



# Institutional capacity-building for targeting sea-level rise in the climate adaptation of Swedish coastal zone management. Lessons from Coastby

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## ABSTRACT

For coastal areas across the world, sea-level rise and problems of coastal erosion and coastal flooding are expected to increase over the next hundred years. At the same time political pressure for continued waterfront planning and development of coastal areas threatens to increase our societal vulnerability, and necessitating climate adaptation in coastal zone management. The institutional dimension has been identified as important for ensuring a more robust adaptation to both current climate variability and future climate change. In this paper, lessons regarding institutional constraints for climate adaptation are drawn from a Swedish case-study on local coastal zone management, illustrating the diverse and complex nature of institutional capacity-building. The aim of the paper is to illustrate critical factors that from an institutional perspective condition the capacity to achieve a more integrated, strategic and proactive climate adaptation and for turning “rules on paper” to working practice, based on case-study experiences from Coastby. Following and expanding a framework for analysing institutional capacity-building we learnt that a selective few key actors had played a critical role in building a strong external networking capacity with a flip-side in terms of a weak internal coordinating capacity and lack of mutual ownership of coastal erosion between sectoral units e.g. risk-management, planning and environment. We also found a weak vertical administrative interplay and lack of formal coherent policy, procedures and regulations for managing coastal erosion between local, regional and national administrations. Further, tensions and trade-offs between policy-agendas, values and political priorities posed a barrier for capacity-building in coastal zone management which calls for processes to mediate conflicting priorities in policy-making, planning and decision-making. The case-study suggests that the ability of the political administrative system to acknowledge and deal with institutional conflicts is a critical condition for ensuring an integrated and proactive climate adaptation in coastal zone management.

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## 1. Introduction

It is today widely acknowledged that climate adaptation is part and parcel of climate policy alongside mitigation. Adapting to climate change is needed under any future climate scenario produced by the Intergovernmental Panel of Climate Change (IPCC, 2007; Pielke et al., 2007; Burton, 2004). For coastal areas across the world sea-level rise and problems of coastal erosion and coastal flooding are expected to increase over the next hundred years (Parry et al., 2007). In a European perspective it has been estimated that the areas of lost or severely damaged land due to coastal erosion amounts to 15 km<sup>2</sup> per year at the same time as the

population in coastal areas has doubled in the last 50 years (Salman et al., 2004). In a Swedish perspective 1800 km of the coast-line is at risk for increased erosion due to climate change, threatening settlements, infrastructure, sites for recreation and tourism, valuable land and natural habitats (SOU, 2007:60). The political pressure for continued waterfront plans and development of coastal areas risk increasing our societal vulnerability in a changing climate and necessitates climate adaptation in coastal zone management.

Speaking in terms of climate policy integration (CPI) entails the mainstreaming of climate change considerations in existing and/or new policies—as well as concrete planning and decision-making practices—at different administrative and political scales as well as in different geographical settings (Urwin and Jordan, 2008; Nilsson and Nilsson, 2005). In order to strengthen current adaptation practices, knowledge of the adaptation process in terms of when, why and under what conditions climate adaptation occurs as well as what influence the success or failure of different adaptation strategies is

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pertinent. Here the concept of adaptive capacity is important since it specifically deals with critical factors influencing the societal ability to respond to climate change (Adger et al., 2007; Füssel and Klein, 2006; Fenech et al., 2004). One such critical factor is the institutional dimension where there is a need for increased knowledge on how institutional aspects limit or enable the mainstreaming of climate change considerations in policy-making, planning and decision-making in different settings (Eakin and Lemos, 2010; Inderberg and Eikeland, 2009; Adger et al., 2007; O'Brien et al., 2006; Næss et al., 2005).

We also know from previous studies that climate adaptation can take technological, institutional and behavioural forms and be related to current climate variability and individual extreme events as well as to expected future climate change (Adger et al., 2007; Wall and Marzall, 2006). Depending on its design, it can either favour a reactive “business as usual” approach within the current development paradigm or it can be directed towards taking a more integrated and proactive approach, highlighting e.g. the need for more fundamental societal transformation and critically reflecting upon the social, political and environmental implications of current adaptation practices (Brown, 2009; Eriksen and O'Brien, 2007). In this paper, lessons regarding institutional constraints for climate adaptation are drawn from a case-study on coastal zone management in a Swedish municipality with the assumed name of Coastby<sup>1</sup> which illustrates the diverse and complex nature of institutional capacity-building. Besides having a recently adopted policy for integrated coastal zone management (ICZM), Coastby has been referred to by Swedish authorities as an example of good practice erosion management where “far-sighted planning and long-term measures have been taken” (SGI/SRV, 2008). *The aim of this paper* is to illustrate critical factors that from an institutional perspective condition the capacity to achieve a more integrated, strategic and proactive climate adaptation and for turning “rules on paper” to working practice in Coastby.

The following three sections deal with the case-study context, methodology and definitions of institutional capacity-building. Thereafter follows the presentation of our empirical results in section five where the analysis is presented in four thematic subsections representing critical factors for institutional capacity-building in Coastby. The *first* deals with the distribution of responsibility and organisation of erosion management within the local administration and the *second* illustrate the lack of cross-sectoral interaction, mutual ownership and internal networking capacity. The *third* explores the vertical administrative interplay, today characterised by tensions, lack of coordination and coherent policy-regulations. The *fourth* pinpoints how conflicting norms, values and priorities in local policy-making, planning and decision-making challenge assumptions, goals and ambitions within ICZM. In the final section six, conclusions are drawn and comparisons with parallel or previous studies are made.

## 2. Case-study context: vulnerability and adaptation to climate change in managing Swedish coastal erosion

After the severe January-storm that struck Sweden in 2005, the Committee on Climate and Vulnerability was formed with the task to assess Swedish vulnerability to climate change and its local and regional consequences. The Final Report, presented in 2007, showed that the coast of southern Sweden is currently exposed to erosion,

flooding and high levels of ground-water and such local vulnerability and that these problems are expected to increase in the coming 100 years due to future climate change. Coastal erosion thus involves temporary erosion—i.e. seasonal variation due to storms—and long-term erosion related to changes in climate (SOU, 2007:60). In the years following the report, climate adaptation has increasingly been recognised as a policy issue that needs to be dealt with at national, regional and local levels in society. When it comes to coastal erosion and sea-level rise, as part of climate adaptation, the Swedish Geotechnical Institute (SGI) is the national authority in charge of coordinating erosion management. At the regional level the County Administrative Boards have the task to coordinate adaptation within each region. However, the main work of adapting to climate change by e.g. managing coastal erosion and sea-level rise is expected to take place at the local level where municipalities today—following the Planning and Building Act—have the responsibility to consider the consequences of climate change and climate risks in spatial planning.

In the municipality of Coastby, approaching coastal erosion and sea-level rise have a much longer history. Coastby is located in the south-eastern end of Sweden, takes up 355 km<sup>2</sup> of land and is populated by 27,200 inhabitants. The 4 miles long coast is an invaluable local asset in terms of recreation, employment and residential areas. Along the coast-line we find natural reserves such as Natura 2000, summer cottages, pastures and harbours. The awareness of eroding land in Coastby dates back to the 1820's but erosion was not officially recognised as a public problem until the 1950's (SGI/SRV, 2008; Coastby, 2008). Investigations have shown that it is mainly four areas that are severely exposed: east of the sewage treatment work, Coastby Sandskog – an area for tourism, summer cottages, camping and recreation, the harbour area and, finally, a former bathing-beach/natural reserve. During the years buildings, facilities, infrastructure and areas of nature protection have been threatened by erosion and large areas of land have disappeared into the sea. Practically the whole coast-line is more or less in danger due to future sea-level rise (Coastby, 2007a, 2004). Currently the coast-line is protected by a number of solid constructions e.g. breakwaters and groins as well as private measures of piling rocks undertaken by anxious land-owners. The building of harbours and solid constructions to protect the coast-line has drastically reduced the availability of sand and created new problems by moving erosion downstream (Coastby, 2007b). Despite this, policy documents and interviews show that erosion management in the form of technical measures and hard shoreline protection has been the preferred approach since the first policy-framework for managing erosion was laid out in the late 1980's. Suggestions of “working with nature” and removing settlements at risk coming from an expert committee of local officials and researchers, where downplayed by politicians (Storbjörk and Hedrén, in press).

The former reactive approach has recently been questioned, and a new policy was processed in 2007 and accepted by the local government council in September 2008. The new policy responded to the need of a more long-term and holistic approach to coastal erosion, based on principles of integrated coastal zone management (ICZM) (Coastby, 2008). The point is to address social, cultural, economic and environmental sustainability and both present and future needs in society (EC COM/2000/547; EC 2002/413/EC). The policy proposes a proactive approach in areas where further erosion would have severe consequences for the public or unacceptable loss of valuable land such as settlements, buildings, infrastructure and sites for nature protection, recreation and tourism. The new policy is rather strict in stating that solid constructions are only to be considered “after alternatives with less environmental impact have been evaluated and eliminated” (Coastby, 2008). While

<sup>1</sup> The choice to use an assumed name was made by the authors, and motivated by the fact that somewhat sensitive personal reflections are sometimes allowed in the analyses. None of the interviewees expressed doubts of standing by what they have said in the discussions after each interview.

representing a promising policy-shift, the case-study revealed several institutional constraints that need to be dealt with in order to take the steps from policy on paper to policy in practice. But before presenting our empirical results, we discuss our methodological approach and theoretical perspectives.

### 3. Methodological approach

The case-study of climate adaptation and coastal erosion in Coastby was based on a combination of interviews and document analyses. The interviews were based on a desire to get in touch with a broad sample of actors, representing different perspectives and experiences of managing coastal erosion. Some operate at local levels and others at regional and national levels of society. In this way interviews have allowed for a focus on multiple realities, perceptions and experiences among key actors (Stake, 1995; Merriam, 1994). The selection was based on the snowball-technique, allowing a gradual mapping of relevant key actors involved in the process of adapting to coastal erosion and sea-level rise in Coastby. All in all eight interviews were done (Table 1).

Unfortunately singular representatives of the planning unit directed us to the head of the unit who declined partaking in interviews due to work overload. This was particularly unfortunate since the critical role of planning is emphasised in the other interviews.

The semi-structured qualitative interviews were conducted in 2008, based on open-ended questions formulated in an interview-guide as a basis for the interviews. The guide included questions e.g. perceived vulnerability to climate change, coastal erosion and sea-level rise, priority on the political/administrative agenda, who the key actors are at local and regional/national levels, to what extent collaboration takes place, measures taken and planned in coastal zone management, the role of knowledge/uncertainties and lessons of drivers/barriers for climate adaptation in coastal zones. The interviews lasted between 1½ to 2 h and were recorded and transcribed. The analysis has been carried out in two steps, first a meaning concentration of the transcribed text where the specific contents in the interviews and different reoccurring analytical themes featuring in the responses were put in focus. Second, for this paper, we have chosen to highlight out themes with a particular bearing on institutional dynamics for more thorough analysis. When presenting our empirical results in Section 5, statements and reflections from involved key actors are put in focus. Here we have chosen to represent a combination of individual viewpoints and more general patterns. Although allowing singular representations—where the analysis reflects individual views, perspectives and

experiences of adapting to coastal erosion—we have generally sought to increase credence of interpretations through data source triangulation, i.e. comparing statements from different interviews. Text analysis has also been made of a selection of local documents, which allows some sense of methodological triangulation (Silverman, 1993; Stake, 1995). By sending a preliminary version of the analysis to the interviewees for them to reflect upon, a “member-checking” triangulation has also taken place (Silverman, 1993).

### 4. Defining institutional capacity-building

Despite the fact that the institutional dimension of adaptive capacity—often expressed in terms of institutional capacity-building—is seen as decisive for the practice of climate adaptation, there is an incongruity in definitions and in the ways institutional capacity-building is quantitatively and qualitatively assessed in studies on adaptive capacity. Within this paper we have followed March and Olsen in their definition of institutions as rules, meaning:

...the routines, procedures, conventions, roles, strategies, organisational forms, and technologies around which political activity is constructed. We also mean the beliefs, paradigms, codes, cultures and knowledge that surround, support, elaborate, and contradict those roles and routines (March and Olsen, 1989, p 22).

Institutional aspects thus encompass both *formal* aspects like procedures, laws and regulations etc. that are visible and tangible and *informal* aspects such as values, norms, traditions, codes and conducts that are tacit (Young, 2002; Buitelaar et al., 2007; Pelling et al., 2008; Inderberg and Eikeland, 2009). The focus is further, as stated by Young and others, on “rules in use”—representing working practices—rather than “rules on paper” (Young, 2002). Within institutional analysis, different views on the classic structure vs. actor distinction within social science can be found. Some regard institutions solely as stable, path- and place- dependent structures for human interaction (Arts and Leroy, 2006) while others emphasise the transformative capacity of institutions. Buitelaar et al. 2007 speak in terms of transformation by highlighting the role of strong actors as “bricoleurs” that manoeuvre change by building identity, leadership and operational competence and also illustrating the capacity to learn through institutional reflection (Buitelaar et al., 2007). Although many authors propose a clear demarcation between institutions as “rules in use” and organisations as material entity of actors guided by institutions, the role of actors and organisations is nonetheless, by several writers, regarded as an important part of an institutional approach (March and Olsen, 1989; Young, 2002; Briassoulis, 2004; Pelling et al., 2008).

Willems and Baumert have distinguished five interdependent aspects of institutional capacity-building that are important for how institutions operate, are maintained and strengthen the integration of climate change considerations in policy-making, planning and decision-making (Willems and Baumert, 2003). The *first* relates to skills and performance of individual actors and the *second* to organisational management capacity. Within both of these, e.g. incentives, mandates, skills, staff and financial resources are important and, for organisational performance, also integration, cooperation and support within the organisational structure. The broader institutional context consists of *third*, the networking capacity between relevant actors and organisations in the form of horizontal and vertical cooperation, *fourth*, the regulatory framework, i.e. laws, rules and regulations for public governance and *five*, the social norms, values and practices that can either support or challenge climate change initiatives (Willems and Baumert, 2003). These aspects are assumed to influence the ability to move from rhetoric to action in

**Table 1**  
Respondents in Coastby.

Number	Respondent
1	Former Head of the technical unit/Current Director of strategic affairs
2	Official with strategic responsibility for environment and climate
3	Politician/Former chair of the Local Environmental Board
4	Politician/Current chair of the Local Environmental Board
5	Official formerly in charge of erosion at The County Administrative Board/regional level
6	Official in charge of erosion at Swedish Geotechnical Institute/national level
7	Accredited Professor with a long-term involvement in erosion management
8	Current leader of a local action-group/former leader of the Local Landowners Association

climate change policy-integration, thus building institutional capacity. Within this paper, the main focus of the analysis will be on level 1–4. Social norms, values and practices are only touched upon indirectly, through the eyes and reflections of the interviewed key actors. Conclusions drawn from the Coastby-study points to certain additions and adjustments of the aspects previously introduced. But first we turn to the case-study analysis and the presentation of our empirical findings.

## 5. The Coastby analysis: institutional capacity-building in climate adaptation

The ICZM-policy adopted in Coastby in 2008 is promising in several of its assumptions and suggestions and—if properly implemented—would involve a clear policy-shift towards an integrated, strategic and proactive coastal zone management. In previous studies on ICZM challenges of implementation have been raised (McKenna et al., 2008; Deboudt et al., 2008; McFadden, 2007; Christie, 2005; Tegner Anker et al., 2004). This Swedish case-study analysis shows four main institutional constraints for taking a more integrated approach to climate adaptation in current coastal zone management in Coastby. The following thematic analysis of critical aspects is divided in four subsections, concerning agency, responsibility, ownership and, finally, colliding policy-agendas, values and priorities.

### 5.1. Agency: a troika of key actors

There appeared to be several drivers at the wheel in managing coastal erosion in Coastby. Several interviewees illustrated that in the local administration, erosion had been the formal responsibility of the technical unit until a reorganisation in 2007, aimed at strengthening the municipal executive board in relation to sector boards. The approach taken has been characterised by strong personal engagement, strategic thinking and acting from the former head of the technical unit, since 2007 acting as Director of strategic affairs, bearing a long-term interest and personal engagement for coastal zone management. The involvement stretched back to the 1960's and with over 20 years of formal responsibility for erosion, the head undoubtedly played a major driving role, which several interviewees certified:

It is all about the individuals holding important positions. Some municipalities at risk have a head who sits on his butt thinking his desk should be shining clean and therefore dismisses challenging issues. In Coastby, he has pressed for attention and kept the ball rolling through the years. It takes a few enthusiastic actors at different positions to drive such processes.<sup>2</sup>

Further, there has been a team of three officials, one working with concrete operations and maintenance of protective measures, the other with EU-projects and the third with strategic communication such as the new policy, background material, producing a local exhibition etc. The work of the technical unit has been focused on building internal capacity in terms, of one the one hand, increased knowledge by testing the effectiveness and relevance of technical constructs and measures, monitoring coast-line change and, on the other hand, networking and exchanging experiences with other municipalities through co-arranging conferences, annual coastal meetings and activities in the context of *Erosionsskadecentrum* (EC) (Coastby, 2007a; 2007b).<sup>3</sup> According to the head-official, who is also chair in EC, the centre is a joint venture between twenty

municipalities and an Engineering Science Council, with the aim to “develop flexible, cost-efficient and environmentally adjusted techniques” for managing coastal erosion (*Erosionsskadecentrum*).<sup>4</sup>

Looking at drivers outside of the formal domains of the local administration, interviews indicate that it was reasonable to speak of a strategic troika of key actors that have approached coastal erosion from complementary positions with different mandates, channels and resources at their disposal.<sup>5</sup> First there was the hitherto introduced *strategic and committed head-official* driving change with the benediction of the rest of the municipal administration and local politicians. Second there was *the accredited professor* positioned at a nearby University who in his own words has given credibility to the process of coastal management by bringing relevant knowledge from the scientific frontline:

I have been a part of investigations and lobbying to increase reliability. There is a lack of critical mass regarding erosion and I want to change the agenda. It lies as much in my own interest as a researcher as in the interest of the municipalities at risk.<sup>6</sup>

The third actor was *the fighter on the barricades*, a former real-estate agent with a long past in the local land-owners association and a more recent new role as leader of a local action group, who eagerly and stubbornly contacted decision-makers at national level in an attempt to spread knowledge, engagement and kick-start activities:

I have been able to drive the more rowdy activities. I keep lifting the receiver and phone whoever we need. Without these mischievous acts I don't think we would have been where we are today. I have made many enemies but I enjoy every second when the big-shots put the phone away whispering “it is that guy from Tomelilla again”.<sup>7</sup>

Taken together, these key actors have made significant efforts to get an increased awareness and understanding of coastal erosion, from their different positions and channels, according to web-site documentation of the EC and the local action-group (<http://www.erosionsskadecentrum.se>; <http://www.reddaloderupsstrandbad.se>), using both formal and informal means of influence. At the same time the interviewees speak of the difficulties in spreading responsibility, raising awareness, interest and knowledge regarding coastal erosion in the local administration at large, which today acts as an institutional barrier for a more integrated climate adaptation.

### 5.2. Responsibility: lack of integrated cross-sectoral approaches

The cross-cutting nature of climate change calls for cross-sectoral learning and reflexive, dynamic and iterative decision-making (Tompkins, 2005; Berkhout et al., 2006; Lidskog and Uggla, 2009; Winsvold et al., 2009; Storbjörk, 2010) but the case-study interviews pointed to a process of building capacity among a specialised few, indicating inadequate contact, knowledge exchange and learning between units working with coastal erosion, planning and environmental protection at the local level. That responsibility for erosion had so strongly been placed in the hands of the technical unit appears to have had a flip-side in lack of common acceptance and ownership where erosion had been regarded as someone else's task and as predominantly a technical issue. Even if other units had not necessarily said no – explicitly dismissing the relevance – they on the other hand had not actively said yes either. Several

<sup>4</sup> Respondent 1.

<sup>5</sup> Respondent 2, 3, 4 and 5.

<sup>6</sup> Respondent 7.

<sup>7</sup> Respondent 8.

<sup>2</sup> Respondents 8, 7, 6, 5, 4, 3 and 2.

<sup>3</sup> Respondents 1, 2, 3 and 4.



interviews bore witness of this and indicated that cross-sectoral approaches were much more complicated to administer as they activate differences in professional interests and priorities, administrative cultures and goals, sometimes encouraging isolationism and professional rivalry rather than a willingness to identify common grounds:

It is hard to implement an integrated approach in real life. Damned if the technical head tells the head of environment or planning what to do and the contrary. /.../ Municipalities are stuck in sectors while the coastal zone management calls for more integrated solutions and administrations. The problem is that it gets all the more complicated to engage other units and risk them telling us what to do. It is easier to solve problems separately and then go home. It's damned human to feel that way.<sup>8</sup>

Another version was that cross-sectoral approaches are dependent upon the attitudes of individuals rather than administrative borders and cultures *per se*. According to the former head of the technical unit:

The watertight bulkhead between planning and risk-management has more to do with individuals. We have had good collaboration with some planners while there have been conflicts with others. It is more related to individuals than organisations.<sup>9</sup>

Difficulties in communicating and collaborating across borders did not only concern local officials. An assessment of erosion management made by accountants Ernst & Young gave a good grade to the technical unit for its engagement and initiatives but also directed critique to politicians for not working enough with steering and follow-up (Ernst and Young, 2007). With the new policy and its ambitions of ICZM—calling for a more long-term perspective and a more inclusive policy, planning and implementation process in the local administration—it was becoming increasingly clear that managing coastal erosion needed to be a dynamic, interdisciplinary and continuous process, aimed to further a sustainable use of coastal areas by balancing economic, social and cultural goals as well as environmental and recreational interests (Coastby, 2007a). This means that from now on officials from different administrative units need to jointly formulate and implement the policy-goals so that a more integrated approach is made possible (Coastby, 2008). The importance of shared responsibilities, changing current working practices and internal routines to enhance cross-sectoral interaction and communication in adapting to coastal erosion is clearly warranted but also—by tradition—difficult. Besides these internal administrative barriers for adapting to coastal erosion, institutional complications were also found in the vertical administrative interplay.

### 5.3. Ownership: challenging vertical administrative interplay

Local key actors expressed a clear frustration by the experienced lack of formal regulations, support and engagement from regional and national authorities and that, in their view, coastal erosion was seen as a problem for the southern part of Sweden rather than a national concern.<sup>10</sup> According to the head-official, the previous lack of national interest for coastal erosion was one reason why Coastby had chosen to be engaged in EU-level initiatives and research projects e.g. EUROSION, SENCORE, MESSINA on coastal

erosion, in some sense circumventing the national level. This has, according to local interviewees, meant that managing coastal erosion has been dependent upon the engagement of particularly exposed and proactive municipalities that have chosen to act on their own. Instead of tangible formal procedures, laws and regulations guiding working practice as well as mutual knowledge exchange, the vertical administrative interplay has, according to local experience, been about lobbying:

I thought focus would be on finding technical solutions. I never believed that so much energy needed to be put on bureaucracy. Success is not so much about factual matters as it is about selling the idea to authorities, to lob for acceptance and priority. /.../ The rules of the game is that you need to know who is grandfather to whom and whose wife works with this and that. It is crazy but that is how it works.<sup>11</sup>

Due to local pressure national representatives frequently has featured on the local scene but their immediate promises have not triggered enough practical results according to local actors. All too often the main result is new photos taken at the beaches of top-politicians, director generals and the Swedish king, their faces expressing concern, chock and despair.<sup>12</sup> Coastby was however given state funding for testing new techniques and measures in the 1990's (SGI/SRV, 2008). Further, the assumption among interviewees was that local lobbying played a decisive role when the Swedish Geotechnical Institute (SGI) was accorded a coordinating responsibility for coastal erosion (Coastby, 2008).

Since 2003, SGI has arranged coastal meetings, seminars and workshops and worked for an increased awareness, knowledge and understanding among regional and national authorities regarding coastal erosion in current and future climate. A number of reports and research summaries have been produced (SGI, 2003; Lerman and Rydell, 2003; Rankka and Rydell, 2005; SGI/SRV, 2008). In 2007, matters of coastal erosion were highlighted in the Swedish Official Report on Climate and Vulnerability (SOU, 2007:60). According to interviews with a representative from SGI, coastal erosion have been, despite the local view, matters of rising national interest and focus.<sup>13</sup> Here the views of local and national actors thus diverged. On a regional level, the County Administrative Board (CAB) has been involved in a project aimed at clarifying how sea-level rise, flooding and coastal erosion can be dealt with in spatial planning (CAB, 2008). Several actors discussed the difficulty of producing regional guidelines for climate change and coastal zone management, due to inherent roles and traditions of regional and local actors. The official from the CAB explained:

Municipalities both call for guidelines and claim their independence. It is tricky. We are not ready to say “you have to plan for 1 m sea-level rise and cannot build within this area” because we have to balance our role as supervisors with the local monopoly of planning. I think that the process we have started must and eventually will lead to recommendations but it is a process.<sup>14</sup>

Local actors on their behalf experienced the lack of an explicit regional policy regarding permits for concrete measures of erosion management and strongly claimed that the views, interpretations and knowledge of singular administrative officials largely affected the position of the CAB rather than any written agreed-upon policy.

<sup>8</sup> Respondent 7. See also 2 and 6.

<sup>9</sup> Respondent 1.

<sup>10</sup> Respondent 1, 2, 3, 4, 7 and 8.

<sup>11</sup> Respondent 1. See also 2, 7 and 8.

<sup>12</sup> Respondent 1, 2, 3, 4 and 8.

<sup>13</sup> Respondent 6.

<sup>14</sup> Respondent 5. See also 6 and 7.

This was stated in several interviews, and confirmed in the interview with the CAB:

Singular administrative officials have too much power. Instead of having a common policy you have a bunch of officials with their personal opinions. The first one you speak to says “yes”, the other “no” and the third “maybe”. You never know beforehand.<sup>15</sup>

Another apparent barrier for a more robust vertical administrative interplay in erosion management was the lack of continuity for erosion management in many authorities, due to recurrent changes in staff with officials moving up the career ladder and changing positions.<sup>16</sup> Taken together, the vertical administrative interplay appeared to be troubled by tensions, lack of coordination and coherent policy-regulations between levels, even though promising signs were also found.

The previous subsections have mainly dealt with institutional capacity—or perhaps incapacity—emanating from the interaction between key actors at different levels of society and horizontally within the local administration. The last subsection targets institutional barriers pertaining to tensions and trade-offs between different policy-agendas, values and priorities.

#### 5.4. Colliding policy-agendas, values and priorities

Managing coastal erosion in Coastby was clearly burdened by tensions and trade-offs between different policy-agendas, values and priorities for how the coastal zone should be viewed and managed, suggesting that there was no unified view at hand. Tensions were expressed both in the administrative process of coordinating different sector interests at national and regional level and in local political priorities and was seen as particularly clear when concrete measures to combat erosion were discussed and decided upon. *First*, there was a division between those who believe that nature needs to have its course and those who believe that measures need to be taken to protect existing settlements and the future value of coast-lines for recreation and tourism. In the words of a representative from SGI, involved in the national level coordination of sector interests, mandates and perspectives:

Sometimes there are tensions when measures are proposed to be taken. From an environmental point of view, actors want to preserve and let erosion have its course while from a coastal management point of view there is a need to take concrete measures to protect societal values such as settlements and recreation areas. Their views diverge.<sup>17</sup>

Erosion managers on their behalf expressed concerns with the restrictive attitude of environmental advocates where the approach of letting nature take its course leads to the conclusion that erosion is not a problem in need of attention. In the eyes of one of the interviewees:

Large areas are Natura 2000 and big things can happen if a storm comes. A small line of dunes holds the sea at bay and we have summer cottages, roads etc. and if the dunes are lost then all hell breaks loose and you don't know what will happen. You can't go in with bulldozers in Natura 2000 but what do you do? Let nature take its course?<sup>18</sup>

The quote clearly illustrated the collision of formal institutional frameworks—Natura 2000 and ICZM—as well as values, and priorities between sector units. *Second*, colliding values and priorities were found amongst those eager to protect societal values by proclaiming the use of and trust in solid shoreline protection to keep the current levels of waterfront planning in risky but attractive areas *and* those who prefer relocation of risky settlements. In the perspective of the erosion managers it was—due to the ongoing pressure on waterfront planning combined with climate change—reasonable that we also reconsider where to live. In the new municipality policy of Coastby it was explicitly stated that considerations of climate change are to be taken by “as far as possible” planning settlements so that risks for damage are reduced. Development and exploitation “are to be avoided” in coastal areas that at present or in the future can be exposed to erosion or flooding. Further it was stated that to secure new settlements, local officials need to jointly determine a reasonable level of allowance without risks for future erosion or flooding (Coastby, 2007a). These joint activities had not yet come about and difficulties were expected in reaching such agreement:

The policy is rather strict and local officials have to agree where it is allowed to build. Let's say they end up at 4 m above sea-level, calculating with sea-level rise and extreme high-water levels. Along our coast-line you would have to go a long way inland to be secure. It is difficult to motivate for planners who plan settlements as close to the coast-line as possible for that is where people want to live.<sup>19</sup>

In concrete planning and decision-making, the perspectives of safety vs. scenery (Storbjörk, 2007) were likely to collide. Similar statements on needed approaches to waterfront planning were found in the regional document on rising sea levels and spatial planning, where it was suggested that no new settlement are placed in areas at risk (CAB, 2008). At the same time the report showed that in the region the total coastal zone area (0–5 m) where new settlements were planned, following local master plans, amounted to 17.4 km<sup>2</sup> (CAB, 2008).

The new policy in Coastby in many ways highlighted the need to take tough and long-term decisions. Several interviewees expressed concern of historical and current trends in planning as bad localisations have had devastating effects in different parts of the world throughout history. The key, according to the interviewees, was a more integrated and long-term perspective in planning:

Authorities speak of having a long-term perspective but erosion is not the only determining factor. With attractive location and high real-estate values it is easy to forget to look at what happens in 50 or 100 years in terms of flooding and sea-level rise and sometimes municipalities choose to stick their heads in the sand thinking that it won't happen now. The long-term perspectives are not always present.<sup>20</sup>

The need to increase awareness regarding the consequences of climate change among planners and decision-makers was seen as essential to counter the risk of short-term considerations. At large the interviews showed that the divergence in agendas, values and priorities between environmental officials, planners, decision-makers and risk-managers was strong where—to be stereotyped—environmental officials wanted nature to take its course, planners and decision-makers wanted a coastal zone policy open for interpretations finding ways to continue waterfront planning, and risk-managers wanted stricter levels of allowances and relocating risky settlements. Taken together these divergences calls for

<sup>15</sup> Respondent 1. See also 2, 5 and 7.

<sup>16</sup> Respondent 1, 2, 5, 7 and 8.

<sup>17</sup> Respondent 6. See also 5.

<sup>18</sup> Respondent 7.

<sup>19</sup> Respondent 2.

<sup>20</sup> Respondent 6. See also 1, 2 and 7.

processes that allow a coordination of agendas, values and priorities in adapting to coastal erosion and sea-level rise.

## 6. Conclusions

So what lessons can be drawn from the study in terms of critical factors that from an institutional perspective condition the capacity to achieve a more integrated climate adaptation in Swedish coastal zone management? Despite being a small municipality, Coastby has taken a proactive approach at the forefront of Swedish coastal zone management, facilitated by key actors with will, mandate, power, resource and competence to drive change from complementary positions. In the lack of previous national and regional initiatives, local key actors have set out their own rules and working practices by which new constellations and arenas for knowledge exchange and learning are created, indicating a strong external networking capacity. At the same time a weak coordinating capacity in the internal municipality administration was shown which posed a barrier in achieving a more integrated adaptation. The case-study thus supported previous conclusion that key actors play a critical role in driving change (Allman et al., 2004; Ivey et al., 2004; Tompkins, 2005; Bulkeley and Betsill, 2005; Wilson, 2006; Shepherd et al., 2006; Wall and Marzall, 2006) but with the important addition that *too much emphasis on strong singular actors in the local administration can also have a flip-side*. The performance of individual key actors in Coastby—sometimes titled “the one man show”—tended to hamper organisational performance and the necessary integration between sectoral units in the municipality administration as it led to a *lack of mutual responsibility for coastal erosion and inadequate contacts* between e.g. erosion managers, planners and environmental officials. Managing coastal erosion has so far been the exclusive concern of the technical unit with a predominant focus on technical fixes in the form of solid constructions. The recently adopted new policy represents a radical shift in rules on paper regarding both management strategies and internal organisational coordination. To what extent it also will transform the rules in use remains to be seen. Problems with cross-sectoral integration, mutual responsibility and learning in terms of interdepartmental rivalry, clashing professional cultures, traditions and knowledge claims has, in previous studies been identified as major challenges in building institutional capacity for climate adaptation (Ivey et al., 2004; Moser, 2005; Næss et al., 2005; Brooks et al., 2005; Tompkins, 2005; Berkhout et al., 2006; Wilson, 2006; Lidskog and Ugglå, 2009; Winsvold et al., 2009; Nicholson-Cole and O’Riordan, 2009; Glaas et al., 2010; Storbjörk, 2010) and in implementing integrated coastal zone management (Tegner Anker et al., 2004; Christie, 2005; McFadden, 2007; McKenna et al., 2008; Deboudt et al., 2008). Such barriers were also found in the Swedish case-study but with the important addition that *the individuals situated at the different positions might in practice have a greater impact on the extent of internal coordination than do administrative cultures and traditions per se*.

A further critical barrier was found in the *weak vertical administrative interplay and networking capacity* between national, regional and local actors. In other studies lack of communication, knowledge exchange and learning between societal levels has been shown to put an inhibiting spell on the capacity to manage the consequences of climate change (Næss et al., 2005; Tompkins, 2005; Bulkeley and Betsill, 2005; Shepherd et al., 2006; Crabbé and Robin, 2006; Few et al., 2007; Storbjörk, 2007; Keskitalo, 2009) and to implement integrated coastal zone management (Tegner Anker et al., 2004; Christie, 2005; McFadden, 2007; McKenna et al., 2008). In our case-study, the interplay between national, regional and local actors appears to be troubled by tensions and unsettled relations, even though promising signs are

also found in the work initiated by SGI and CAB. It also is worth noting that despite this weak vertical interplay and the tensions found between levels, the local actors have managed to work quite extensively with coastal erosion and taken a strong position on their own. Even though the vertical interplay is described as inhibiting this does not mean that it appears obstructing. Coastby has still taken a comparatively proactive approach to coastal erosion and sea-level rise, likely due to the determination of the driving key actors — discussed in terms of the troika. Still, however, the current vertical interplay poses problems. Since no coherent formal policy, procedures and regulations exist as of yet for how to manage our eroding land either in long-term spatial planning or when concrete measures to combat current coastal erosion are decided upon, the official standpoints of authorities e.g. the County Administrative Boards reflects the views, interpretations and knowledge of singular administrative officials who get the preferential right of interpretation which—in the recurrent changes of staff—leads to a *problematic lack of continuity in coastal zone policy-making, planning and decision-making*.

At large, the results point at *the importance of manifest planning- and decision- making structures, arenas and regulatory frameworks* capable of clarifying how to best manage our eroding land in a long-term and integrated way. The case-study identified barriers related to conflicting regulatory frameworks e.g. ICZM-principles of protecting societal values vs. interpretations of Natura 2000 that nature should take its course. *Tensions and trade-offs between policy-agendas, values and priorities* are also expected, e.g. on the one hand intentions in the new policy of avoiding further exploitation of waterfront areas at current or future risk of flooding or erosion and, on the other hand, the trend to rebuild harbour-areas and allow attractive waterfront housing. In other studies on climate change policy-making, planning and decision-making such barriers have also been prominent. Negative trade-offs have been identified where discursive struggles, tensions and conflicts between societal norms, policy-goals and political priorities makes the practical implementation of climate change measures of both adaptation and mitigation difficult (Demeritt and Langdon, 2004; Allman et al., 2004; Næss et al., 2005; Brooks et al., 2005; Berkhout et al., 2006; Crabbé and Robin, 2006; Storbjörk, 2007; Urwin and Jordan, 2008; Winsvold et al., 2009). These kinds of tensions are largely missing in the analytical framework of institutional capacity-building by Willems and Baumert that emphasise the capacity of key individual actors, internal organisational performance, vertical/horizontal networking capacity, regulatory frameworks and social norms, values and practices (Willems and Baumert, 2003). Based on the case-study results we thus suggest an addition to their framework in the form of “the capacity to harmonise and mediate conflicting priorities”. From the analysis, the ability of the political administrative system to acknowledge and openly deal with institutional conflicts in the sense of colliding agendas, values and priorities among the different key actors and their settings appears critical for ensuring the practical realisation of an integrated, strategic and proactive process of adapting to current and future climate change in the coastal zone.

We would suggest a few issues to consider in the climate adaptation of coastal areas and in moving from policy-formulations to practical implementation as approving a new policy, how wise and reflective it may be on paper, is not enough. Municipalities need to consider how to combine the presence of key actors with engagement, mandate, staff/financial resources and competence to drive change with an organisational mainstreaming across sectoral borders where professional cultures, interests and claims can be bridged in a way that makes a mutual responsibility and ownership possible. The way key actors—operating at different administrative levels—interact in order to make the most of their respective



experiences, competences and mandates is also of importance. Further the different policy-agendas, values and priorities for how the coastal zone should be viewed and managed as well as the different goal conflicts found in concrete planning and decision-making practices needs to be made visible, openly discussed and mediated.

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