives to vulnerable communities. It involves anticipatory decisions made to prepare for potential effects of climate change or reactive decisions that only take place after the occurrence of certain consequences of climate change (Fankhauser et al, 1999). However, no matter the nature of the strategy chosen, any adaptation strategy must be efficient enough to fulfill two basic requirements. Firstly, they must be flexible enough so as to address the broad range of uncertainties inherent in climate change. Therefore, robust, measures capable of rendering vulnerable spots to be able to resist harsher conditions or quickly adapt to any changed conditions must be put in place. Secondly, the costs of any adaptation strategy must not exceed the anticipated benefits since such decisions are usually based on cost and benefit analysis (Smith and Lenhart, 1996).

Whatever the case may be, adapting to climate change involves lots of risks, for no one knows for sure what will happen and when, this renders the task of designing adaptation strategies difficult. It is therefore necessary to involve all relevant stakeholders (Stirling 2007). Involving everyone concerned with such risks will also permit them to understand how to adapt as well as give them an opportunity to express their fears. The following section will give an overview of how risks are perceived by different groups of individuals and how this affects trust on public authorities and risk management. Some variables of risk perception would also be highlighted.

3.2 Risk Perception Literature.

The definition of risks varies with the circumstances and situations under use. Hence there is hardly a universally acceptable and applicable definition of risk despite efforts made to that effect. Any definition of risk that therefore purports to be universally applicable is a myth (Hansson 2006). However, for the purpose of this thesis, I have chosen to define risk as the possibility of human action or events to lead to consequences that harm aspects of things that human beings value (Klinke and Renn 2002). Such a definition could be simplified as Risk = hazards + outrage, where hazard refers to the probability of occurrence of a dangerous event and its severity, and outrage could be taken to refer to fear, dread, misery, etc, (Beecher et al, 2005).

However, risk is different from uncertainty which is a situation where the important system parameters are well known but the probability of occurrence is not known. And this could be

distinguished from ignorance which is a situation when we do not know what we do not know (Wynne, 1992). Such a situation actually exposes the limits and weaknesses of scientific knowledge as well as creates a vacuum for vital social discourses about the conditions and boundaries of scientific knowledge. There are several different variables to uncertainty, common among them, includes; statistical variations, measurement errors, and indeterminacy. Such variables blur the causal relationship within certain risks, making them difficult to assess and evaluate (Renn and Klinkle 2002).

Risk perception on the other hand is the subjective assessment of the probability of a specific type of accident happening and how concerned we are with the consequences (Sjoberg et. al, 2004). The perception of a risk such as floods may have an impact on stakeholder involvement in adapting to climate change. This is because; individual adaptation will depend on whether certain climate change impacts are perceived as risks to be acted upon (Adger et al, 2009).

The way people tend to perceive risks can be affected by many variables. Common among them are the expected number of perceived fatality or losses and the catastrophic potential. Hazards associated with extremely harmful potentials capable of causing physical and financial ruin, lost of life and property, are said to be perceived as high risk. Other qualitative risk characteristics such as voluntariness, personal control, familiarity and dread could also affect the way risk is perceived. Unfamiliar and involuntary risk that are out of personal control are said to be feared more (Sjöberg, 2001).

Risk is seen as a social construct rather than as a representation of real hazards hence integrating the public can help in alleviating some of the misconceptions that the public holds about risks (Klinke & Renn, 2002).

Despite such arguments, many experts are not really comfortable with the idea of involving other stakeholders or integrating public perceptions in risk management. Their view on this has been that, public perceptions are irrational, and they see the public as being ignorant, biased and uninformed, hence misperceptions and inexperience should not govern priorities of risk management (Klinke and Renn 2002). Other arguments that have been forwarded are that public deliberative processes are economically inefficient coupled with the inability of stakeholders to represent common interests and that they may even lead to further conflicts (Klinke & Renn 2002, Verschuuren 2004).

From a psychological point of view, the way the public perceives risks will influence their responses and reactions. The higher the level of perceived risk the more would the public presumably demand in terms of risk mitigation (Sjöberg 1999). According to the psychometric paradigm, risk perception levels increase as the number of negative events associated with the risk increases. Although one would expect high risk perception levels to be relevant to policy makers, there is no clear link between levels of risk perception and the nature of risks. For the public tends to portray the same perception levels for both trivial and fatal risks, hence risk perception levels could be a misleading guide for policy makers (Sjöberg, 1999). People's perception of risk could differ depending on whether they see the risk as a personal or a general risk. This may depend on a variety of variables, common among them are the expected number of perceived fatalities or losses, the catastrophic potential, and other qualitative risk characteristics such as voluntariness, personal control, familiarity, dread, social and cultural beliefs associated with the cause of the risk, emotional associations with the risk (stigma), and trust in risk managers and experts (Klinke and Renn 2002).

Studies have proven that negative consequences rather than probability of occurrence are more important in the way the public perceives risk and their call for mitigation (Sjöberg 1999). However one interesting point of note here is the social disparities that exist. Such aspects as gender, age and education influence the way people perceive risks. Women have been shown to generally express more concerns than men. Such differences could also be observed between age groups as well as levels of education (Sjöberg, 2006). Floods would cause damage to both human life and the environment with farmlands and infrastructure as well as property located along the coastline particularly at risk. Communities around the lake Mälaren area are very familiar with floods because they have experienced floods in the past even though with low catastrophic potential especially during the later parts of winter and early spring. The level of flood risk perception in these communities although low remains a course of concern (Viehhauser et. al, 2006). Although the above factors affect the way the public perceives risk, the situation could be exacerbated where there is lack of trust on the risk management agencies; which in turn could affect risk policies since the public may not be willing to accept risk management decisions due to the lack of trusts in such decisions.

3.3 Risk, Policy and Stakeholder Involvement.

The involvement of stakeholders provides an avenue for policy makers to interact with the public and somehow engage them in decision making. It has been argued that this will enable

policy makers to determine certain areas of contention that have been hitherto ignored as well as to gain inputs from the local experiences of the public. Involvement will also facilitate the implementation of decisions and risk management agencies to gain public trust and whatever policy that may emanate from such an event would be seen more as legitimate (Renn and Klinke, 2002).

Trust is very important in risk management, because the manner in which individuals will perceive risk information depends on the amount of trust bestowed on the source of information. Trust is of great relevance when trying to understand the relationship between risk perception and policy (Sjöberg 2001). Credibility and honesty have an influence on the way the public judge's information on risk (Maule, 2004).

The public's acceptance or rejection of a perceived risk can be influenced by the amount of trust they put on the risk management agency. The amount of trust on an agency or expert depends on competence and expertise, objectivity, fairness, consistence and acting in good faith (Maule, 2004).

Despite the central role trust plays in risk perception, Sjöberg argues that specific trust is more powerful than general trust in influencing perceptions. Moreover, the link between trust and perception is not as strong as has generally been assumed, because the public may reject a risk despite their trust on experts (Sjöberg, 2001). In general, the public mostly judges information from experts with some skepticism or caution and there has been growing public distrust on risk management agencies since it is believed information concerning risk could be deliberately distorted and biased before presented to the public in order to gain public acceptance. Trust could also help explain the precautionary position that the public has been known to adopt in deliberative events. The public being aware of the limits of scientific knowledge may become reluctant in implementing policy guidelines (Dryzek et. al, 2009).

There are lots of uncertainties concerning climate change science, which makes it more likely for the public to perceive it as something potentially harmful especially if they are not involved and well informed. However, more emphasis is laid on gaining public acceptance of decisions, rather than gaining their inputs. This is basically due to the fact that the public is considered to be ignorant and irrational in their perception despite studies that have actually proven the contrary, (Hansson, 2005). In a study carried out in Australia to determine whether community rejection of proposals to site nuclear repository waste facility was due to ignorance or misinformation, it was realized that a well informed public still did not accept proposals for nuclear power hence rebutting the assumption of public ignorance and irrational

perceptions (Beder, 1999). Expert /public disputes are very common with the public wanting an adequate voice in making decisions which affect their own locality (Allen 1998).

Judging from the above therefore, it is reasonable and acceptable for science to serve as an empirical source of knowledge upon which policies should be built but how would science fully play this role when there are so many gaps in scientific knowledge? Here I think is where the public steps in to fill this gap by bringing to the fore hitherto unacknowledged facts and values, perspectives and different meanings of risk, desired futures, ideas about resource distribution or as well as the distribution of advantages/disadvantages. Therefore it would be beneficial for both experts and policy makers to involve the public in risk assessment and management because this will also enable the public to gain some skills in making decisions that concerns them as well as give credibility to risk management agencies (Stirling, 2007). Public participation should therefore be seen as a complimentary effort towards risk management for not only can the way the public perceives risk serves as an estimation of public concern, it could also help in identifying where misperceptions lie.(Smith and Irwin, 1984).

3.3 Stakeholder Involvement in Sweden and Denmark.

Involving stakeholders in the impact assessment of projects is seen as a cornerstone for success since public participation improves project design, environmental soundness and social acceptability as well as the predictive quality of environmental assessment (Hughes, 1998). A stakeholder could be defined as any person or organization with an interest in an issue (Sjoberg, 2006), or as all those people and institutions who have an interest in the successful design, implementation and sustainability of a project (Hughes, 1998). Generally, stakeholders include all those who may be positively or negatively affected by a project and it involves processes whereby all those with a stake in the outcome of a project, can actively participate in decisions on planning and management. They share information and knowledge and may contribute to the project so as to enhance its success and their own interests (Hughes, 1998). There are several forms of stakeholder involvement used by government agencies, municipalities and companies. During such processes, information concerning projects and planning ventures are disseminated to the public giving the public an opportunity to question planning alternatives, goals and objectives as well as the risks and benefits involved (Boholm, 2008). The scope of participation of stakeholders is influenced by their respective interests

and sometimes they turn to deviate from representing public interest due to their own vested interests or may be profiting from the atmosphere of controversy (Sjoberg, 2006).

Sweden and Denmark are both organized as representative democracies just like other European democracies. Even though some may argue that too much involvement of stakeholders in a representative democracy may lead to other problems such as biases, sectoral interests, and excessive risks amplification. However, since the creation of the European Union and the decentralization of decision making to local authorities, cracks have been created in the central administration agency's power in making decisions that affect everyday life. Most members of the EU have seen their decision-making prerogatives shifted to the EU parliament and local municipal authorities (Andersen and Jaeger, 1999). New forms and avenues of decision-making are created, with citizens becoming more involved with the task of making local decisions. This helps in exposing the will of the people through deliberation and introduces the concept of participatory democracy that integrates all citizens in the political process.

Most of the various participatory models that have been used in involving stakeholders in the area of climate change adaptation in both Sweden and Denmark are reflective of the various democratic cultures of these two countries as shown above. The forthcoming sections of this thesis will look into these participatory models and how they are conceived through the various case studies. Before doing that, I will first of all present my methodology.

Chapter 4

Methodology

A qualitative comparative case study method is used for this study. A case study can be defined as an empirical inquiry that investigates a contemporary phenomenon in depth and within its real context especially when the boundaries between phenomenon and context are not clearly evident; or better still, as a strategy of inquiry in which the researcher explores in depth a program, event, activity, process, or one or more individuals (Yin, 2009, Creswell, 2009).

Case studies generally rely on multiple sources of evidence converging in a triangulating manner with data collection and analysis guided by previously developed theoretical tools, (Yin, 2009). They are good for the intensive study of a single or multiple cases where the purpose is at least in part to shed light on a larger class of cases (a population) (Gerring . 2007). Furthermore, the use of “How” and “Why” helps in exploring and making sense of causal links between events under study. A case study particularly suits this thesis since it is aimed at investigating models of stakeholder involvement in relation to theories as well as concrete cases with the aim of finding suitable ways of adapting to flood risks induced by climate change around the Baltic Sea Region. Also, climate change adaptation is a contemporary phenomenon that is still making its way into policy arenas, this therefore calls for in-depth studies of cases in order to understand how discursive processes have been organized within this area of policy, which will help in shedding light on other cases. Multiple sources of data are used, examples of which include documents, interviews and video records, (*Interviews conducted for this study were carried out on a one-on-one basis, telephone and emails*).

In order to achieve this objective, two Baltic Sea regional projects were selected. They are the SEAREG (Sea Level Change affecting the Spatial Development in the Baltic Sea Region) and the BALTCICA project (Climate Change Impacts, Costs, and Adaptation in the Baltic Sea). Bearing in mind that the main aim of this thesis is to explore how conceptions of flood risk and stakeholders relate to the design of participatory models, the two cases selected reflect two different designs of stakeholder involvement. On the one hand, we have events based on relatively old forms of stakeholder involvement. Quantitative information is used in communicating with other stakeholders, and invitation of participants to these events is limited to particular individuals with certain qualities. On the other hand, we have events designed using relatively new models of stakeholder involvement. In these events, qualitative information is used in communicating with other stakeholders and participation is open to the lay public. In a more concrete manner, I will be looking into the design and framing of the various events. This therefore makes it possible to infer the relationship that underlies the conception of floods and stakeholders and the design of these models. Other reasons that motivate my choice for these two cases are as follows.

Firstly both projects span through the Baltic Sea region dealing with partners from different institutions and decision-making cultures. Also, different forms and models of stakeholder engagement and public participation were employed all along these projects with the use of different public engagement tools such as climate change scenarios based on the cultures of the various project partners. It is not until lately that climate change adaptation made its way into policy avenues; hence there has been lots of policy incoherence. Another motivation for my choice of these two projects is thus that they are among of those few projects aimed at finding adaptive strategies to flood risk at the regional, national and local levels. Both projects have been very important in providing knowledge input necessary to guide climate change adaptation strategies.

4.1 Overview of cases.

The first case is The *SEAREG* (Sea level Change Affecting the Spatial Development in The Baltic Sea Region), which is part of the Baltic Sea Region INTERREG III B Neighborhood Programme which in part was financed by the European Union. This project started in July 2002 and ended in March 2005. The project focused on the socio economic and environmental assessment of climate change in the Baltic Sea Region with special emphasis in sea level rise and the changing patterns of rivers. Both such events are capable of leading to

major flooding events with severe impacts on the spatial development of cities and regions as well as the sustainable development of the entire region. The main partner in this project is the Geological Survey of Finland with 15 other partners from municipalities, regional authorities and research institutes as well as other interest groups like industries, public services, and cultural heritage, municipal and regional planning offices. The Stockholm County is one of the regions that hosted some of the participatory events involving other stakeholders.

Stockholm, is one of those areas that border the Baltic Sea and with a high population density and a wealth of infrastructure, floods are a cause for concern. Low lying areas situated in potential flood plain areas of Lake Mälaren are of great risks to floods. Crucial facilities and residential areas located along the shores would be flooded, (SEAREG¹). Although, the occurrence of floods is relatively low in the Stockholm area, this does not eliminate the risks of more floods with increased precipitation due to climate change. During the SEAREG project, Regional Climate Models (RCM) prepared by the Rossby Center (SEAREG¹), was used in engaging with stakeholders. These models helped in generating scenarios for the future that were communicated to stakeholders.

In order to communicate the project results, a multi-disciplinary discussion platform is created that brings together scientist and spatial planners. This platform enables a mutual learning process. The project results have been summarized and fitted into a decision making framework (SEAREG Decision Support Frame) to facilitate the tasks of decision makers.

The second case is the *BALTCICA* (Climate Change: Impacts, Costs and Adaptation in the Baltic Sea Region), that started in February 2009 and runs until January 2012. It is partly financed by the EU Baltic Sea Region programme. The lead partner in this project is the Geological Survey of Finland (GTK) with a partnership that comprises of 24 members (Municipalities, regional authorities and research institutes). This project focuses on the most imminent problems that climate change is likely to cause around the Baltic Sea, especially in coastal cities where a sea level rise could cause severe damages to both the built environment and water resources. Recognizing the fact that adaptation to climate change cannot be solved in isolated attempts, one of the major aims of the BALTCICA project is to create integrated and cooperative approaches in the selection of adaptation strategies in the Baltic Sea region. With local and regional partners, communities are prepared to cope with some of the impacts of a changing climate.

Kalundborg municipality is one of the case study sites of the BALTCICA project wherein scenario workshops have been held involving the lay public and citizens. It is also used as a

pilot case for the development of other scenario workshop models adapted to the needs and to be used by other BALTCICA partner countries and communities. Qualitative narratives of three future climate scenarios were designed to be used as an attempt to illustrate the consequences of reacting to future climate changes in different ways. The three scenarios used for this purpose represented a “laissez-faire”, “protection” and “adaptation” themes. These scenarios serve as inspirations for participants taking part in deliberations on the advantages and disadvantages of the different options available (BALTCICA²)

The Kalundborg community is an area that comprises a peninsular (14000 hectares), a large lake (1233 hectares), a large near-shore and low lying summer cottage area, large agricultural areas, nature resorts, ground and surface water interests, tourists and cultural assets coupled with permanent habitation (BALTCICA³). With land behind the coastline having delta-like characters, this makes the area particularly vulnerable to extreme weather conditions. The situation is further exacerbated by low land and coastline that are threatened by rising sea levels and changes in precipitation. This poses a lot of risks to infrastructures such as roads, sewages, water supply and drainage assets (BALTCICA⁴).

4.2 Data Collection.

Data collected for this study are from two main sources; interviews and document studies. Semi-structured interview questions were sent to four respondents, two from the SEAREG project and two from the BALTCICA project. However, the project manager for SEAREG was also the project supervisor of the BALTCICA project. Hence, he responded to two different sets of questions in two different capacities; one, in the framework of SEAREG and the second within the BALTCICA project. Thus, 4 Interviews were conducted for this study, questions were first of all sent out through emails and the respondents were free to choose whichever method they preferred to respond to the questions. At the end, 1 face-to-face interview, 1 telephone interview, and 2 email interviews were conducted with the respondents.

These interviews were generally centered on the framing and organization of participatory events, and the contribution of these events into policy. An example of the main questions include, which participatory model(s) or other information activities are used? Who initiates such events? Who are those Invited and how are they selected? What happens during such events, and who sets the agenda? How many participants are invited to each event? How information on the uncertainties of climate change and floods is in particular communicated to the participants and how is such information interpreted by those who receive it?

Follow up questions were used in between the main questions, but they were all centered on the framing and design of the participatory models. Some of them chose to respond by email since they had concerns that they may not be able to quickly reflect on the questions and respond instantly in a face-to-face or telephone interview. Furthermore, I had to rely on telephone and email interviews due to financial constraints preventing me from making a trip to Denmark and Finland. The calls were all done using Skype (www.skype.com) and recorded by “Callgraph” (call recording software, www.callgraph.biz). This enabled me to later transcribe and analyze the interviews. Each call lasted for about an hour. The only face-to-face interview for this thesis was conducted with the responded resident in Stockholm. This lasted for about an hour and a half and the interview took place in his office.

Certain documents were retained for extensive study. These documents include both text documents, for example projects reports from SEAREG and BALTCICA as well as peer-reviewed articles written within these projects (see literature list). These documents contain reports of the various participatory events that were organized within both projects as well the participants. In addition, videos of a scenario workshop held in the Kalundborg community, was used. This video contains excerpts of the workshop showing citizens deliberating over different possible options as well as impressions that were recorded at the end of the workshop.

4.3 Method of Data Analysis.

The data collected is content analyzed. Content analysis can be briefly defined as the “systematic, objective, quantitative analysis of message characteristics, which includes the careful examination of human interactions, the analysis of character portrayal, in television commercials, films and novels” (Neuendorf.k, 2002, p. 23). Krippendorff defines content analysis as the use of replicable and valid methods for making specific references from text to other states or properties of its source (Krippendorff 1969, p. 103). The object of any content analysis can be a recorded communication that may include transcripts of interviews, video tapes and documents (Mayring, 2000). Such objects shall all be content analyzed for the purpose of this study, with respect to definitions of risk and definitions of public organization of stakeholder involvement. The analysis and evaluation of the participatory events organized within both cases will be based on the various rationales of participation theory and this will be compared to the various risk management approaches to see under which approach each case falls.

4.4 Methodological Limitations.

It was my intention to take part in some of the participatory events organized in order to have the opportunity to observe and interview some of the participants, i.e. both the lay public and other stakeholders but due to constraints and the limited time frame for this thesis, I had to rely on just the four respondents that accepted to respond to my questions. Also, the SEAREG project had ended since 2005 and some of the documents especially relating to participatory events could not be accounted for at least by the respondents some of whom had changed jobs within these periods. In this case an interview was preferred. Another limitation was the language difficulty. Participatory events were organized in the respective official languages of the various project partners making it difficult for the author of this thesis who unfortunately happens to be fluent just in English and French, to take part in these events. Sometimes difficulties were experienced in having interviews in English since some of the respondents were not comfortable enough to express themselves in English.

Besides language difficulties, time constraints and the availability of respondents to respond to interview questions was a very limiting factor. Most of the respondents I contacted both from Sweden and Denmark were hardly available for a face-to-face interview. Some requested that I send the questions in advance before we could book a meeting, but unfortunately when I did send these questions via email, they never replied and refused to take any of my follow up calls. Some even deliberately gave me misleading information on how to get other potential respondents. On the Danish site, the project manager of the BALTCICA project, after some hesitation and reluctance, decided to give a two month waiting period before he could attempt responding to my questions. Reasons for this waiting period, as advanced by him were that, he and his project assistant were travelling abroad. However, despite such limitations, the amount of data collected was highly exploited in order to make-up for the above shortcomings hence giving this study the validity it deserves. More emphasis was laid on the documents available online such as publications and project reports.

Chapter 5

Theoretical Framework

The theoretical framework for this thesis is based on the risk management approaches as put forward by Renn and Klinke. However these approaches will be expanded to include concepts and theoretical perspectives on public participation as argued by Andrew Stirling and Fiorino. My main reason for such a theoretical build-up is the fact that they have one common denominator, which is arguing in favor of public participation or stakeholder involvement in the management of risk.

In the following paragraphs, I will briefly present the three main challenges of risk management which are complexity, uncertainty and ambiguity as well as three different approaches to risk management as described by Renn and Klinke. The success of any risk management strategy will rely on how well different risks can be estimated and classified based on these challenges. But before looking into these challenges and approaches, I will first of all present the rationales for public participation.

5.1 Rationales for Public Participation.

Stirling (2005), and Fiorino (1990), identify three rationales for public participation: normative, instrumental and substantive. Normative imperatives are built on principles of democratic emancipation, equity, equality and social justice. Marginalized citizens are not only given the opportunity to take part in making decisions, they are also empowered politically. Hence participation is a good thing in its own right since it inculcates the spirit of civic competence through the building of democratic skills, overcomes feelings of powerlessness and alienation and contributes to the legitimacy of the political system. Citizens are the best judges of their own interests thus, they should be capable to partake in decisions that affect their lives and their communities, (Fiorino, 1990).

Instrumentally, public participation reduces conflict, clarifies differences leading to decisions based on consensus. This improves the acceptance, compliance or implementation of whatever decisions that may be taken. In doing this, risk management agencies stand to benefit from public support, credibility, public trust and legitimacy. Furthermore, the capacity to draw a broader range of views into decisions reduces the likelihood for policy errors and this also helps in educating the public.

The third rationale as identified by Stirling is the substantive nature of decisions that emanate from deliberative processes. Authenticity, robustness and quality in choices derived from social appraisal are some of the benefits of a decision making mechanism that gives a voice to the public. This permits decisions to be congruent with and authentically embody diverse social knowledge, values and meanings. This gives quality to any resulting decisions from such processes. In situations of scientific uncertainty like climate change, broad stakeholder engagement enables the consideration of wider issues, questions, conditions, causes or possibilities, hitherto ignored.

In a nutshell, public participation helps in countering or ameliorating undue exercise of power and uncritically achieves ends conditioned by existing power structures as well as provides apparently transcendent qualities in the resulting social choices. However one common factor in all these different rationales is the fact that they raise significant and relatively neglected or ignored questions about the role of power in the social appraisal of risk. The degree of success in any participatory process will depend on the framing conditions and the amount of power that stakeholders can exercise either against the risk management agency or other influential stakeholders representing special interest and this can be evaluated based on the following criteria below.

5.2 Criteria for evaluating participatory mechanisms.

Fiorino suggests four criteria for assessing participatory mechanisms. First among these criteria is that such mechanisms should allow for the participation of citizens or amateurs in decision making. The premise of decision making is highly concentrated in the hands of elected representatives, appointed administrators, interest group professionals, or technical experts. Citizens should be given the opportunity to share the decision making platform with the above mentioned officials.

Secondly, the extent to which citizens actually take part in collective decision making is also very important since the *raison d'être* for participation theory is to get citizens to co-determine policies in collaboration with government officials as well as exercise decision authority. Participation therefore should be seen as a more than therapeutic, oppositional and pleading exercise.

Thirdly, participatory mechanisms should provide the opportunity for face-to-face discussions to be held between experts and citizens over a certain duration of time. Through mutual talk and persuasion, trust is built during discussions and deliberations. This creates opportunities to transform conflict into constructive directions, which are all attributes that any participatory

mechanism seeks to achieve. Through such face-to-face discussions, alternative futures and competing visions of the community are constructed.

Fourthly, every good participatory mechanism should offer an equal platform for citizens, experts and administrative officials. This equality should be reflected in the definition of issues, and citizens should have an equal opportunity to question experts, dispute evidence and shape the agenda. In order to archive this goal, citizens should be educated and prepared well enough to debate on factual and analytical issues. Hence institutions should be designed so as to allow for the effective and equitable participation of the public.

However, this will also depend on the nature of the risk and its challenges. Renn and Klinke have designed three different approaches to risk management. Within these approaches, the extent of public participation as well as the nature of the actors involved is different. This will be seen below.

5.3 Risk Management and Challenges.

Risk management, is defined as the process of reducing risks to a level acceptable by society and to assure, control, monitoring and public communication, (Renn and Klinke 2002 p, 1071). As earlier mentioned, there are three major challenges to risk management as seen below.

Complexity refers to the difficulty of establishing causal links to adverse effects. This may be due to the interaction or inter-wovenness of quite a host of far too many causes that may have blurred the direct link between cause and effect. Other variables that may complicate this relationship include long delay periods between cause and effect as well as inter individual variations. This therefore creates the need for in-depth analysis in-order to distinguish with exactitude the cause and effect. However, the lack of both the knowledge and tools necessary to carry on such an analysis further complicates the task. This has been one of the main challenges with climate change wherein more knowledge is still necessary to pin specific causes to particular effects.

Uncertainty on its part is the difficulty of defining or estimating cause and effect relationships of a risk inducing activity or agent due to statistical variations, measurement errors, ignorance and indeterminacy. Some of the uncertainties of climate change include; epistemic uncertainty, which is related to incomplete knowledge. Natural stochastic uncertainty is related to the chaotic nature of the climate system while human reflexive uncertainty is related to human agency in terms of green house gas emissions, mitigations and adaptation measures (Patt and Dessai, 2005).

Furthermore, ambiguity could be defined as the variability of interpretations based on identical observations or data assessments. It may result from differences in the way stakeholders interpret factual statements or from differences in the way normative rules to evaluate the state of the world are applied (Renn & Klinke, 2002). It should be noted that the three above mentioned challenges to risk management are closely related since most risk with high levels of complexities and uncertainties may lead to ambiguity. Renn and Klinke propose three different approaches to risk management; they are the Risk-Based, Precaution-Based and Discourse-Based approaches. These approaches will be described below.

The first approach is the risk based approach which is well suited when the probability of occurrence and extent of damage is known. Hence efforts should be focused on reducing the disaster potential. A risk or science based approach relies on the numerical assessment of probabilities and potential damages. Just as the probabilities of climate change are uncertain, so too are the probabilities of floods occurring around the Baltic Sea region. This is most likely to increase with increases in precipitation due to increase in emissions of green house gases. This therefore leaves the public more concerned about the damage potentials of floods. The use of precautionary measures as well as the generation of new knowledge through further research is also recommended in order to reduce the remaining uncertainties in relation to the distribution of probabilities (Renn and Klinke 2002)

The second approach is the precaution-based approach. Where the risk is characterized by high degrees of uncertainty, such as the emission of green house gases, the application of precautionary measures will help in avoiding unforeseeable impacts. While being cautious on such risks, efforts should be placed on research to gain more knowledge and reduce uncertainties. Management tools such as; containment of application in space and time, constant monitoring of potential side effects, development of functional equivalents with less persistent or ubiquitous consequences will be appropriate. Furthermore, promoting diversity and flexibility, capacity building for organizational competence, introduction of strict liability, etc, would be of great help in reducing the risk to a level as low as reasonably applicable (Renn and Klinke 2002).

The third approach according to Renn and Klinke is the discourse-based approach. Discursive approaches to management are essential if the potential for wide-ranging damage is ignored due to delayed effects. Risk falling under this category may not be taken seriously because of the time frame between the initial effects and the damage impacts. However, they are capable of attracting serious public attention and incite public anxiety which may lead to outrage since

it may be believed that the risk poses a serious threat. In such a situation, building up consciousness and confidence, increasing trust and initiating collective efforts or employing discursive decision making methods that also involves the affected lay public would be important.

The fact that risk issues are very technical in nature does not mean that the public is willing to give exclusive decision making rights to experts and administrative authorities. Citizens will always want to at least take part in decisions that affect their interest or share the decision making platform with other stakeholders (Renn and Klinke 2002). However, the participation of the public in the social appraisal of risk and management will depend on the nature of the risk and the challenges. First of all, in the case where the risk in question is faced with complexity, resolving such complexity requires deliberation or epistemological discourses. This mainly involves discourses among experts in the form of a communicative exchange of arguments in order to clarify dissenting views and achieve a homogeneous and consistent definition of the phenomena (Renn and Klinke 2002). This may well reveal any hidden controversies between the experts. An important point of note here is the definition of experts that includes both natural as well as social scientists.

In the case where the main challenge facing risk management is that of uncertainty, scientific input is not enough to evaluate the risks. It is therefore essential to bring to the deliberative arena all relevant data and various arguments. Such an arena should not only include scientists or experts, directly affected stakeholders and public interest groups should be given the opportunity to deliberate. A good example here is that of climate change. In this case therefore, participation should be extended and inclusive enough to bring in the lay public into the deliberations. Clarification of facts is not enough in convincing people except those affected are involved in the discursive methods of deliberation and decision making.

Where the main challenge of the risk is that of ambiguity, participatory discourses are important in resolving such ambiguities and differences in values. They will also serve as a means to search for solutions compatible with the interests and values of various stakeholders hence reducing conflicts.

From the above therefore, it will be realized that public participation and stakeholder involvement is very essential in resolving the various challenges to risk management even though the definition and composition of the public differs depending with the nature of the risk. The risks involved in climate change are complex, uncertain and may lead to ambiguity.

This therefore calls for the affected public to be involved in whatever deliberations that may be needed to find ways of adapting to climate change. Below is a table illustrating the various discourses based on the various challenges of risk management.

Figure 1

Challenges of Risk Management:	Complexity	Uncertainty	Ambiguity
Types of Conflicts:	Cognitive	Cognitive and Evaluative.	Cognitive, Evaluative and Normative
Actors:	Agency Staff and External Experts.	Agency Staff, External Experts, Stakeholders such as Industry, and Directly Affected Groups.	Agency Staff, External Experts, Stakeholders such as Industry, and Directly Affected Groups, and Representatives of the Public (s).
Discourses:	Cognitive	Reflective	Participatory

Adapted from the risk management escalator as designed by Renn and Klinke, (2002, p. 1090).

5.4 Framing of Participatory Processes: Exclusive and Inclusive Approaches.

Participatory processes are generally framed based on the expected outcome of the event. Factors such as the choice of focus, partition of perspectives, engagement of stakeholders, choice of participants, phrasing of questions, characterizing of alternatives, the provision of information, medium of discourse, management of dissension, the documentation of findings etc, will determine the nature of the event as well as its outcome. These factors may also have an impact on the power dynamics among the various actors. A close look at the design of

participatory events brings out two main approaches to mind. A close-down approach and an open-up approach. The preference of either or both approaches in involving stakeholders sometimes depends on the nature of the risk/issue to be deliberated upon as well as on the nature of the stakeholders or participants. It is argued that involving stakeholders gives quality and soundness in decision-making as well as empowers stakeholders politically. Hence participatory processes should be designed in such a way as to allow for an equitable distribution of power. As seen above, risk management agencies and some sponsors of participatory processes are usually more interested in the instrumental benefits of stakeholder involvement. Here, stakeholder involvement is used as a tool to get the public to ratify or justify decisions or it is seen as a means to an end rather than as an end in itself. This resembles what Stirling calls a decision justification which may either be weak or strong depending on the circumstances (Stirling, 2005).

In circumstances where participatory processes are employed in order to gain legitimacy and to avoid or deflect responsibility, incumbent interests tend to be very relaxed with less attention paid to the details of any outcome. The purpose of stakeholder involvement will be more deceptive, since stakeholders are tricked or manipulated into accepting responsibility for choices they never made. In contrast, a strong decision justification is where the intention of the organizers or sponsors is to see to it that a particular decision outcome should be arrived at. In this case, there would be an exercise of strong influence on the process and the whole procedure will be framed such as to favor the particular decision outcome (Stirling, 2005). Stakeholder engagement here will be nothing more than just listening, making comments or another hand-clapping event. Such a closed method of stakeholder involvement may also help in avoiding conflict. Caution should however be exercised if not, the very credibility and trust sought through stakeholder involvement could be lost since stakeholders may find the whole procedure unreliable. Such a situation could subsequently lead to outrage.

Furthermore, a closed down approach highlights the retained appeal for expert driven styles of risk management. Other reasons for such an approach may include disparity on the interpretation of who actually represents public interest. It would be reasonable to assume that risk management agencies always have the tendency to claim a legitimate mandate to act on behalf of the public interest; hence their propensity to control participatory processes. However, how can one really believe in such a legitimate mandate when public concerns are sometimes ignored in decision making? Beck argues that, the ecological and technological hazards, created by industry come with some form of politicization that obliges industry to be

more dependent on discourse (Beck, 1990). In addition to this, attempting to avoid dissent and the scope for conflict would only result in the containment of the process. Hence stakeholder involvement will be more of rhetoric with no commitment to giving people an effective voice (Roger et al. 2005). Such a closed down approach may even prove more futile in an uncertain risk situation such as climate change for no one can determine with certainty the exact changes that will be experienced in future. Adapting therefore to uncertainty may become even more difficult and abortive with the exclusion of the public. This therefore makes it necessary for the public to be involved since it provides an opportunity for policy alternatives and other neglected aspects to be considered.

Participants should be given equal opportunities as other stakeholders and just as Barnes puts it, from the perspective of a normative rationale,

All persons should have the right and opportunity to participate in the deliberation and decision making of the institutions to which their actions contribute or which directly affects their actions, (Barnes et. al, 2003 p.391).

Deliberation implies equality among the participants, peer review as a means for verifying understandings (i.e. holding knowledge claims up to public scrutiny), and an orientation towards resolving conflicts in a consensual rather than adversarial ways (Renn and Klinke 2002). Only in such a way can a robust and transparent method of governance be achieved (Stirling, 2005). Deliberative methods with the use of scenarios would actually be very helpful in revealing the implications of various assumptions and conditions as well as help illuminate the possibility of considering a variety of other options.

Chapter 6

Comparing two cases of Stakeholder Involvement

Before comparing these two cases, I will first of all present a general background of what scenarios are all about, their importance and how they are designed. This is aimed at enabling the reader to understand how and why scenarios have been applied in the various participatory models within the two case studies.

Scenarios are just one of several methods if not the most suitable in communicating with stakeholders in the decision-making process concerning uncertain future events such as climate change. A scenario therefore could be a coherent and plausible story told in words and numbers about the possible co-evolutionary pathways of combined human and evolutionary systems (Swat et al, 2004). They are mostly comprised of a definition of the problem boundary, characterization of current conditions and processes driving change, identification of critical uncertainties and assumptions of how they could be resolved as well as images of the future. One of the main objectives of a scenario therefore is to characterize the nature of human and environmental response under different conditions (Swat et al, 2004). In the case of climate change, three different scenarios (low, average and high) are used in characterizing different ways in which the climate is expected to change in the future based on current trends of greenhouse gas emissions, as well as population growth.

The IPCC's Third Assessment Report (TAR), contains four different climate change scenario families that are intended to guide policy makers in the design of mitigation and adaptation strategies. Some of the main characteristics of these scenario families will be briefly described below.

The first of these scenario families is the A1 storyline that emphasizes more on market oriented solutions to environmental problems, with high consumption of both tangible and intangible commodities. Advances in technology and communication will encourage the

intensive mobility of both goods and people. Demographic and economic trends are closely linked with an increase in incomes leading to low mortality and low fertility. Technological progress is also expected to lead to the abundance of mineral and energy resources. This is due to the reduction in the amount of resources needed to produce a given level of output and increases in economically recoverable reserves. Further emphasis will be put on the management of natural and environmental services, rather than conserving them in order to increase resilience (IPCC²).

Contrary to the A1 scenario family, in the A2 scenario family trade flows are lower. There is also a relatively slow capital stock turnover and slower technological change. Less emphasis is placed on economic, social, and cultural interactions. This leads to self reliance in terms of resources, widening of the income gap between the rich and poor countries. Such events will be triggered by the low level of international cooperation, with people, ideas and capital becoming less mobile. Fertility rates decline relatively slower leading to higher populations (IPCC³).

In the B1 storey line, there is a high level of environmental and social consciousness combined with a globally coherent approach to sustainable development. The over-use of natural resources (deforestation, soil depletion, over fishing, and pollution) and their negative impacts will be the principal motivation behind such a scenario. Businesses, governments, the media and the public will pay more attention to the environmental and social aspects of development. Economic development is expected to be balanced with efforts to achieve equitable income distribution, improved efficiency of resource use, equity, social institutions and environmental protection. This therefore leads to higher environmental quality with most potential negative environmental aspects of development anticipated and dealt with effectively at the local, national and international levels (IPCC³).

The last but not the least of these scenarios is the B2 scenario. In this scenario, there is more environmental and social sustainability. This is achieved through government policies and business strategies that are influenced by environmentally conscious citizens. There is more reliance in the local or community based management of resources, with citizens playing a greater role in decision-making (IPCC⁴).

The scenarios that have been used in both the BALTCICA and SEAREG projects were those developed by the IPCC to explore future developments in the global environment with special reference to the production of green house gases and aerosol precursor emissions.

These scenarios are described using either a narrative or a quantitative description of a scenario or family of scenarios highlighting the main characteristics and dynamics, and the relationship between key driving forces. Scenarios also contain projections of a potential future, based on a clear logic and a quantified storyline (IPCC¹).

If these two scenario families were retained by both the SEAREG and BALTCICA projects, it's because self-reliance and preservation of local identities is prioritized in them and much emphasis is laid on local solutions to economic, social, and environmental sustainability. There are however some differences between these scenarios, the A2 scenario family lays more emphasis on self reliance and preservation of local identities whereas the B2 scenario family stresses on local solutions to economic, social and environmental sustainability with an orientation towards environmental protection and social equity. The above scenarios were described in the BALTCICA project using narratives whereas the SEAREG project preferred quantitative descriptions. This could be explained by the difference in the audiences as shall be seen below.

6.1 The Organization of Stakeholder Involvement in the SEAREG Project.

Public participation and stakeholder involvement was a recognized asset during the SEAREG project; this is because the projects in itself was aimed at making a contribution to the climate discussion as well as provide a tool for communication. Furthermore, the participation of the various communities provided the opportunity for different dimensions of the risk of floods to be taken into account. According to the organizers of the project,

stakeholder involvement during the SEAREG project exemplifies the idea of modern environmental governance that creates new spaces for organizations to act without any conventional boundaries and helps to remedy institutional voids and creates deliberative arenas for new policy approaches, (Lehtonen and Peltonen, 2006).

Such statements above illustrate the importance of involving different stakeholders since it gives the opportunity for multiple dimensions of risk to be taken into consideration. Another point of note here is the recognition that stakeholder involvement helps in remedying institutional voids by creating deliberative arenas for new policy approaches. Several seminars, roundtable discussions, interviews as well as

conferences were organized with other stakeholders who were mostly spatial planners and municipal authorities.

During these participatory events, results of the project were discussed in a multi-disciplinary platform bringing together both scientists and planners. Such a platform is necessary for the effective transfer of knowledge by bringing together expertise from a diverse and broad base of stakeholders who will be potentially affected by a sea level rise (Geological Survey of Finland, a). It became evident that sea level rise related information may be very sensitive and even conflictual due to the uncertainties in the climate change science or even due to the fact that most interests such as planning, investments, land and property value are highly at stake (Geological Survey of Finland¹). This makes public participation indispensable in avoiding such conflicts of interests through an open communication of the various uncertainties as well as bringing different stakeholders together in order to sort out differences.

Much emphasis was laid in the cooperation with concerned regional and municipal stakeholders with a focus on spatial planners. This had several practical orientations. Prominent among them was the production of regional and municipal flood risk maps, raising the awareness among planners and decision makers concerning flooding risks, as well as maximizing the usefulness of the project results in the region. Spatial planners, risk managers and technical administrators were urged to include flooding issues in ongoing work processes and plans. The communication of climate modeling and flood risk results through discussions with concerned actors including direct dialogue with regional and local planners was also one of the main objectives of this project. The actor-network potentials of the lake Mälaren Flood Group (voluntary actor-network formed after the 2001 floods around the Stockholm-Mälaren area) was highly exploited as a transmission route for disseminating the results of the SEAREG project in the Stockholm-Mälaren region, (Meier et al, 2006).

Round table discussions were organized as three separate events bringing together three different categories of stakeholders in the Stockholm region. The first event brought together scientist and other researchers within the project, while the second event brought together spatial planners and the third event brought together politicians. After these events, a fourth event was organized that brought together the above mentioned categories of stakeholders. Parallel group interviews and individual interviews were organized with actors who could not take part in the group round table discussions (Lehtonen and Peltonen, 2006).

The table below describes the various participatory events that took place within the SEAREG project.

Figure 3:

SEAREG (Sea Level Change Affecting the Spatial Development in the Baltic Sea Region)

Duration of Project:	July 2002-March 2005
Models of Stakeholder Involvement and Public Participation:	Interviews Seminars Roundtables Conferences News letters
Actors Involved:	Spatial Planners Decision-makers Representatives of Industry
Aim:	Contribute to the Climate change discussion and offer a tool for Communication.
Results:	The SEAREG Decision Support Frame (The Decision Support Frame is tool for assessing sea level rise in the Baltic Sea. It comprises of four pillars representing the main tasks that are necessary to communicate sea level scenario building and analysis on a scientifically interdisciplinary basis. This decision frame should involve planner's decision-makers and stakeholders).

If stakeholder engagement should remedy institutional voids and provide a multi- dimensional view of risks, actors should be capable of actively and equally participate. For this to exemplify the idea of modern environmental governance as mentioned above, at least, the normative, substantial and instrumental rationales for public participation should be reflected in the deliberative events. However, the reality was a bit different, because an analysis of the participatory events organized within the BALTCICA project paints quiet a different picture as shall be seen below.

6.2 The Organization of Stakeholder Involvement in the BALTCICA Project.

Within the BALTCICA project, the Kalundborg municipality was selected as a suitable pilot site for the development of participatory models to be used by other partners. This was done in collaboration with the Danish Board of Technology and the Geological Survey of Denmark and Greenland. The main reason for the choice of Kalundborg is due to its geographical characteristics that make it a typical pilot area for illustrating different climate change impact scenarios.

The design of the stakeholder dialogue methodology was done by the Danish Board of Technology. The Geological Survey of Denmark and Greenland provided scientific data and also carried out simulations with integrated hydrological models which demonstrate the threats to human and environmental health and the need for protection and adaptation. Two main participatory models were used within the Baltcica project. They are the Scenario Workshop and the Citizens Summit. According to the Danish Board of Technology Scenario workshop methodology, scenario workshops are aimed at looking for solutions to problems. Such problems may be related to new technologies, new regulatory mechanisms or just searching for new ways of organizing and managing new problems. A typical scenario workshop takes place within 2 days, with 25-30 participants divided into groups of 5-8 members. The participants generally include people with different roles in society and experiences and are generally invited and selected through networks including politicians, civil servants, technical experts, investors, businessmen, citizens and local associations. The workshop is structured into meetings and dialogue and with four local groups and comprises of three phases. The critical analysis phase, which is dedicated to criticisms and comments, the visionary phase which focuses on developing personal visions of the future, and the implementation phase which focuses on identifying barriers that may hinder the transformation of visions into reality (Andersen and Jaeger, 1999).

In the Kalundborg scenario workshop, participants included farmers, policy makers such as municipal councilors from the Kalundborg community as well as business representatives, (Andersen and Jaeger, 1999). At the scenario workshop, the main issue at hand was to find suitable ways of adapting to sea level rise and floods as a result of climate change. During the workshop, a set of scenarios were developed exploring alternative ways of adapting to climate change.

This allowed for stakeholders to develop different visions of how to deal with climate change in the future. The workshop also served as a hands-on interaction platform between stakeholders, the public, spatial planners and politicians. Three different future scenarios were presented to stakeholders; these scenarios represent three fundamentally different ways of responding or approaching climate change.

The first of these scenarios represents a basic or “laissez-faire scenario”, which is based on the assumption that it is impossible to do anything special in advance to reduce the impact of future climate changes beyond what is economically viable. The second scenario, dubbed a “protection scenario”, represents attempts to protect all regions of interests such as residential areas, infrastructure, commerce and agriculture, against the consequences of any future climate changes such as floods. And the third scenario named an “adaptation scenario” is based on the need to adapt to future climate change. This scenario assumes that current land-use patterns will be re-evaluated with more space allocated to wetlands and more consideration to the environment and nature. It should be noted that the above three future scenarios were based on the A2 and B2 scenario families as developed by the IPCC and they are all based on fictional narrative stories as described by a journalists. Hence while they are scientific in nature, they are not presented in a traditional scientific manner. During the workshop, participants were divided into smaller groups with a task to deliberate on the different climate change scenarios. Each group developed visions for the future and these visions were written down and later presented at the end of the seminar by the group leaders (BALTCICA¹).

Four visions were created, which span from turning existing farmland and build-on areas into wetlands, to the establishment of large dikes in order to protect those same areas. Within these participatory events, particular emphasis is laid on the participation of citizens for it is believed citizens can make fruitful contributions to any decision making process. Themes such as,

Asking for citizen’s advice about climate change and sea level rise. Affected citizens should be given the chance to meet and debate possible future scenarios and to create visions and plans for actions beforehand (DBT videos of the Kalundborg scenario workshop),

illustrate the importance that was placed on the public’s participation and the value in the knowledge that they may generate. This also shows that, the main objective of the event was

to get the lay public active in the climate change adaptation discourse. A citizen's summit is currently under preparation with about 500 citizens expected to take part by the beginning of 2011. The main objective of this summit is to present different climate change adaptation strategies in the Kalundborg municipality. Citizens will be given the opportunity to vote for their favorite strategy following visions drawn from the scenario workshop. This will serve as an important input for decision makers in the design of adaptation strategies. Below is a table illustrating the various forms of participatory processes organized within the BALTCICA project.

Figure 4:

BALTCICA (Climate Change: Impacts, Costs and Adaptation in the Baltic Sea Region)

Duration of Project:	February 2009-January 2012
Models of Stakeholder Involvement/Public Participation:	Scenario Workshop Citizens Summit
Actors Involved:	Business Representatives Policy Makers Experts farmers, and other lay people
Aim:	Prepare regions and municipalities to cope with a changing climate by providing for the creation of new knowledge on locally existing visions, barriers and opportunities to realize visions, production of policy proposals, provide for a more qualified debate based on an increased exchange experience and knowledge.
Results:	Adaptation strategies developed during the project

A description of the various participatory processes within the SEAREG and BALTCICA projects has been given above. One important observation here is the fact that although they both recognize the importance of public participation and stakeholder involvement, their methods of engagement differs.

This can be explained by the differences in the objectives of both projects with each seeking to obtain different results. Another point of note here is the fact that while the SEAREG relied

on relatively old models of stakeholder involvement, the BALTCICA made use of relatively new models developed by the Danish Board of Technology. For participatory processes to produce valuable results, they have to be well designed and framed in order to ensure the active participation of all stakeholders and the public.

6.3 Conceptions of flood risks, stakeholders and the design of participatory models.

The communication between the fields of science, planning and decision making is far from straightforward. This is due to the fact that the two groups have different interests and professional ethics which affect their actions (Peltonen and Lehtonen, 2006). The conceptions that engineers, climate modelers, and other experts have about people as individuals and collectives who will utilize or be affected by the knowledge they produce, will influence the way they will communicate with them. Such conceptions could be science based, i.e. seeing stakeholders and the public as being capable of understanding scientific information, conceptions may also be based on the experience of the stakeholders and the public in dealing with floods, as well as on narratives that can enable citizens with no prior scientific background to understand and actively participate.

In the SEAREG project, participation was mostly limited to spatial planners due to their previous experiences with handling issues of flooding. All of these stakeholders had a direct or indirect role to play in the management of floods. Hence they had experienced flood events in the past or had something to do with flood risks in an official capacity in one way or the other. Even the scenarios that were used in communicating with the public in the SEAREG project were endowed with scientific calculations and formulas as well as other complex data that could only be understood by individuals with some scientific background. Such a choice excludes others without the knowledge or the experience to understand them. This, first of all, could be explained by the fact that the science behind climate change as well as flood risks and sea level rise was conceived as being very complex to be understood by other stakeholders without any scientific background. Participatory events such as the roundtable discussions and seminars that were organized were mostly aimed at explaining and disseminating the results of the project with little or no space for other stakeholders to make any inputs. According to the project manager (interview 1)

What happens usually is that the stakeholders ask us for information and we try to give as precise information as possible in an understandable language (interview 1).

This therefore means that the participation of stakeholders in the deliberations was more or less limited to knowledge transfer or communication of the risks of climate change, from the organizers to the participants who in this case could merely be considered as receivers of knowledge. Such a closed-down and exclusive approach to decision making as seen in this project could also point to the fact that, the main rationale for the organization of participatory events was mainly for instrumental reasons. The other two rationales for involving stakeholders which are the normative and substantial rationales were ignored.

On the other hand, as earlier mentioned participation in the BALTCICA project was a bit different. First of all, the description of flood risks as well as sea level rise and other expected impacts due to climate change, was based more on narratives. The scenarios were designed using simple literary text in the form of a fictitious story depicting how the future may look like in 100 years following different pathways. Hence no complex scientific information was used. According to the Danish Board of Technology, citizens are not only looked on as receivers of information and expert knowledge, but should make useful and necessary contributions to technology assessment (Anderssen and Jaeger 1999). Such a conception could easily be inferred from some of the themes of the Kalundborg workshop which goes as follows,

If the meetings are carefully organized and the relevant stakeholders are invited, the process can produce valuable advice to politicians and decision makers (DBT video records).

This clearly illustrates an inclusive and opened-up approach to decision making that recognizes the value of the knowledge possessed by other stakeholders as well as fulfills the normative, substantive and instrumental rationales of public participation. (Stirling 2007)

6.3.1 Reliance on scientific risk conceptions.

In the participatory events organized during the SEAREG project, there was more reliance on scientific and experience based conceptions of floods. This could be seen in the design of scenarios that were made up of climate models, with mathematical calculations and scientific formulas in engaging stakeholders and the public. Projections of future sea level rise, temperatures, precipitation and other weather conditions were all defined in figures. Furthermore, there was the use of maps and Geographic Information Systems (GIS), computer generated graphs and figures in describing the various future scenarios as well as the potential risk zones (Meier et al. 2006). The two flood situations used in the GIS

assessment where the 100 year flood and the maximum probable flood which correspond to the following in lake Malaren's height system; 100year flood is at a level of 4.80m or 0.65m over the lake's mean water level, maximum probable flood is at 5.63m or 1.48m over mean water level. An overview assessment of the Baltic coast areas and Lake Malaren was done using a regional GIS (Geographic Information Systems) model with a scale of 1:50,000. The GIS model's vertical accuracy was 0.5m, where as the horizontal grid length 50-500. These resulting assessments were therefore uncertain and could only be used for the general reflections. However, this model enabled the production of detailed maps of potential risk zones as well as determines a vulnerability assessment of the local communities (Viehauser et al, 2006). If such highly scientific information with quantitative data was used in these participatory events, it is due to the fact that spatial planners and other stakeholders were expected to have the knowledge, skills and experience in handling such information.

6.3.2 Reliance on narratives of the future.

The scenario workshop that took place in Kalundborg was open not just to stakeholders who may possess a certain amount of knowledge in order to participate, but also to the lay public. This was based on narratives of three different scenarios of climate change to enable participants to formulate their own visions and action plans. These scenarios are part of the A2 development scenario which has the largest emission of greenhouse gases and it is the worst of the two scenarios recommended by the Danish government for planning purposes. The risks of floods and sea level rise are described in a narrative format with less use of calculations, scientific jargons and figures. These narratives sought to describe the situation in a region situated between Tisso in the east and Jammer land Bugt in the west, in about 80 years when the climate must have changed according to predictions from the IPCC (BALTCICA²).

It should be recalled that these narratives were aimed at stimulating thoughts and ideas from participants at the scenario workshop that took place at Kalundborg. Three, future scenarios of events that are to take place by the year 2091 are described in the form of observations and impressions of a journalist. She begins by describing a "laissez faire scenario" in which no collective effort is made at adapting the development of the local community to climate change. They are as follows.

No coastal Protection beyond initiatives that have already been implemented or adopted i.e. coastal protection is left to the individual landowners and urban land associations. No changes to land use i.e. basically no changes to urban areas, holiday home areas and agricultural areas

unless required. No initiatives in response to the consequences of changes in precipitation conditions, (DBT, introduction to the scenarios p.5). She goes further in describing how rivers such as the Halleby will run into a shape she calls "The Bottle", which is when the river mouth moves north and the coast line gradually moves inland due to the rise in sea level. Letting things slide into a laissez faire scenario without taking any actions as described above will affect all sectors of the society with farmers and owners of holiday homes to be one of the hardest hit. She ends this scenario by raising some pertinent questions on where to go from here, they include; "What about the future? What should we do with the remaining holiday cottage areas that are becoming increasingly endangered?"(BALTCICA², p.8). Such questions help in stimulating ideas about the future if collective efforts are to be initiated. The future will mean choosing among two alternative pathways, either to protect the society against the impacts of climate change or to adapt to it.

She begins with a protection scenario in which in order to protect the community against climate change some possible actions are proposed. They include protecting the holiday homes and agricultural areas against future floods as well as the construction of dykes to protect river banks, pumping of sand to protect beaches and draining holiday home areas. However, in order to fulfill these tasks, other questions are raised. They include "How much longer will we be able to protect the area against the sea and rising ground water?" Should we build dykes out towards the sea when the pumping of sand is no longer sufficient? And if so who should pay? Is a holiday home area that is barricaded in between dykes on all sides at all attractive and worth preserving? (BALTCICA², Introduction to the scenarios p.10).

With such questions in mind another scenario is introduced which advises that, instead of protecting or trying to fight climate change, citizens are better off adapting to it. This will entail the re-evaluation of current land use areas that are expected to be affected by floods, change of agricultural methods in order to take into account new weather conditions and other factors such as leaching of nutrients and emission of green house gases. More focus will be placed on the natural environment with urban communities adapted to changes in climatic conditions.

Hard choices will have to be made in order to adapt to climate change. Most policies will not be beneficial to every individual but priorities will have to be made, which is the reason why it is very important for every stakeholder to be involved.

As seen above, the scenarios were based on narratives, making it easier for the lay public to understand and develop future strategies. Furthermore, expected weather conditions were described using simple expressions such as,

“Heavy precipitation in excess of 80mm over a period of 48 hours leading to drastically increased water levels”

“Water levels peaked at one and a half meters over the daily water level for over an hour”, (BALTCICA, b, p.5). In order to facilitate the public’s understanding and participation, all uncertainties were thoroughly explained (in writing and by word of mouth) and this was accepted as a condition by participants, (interview 4).

Within the three different scenarios described above, certain salient points concerning adaptation to climate change could be noted. First of all, the problem of cost is brought up in all the various scenarios. Furthermore any adaptation strategy must be effective and efficient, and fairness is also seen as being very important especially as certain strategies could lead to disparities in the bearing of costs and benefits that could cause outrage.

As mentioned earlier, scenarios could basically take two forms, a quantitative form which relies on the use of scientific models and a qualitative form which captures other factors influencing the future such as system shifts and surprises or other factors that cannot be quantified such as cultural values and institutional features (Swat et al, 2004).

6.4.1 Informing the Public or Including the Public in discussions on the future.

Judging from the conceptions of both flood risks and stakeholders in the above participatory events organized within the SEAREG and the BALTCICA project, two main observations can be made. From an evaluative point of view, on the one hand, there is the use of established, narrow, rigid, quantitative, opaque, exclusive, expert-based and analytically rigorous models of stakeholder-involvement in the SEAREG project. On the other hand we see the use of relatively new, qualitative, sensitive, inclusive, transparent, deliberative and democratically legitimate processes of stakeholder involvement in the BALTCICA project which fulfills most of the qualities of a sound participatory process, (Stirling, 2007). Also, it could be said that the SEAREG project relied more on the precaution based approach to managing flood risks. Hence one of the aims was to develop precautionary measures and substitutes. Risk management tools such as constant monitoring of potential side effects, promoting diversity and flexibility. Capacity building for organizational competence was prioritized (Renn and Klinke 2002). This explains why participation was limited mostly to spatial planners who were expected to integrate climate change into the spatial planning of communities.

On the other hand, in the BALTCICA project, the discourse based approach to risk management was adopted. According to Renn and Klinke, this approach is particularly suitable when the potential for wide ranging impacts is ignored due to delayed effects and uncertainties, as in the case of climate change. Furthermore, the hazardous nature of the risk involved in climate change is mostly built upon how they are perceived by the public, thus broad stakeholder participation is therefore important.

Participation as a concept in itself is very problematic; it is defined and used differently in different circumstances. These differences range from seeing participation as a passive event in which stakeholders are seen as recipients of information to more interactive processes wherein participants can take part in the joint analysis of problems and exercise greater control over decisions (Few et. al, 2007). Such differences as mentioned above clearly have consequences. Every good participatory process must allow for direct participation of citizens on equal grounds in face-to-face discussions with both experts and citizens disputing evidence and shaping the agenda (Fiorino, 1990). However, this was never the case in the SEAREG wherein, in order to obtain particular results, approaches of stakeholder involvement were streamlined to avoid different models leading to different results. Such a technical managerialist style of top-down decision making will only result in an illusory consensus due more to the exercise of institutional power rather than the exercise of power of reasoned public conversations (Few et al, 2007).

This gives the agency organizing the event more power not only to control the whole process but also to contain the participation of the stakeholders in order to arrive at pre-determined goals. Here, more emphasis is placed on the instrumental benefits of stakeholder involvement, while neglecting or ignoring the normative and substantial aspects of public participation. Principles of democratic emancipation, equity, equality, social justice and the empowerment of citizens are clearly set aside in order to push through particular decisions. However, one other handicap of such a top-down process is the fact that, valuable social intelligence which may help in feeling knowledge gaps and determine areas of conflict to particular courses of action are missed (Stirling 2007). Climate change is still a very contentious social problem. Due to its uncertainties, questions such as who will adapt, to what and how remain difficult to be answered satisfactorily. Involving citizens will help in answering these questions, for they face these risks such as floods in their daily lives. Adaptation strategies do not only entail costs, they involve fundamental changes in current day-to-day activities and lifestyles. Citizens should be given the opportunity to make proposals as well as cross examine experts.

Only through such a way can authentic and robust outcomes be achieved from any participatory process (Stirling 2007).

After the scenario workshop that took place in Kalundborg, most participants came out satisfied and expressed more confidence in themselves as well as hopes for the future. Below are a few impressions from participants recorded after the workshop;

It is really good to hear other people's opinions, as a farmer, I expect to be one of the most affected when the sea level begins to rise, then it is important to know that I have support from other local citizens for actions to be taken that I find necessary and that is what impressed me most, the unity in the groups - also concerning those that I would normally disagree with, (DBT audio-visual recording).

A municipal councilor expressed that,

I was a bit skeptical when I looked at the material over, at my desk and again when I heard the introduction. That was quite a thing and a mixed lot, but coming to the end of the day, I must admit it has been a fine experience and spectacular that so many stakeholders have been so enthusiastic about the subject, there are so many angles that I haven't noticed (DBT, audio-visual recording).

It can therefore be indicated from the above that, after taking part in a participatory event, citizens may gain confidence in themselves and enjoy the entire experience. This enables them to acquire decision making skills and also enforces them democratically.

In the onset, some citizens may be ignorant about the subject matter to be discussed and this may make them feel insecure. However, with the use of facilitators such as consultants and an enabling environment, citizens will become very engaged and actively take part in the deliberations as confirmed below;

It has been interesting to experience how engaged the participants have been, (BALTCICA project manager, courtesy of the DBT video recording).

NB. The above impressions are excerpts from an audio-visual recording of the kalundborg scenario workshop, produced by the Danish Board of Technology.

From the above, the different participatory approaches and models of both the SEAREG and BALTCICA have been explored. In the BALTCICA project the public or citizens have a

prominent role to play. This was not the case in the SEAREG project that instead preferred experts such as spatial planners. However, does the SEAREG's exclusion of the public tantamount to negative conceptions of the public? Did they see the public as being unable to understand or did they even have any conceptions of the public at all? However, this was far from the case because the SEAREG project was never intended to involve lay citizens. The main objective was to communicate with spatial planners and get feedbacks from them as well as to develop a decision making framework that could assist them in their daily task. This objective was well attained because at the end of the project, a decision support frame was developed which serves as a tool for assessing sea level rise impacts in the Baltic Sea region (<http://www.gtk.fi/slr/>). Looking at such circumstances therefore, it would be unfair to conclude or see the exclusion of lay citizens as due to negative conceptions. As seen from the above therefore both projects had different objectives even though it could be said, their objectives and results complement one another. Hence they should both be seen as part of the discursive processes currently taking place within the Baltic Sea region on finding suitable ways of adapting to climate change. This could also account for the use of different models of stakeholder involvement in both cases, with the SEAREG project relying on old or traditional models such as roundtables, seminars and conferences and the BALTCICA project adopting relatively new models such as scenario workshops and citizens conferences.

Chapter 7

Conclusion

In finding suitable ways of adapting to climate change in the Baltic Sea region, several models have been used to involve stakeholders. They include seminars, roundtables, conferences, newsletters, interviews, scenario workshops, and citizen's conferences. The choice of which model to use depends on the very objective of the initiative and the number of stakeholders to be involved. Excluding the lay public in some decision making events is not tantamount to conceiving them as ignorant or unknowledgeable enough, except in circumstances where no other possibilities exist for the public to express their own opinions. Even the public would prefer certain complex issues to be handled by experts in particular domains especially if they can trust them.

The design of participatory events as well as the definition of stakeholders to be invited should also be based on the nature of the information to be communicated or debated upon. In the case where the information to be deliberated upon involves a lot of technical material, participation should be limited to those with the necessary background necessary to understand such information. However, where the risks involved are more likely to create public sensitivities, a broken down or simplified version of the issues involved should be used in communicating with the public. This will enable their understanding and facilitate their participation. This therefore means that participatory events should be organized based on the targeted audience. However, due to the benefits of involving the public in decision making, both expert-based and citizen-based participatory events should be conducted in synergy.

Climate change is a risk that involves lots of uncertainties, hence inputs from both the lay public and experts are necessary to understand some of these uncertainties.

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Abbreviations

DBT – Danish Board of Technology

IPCC - Inter-governmental Panel on Climate Change

SEAREG- Sea Level Change Affecting the Spatial Development in the Baltic Sea Region

BALTCICA-Climate Change: Impacts, Costs and Adaptation in the Baltic Sea Region

