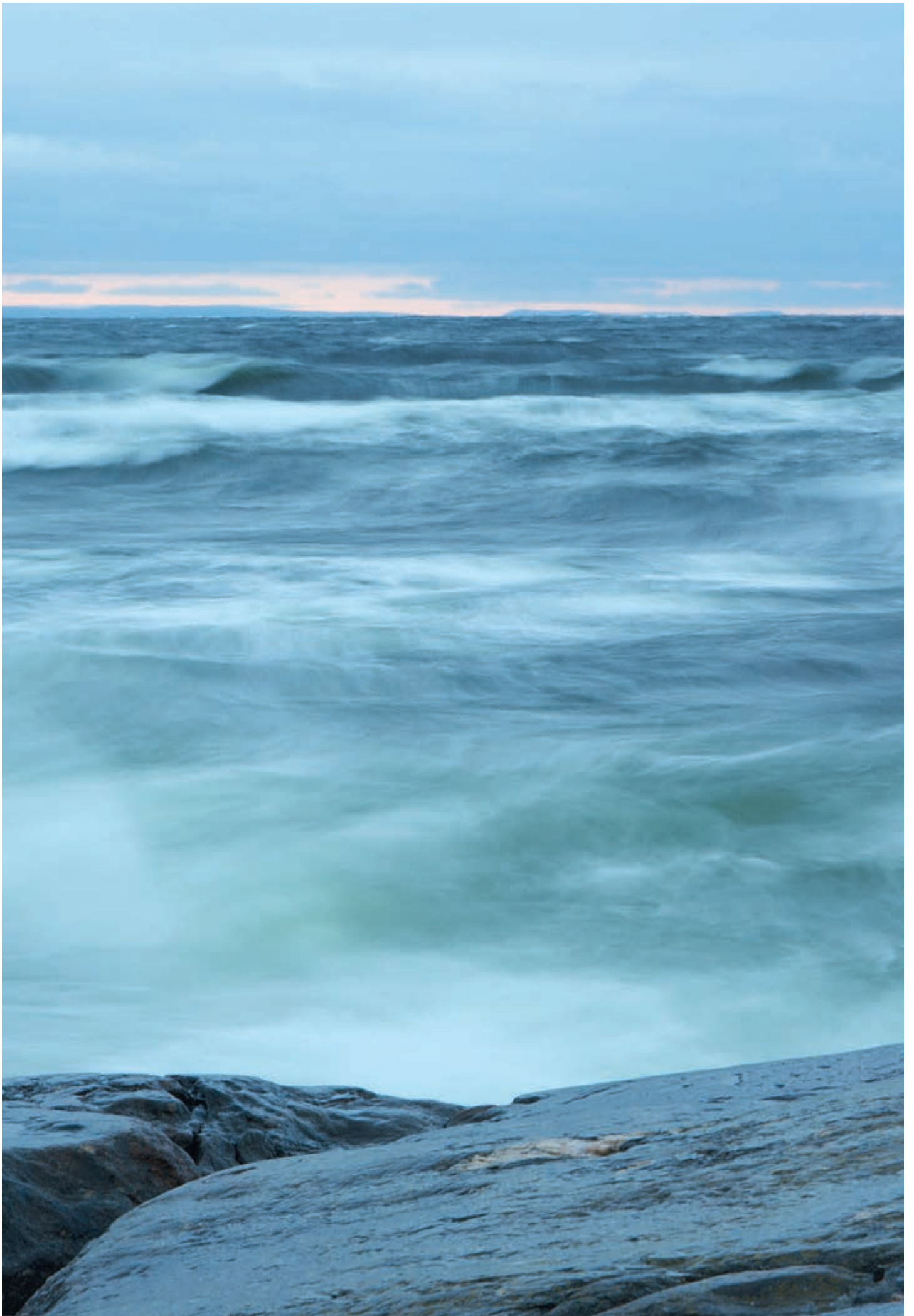


BALTADAPT ACTION PLAN

Recommended actions and
proposed guidelines for climate change
adaptation in the Baltic Sea Region



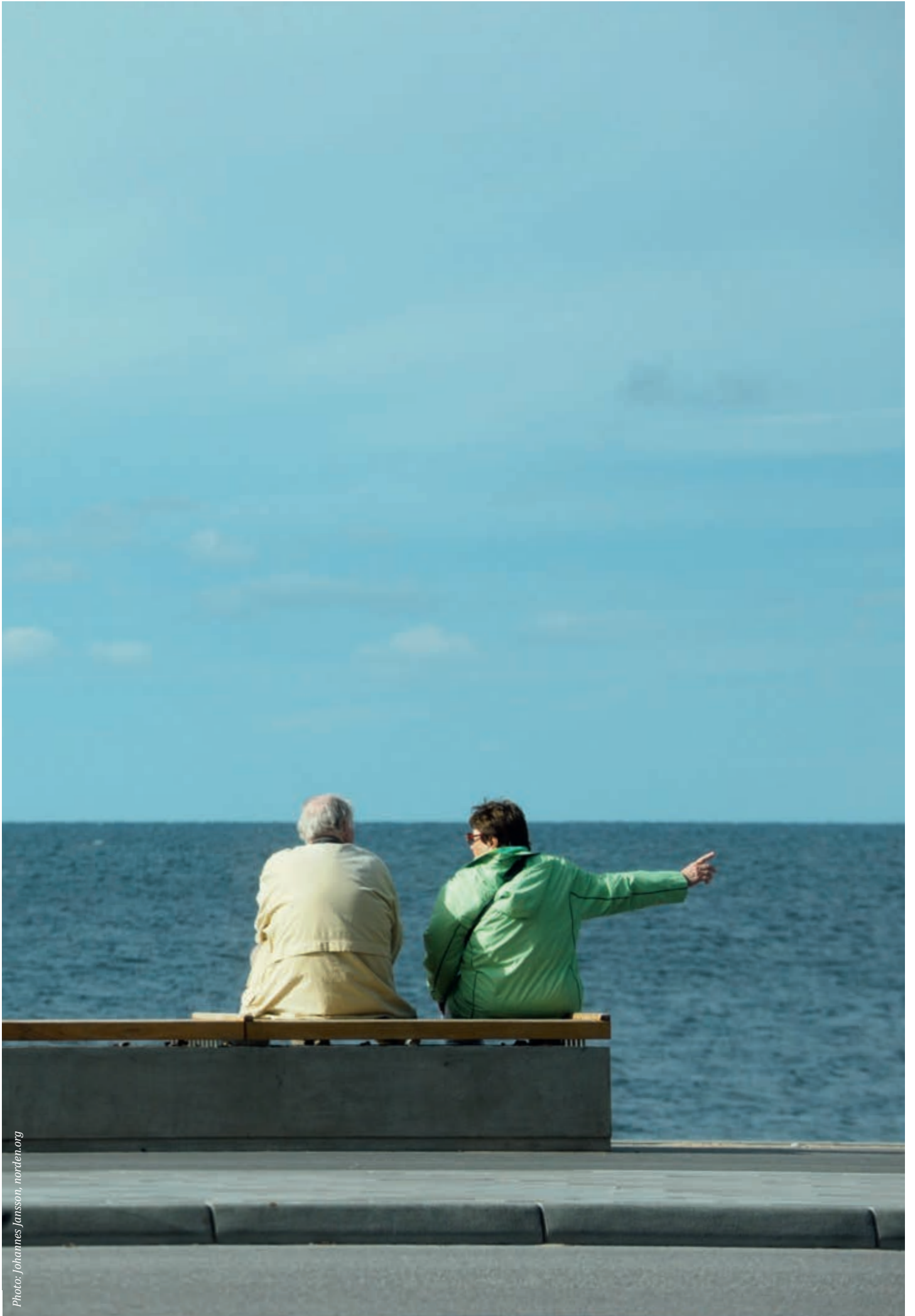
BALTADAPT ACTION PLAN

Recommended actions and
proposed guidelines for climate change
adaptation in the Baltic Sea Region

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1. INTRODUCTION

The overriding goal of the Baltadapt Action Plan – Recommended actions and proposed guidelines for climate change adaptation in the Baltic Sea Region is to promote the implementation of the Baltic Sea Region Strategy for Adaptation to Climate Change (Baltadapt Strategy) and to specify priority activities for the macro-region in the field of adaptation to climate change (CC). However, the implementation and sustainability of the Strategy and its Action Plan depend on subsequent political endorsement, which exceeds the mandate of the Baltadapt project. The Action Plan is therefore a proposal for recommended actions and guidelines for climate change adaptation in the Baltic Sea Region (BSR) based on the Baltadapt project results. For an easier reading, in the following these recommendations are referred to as Baltadapt AP.

While the aim of the Baltadapt Strategy is a connected region with informed actors on all governance levels responding to CC in a way that ensures prosperity, competitiveness, as well as clean water and rich and healthy wildlife, the specific objective of the Baltadapt AP is to strengthen the capacity for adaptation action at all rele-

vant levels and to enhance the ‘adaptive capacity’ of the region. Adaptive capacity comprises a sound knowledge base, an exchange of information between relevant actors, science and policy, the mainstreaming of CC adaptation in other policy areas and includes cooperation activities between all actors in the BSR. Therefore, these issues are covered in the three main chapters of the Baltadapt AP. Furthermore, the Baltadapt AP puts special focus on adaptation actions dealing with the four main sectors: marine biodiversity¹, infrastructure, tourism and food supply (including fisheries and agriculture). The scope of the Baltadapt Strategy is on coastal and marine areas. Therefore, the topics and actions provided within the Baltadapt AP are focused on these areas as well. However, due to strong inter-linkages with the inland, the recommended actions partly cover land-based aspects as well for each topic. Finally, the Baltadapt AP outlines funding possibilities for specific activities. Figure 1 shows the general structure of the Baltadapt AP. Good practice examples are included throughout the Baltadapt AP to illustrate ways and opportunities for how to cope with different challenges in practice.²

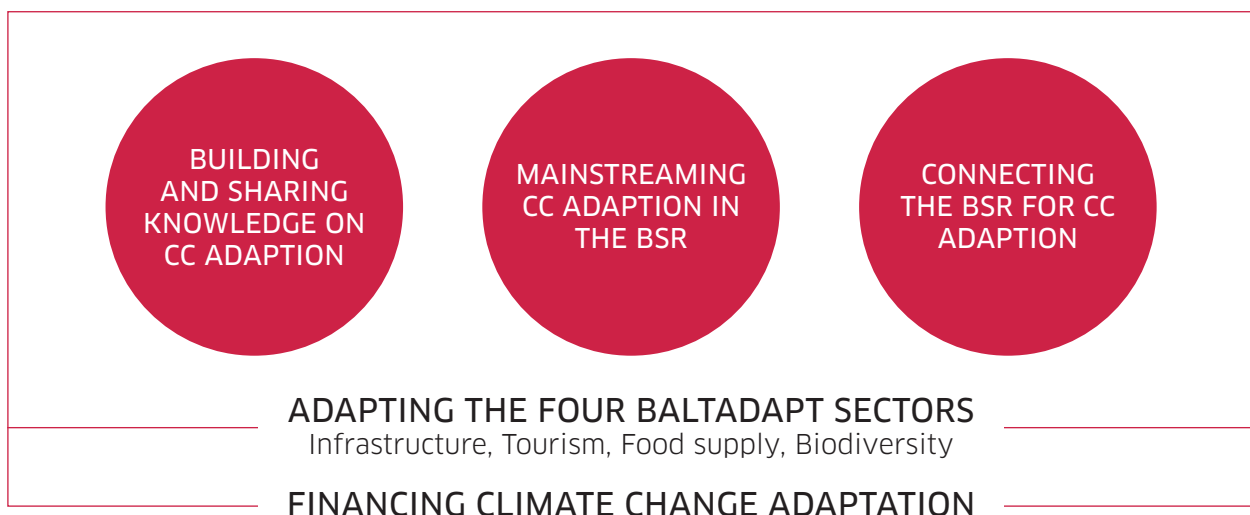


Figure 1 Structure of the Baltadapt AP

¹ Although biodiversity is a cross-cutting issue, in the following it will be referred to as a sector like the other three.

² The findings provided in the following chapters are based on the Baltadapt Project report's 1' 3' 4' 5' 7' and 11' (<http://reports.Baltadapt.eu>) stakeholder workshops conducted in Poland, Lithuania, Latvia, Germany and Sweden, Policy fora with invited representatives, project partner meetings as well as literature and internet reviews.

AIM OF THE BALTADAPT STRATEGY	CHAPTERS IN THE BALTADAPT AP
<ul style="list-style-type: none"> • Informed actors on all levels • Raised awareness concerning the need for action at all governance levels • Shared macro-regional knowledge bases • Research cooperation in order to identify and address knowledge gaps 	Building and sharing knowledge on climate change adaptation (chapter 2)
<ul style="list-style-type: none"> • Reviewed and mainstreamed in light of CC adaptation concerns • Macro-regional cooperation within business sectors 	Mainstreaming climate change adaptation in the BSR (chapter 3)
<ul style="list-style-type: none"> • Cooperation between states on the development of national strategies and action plans • Cooperation on disaster risk management to cope with increased risks due to CC • BSR cooperation with non-EU member states where it has been defined to be of mutual benefit • The BSR as model region for macro-regional cooperation on CC adaptation • Build a connected region with informed actors at all levels • Facilitated science-policy-business dialogues at and between all governance levels through the provision of web-based as well as “real life” meeting places 	Connecting the BSR for climate change adaptation (chapter 4)
<ul style="list-style-type: none"> • Macro-regional cooperation within business sectors • Respond to CC in a way that ensures prosperity and competitiveness within all four sectors 	Adapting the four Baltadapt sectors (chapter 5)
<ul style="list-style-type: none"> • Macro-regional cooperation in order to ensure solidarity and funding of adaptation measures 	Financing climate change adaptation in the BSR (chapter 6)

Table 1 Aims of the Baltadapt Strategy and related chapters in the Baltadapt AP

The Baltadapt AP as well as the Baltadapt Strategy are focused on increasing the adaptability of natural, social and economic systems and enhancing the exploitation of possible opportunities for adaptation. Table 1 gives an overview of where specific objectives of the Baltadapt Strategy are reflected in the Baltadapt AP.

The main target groups of the Baltadapt AP are political representatives at the EU level, especially of the departments DG CLIMA, DG MARE, DG ENV and DG REGIO. Furthermore, the following groups also belong to the target groups of the Baltadapt AP:

- Administrative groups at national levels of all Baltic Sea states working with adaptation-related sectors,
- Sectoral stakeholders at national levels,
- Stakeholders working in bilateral and multilateral cooperation,
- Stakeholders working with regional sea conventions / macro-regional approaches.

Even if local stakeholders are not the target group of the Baltadapt AP, they have key responsibilities to implement adaptation measures at the local level. Furthermore, as long as some member states within the BSR have no national adaptation strategies (NAS), support provided by the Baltadapt AP might be welcomed by this group.

Uncertainty

Global climate scenarios show that climate change science is built on many different uncertainties. This problem is enhanced at smaller geographical scales, like the BSR. One way to deal with uncertainty is the use of the precautionary principle. The Helsinki Convention suggests that the countries of the BSR should take preventive measures when there is reason to assume that CC impacts harm people, living resources and marine ecosystems. Uncertainty should be no excuse for non-action and support should be given to non-regret measures and flexible possibilities of adaptation, even when there is no conclusive evidence of a causal relationship between CC inputs and their effects. In the long-term it is crucial that science and decision-makers work together to tackle uncertainty and improve our understanding, providing climate projections and using them for political decisions.







Photo: Oskars Marike

2. BUILDING AND SHARING KNOWLEDGE ABOUT CLIMATE CHANGE ADAPTATION IN THE BSR

The availability, accessibility and transfer of knowledge and information on future CC and its associated impacts are essential elements for adequate public and private adaptation actions and action plans. For this reason, the actions recommended in this chapter support the overriding aim of the Baltadapt Strategy of achieving a connected region with informed actors on all levels. The Baltadapt AP's objective is to help the reader obtain robust, policy-relevant and research-based common knowledge on CC impacts, vulnerabilities and adaptation measures, including the handling of uncertainties and estimates of costs and benefits of adaptation action. This chapter provides platforms for the exchange of experiences and gives 'good practice examples' as a possible starting base for own action. The aim of this chapter is to raise awareness for the need for communication, cooperation and actions on all levels.

2.1. Building knowledge on climate change adaptation

The availability and exchange of reliable and compatible knowledge are essential for achieving good climate change adaptation. Within the BSR, however, the Baltadapt project identified a set of knowledge gaps and recommends future actions and research on European, macro-regional, national and local levels to possibly fill these gaps.

2.1.1. Research needs on climate change impacts and vulnerabilities

The fundamental basis for adaptation action is scientifically-sound information on the characteristics of potential future CC. For this reason, research and research institutions should be strengthened in all countries around the Baltic Sea to increase knowledge on climate change impacts and vulnerabilities. This information must span spatial and temporal dimensions, be relevant for the BSR and be cognisant of the associated uncertainties in these CC projections. The current state of knowledge on CC impacts for the BSR has been summarised in 14 Baltadapt Climate Info Bulletins on selected indicators, such as air temperature, sea level rise or eutrophication³. In addition, the Baltadapt project carried out a review of relevant vulnerability assessments for the BSR in general, as well as for the four Baltadapt sectors. What is more,

Building knowledge

- In order to address the identified research needs (e.g. identified within Baltadapt) future research (European, macro-regional, national, local) should focus on the following topics:
 - more precise data for the BSR, with special focus on development of spatial models and risk maps, new and improved models on risk assessment and improvement of monitoring,
 - studies on basic ecosystem processes and interactions under CC impact,
 - more focused impact assessments for sectors (e.g. health, infrastructure, tourism, agriculture, biodiversity and societal groups),
 - promotion of multi- and interdisciplinary studies on CC impacts, including scenario development and socio-economic assessments.
- Economic assessments of costs and benefits of climate adaptation:
 - knowledge transfer and communication strategies on climate impacts, vulnerabilities and adaptation options to raise awareness,
 - social sciences: the social context of adaptation responses, social barriers and incentives and integrated analysis of response strategies considering ecological and socio-economic limits and opportunities.
- Research and research institutions should be strengthened in all countries around the Baltic Sea to increase knowledge on climate change impacts and vulnerabilities.

Sharing the knowledge base

- Support pooling of all relevant information in the BSR on CC impacts and vulnerabilities, adaptation plans and strategies as well as adaptation measures and actions: The Baltic Sea Region sub-section in Climate-ADAPT (<http://goo.gl/1yyxvg>) will serve as a macro-regional information platform for the BSR.
- Target knowledge and information needs towards different stakeholders.
- Use new and innovative tools such as visualisation for enhanced knowledge transfer.
- Provide information on uncertainty and integration of uncertainty into decision-making.

the project also produced impact assessments for the four sectors to serve as a knowledge base on CC and related vulnerabilities. Despite a sound knowledge base, many CC impacts and their specific effects on the macro-region are still unknown. Within the scope of Baltadapt a series of knowledge gaps for the coastal areas of the BSR was identified as needing additional specific research regarding CC impacts (see table 2). The research needs show regional differences.

³ <http://climate-info.baltadapt.eu>

CLIMATE CHANGE IMPACT	RESEARCH NEEDS
General	<ul style="list-style-type: none"> • Knowledge on the systemic character of CC and CC impacts, basic ecosystem mechanisms and interactions, habitats and species, ecosystems goods and services under CC, • Sectoral impact assessments (e.g. health, infrastructure, tourism, agriculture, biodiversity and societal groups), • Vulnerability assessments at the BSR level, • Addressing of uncertainty in impact scenarios, • Increased availability of more precise data, with special focus on spatial models and risk maps, • Improved representation of the Baltic Sea (Region) in climate models, • Increased capacity in CC modelling and applicability for using these approaches for the BSR, • CC scenarios that integrate environmental, land-use, geographical and socio-economic aspects, • Multi-disciplinary studies, such as synthesis studies, scenario development, socio-economic assessments of CC impacts, cost-benefit analyses and social science.
Flood risks	<ul style="list-style-type: none"> • Precise altitude information, • Flood prognoses, • Synthesis studies, e.g. flood risk maps, • Research on flood dynamics, • Combined use of different information sources (hydrology models, hydraulic models, flood maps, etc.), • Flood/drought event case studies, • Economic assessment of flood risks and flood risk mitigation, • Risk-index systems.
Sea level rise	<ul style="list-style-type: none"> • Coastal zone erosion and flooding, including areas and structures that would be affected (e.g. detailed maps).
Extreme weather events	<ul style="list-style-type: none"> • Development of and changes to erosion of different coastal types.
Precipitation	<ul style="list-style-type: none"> • Improved understanding of changes in river runoff, nutrients loads and eutrophication on a Baltic Sea wide scale as well as on a local scale.
Salinity	<ul style="list-style-type: none"> • Improved understanding of changes and their effects on the ecosystem, • Distinction between a variety of effects such as eutrophication and CC.
Reduced ice cover of the Baltic Sea	
Change of stratification	
Water quality	<ul style="list-style-type: none"> • Impact of CC induced land-based changes.

Table 2 Specific research needs concerning climate change impacts on environmental conditions in the BSR (adapted from Baltadapt Report #5, Krämer et al., 2012)

Further research needs should be identified together with stakeholders and actors. The science-policy cooperation should be improved to develop reliable climate and risk models according to the needs of decision-makers (see chapter 4.4).

The specific research needs for the focus sectors ‘food supply’, ‘tourism’, ‘infrastructure’ and ‘biodiversity’ have been identified in the ‘Gap-fit Analysis on Adaptation to Climate Change Research and Policy Design’ (Baltadapt Report #1; Bruneniece, 2012) and in the climate change impact assessments conducted within the Baltadapt Project (Baltadapt Report #3, Dahl et al, 2012; Baltadapt Report # 4 Peltonen et al., 2012; Baltadapt Report #5, Krämer et al., 2012; Baltadapt Report #6, Kule et al, 2013).

Table 3 presents specific research gaps and needs identified for the four focus sectors within this Baltadapt AP.

A general overview across 237 EU-funded projects focusing on climate impacts, vulnerability and adaptation showed that 186 projects address one or more (cross-sectoral) adaptation subjects.⁴ Most of these research projects focus on CC impacts. In this context, the water sector and the biodiversity sector (ecosystem changes in species, habitats and ecosystem services) are mostly covered. Little research on CC impacts exists for sectors such as fishery, energy, industry and health. A similar picture can be drawn for research on adaptation to CC. Not all research projects addressing the issue of adaptation provide precise adaptation measures as an output. The projects identified as doing so are presented in Annex A. Flagship Projects under the EU Strategy for the Baltic Sea Region (EUSBSR) for priority areas relevant for the BSR are presented in Annex B. Additional flagship projects will follow in the future, harmonised by the horizontal action “Sustainable Development and Bioeconomy” under the EUSBSR.⁵

⁴ The projects have been identified from the following funding programmes and/or web sources: INTERREG III B 2000–2006; INTERREG IV B 2007–2013; Cordis (projects funded by Framework Programmes FP4–FP7); European Communities 2009 (European Research Framework Programme: Research on CC Prepared for the Third World Climate Conference and the UNFCCC Conference of the Parties); European Commission: Research and Innovation - Environment (Link: http://ec.europa.eu/research/environment/index_en.cfm?pg=climate and http://ec.europa.eu/research/environment/index_en.cfm?pg=marine); Cost Action; ERA-net CIRCLE and CIRCLE-2

⁵ www.balticsea-region-strategy.eu/pages/websites

SECTOR	RESEARCH NEEDS
Biodiversity	<ul style="list-style-type: none"> • Improved ecosystem modelling to assess the CC impacts in combination with other anthropogenic impacts on the ecosystem (and ecosystem dynamics), • Impact of changing freshwater and nutrient supply to aquatic ecosystems, • Assessment of the potential (monetary and non-monetary) value stemming from a healthier ecosystem and its provided goods and services, • Impact mechanisms (e.g. ecosystem services > societal impacts), • Multidisciplinary research on adaptive capacity of species, habitats and ecosystem services, • Bottom-up and top-down Baltic Sea ecosystem changes induced by CC, • Development of CC scenarios that integrate environmental, land-use, geographic and socio-economic aspects, • Social science, economics and organisational studies to proceed from the study of impacts to adaptation research, • Development of tools for multi-disciplinary research (for combining various types of information).
Agriculture	<ul style="list-style-type: none"> • Research on cost-benefit analyses of adaptation in the agriculture sector, • More focused assessments of climate change impacts in the BSR, • Research on adaptation options for the agriculture sector (e.g. emerging new production lines), • Analysis of international trends in economy and climate change adaptation (e.g. agriculture markets), • Research on effectiveness of water protection measures in agriculture under CC (e.g. adapting the use of fertilisers and manure).
Fisheries	<ul style="list-style-type: none"> • Improved ecosystem modelling to assess human impacts on fish populations in combination with CC and to assess the potential value arising from a healthier ecosystem and from productive fish populations, • Population structures of Baltic Sea fish stocks (geographical range-shifts of fish species, effects of substitution of species and alien species), • Research on sustainable fisheries management considering ecological and socio-economic effects of CC, 'climate-proofing' of long-term fisheries management.
Tourism	<ul style="list-style-type: none"> • Comparative research: exploring why some destinations are more sensitive to CC than others (e.g. diversity of supply and demand factors or the presence of built/cultural attractions), • Improved/new impact assessments, • Studies on the impacts of extreme events on tourism and the capacity to cope with them and studies on vulnerability of particular tourism sites (resorts), • Trans-disciplinary research activities linking social, economic and CC (natural sciences) researchers from different BSR countries, • Activity-oriented and participatory action research, dealing with the impacts on activities such as bathing, by concentrating on climate linked tourism resources, • Research on tourism behaviour change by changing climate elements and their variability.
Infrastructure	<ul style="list-style-type: none"> • Economic (cost-benefit) and management aspects of possible CC adaptation measures, participatory action research and policy transfer (BSR-wide, EU-wide and transnational) with focus on CC adaptation options used in coastal infrastructure, • Improvement of indicators used, data availability and monitoring in relation to CC impacts and adaptation measures in coastal areas, • Review of coastal monitoring data, • Integrated development of offshore and coastal areas, preparation of scenarios, adaptation strategies and intervention plans for mitigation of impacts of CC on coastal areas, • Holistic approaches to identify impacts of climate and global change (including demographic changes), • CC impact assessments on coastal and island areas, including tourism and water quality (algae blooming), • Support to research and practice, thus encouraging innovative activities and learning by individuals and organisations, • Support for model, pilot and demonstration actions in which public, private and scientific organisations participate jointly. <p>Coastal protection</p> <ul style="list-style-type: none"> • Knowledge on regional/local changes and their time horizon, • Hydrodynamic studies to improve understanding of coastal evolution, longshore sediment drift parameters and surf zone dynamic peculiarities, • Monitoring of coastal geological processes, • Modelling of coastal evolution. <p>Maritime traffic and ports</p> <ul style="list-style-type: none"> • Analysis of requirements for buildings/constructions and for owners, users and operators due to changed climatic conditions, • Analyses of behavioural changes of building users and options of achieving such changes, • Analyses of possible adaptation of planning criteria for buildings/constructions and for determination of their energy demands as well as their design, • Analysis of requirements for design, dimensioning and operational/system management, • Analyses of future building demands for design, dimensioning and energy needs of air conditioning systems, • Adaptation of maximal power of heating systems and air conditioning to changing temperatures.

Table 3 Research needs of the four Baltadapt sectors

2.1.2. The need for cost and benefit assessments

In addition to the research gaps on CC impacts and their effects on the marine ecosystem and the human use of the BSR coastal region, there are also many gaps in the assessments of the estimated costs of CC. Therefore, an increased effort in researching the economics of CC in order to assess the financial consequences (i.e. costs and benefits of adaptation) is recommended to eventually

INFO

Need for assessment of adaption costs

Agriculture

Scenario-studies often ignore socio-economic conditions and the adaptive capacity of farms and at the sectoral level. Since effects of CC differ between regions, there is a need for increased attention to regional studies on impacts of CC. There is also a considerable need for better estimates of costs and cost effectiveness of various adaptation measures. This includes the improved design of policy measures to maximise synergies between adaptation and other environmental objectives, including mitigation and provision of ecosystem services. Moreover, the linkages between adaptation at farm level and more broadly within the food-industry need to be understood.

Biodiversity

Information on the economic damage of lost ecosystems is limited. There are key figures for the economic value of ecosystems, but there are not yet calculations available for how these values will behave under climatic changes. There is little information on the impact of CC on the establishment of invasive species and of weather extremes on the fluctuation and recovery of populations and effective adaptation measures.

inform decision-makers and to guide adaptation policies. The importance of these financial assessments was highlighted multiple times during the course of Baltadapt workshops (see info box).

Certain of the CC induced extreme events such as floods and heat waves that are expected in the BSR can induce high economic damage in local areas. Adaptation measures addressing these impacts will involve costs, but they will also prevent the damage costs. The assessment of these costs and benefits of adaptation measures, however, is still a challenge that several projects are trying to tackle at the moment. Several European wide initiatives exist in this area and some projects in the BSR have already considered the costs and benefits of CC adaptation. Some of these initiatives are presented in the good practice box in the left column.

Still, research is needed for new and improved methodologies and better economic assessments. To inform and support adaptation management, vulnerabilities need to be presented in monetary terms, in tandem with a comparison of the costs of adaptation measures against the cost of inaction. As a basis for this, the resolution of climate models has to be improved to be applicable to smaller scale assessments. Consequently, methodologies for regional assessments must be developed at the European or BSR level. Next to the macro-regional assessments, more detailed assessments of local circumstances should be carried out at the national and local levels so as to inform decision-makers of the financial consequences and the expected needs for funding adaptation to expected climate changes.

2.1.3. Applied adaptation research

In addition to research on CC and its impacts, more focus should also be placed on applied research, referring to research on adaptation measures and actions. The BSR is still at an early stage in its understanding of how best to adapt to future CC, how to effectively reduce vulnerability and enhance resilience and of what the characteristics of a successfully adaptive society might be. It is critical to learn what works well or not, in which circumstances and for what reasons. Therefore, continued scientific research is necessary to develop effective adaptation measures for every specific sector, adjusted to local conditions. More pilot projects and practical demonstrations are desirable, in which concepts and solutions for adapting to CC are developed and tested. The improvement of adaptation knowledge at the sectoral level is partly supported by science programmes and initiatives. The info box on the right-hand page presents examples of national initiatives in Germany and Finland.

Within the field of CC adaptation, the demand for social science is widely recognised. It is promoted by many research networks and international initiatives worldwide, given the multiple interrelations between societal responses and CC. This also applies to the BSR, where the adaptive capacity is based on socio-economic conditions, significantly determining future vulnerabilities. Therefore multidisciplinary research and actions are required to understand, develop and implement social and economic responses to CC.

GOOD PRACTICE

Costs and benefits of climate change adaptation

The European **PESETA** project (Projection of Economic impacts of climate change in Sectors of the EU based on bottom-up Analysis) developed an innovative, high-resolution, regionally focused and integrated assessment of the physical and economic effects of climate change in Europe. It focused on the impacts of climate change on the following sectors: agriculture, river floods, coastal systems, tourism and human health.

<http://peseta.jrc.ec.europa.eu>

Another European project, **ClimateCost** provided a comprehensive and consistent economic analysis of climate change impacts, including the costs and benefits of adaptation. The results of the project are aimed at informing policy makers in the debate around climate mitigation policy and adaptation issues. The project concluded that the need to recognise and work with this uncertainty – as part of integrated and sustainable policies – requires an iterative and flexible approach.

www.climatecost.cc

A project tackling the costs and benefits of climate change in the coastal regions of the BSR was **BaltCica**. The project developed a framework for the assessment of damage costs that feed into a cost-benefit analysis and a multi-criteria decision analysis. It then applied this methodology to several local case study areas such as the metropolitan region of Helsinki and the municipality of Kalundborg.

www.baltcica.org

Examples of national initiatives (Germany and Finland) for sectoral knowledge improvement

Germany:

Non-sectoral

- KLIMZUG (supported by the German Ministry for Science and Education): development of innovative regional strategies for adaptation to CC and related weather extremes, www.klimzug.de
- Social dimensions of climate protection and CC (supported by the German Ministry for science and education): 12 projects

Urban and regional planning of coastal areas

- planBaltic (supported by the Federal Ministry for Science and Education): CC and regional planning, adaptation strategies in coastal urban areas in the BSR,
- [www.hcu-hamburg.de/research/forschungsprojekte/koordinierte-projekte/planbaltic/vorstellung/\(de\)](http://www.hcu-hamburg.de/research/forschungsprojekte/koordinierte-projekte/planbaltic/vorstellung/(de))

Biodiversity

- 27 projects about biodiversity and CC: development of adaptation strategies by the Federal Ministry for the Environment to minimise loss of climate sensitive fauna and flora and provide recommendations for adaptive management in Natura 2000 areas

Agriculture

- Conservation of genetic resources in gene banks as a starting point for breeding programmes, e.g. for climate adaptation and higher efficiency of nutrients (supported by the Federal Ministry of Food and Agriculture)

Finland

Non-sectoral

- Research project on climate change adaptation and social impacts: the project assessed the impacts of climate change and climate change adaptation on rural communities and their well-being. The focus was especially on analysing and recognising social impacts in advance and mapping the relevant actors and adaptation measures.

Urban and regional planning

- EXTREMES II – Impacts of natural hazards on infrastructure in a changing climate: the project developed methods for defining the frequency of rare weather events. A numeric regional climate model was used for studying how climate change influences the occurrence of these events especially concerning the built environment. www.ymparisto.fi/default.asp?contentid=189842&lan=en

Agriculture

- ADACAPA – Enhancing the adaptive capacity of Finnish agri-food systems: the project developed measures to evaluate and improve the adaptive capacity of Finnish agri-food systems to global changes on various levels of decision-making (farmers, trade, consumers, companies, regions, countries). The project studied the diversity within crop varieties and species and the diversity of cultivation systems, farms and marketing channels, regarding them as factors that advance adaptive capacity. www.mmm.fi/en/index/frontpage/climate_change_energy/adaption/adaptation_research/isto_projects/ADACAPA.html
- ILMASOPU – Adaptation of the agri-food sector to climate change: the project produced comprehensive, regional future estimates of Finnish field and horticultural crop production, competitiveness and environmental effects in changing climate and global markets. This information serves as reliable knowledge for decision-making, businesses and all anticipated actions. www.mmm.fi/en/index/frontpage/climate_change_energy/adaption/adaptation_research/isto_projects/ilmasopu.html

At the European level, this is supported by the Strategic Research Agenda of the Joint Program Initiative Climate (JPI) (see good practice box in section 2.2). JPI includes enhanced knowledge on the social context of adaptation responses, social barriers and incentives to respond to

CC as well as integrated analysis of response strategies considering socio-ecologic and socio-economic limits and opportunities of adaptation strategies.

Applied adaptation research should address communication and dissemination. New methodologies have to be developed on how to improve communication and reach the targeted stakeholders in order to raise their awareness of the need for action on all levels.

2.2. Sharing knowledge on climate change adaptation

For the development and implementation of adaptation strategies and measures, it is necessary to have access to harmonised and relevant data as well as a sound knowledge base on CC impacts and risks. The Baltadapt Strategy therefore acknowledges the importance of access to harmonised open source data and of knowledge transfer between all responsible levels.

The European Marine Observation Data Network - EMODnet

The European Commission (EC) launched the European Marine Observation Data Network (EMODnet) to bring fragmented and inaccessible data together, collected largely by public institutions and with different levels of quality. EMODnet aims to increase the efficiency for those working with marine data – industry, public authorities and research bodies. A final EMODnet Network is planned for the end of 2014.

www.emodnet-hydrography.eu
<http://bio.emodnet.eu>
www.emodnet-geology.eu

GOOD PRACTICE

The often-noted fragmentation of information on CC, adaptation needs and potential adaptation measures can be addressed through platforms on data and information on CC impacts and CC adaptation. Two European initiatives on marine and climate data distribution (including adaptation) are presented in the good practice boxes on this and the following page. These initiatives represent a first step towards good communication, but more open access is needed for the better exchange of data and information. Further cooperation with the research community is addressed in chapter 4.

In addition to the increased knowledge base among the research community, the aim is to have informed stakeholders on all levels. Therefore, improved knowledge and information transfer to and between actors dealing with adaptation is needed.

At the EU level the European Climate Adaptation Platform Climate-ADAPT aims to pool all relevant information focused on adaptation for decision-makers. With regard to the BSR, various adaptation measures have been developed and implemented and information on many of these measures is available across various information platforms, reports or national action plans. Within Climate-ADAPT, a Baltic Sea Region sub-section pools rele-

Connecting climate knowledge for Europe - JPI climate

The JPI climate is a long-term initiative that aims to empower European decision makers to take appropriate action on climate change. It thus intends to contribute to a highly coordinated knowledge development by improving the scientific expertise on climate change risks and adaptation options, as well as providing climate knowledge and connecting it with decision-making on safety and major investments in climate vulnerable sectors in Europe.
www.jpi-climate.eu

vant information on climate change adaptation focusing on the BSR. Supporting mutual learning and the exchange of best practices are key to assisting policy-makers in the development of their own adaptation plans.

On the national level, good initiatives exist in the BSR that provide information on CC, including impacts and adaptation (see info box). The information on these platforms is targeted towards those institutions and individuals considering the need for adaptation to CC in personal, economic or political decisions.

National information platforms

Denmark

www.klimatilpasning.dk - This portal provides information on the newest research and developments within climate change adaptation in Denmark and abroad. The portal also contains a number of specific examples of adaptation measures. It was developed by the Task Force on Climate Change Adaptation under the Danish Ministry of the Environment in collaboration with an array of other government institutions. Language: DK

Finland

<https://ilmasto-opas.fi/en/> - This platform provides information on climate change and its impacts, mitigation and adaptation. Content is produced by Finnish research institutes. The aim is to enable Finnish research institutions, authorities and expert organisations to make their climate change information and services more easily available to society. Language: FI and EN

Germany

www.anpassung.net - This is the website of the Competence Centre on Climate Impacts and Adaptation, created by the Federal Environment Agency (KomPass). It provides information on climate change and its impacts, as well as adaptation measures and their limitations. It is intended as the interface between climate research, society, economy and politics. Language: DE

Sweden

www.smhi.se/klimatanpassningsportalen - The portal offers comprehensive information about the effects of climate change, risk management, how an adaptation plan can be developed and examples. The target groups for the portal are currently municipalities and county administrative boards. The portal is a result of the cooperation between thirteen Swedish governmental agencies, in collaboration with Sweden's municipalities and county councils. Language: SE

For an improved knowledge transfer information has to be communicated in a way that is relevant, accessible, transparent and that takes proper account of associated uncertainties. It is also of considerable importance to address different stakeholders groups with differently translated and refined information. Consequently different dissemination strategies are required targeted to decision-makers, industry or the wider public. This also applies to the BSR, where such targeted knowledge transfer can increase awareness and improve understanding of adaptation needs. The BalticClimate Toolkit (see good practice box on the right-hand page) is highlights a good example of a targeted knowledge transfer instrument for the BSR. The provision of knowledge has to be continuously adapted in line with a growing knowledge base.

For decision-makers in the BSR, the perceived lack of knowledge and the uncertainties surrounding climate predictions and modelling make it hard to take concrete decisions towards CC adaptation. In order to avoid postponing the implementation of adaptation actions, it is important to inform and communicate with decision-makers in the BSR about this uncertainty and on how to integrate it in adaptation decision-making. The science-policy cooperation on these issues is dealt with in chapter 4.

One possible instrument for successful knowledge transfer is the visualisation of climate information. This can help convey climate knowledge and understanding of future CC impacts to a wider public. As visualisation technology makes it easier to see and understand complex ideas, it can support awareness raising for issues like CC. Good examples of visualisation are shown in the boxes on the right-hand page.

Online platform CLIMATE-ADAPT

This platform provides information on CC impacts and vulnerability, adaptation plans and strategies as well as adaptation measures and actions. Coastal and marine areas and fisheries are two of the sectors covered by the database (alongside agriculture, biodiversity, health, etc.). Furthermore, information about the nature of uncertainty in climate research and good guidance on how to deal with this uncertainty in decision-making is available.
<http://climate-adapt.eea.europa.eu>

Baltic Sea Region sub-section in Climate-ADAPT

The aim and concept of an adaptation web portal for the BSR is to establish a knowledge brokerage process on CC and CC adaptation between researchers, stakeholders and political decision makers across political levels.

To ensure the high durability and sustainability of such a BSR adaptation web portal, it is integrated as a sub-section of the Climate-ADAPT platform. It presents knowledge, facts and case studies with relevance to CC and adaptation in the Baltic Sea Region. Decision makers in policy and civil service are empowered with the aim of motivating them to action. Additionally, the platform provides a space to exchange knowledge among regional decision-makers. BSR specific items such as publications and reports, projects, case studies, adaptation tools and others can be entered and accessed via the Climate-ADAPT database.

<http://climate-adapt.eea.europa.eu/transnational-regions/baltic-sea>

BalticClimate Toolkit

The project BalticClimate developed a Toolkit as an empowering knowledge transfer instrument for actors at the local and regional levels related to the implementation of climate change mitigation and adaptation measures.
www.toolkit.balticclimate.org

Visualization of climate information - the Geodome

One good example of visualisation of research results on eutrophication of the Baltic Sea in relation to climate change is available in the Geodome, a production of the Swedish Meteorological and Hydrological Institute (SMHI) and the Centre for Climate Science and Policy Research (CSPR) in cooperation with Visualiseringscenter C. Information is presented in an inflatable dome theatre that accommodates 20 visitors at a time.



Figure 2 Geodome (Photo: Eluminati)

ECOSUPPORT scenarios with Google Earth

ECOSUPPORT (Advanced tool for scenarios of the Baltic ECOSystem to SUPPORT decision making) was a BONUS+ project that produced visualisations of various future scenarios for the Baltic Sea which can be viewed with Google Earth. It can be used to visualise possible developments for different physical and biogeochemical variables, shown as changes between the recent state and the state at the end of the century.
www.baltex-research.eu/ecosupport/dss/scenarios.html



Figure 3 Example of Google Earth layers to visualise different nutrient load scenarios

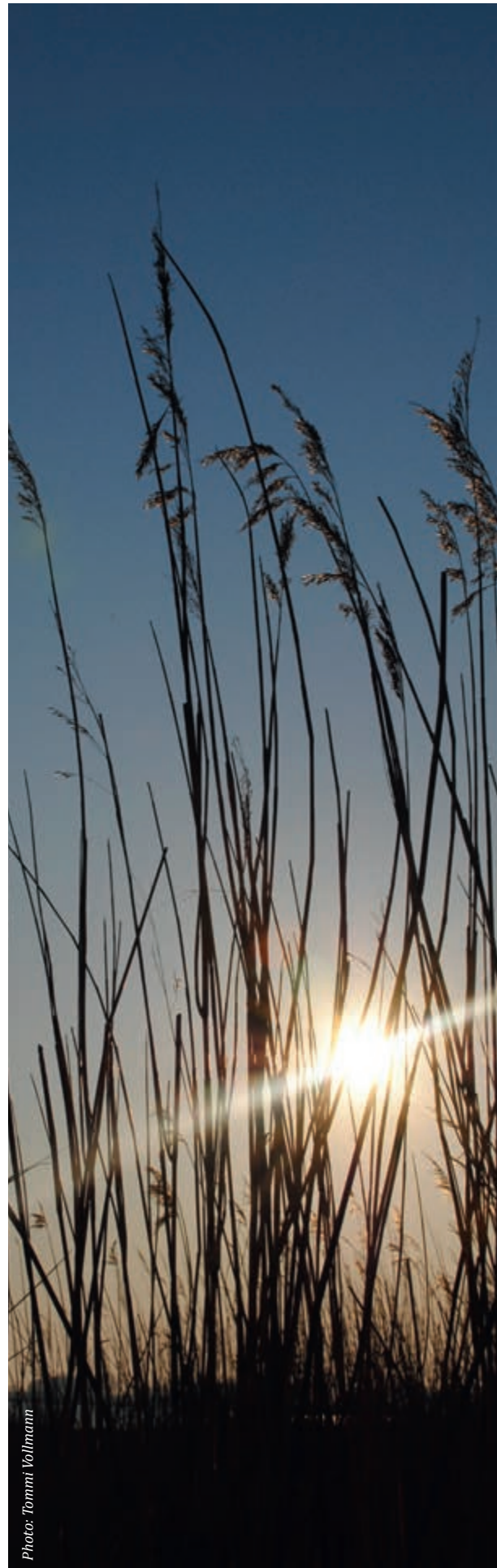


Photo: Tommi Vollmann



3. MAINSTREAMING CLIMATE CHANGE ADAPTATION IN THE BSR

Mainstreaming adaptation needs:

Identify key instruments for integrating adaptation

- Screen policies at EU and national levels relevant for adaptation (National Adaptation Strategies (NAS) and National Action Plans are key instruments for supporting implementation and mainstreaming).
- Strengthen integrated approaches to review instruments used in the past. Herewith it could be ascertained whether they are suitable to identify and implement climate adaptation planning measures or need to be modified, e.g. decision-support systems or the formal weighing process applied during planning procedures.

Include adaptation requirements in relevant legal provisions

- All relevant stakeholders (municipalities, national administrations, EU DGs, business, NGOs, etc.) should follow adaptation mainstreaming when elaborating and implementing planning and decision processes.
- All relevant authorities (e.g. responsible for health, civil protection, transport, energy, economy, finance, education, etc.) need to be informed and involved in the adaptation process, receiving a clear mandate to take decisions in their fields of responsibility. This applies also to the core team as discussed above.

Their degree of involvement varies between providing and exchanging information, building adaptive capacity or decision-making on adaptation within their authority (see EU Adaptation Strategy).

- The BSR countries should share experiences with regard to adaptation in order to preserve biodiversity against negative effects of CC. This entails including biodiversity aspects in national and regional adaptation strategies and action plans and vice versa, e.g. for agro-biodiversity.
- BSR member states should examine whether it is necessary and appropriate to include targets and principles for highest acceptable CC impacts or adaptation requirements; BSR countries should use spatial planning as an integrated management approach, e.g. consider and compensate predicted and observed dynamics and changes to ecosystems and landscapes caused by CC.
- Local authorities should mainly be responsible for implementing adaptation measures.
- When taking action, local municipalities should consider different aspects: a) influences of top-down approaches via EU and national legislation, b) macro-regional influences, c) opportunities of engaging strong local leaders, d) inter-municipal and regional cooperation, and e) opportunities for local businesses and for learning from each other.

The overriding aim of the Baltadapt Strategy is to ensure coherent adaptation throughout the BSR macro-region. To achieve this goal, policies across all relevant sectors need to be reviewed and adjusted to CC adaptation concerns.

Therefore, possible CC impacts and adaptation needs within the BSR model-region are to be “mainstreamed”⁶ Mainstreaming means to “integrate adaptation objectives, strategies, policies, measures or operations such that they become part of the national and regional development policies, processes and budget at all levels and stages”.⁷ Mainstreaming and cooperation are even more important, as the EUSBSR does not strive for the creation of new institutions or regulations.

This chapter outlines the need for adaptation mainstreaming and provides an overview of the different approaches of BSR countries to governing adaptation policy. The chapter develops initial ideas concerning options for a more consistent and comprehensive integration of CC adaptation considerations within policies at the macro-regional level. It focuses on the political level and is followed by a chapter on cooperation. There, the focus is on ideas for supporting mainstreaming through cooperation (chapter 4).

3.1. Identify key instruments for integrating adaptation

Mainstreaming helps policy makers to develop societal and ecosystem adaptation approaches, i.e. coherent

Establish new instruments

- BSR countries should jointly elaborate spatial planning differentiation of eutrophication targets for management needs and interlink it with the aims of the WFD.
- Include adaptation aspects in management plans of marine protected areas (MPAs) in the Baltic Sea (e.g. according to the Natura 2000 network). Support the policy-science interface and introduce requirements for policy relevant outcomes and end-user involvement. This is the aim of the new Horizon 2020 project (<http://www.h2020.net/>; see also Chapter. 6, “Funding”).

⁶ While some, e.g. adaptation experts of the IPCC reports (IPCC, 2007), are talking about „climate mainstreaming“, others like the EEA (EEA, 2005) are referring to „policy integration“. In the following both terms will be used.

⁷ www.oecd.org/environment/cc/36736773.pdf

Integrating adaptation in other policy processes:

- Adaptation has to be further addressed as a topic in, for example, the Rural Development Policy, the national strategies for agro-biodiversity, the national strategies for the Sustainable Use and Protection of the Seas and the national strategies for Integrated Coastal Zone Management (ICZM).
- Further cooperation of BSR countries, the Council of the Baltic Sea States (CBSS) and other implementers of the macro-regional Baltadapt Strategy with HELCOM to include CC into integrated maritime policy.
- Include CC adaptation (stronger) in EU directives like the MSFD or the WFD.
- Further support by BSR countries for evaluating and completing the designation of a network of MPAs in the Baltic Sea according to the Natura 2000 network, the HELCOM Baltic Sea Protected Areas (BSPAs), the MSFD and the EU Biodiversity Strategy 2020.

Mainstreaming, the private sector with a special focus on insurance:

- Policy should support spontaneous or autonomous adaptation innovations in the private sector. Insurances should follow the priority strategy.
- Include the insurance industry as a particularly capable actor to more strongly assist and advice governmental authorities in adapting societies to CC.
- Strengthen mainstreaming tendencies by the sectors themselves, e.g. by regulating and changing the character of insurance products towards CC adaptation to overcome current regulative and operational obstacles.
- Support the further development of new products, e.g. bonus systems to avoid damages for those customers best adapted and provide incentives.

approaches which deal with different social, ecologic and economic aspects of life.

The use of existing instruments like legislation, regulations, strategies, standards, planning tools, assessment frameworks, research and development programmes can contribute to an integrated adaptation approach.

3.1.1. Key instruments at EU level

At the level of the EU, a range of policies and policy instruments referring to CC and/or CC adaptation are available, including precise adaptation measures, monitoring, guidelines and mechanisms to stimulate adaptation. The info box provides an overview of existing EU policies for different sectors.

3.1.2. Key instruments at national level

Governments need to address adaptation pressures with responses that cut horizontally across the ministerial or departmental structure of governments. The main policy fields affected are water and coastal management, housing, spatial planning (see 3.1.3), public infrastructure, tourism

and agriculture (Burton et al, 2006). Additionally, adaptation pressures and responses cut vertically across different jurisdictional levels, from the EU to national, regional and local levels of policy making (EU, 2007).

Horizontal instruments

Horizontal coordination approaches are meant to establish a common national or federal approach to CC adaptation across ministries. They have to trigger synergies and avoid trade-offs between sectors. They are also pursued by integrating adaptation issues into broader policies (e.g. SE) or into other strategies (e.g. FI, DE). The Danish government demonstrated a leadership role in the governance of CC adaptation through the requirement that all departments compile a departmental adaptation plan in 2010. National examples are given in Table 4. You can find more detailed information on the EU adaptation portal: <http://climate-adapt.eea.europa.eu/countries>.

Vertical integration

Vertical integration means integration between different jurisdictional levels, e.g. from the EU to the national level or from the national to the regional level. As the different levels of government have different policies relating to CC and adaptation, Baltadapt stakeholders have pointed out inconsistencies between policies, that could potentially counteract each other. One important

EU policy and available instruments for different sectors

(For complete table see <http://climate-adapt.eea.europa.eu/eu-sector-policy/general>)

Biodiversity:

Biodiversity Action Plan, Habitat Directive, Birds Directive, Strategy on Invasive Alien Species. Elements of protecting biodiversity are also indirectly included in the WFD and the MSFD through the targets set for e.g. restoring water bodies and reducing eutrophication

Water:

Water Frame Work Directive (WFD), Marine Strategy Directive (MSFD), Floods Directive, Bathing Water Directive, Shell Fish Directive⁹

Ocean and seas:

Communication on an Integrated Maritime Policy for the EU and its Action Plan (COM(2007)575) and Progress Report (COM(2009)540); Communication on 2020 Marine Knowledge (COM(2010)461); Communication on Maritime Spatial Planning; The Maritime and Maritime Research Strategy

Fisheries:

Current Reform of the Common Fisheries Policy (CFP) – Fisheries management and governance challenges in a changing climate

Agriculture:

Common Agricultural Policy (CAP) reform (reform of direct payments, rural development regulation and market measures), document "Adapting to climate change: the challenge for European agriculture and rural areas" accompanying the White Paper

⁹ The Shellfish Waters Directive – 2006/113/EC

Types of vertical integration in the BSR

In Denmark, sub-national authorities are represented in a national coordination body in order to represent their views at the national level.

In Germany, the pre-existing federal conference of environment ministers established a Permanent Committee on "Adaptation to Climate Change Impacts", which involves heads of ministerial directorates from all Länder and the Federal Government. Exchange of information and cooperation among the Federal Government and the Länder are the main objectives of the committee.

Three of the eight (+Russia) countries facilitate vertical coordination by initiating and funding networks and partnerships concerned with adaptation planning at sub-national levels.

Monitoring and reporting schemes as means for vertical integration are used in Denmark. Indicators on adaptation are under development in Germany in order to add them to the set of national indicators.

Denmark, Sweden, Germany and (partly) Poland are using guidance tools that aim to support regional and local governments in assessing vulnerabilities and developing respective adaptation policies.

According to the Russian action plan to implement the Climate Doctrine by the year 2020 (Russian Action Plan 2011), national ministries like the Roshydromet or the ministry for regional development are developing guidelines and methodologies, e.g. for risk assessments concerning sea level rise to support federal regional authorities.

point of action at the national level would therefore be to enhance cooperation between the different ministries and competent authorities to harmonise legislation and policies regarding CC and adaptation in order to make them consistent. A possible mechanism to promote this would be an adaptation cooperation and coordination council, as a consultative body in which representatives of state institutions, municipalities and non-governmental organizations (NGOs) can exchange their ideas and information and initiate and mobilise joint activities. These joint actions can be particularly relevant to coastal

municipalities that do not have the capacity, in manpower as well as financially, to implement adaptation measures.

The importance of integrating adaptation policies across different levels of government is widely acknowledged in the surveyed BSR countries (see info box). Policy makers at the national level know that impacts of CC are mainly relevant locally and that provinces and municipalities are responsible for many adaptation activities. However, when taking action, local municipalities should consider the strong influence of top-down EU, national and macro-region approaches. On the other hand they can take advantage of a range of opportunities by engaging strong local leaders, cooperating inter-municipally and regionally, and working with local businesses.

National Adaptation Strategy (NAS) approaches in the BSR

Although horizontal and vertical integration are clearly distinct challenges from a scientific point of view, governments often address them jointly. This applies in particular to the temporary coordination and consultation approaches that help to elaborate the NAS: they all aim to coordinate policies in different ministries and at different levels of government at the same time.

A NAS is seen as a tool for an integrated approach to bridge the gaps in sectoral planning and implementation. In all BSR countries surveyed, the process of developing a NAS marks the first systematic approach to the coordination of adaptation policies horizontally across sectors. Since NAS play a key role in the governance of CC adaptation (Biesbroek et al., 2010), all temporary or institutionalised governance approaches described here are somehow related to the development and the implementation of the NAS.

Some of the surveyed countries (DK, FI, DE, LT) guide governmental adaptation activities with a general policy framework, most often referred to as NAS, sometimes supported by a National Action Plan. Other BSR countries are developing NAS or focus their efforts merely on local initiatives (see info boxes on the following page).

COUNTRY	TEMPORARY COORDINATION OF NAS AND ACTION PLANS	INSTITUTIONAL COORDINATION BODIES	OTHER STRATEGIES ADDRESSING ADAPTATION
Germany	Inter-ministerial working group	<ul style="list-style-type: none"> Inter-ministerial working group (WG adaptation) KomPass Climate Service Center (affiliated with the Helmholtz Community of German Research Centers) 	<ul style="list-style-type: none"> Sustainability strategy National strategy on biological diversity Strategy on agrobiodiversity (planned) On regional level: several sectoral adaptation strategies, e.g. for agriculture in Saxonia
Denmark	Preliminary inter-ministerial working group	Coordination Forum for CC Adaptation	
Finland	Series of seminars during the development of the NAS for different ministries	Finish Coordination Group for Adaptation to CC	<ul style="list-style-type: none"> Forestry strategy Foresight report

Table 4 Types and examples of governance approaches addressing horizontal integration. Adapted from Bauer, A. et al, 2011

Existing NAS

Denmark, Finland, Germany and Lithuania have developed and adopted NAS, all with a focus on specific sectors. At the same time, integration and mainstreaming adaptation within existing national programmes are central to these NAS. Action Plans support the implementation of the NAS in Denmark, Finland and Germany. Two of them mention cross-border initiatives (DE, DK).

BSR countries in the process of developing NAS:

Estonia, Latvia and Poland

BSR countries developing or having developed strategies at the local (municipal or regional) level

- Several countries (FI, SE, LV, PL) have partially developed strategies at the local (municipal or regional) level. Although Sweden has not adopted a national strategy, this country has a very comprehensive system of policies addressing most CC effects.
- For a comprehensive overview of existing regional strategies in the BSR, see Annex C. This annex also provides an overview of relevant national governance bodies and NGOs working with CC adaptation issues.

Guidelines for developing NAS

Although Baltadapt has developed a macro-regional strategy for adaptation to CC, implementation of this Baltadapt Strategy needs to take place at the national as well as on regional and local levels. Just as knowledge and best practice exchanges are needed and macro-regionally coordinated, it is important that this knowledge and these measures get adapted to the specific conditions that apply to the different regions around the Baltic Sea. Policies and adaptation measures should be tailored to the national conditions and might need further fine-tuning at the local level. Guidelines on how to implement the Baltadapt Strategy and how to develop national strategies could be developed jointly.

The national strategies need to function as a link to the Baltadapt Strategy.

The following good practice box gives several examples of guidelines on how to develop such strategies. In addition, the EU Adaptation Strategy provides guidelines for it as well (see Guidelines on developing adaptation strategies, SWD (2013) 134 final, and Annex 6).⁹

3.1.3. Cross-cutting issue: spatial planning

Differentiated spatially, temporally and in terms of their intensity, CC impacts affect all areas of life, the environment and the economy. In order to prevent conflicts between resource uses and to foster synergies in the pursuit of other policy objectives, horizontal and vertical integration approaches should be fostered. One effective tool for this is spatial planning. For example, the strategic environmental

⁹ http://ec.europa.eu/clima/policies/adaptation/what/docs/swd_2013_134_en.pdf

Guidelines on how to develop an adaptation strategy

The online platform CLIMATE-ADAPT provides an adaptation support tool to assist in developing climate change adaptation policies by providing guidance, links to relevant sources and dedicated tools. This tool could be used to develop and improve the national adaptation policies.

<http://climate-adapt.eea.europa.eu/adaptation-support-tool/>

With special focus on the coastal areas, the IMCORE project developed guidelines and an illustrated step by step online course on how to develop coastal adaptation strategies applied to the north-west marine regions. Moreover special techniques for developing the adaptation strategies were successfully used and reviewed.

www.imcore.eu

www.coastaladaptation.eu

Looking more at the local and smaller scale level the German "Klimalotse" provides an online guidebook on adaptation for municipalities and companies.

www.klimalotse.anpassung.net

assessment (SEA) applies to plans and programmes while the environmental impact assessment (EIA) applies to projects in several member states of the BSR. Furthermore, ideally, CC adaptation strategies are part of spatial and development planning in a region or a BSR member state. Cohesion Policy programming can build on those (see chapter 6). According to the EUSBSR Action Plan, pilot plans for trans-boundary, ecosystem-based Maritime Spatial Planning (MSP) should be in place by 2013. The deadline for development and application throughout the region is by 2020.

The time horizon for integrated planning approaches differentiates between the time scales over which changes in the climate and CC impacts are projected: short-term (up to 2020), medium-term (up to 2050) and long-term (up to 2100) periods. By contrast, the time horizon for decisions about adaptation measures tends to be oriented towards the short term – in particular if there is a focus on local/regional levels.

The actors in the BSR member states have now gained their first experiences in implementing integrated climate adaptation planning projects. Climate adaptation is being pursued both sectorally and inter-sectorally. Integrated approaches open up the possibility of reviewing instruments used in the past to ascertain whether they are suitable for the identification and implementation of climate adaptation planning measures or need to be adapted (e.g. decision-support systems or the formal weighing process applied during planning procedures). For example, projects following the inter-sectoral perspective of spatial planning, using formal and informal instruments (e.g. KlimaMORO, KLIMZUG) or a shared understanding of aquatic ecosystems requiring sustainable managed (KLIWAS). Various forms of integration are implemented and methodologically supported in these projects (BMU, 2012).

The VASAB¹⁰ platform (VASAB, 2010) promotes cooperation on spatial planning and development in the BSR as an intergovernmental network of 11 countries. The HELCOM-VASAB MSP Working Group supports several projects like the PartiSEApate flagship project (www.partiseapate.eu) and integration of results into policy.

The stronger enforcement of bio-corridors across borders built by maritime and coastal Natura 2000 sites could furthermore enhance mainstreaming of adaptation measures and support biodiversity (see financing in chapter 6).

3.2. Including adaptation requirements in relevant legal provisions

There is still a range of policy gaps in the BSR (Baltadapt Report #1; Bruneniece, 2012). In general they can be summarised as follows:

- Lack of adaptation strategies (including CC risks and gains) at national levels
- Lack of adaptation strategies and policies at local (municipal or regional) levels
- Insufficient policies addressing economic losses from damages caused to buildings by flooding
- Necessity for more integrative policies addressing planning and building regulations in the context of adaptation to CC
- Insufficient policies addressing risks to infrastructure
- Insufficient policies addressing risks to human health
- Necessity to develop policies related to harbour adaptation
- Necessity to develop guidelines for best practices with ecological methods for building
- Need for updated routines and checklists for dealing with heat waves
- Need for updating guidelines and contingency plans regularly; the planning and building regulations need to consider CC effects on existing establishments
- The development of extreme events should be monitored and analysed closely; monitoring and early warning systems should be developed



To specify adaptation to CC as a regulatory goal in relevant legal provisions, a possible approach is to consider climate and extreme weather-relevant factors within technical and operational plans and their implementation. The BSR member states should examine whether it is objectively necessary and appropriate to include CC impacts or adaptation requirements as targets, principles or even trade-off aspects in relevant legislation being introduced, particularly in the fields of planning and environmental law. In some member states this has already taken place, for instance with the revision of the regional planning acts (BMU, 2012).

The intention should be to further develop the law of sectoral planning so that environmental conditions affected by CC are carefully considered and taken into consideration accordingly. BSR countries should therefore examine how closer coordination of spatial planning and regional planning with sectoral plans for specialised projects and environmental plans can enhance this objective. With regard to environmental planning and regional planning, no member state currently seems to require separate new instruments for the examination of climate compatibility, although there is a need to improve the conditions under which possible consequences can be weighed up with certainty when existing instruments are applied (Keskitalo, E. 2010). It is necessary to draft corresponding guidance documents and teaching aids, in particular for the evaluation of CC impacts and the application of suitable formal and informal instruments.

Regarding coastal zone management, BSR member states have already taken steps to integrate CC adaptation following the “Recommendation on Integrated Coastal Zone Management in 2002” through specific coastal strategies and frameworks as well as through general CC adaptation plans.

However, in case the modification of existing instruments alone is insufficient to handle adaptation needs, new instruments like legislative, economic, informal or cooperative instruments have to be established.

3.3. Integration in other policy processes

The Baltadapt AP was developed to advance the practical implementation of the Baltadapt Strategy. As the Strategy aims to interconnect a large area, comprised by different nations, it is important to also consider and inter-link all available national strategic processes, such as National Sustainability Strategies and National Strategies on Biological Diversity. Other national or sectoral activities of EU member states that have not dealt with CC and CC adaptation yet also need to be integrated in the process of adopting the Strategy. For instance, the Rural Development Policy, the national strategies for agro-biodiversity (FAO, 2007), the national strategies for the sustainable use and protection of the seas and

¹⁰ VASAB – Vision and Strategies around the Baltic Sea. The project’s Long Term Perspective for the Territorial Development of the Baltic Sea Region (LTP) was adopted by the ministers responsible for spatial planning and development of BSR countries in October 2009 in Vilnius.

the national strategies for ICZM have to be taken into account. In line with the idea of 'mainstreaming', actors should always consider present or future CC-relevant developments into their work.

Regarding macro-regional processes, the CBSS and other potential implementers of the Baltadapt Strategy and its Baltadapt AP, should seek coordinated action with HELCOM to include CC and adaptation into marine policy. Adaptation issues should be integrated into the MSFD as well as the Floods Directive and the WFD. The WFD does not explicitly mention CC. However, it provides a strong framework for integration of effective adaptive management, particularly with a focus on ecological and biochemical targets, monitoring and the cyclic nature of the production of river basin management plans. A WFD guidance document has been produced through a Common Implementation Strategy to help practitioner's mainstreaming CC adaptation into the planning process.¹¹

Enlarging the net of MPAs within the Baltic Sea is a further instrument to enlarge resilience of the ecosystem and integrate adaptation into macro-regional activities.

3.4. Mainstreaming: The role of the private sector with a special focus on insurance

Planned adaptation, considered as result of political decisions made by the public sector, largely follows a top-down management approach. In parallel, spontaneous or autonomous adaptation is generally linked to private sector innovations relevant for future CC. There is a growing policy discourse supporting its involvement in adaptation.

This is linked to increased damage costs from extreme weather events in EU member states, from EUR 9 billion

in the 1980s to more than EUR 13 billion in the 2000s (values adjusted to 2011 inflation, see figure 4).¹²

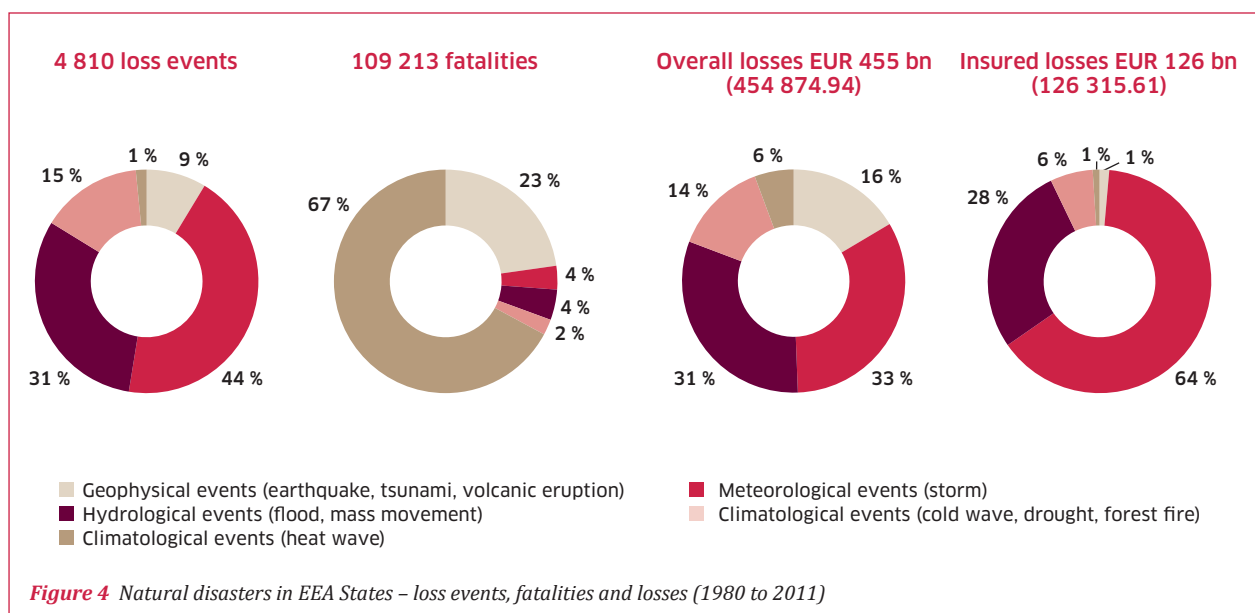
However, there is little empirical examination to show how the sector might be involved. Using evidence from the insurance industry, the Baltadapt AP outlines findings for the governance of adaptation and its mainstreaming.

Insurance is not automatically related to adaptation. However, the industry's expertise in loss reduction and risk management gives the sector a potential role in delivering climate risk reduction that can increase adaptive capacity and resilience. Therefore, it has often been named (even by its own actors) as a particularly capable player in assisting governmental authorities to adapt societies to CC. Studies (e.g. Surminski, S. 2013) show that a wide range of private adaptation activities, including raising awareness of climate risks through flood maps, promoting action by governments, and supporting individuals through incentives, information and financial means are in place. Although often a win-win situation, in reality the situation regarding e.g. flood insurances is far from being straightforward. Special conditions might make flood insurance regimes volatile and the relevant organisations unstable if certain conditions are not met (Priest S. et al, 2013).

Integration of relevant data into financial services in Germany

Binding incorporation of basic climate and extreme weather-relevant data and factors into the examination of risk in financial service provisions in accordance with EU legislation (transposition of Directive 2009/138/EC) (BMF, envisaged as of 2013): Among other things, the standardised use of scenario models for surveying climate risks will become obligatory. As a rule, these models build on data that insurance companies have been gathering jointly around the world since 1977 (www.cresta.org).

GOOD PRACTICE



¹¹ COM (2009) Common Implementation Strategy for the WFD (2000/60/EC). Guidance document No. 24: River Basin Management in a Changing Climate. Technical Report 2009040.

¹² European Environment Agency (2012): Climate change, impacts and vulnerability in Europe 2012, An indicator-based report, EEA Report No. 12/2012.

There are also tendencies towards mainstreaming in the sector by itself, e.g. by regulating and changing the character of products to overcome current regulative and operational obstacles. Bonus systems of insurance have been introduced for reducing damages caused by storms and hazards. Furthermore, companies commit themselves to provide insurance products or bonus systems with special conditions for costumers. Nordic countries like Sweden and Norway have introduced a web-based visualisation tool (VisAdapt¹³) to spur awareness of potential vulnerabilities, support adaptation activities for homeowners as well as assist insurance professionals in planning and risk assessment (Neset, T.-S. et al, 2013).

The standardised use of scenario models has to be taken into account (see good practice box).

However, there is still a lack of available insurance against natural risks and missing collaboration between public authorities and insurance in research and risk prevention. The latter constitutes the biggest challenge for insurances to be part of CC adaptation efforts (e.g. Vulturius, G. et al, 2013). The EU COM Green Paper on disaster insurance¹⁴ contains a public consultation to learn more about possibilities to improve the market for disaster insurance in the EU.¹⁵ Instruments which are assessed are inter alia product bundling, compulsory disaster insurance, government as (re-)insurances, weather insurance, contractual information requirements and market-based incentives for risk prevention.

3.5. A toolbox of instruments to support adaptation mainstreaming throughout the BSR

To enhance inclusion of adaptation in all policy sectors within the macro-region of the BSR, a toolbox with potential adaptation actions could support the cross-border exchange of experience between national and local authority bodies when implementing or creating new policies. Adaptation measures that work well in one area can usually be transferred to tackle similar situations in other areas. However, the performance of individual actions may depend on the scope of the problem and the specific scale of implementation. Making use of existing information on good adaptation practices and experiences can also optimise individual resource and effort management.

The suggested toolbox could be located in the Baltic Sea Region sub-section of the Climate-ADAPT web-platform. Furthermore, such a toolbox could offer the opportunity of including various sectors and cross-cutting issues relevant for the BSR. A first draft of a toolbox can be found on the Baltadapt website (www.baltadapt.eu). To provide a first guidance the actions identified within the Baltadapt project for all four focus sectors (see chapter 5) are already included. Within the toolbox an action can be allocated to:

¹³ [www.nord-star.info/attachments/article/84/Insurance_project_brochure_VisAdapt%20NORD_STAR%20\(1\).pdf](http://www.nord-star.info/attachments/article/84/Insurance_project_brochure_VisAdapt%20NORD_STAR%20(1).pdf)

¹⁴ COM(2013) 213 final; 16.4.2013

¹⁵ This process is seen as a very comprehensive, exemplary consultation.



Photo: Tommi Vollmann

Adaptation actions on the CLIMATE-ADAPT Platform

Explore the case studies section and the prevention good practice inventory on the CLIMATE-ADAPT Platform <http://climate-adapt.eea.europa.eu>

Furthermore, the CLIMATE-ADAPT Platform provides a comprehensive compilation of possible adaptation options for various fields.

INFO

- Different categories of instruments like regulatory, planning, economical or voluntary,
- Examples of measures relevant for the BSR,
- Practice examples,
- The four priority sectors of Baltadapt,
- The aim of adaptation, e.g. protection of human lives,
- The participation of stakeholders (including administrative level of each country),
- Target groups,
- Time lag between start and impact of the instrument,
- Importance/effectiveness,
- Urgency,
- Flexibility,
- No-regret characteristic,
- Side-effects,
- Cost-efficiency,
- Feasibility.

Moreover, the actions related to infrastructure include the results from the prioritisation exercise carried out during the Baltadapt project (see chapter 5).



Photo: Ecologic Institute

4. CONNECTING THE BSR FOR CLIMATE CHANGE ADAPTATION

The Baltic Sea is a specific eco-region, leading to the assumption that the impacts of CC as well as the needs for adaptation will be specific, too. As already indicated in chapter 2, it is important to connect all available knowledge and to ease its availability, dissemination and exchange. For this reason, actions in this chapter support the overarching aim of the Baltadapt Strategy of a connected region with informed actors on all levels. Moreover, the objective of facilitating implementation of local, national and EU strategies through cooperation is addressed in this chapter. Good cooperation between all Baltic Sea stakeholders will support the sense of shared responsibility and solidarity as well as reduced vulnerability and an increasing adaptive capacity of the region to CC. An added value will be achieved by cooperation with other macro-regional groups like the Southern neighbouring states and non-EU countries like Russia, Norway and Ukraine. The EUSBSR Action Plan¹⁶ promotes the need for good cooperation between all levels on adaptation, as well as on risk prevention and management including sharing 'best practices' that have proven to be economically, socially and environmentally sustainable.

4.1. Macro-regional cooperation

Since several CC adaptation related issues in the BSR states and the Baltic Sea can only be efficiently handled through cooperation involving all states in the region, macro-regional cooperation with Russia and other non-EU states is a significant added value.

At the macro-regional level, the goal is to strengthen cooperation on prevention, preparedness and response to become more resilient as a region to the impacts of CC. The added value of macro-regional cooperation is the exchange of knowledge and experiences to learn from each other and the use of synergies leading to cost and time savings. For example, the conduction of parallel developments instead of individual approaches that would later on need harmonization and coordination or the sharing of human resources and mutual learning that saves time and money. One important aspect of cooperation is the increased joint effort to reduce the risks of natural disasters through management and to promote activities under the UN Hyogo Declaration and Hyogo Framework for Action (HFA) (see chapter 4 in the Baltadapt Strategy).

¹⁶ SEC(2009)712/2, 2013 version

Transnational cooperation

- The focus of macro-regional cooperation should be on the exchange of knowledge and experiences.
- Joint actions and adaptation measures should focus on joint problems and risks.
- New institutional processes and better use of existing institutions is needed.
- The work and results of different transnational and inter-governmental organisations active in adaptation should be better interlinked concerning adaptation.
- National focal points of adaptation could be identified in all BSR countries.
- A transnational working group on CC adaptation or different working groups/platforms discussing CC adaptation in relation to different horizontal issues could be established.
- Non-EU countries have to be involved in BSR projects; the focus should be on cooperation with Russia and with other countries in the Baltic Sea catchment area such as Norway, Belarus, Slovakia, Czech Republic, Ukraine, and Belarus. They should be promoted whenever thematically relevant.
- Funding programmes should make adjustments considering enhancement of cooperation with non-EU countries. Guidelines on the implementation of the BSR adaptation strategy and on how to develop NAS are needed and could be developed jointly.
- Macro-regional research cooperation has to be facilitated to bridge the gaps between national and macro-regional research foci.

Sectoral cooperation

- Support and facilitation of cross-sectoral cooperation on adaptation by political will and action is needed.
- Improve sectoral communication fostered by governmental institutions.

Participation

- Improved cooperation between the different ministries and competent authorities to harmonise legislation and policies regarding climate change and adaptation in order to make them consistent.
- An adaptation cooperation and coordination council could be established (where not present already) at the national levels as a consultative body.
- Local stakeholder engagement has to be ensured in the development of adaptation strategies and measures.
- Cooperation between stakeholders on local or regional levels has to be stimulated.

Research and science-policy cooperation

- Research cooperation between the BSR countries has to be supported by political will and available funding.
- Research needs have to be identified in cooperation with stakeholders; decision support tools have to be developed with stakeholders to fulfill their needs.

The lack of macro-regional cooperation and coordination of adaptation was identified as a major obstacle for adapting the region in (previous) research projects,¹⁷ calling for an efficient linkage and coordination with other transnational agreements in the BSR. The macro-regional approach will thus facilitate cooperation of forerunners in adaptation with the ones that are lagging behind, which requires functioning coordination and cooperation in the development and implementation of adaptation actions. Joint actions and measures should focus on issues where macro-regional cooperation is more effective than individual solutions and is moreover required for sustainable solutions.

In the Baltadapt project stakeholders and national representatives stated that there is no need for new institutions as such, but new institutional processes and a better use of the existing institutions is needed. The existing institutions in the BSR are outlined in chapter 6 'Coordinators and Implementers of the Strategy' in the Baltadapt Strategy. So the suggested actions do mainly refer to a more effective design of macro-regional cooperation on CC adaptation.

An important task is to define a responsible implementing body to facilitate the process of macro-regional cooperation on adaptation as outlined in chapter 3 of the Baltadapt Strategy. One way forward would be to create a transnational BSR Climate Change Adaptation Working Group involving the national responsible authorities and various stakeholders from the BSR under the coordination of CBSS as horizontal action leader for 'sustainable development' under the EUSBSR. Instead of trying to deal with all adaptation issues, this group should identify concrete fields of actions in priority areas that would demonstrate benefits for cross border cooperation. The working group could also ensure consistency with the EUSBSR and the EU Strategy for Climate Adaptation.

Clustering existing activities in working groups or platforms, especially on horizontal issues, i.e. between sectors, would increase the effectiveness and the impact of those activities in a meaningful way. Such topic-specific cooperation would prevent overlapping and duplication of efforts and create synergies.

One challenge is to better interlink the work and results of the different macro-regional and intergovernmental organisations active in the field of climate adaptation (see chapter 6 in the Baltadapt Strategy) and to create fora that enable integration of policies and knowledge across sectors and administrative levels.

At the national level focal points on CC adaptation (maybe specific focal points on horizontal issues) would be needed in all BSR countries to cooperate on a macro-regional level and feed their work into the national policy processes and vice versa. As a result, macro-regional cooperation would influence region-wide policy-making and help to create coherent adaptation policies and actions from the macro-regional to the local levels.

¹⁷ Like BaltCICA, BalticClimate, CoastAdapt, Future Cities or RADOST; for an exhaustive overview of previous and recent research projects, see Annex A

WATERPRAXIS

The WFD requires cross-border management plans for transboundary river basins. The project WATERPRAXIS "From theory and plans to eco-efficient and sustainable practices to improve the status of the Baltic Sea" aims to improve the status of the Baltic Sea by assisting in the implementation of river basin management plans in the region. The project addresses harmonisation needs in water management practices in transnational cooperation efforts between different BSR countries.
www.waterpraxis.net

GOOD PRACTICE

Baltic Green Belt

The project Baltic Green Belt sought to foster the conservation of nature areas and put into practice sustainable development, including coastal protection, eco recreation, sustainable animal farming, military based tourism and integrated, participative coastal planning. The collaboration included environmental NGOs, universities and authorities involved in sustainable development in the coast in Germany, Poland, Lithuania, Latvia, Estonia and Russia.
<http://www.balticgreenbelt.uni-kiel.de/>

GOOD PRACTICE

The South Baltic Programme

The South Baltic Programme is a multilateral cross-border cooperation programme created on the maritime borders between the southern BSR nations. It is an area in which cross-border cooperation structures have not been set at a full scale yet. The overall objective of the Programme is to strengthen the sustainable development of the South Baltic area through joint actions increasing its competitiveness and enhancing integration among people and institutions.
<http://en.southbaltic.eu>

GOOD PRACTICE

Cooperation between countries

The impacts of CC show regional differences. Whereas for example sea level rise is more of an issue in the southern Baltic Sea countries, it is not for the northern countries as they will experience tectonic uplift at the same time. Transboundary issues create interdependencies between countries (e.g. hydrological, social and economic ones).

For that reason, some challenges of CC adaptation need regional approaches of cooperation between countries. This cooperation can relate to research and management (see section 4.4 on research cooperation). Joint adaptation and disaster risk management efforts might further need to be based on the identification of common threats (e.g. by undertaking mutual risk assessments) and must be in line with each country's adaptation objectives. A good starting point is the identification of areas relevant to adaptation action in which there have been transboundary cooperation efforts (e.g. river basin management) and seek to involve the managing authorities in the adaptation policy. The above boxes give different good practice examples



Photo: Tommi Vallmann

on joint cross-border management and a programme supporting such cooperation.

Non-EU countries

One aim of the Baltadapt Strategy is to include non-EU countries in cooperation on climate adaptation when deemed of mutual benefit. In the course of the Baltadapt project this need was expressed very clearly. Most important is the involvement of Russia as a direct coastal BSR country. In addition, as part of the catchment area, Norway, Belarus, Slovakia, the Czech Republic and Ukraine have influence on the quality and eventually the adaptive capacity of the Baltic Sea.

Political cooperation with Russia is supported by the Northern Dimension, a policy framework for cooperation involving the EU, its Member States and partner countries Iceland, Norway and Russia. It aims at providing a common platform for promoting dialogue and concrete cooperation as well as strengthening stability and promoting economic integration, competitiveness and sustainable development in Northern Europe. It could therefore also be used for cooperation related to CC adaptation of the BSR.

In 2011, an action plan to implement the Climate Doctrine of the Russian Federation until 2020 was adopted. The Climate Doctrine includes measures relating to the development of scientific, social and economic as well as personnel and information policies in the climate field, along with measures to identify and implement adaptation measures. The doctrine provides an opportunity to improve and strengthen macro-regional cooperation with Russia and supports efforts on climate adaptation by the Russian Federation. It is therefore highly important to involve Russian partners in macro-regional projects and initiatives in the future.

Russian institutions, like the Shirshov Institute of Oceanology and the Coalition Clean Baltic and Friends of the Baltic were involved in the Baltadapt process and in the

development of the Baltadapt Strategy through participation at several workshops, partner meetings and the Policy Fora.

The info box below gives some examples of cooperation with Russia through the EUSBSR External Action Programme, Interreg and FP7 projects.

4.2. Sectoral cooperation

Based on sector specific common climate challenges and opportunities in the BSR, cooperation within and between sectors should be improved. Whereas chapter 2 covers knowledge transfer to stakeholders, there is also a need

Cooperation with Russia – The EU External Action Programme

In 2010 the EC adopted a EUR 20 million action plan to finance activities supporting the external dimension of the EUSBSR. Most of the activities and projects funded take place in the framework of the Northern Dimension Policy. The Action Plan consists of three major initiatives:

- Contribution to the Northern Dimension Environmental Partnership Support Fund,
 - Support for the implementation of the Helsinki Commission Baltic Sea Action Plan (BSAP),
 - Non-State Actors and Local Authorities programme for the BSR
- Several projects support cooperation between the EU and Russia in this important region by encouraging local stakeholders to participate more effectively in addressing common challenges and exploiting common opportunities.

Russian involvement in the Baltic Sea Region Programme 2007-2013

With the status of associated partners, Russian organisations participate in 48 projects out of 65 approved projects in three calls. Russian organisations have demonstrated high interest in participation in joint transnational cooperation projects in the BSR, even with no funding available for their participation.

INFO

COUNTRY	COORDINATION BODIES	NETWORKS AND PARTNERSHIPS
Germany	<ul style="list-style-type: none"> Stakeholder conferences and stakeholder dialogues arranged by governmental bodies Online consultations during development of National Action Plan on Adaptation (2011) 	<ul style="list-style-type: none"> Partnership with the German Insurance Association (see good practice box on this page) The “Behördenetzwerk” is a network of federal agencies exchanging information on adaptation issues. Tasks can be assigned to the network.
Denmark	NAS presented in a public hearing	Local Government Denmark (see good practice box)
Finland	Sectoral workshops during the formulation of the NAS	
Norway		National Platform for Disaster Risk Reduction (Samvirkeområdet natur): network of governmental agencies and other stakeholders focusing on natural hazards, including climate change

Table 5 Types and examples of governance approaches addressing participation. Adapted from Bauer, A. et al, 2011.

for improved (cross-) sectoral knowledge transfer on climate impacts, adaptation actions and the exploitation of common opportunities in order to increase the region’s resilience to CC and ensure prosperity and competitiveness. The (cross-) sectoral communication could be fostered with the will of governmental institutions, e.g. by invitations to workshops or expert groups. On the macro-regional level, the horizontal action leaders could improve cooperation across horizontal actions. On the national level (cross-) sectoral cooperation could be improved through enhanced cooperation between the different responsible ministries and competent authorities in order to harmonise actions and policies regarding climate change adaptation.

4.3. Participation

Climate adaptation is mainly guided by a top-down approach from the EU and national legislation. Still, it is the local level that is mainly concerned by adaptation issues and that is key for adaptation actions. The participation of local stakeholders in the national as well as local processes is therefore crucial for successful adaptation. Cooperation, however, needs to be both horizontal and vertical. At the macro-regional level a BSR-wide stakeholder platform could be established in order to promote interdisciplinary interaction between stakeholders and the exchange of experiences and knowledge regarding adaptation as well as to integrate stakeholders in the decision-making process. Such stakeholder platforms are encouraged by the EC to suggest priorities on integrated maritime policy-making, as they create an opportunity for networking and strengthen capacity building, creating interdisciplinary science-based marine ecosystem management as a two-way process towards achieving GES in Europe’s seas.

GOOD PRACTICE

Local Government Denmark (LDGK)

The LDGK represents stakeholder interests in Danish communities. With respect to CC they have established a forum for discussions. With this tool communities receive assistance and support; it enhances the exchange of knowledge between communities, e.g. good practice examples.

Cooperation at the national level

At the national level, stakeholders can get involved in temporary coordination or governance bodies for example during the development of national adaptation policies. Table 5 outlines how and whether coordination bodies, networks and partnerships have been established in the BSR, which include not only policy makers from different levels but also non-state stakeholders.

The establishment of those bodies or fora for discussion and knowledge exchange throughout the BSR could enhance cross-border exchange between communities with similar challenges in different regions.

Furthermore, a large number of non-state actors play key roles when adaptation activities are developed and implemented, first and foremost at the regional and local levels. However, also at the national level there exists a range of examples illustrating how social actors are driving adaptation to CC ahead.

Cooperation on local level

The Baltadapt project reviewed stakeholder engagement in various past Baltic Sea projects. Many of the reviewed projects stated that the involvement of local stakeholders had been a vital part in their success or in the determination of their results. This shows the importance of involving the local level in different steps of CC adaptation projects.

The involvement of local stakeholders is a way to gather information, raise awareness and gain social and political acceptance of results that have a societal relevance.

ZÜRS Geo online platform

Since 2001, the German Insurance Association (GDV) has been developing a zoning system for flooding and environmental risk assessment. Since the beginning of 2008, the ZÜRS Geo online platform has supplied applications and services for the detailed evaluation of different insurance risks to the GDV’s approx. 120 corporate members who provide non-life and third party liability insurance. ZÜRS Geo is deployed in insurance companies for the evaluation of individual risks, when setting prices or for the purposes of damage management.

GOOD PRACTICE

Public commitment and public understanding of CC adaptation and the need for development of a strategy are crucial. Involving local stakeholders can moreover overcome communication barriers and diverging interests, which can become obstacles for implementation of adaptation measures.

To address these stakeholders more effort has to be placed on finding a way to present CC impacts and adaptation needs (see chapter 2), to identify and address the relevant stakeholders and to stimulate cooperation between those stakeholders dealing with similar issues on local or regional levels. The good practice box shows some good examples of local stakeholder engagement in adaptation.

4.4. Research and Science-Business-Policy cooperation

Facilitating research cooperation between the Baltic Sea countries is crucial for developing collective knowledge and common understanding of expected CC impacts and vulnerabilities and of measures needed to enhance resilience and support sustainable development in the BSR. Transnational research projects are needed on issues that have been identified as priorities at the macro-regional level, such as vulnerability reduction and adaptive capacity (see info box).

Moreover, improved science-business-policy cooperation is needed to identify policy relevant research needs and develop decision support tools like climate and risk models according to the needs of decision-makers (see chapter 2). Interactive communication is also aimed at increasing policy makers' awareness and understanding of climate related risks and options for adaptation, as well as improving researchers' awareness about the realities and perspectives of policy makers and other stakeholders. This includes information and communication on the uncertainties surrounding climate projections, which has to be improved in the science-policy cooperation in order to avoid postponing adaptation actions.

Research at the national or local levels might take precedence over other issues, so that the added value of macro-regional research cooperation should be to bridge the gaps between national and macro-regional research foci. Future European and BSR wide research programmes need to consider these research needs to ensure funding is available to address them (see chapter 6 for funding opportunities).

Local stakeholder involvement in adaptation

As part of the Baltadapt project a review was conducted of projects with relevant local stakeholder involvement in CC adaptation in the BSR. 21 projects were identified that had a stakeholder involvement component to different degrees (Baltadapt Report #11, Alberth, 2012). Some of the projects merely included dissemination activities among stakeholders, such as invitations to final conferences, while others built their project input and goals on stakeholder participation processes.

Different levels of participation and different engagement processes are appropriate for different projects or different parts of a project. Common perceived barriers to the active participation of stakeholders in CC adaptation related activities were mainly related to a lack of coordination and financing. A lack of awareness was also often identified as an obstacle.

Examples of stakeholder dialogues

Mistra-Swecia

The primary role of the stakeholder dialogues conducted within the Mistra-Swecia project was to contribute to the collection of empirical data. The project was especially interested on relevant actors' views on climate adaptation. These dialogues can be characterised as science-based stakeholder dialogues.

Radost and BaltCICA

The Radost and BaltCICA projects carried out a six-step stakeholder process with the aim of identifying adequate CC adaptation measures for the German Baltic coast. Initially, sectors on which to focus were identified and a stakeholder mapping process was conducted. After this initial step, five workshops were conducted, focusing on problem recognition and vulnerability assessment, adaptation ability appraisal, adaptation options, adaptation strategies, the implementation of adequate exemplary measures and eventually evaluation of conducted adaptation measures.

GOOD PRACTICE

European Climate Research Alliance (ECRA)

In the field of climate research nine leading European research organisations – SMHI, ENEA, NMI, DTU, FMI, CIEMAT, KNMI, NCAS and the Helmholtz Association of German Research Centres – officially joined under the lead management of the Helmholtz Association to form a European Climate Research Alliance (ECRA) in October 2011. The research organisations and institutes play a major role in the formulation and implementation of strategic research agendas with respect to key scientific and technological questions. They work on the development of international standards, network with research partners in different countries and sectors and operate important research infrastructure for the international research community. They represent a major link between the EU, the Member States and other players and sectors in the pan-European science system. Through greater incorporation into the shaping of research programmes (bottom up) and networking of research organisations and institutes among one another it is possible to achieve greater synergies by bundling research capacities. Based on Helmholtz Association (2012).

INFO

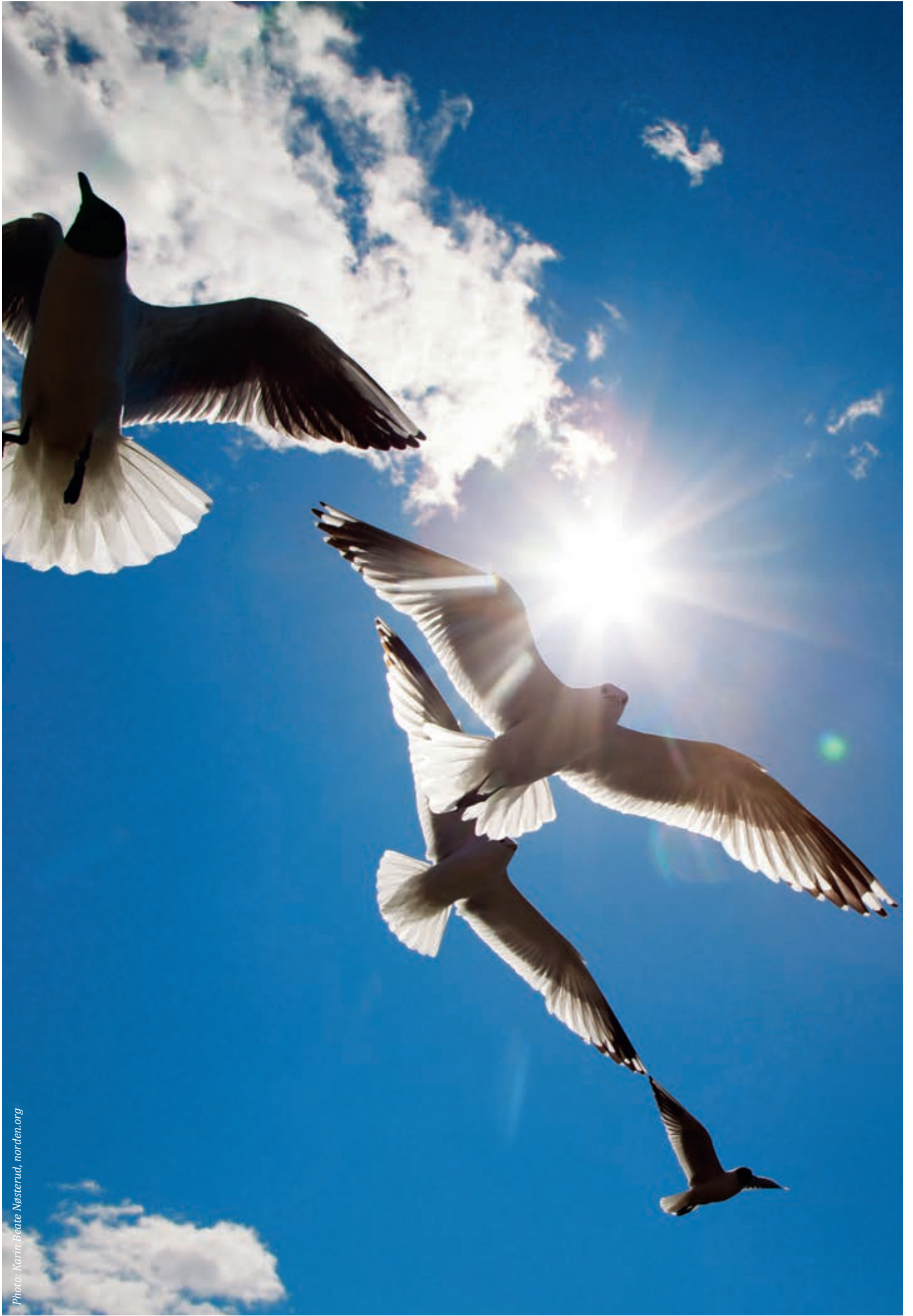


Photo: Karini Beate Nøsterud, norden.org

5. ADAPTING THE FOUR BALTADAPT SECTORS

Whereas the Baltadapt Strategy identified the main CC impacts for the BSR, the Baltadapt AP identifies the most important adaptation measures to address these impacts for the four focus sectors. The recommended actions list these adaptation measures in order of their ranking based on a prioritisation exercise applied within the Baltadapt project. All actions are directly or indirectly related to several EU policies like the EU Biodiversity Strategy 2020, the MSFD, the CFP and the CAP.

RECOMMENDED ACTIONS

Biodiversity

1. Include adaptation in the wording of European instruments like the BSAP, WFD, Habitats Directive and MSFD.
2. Implement agreed strategies to obtain “ecological” and “environmental” targets of the Baltic Sea and its coastal waters as mandated by the WFD, MSFD, BSAP and national action plans.
3. Reduce the loss of nutrients from point sources and diffuse sources such as atmospheric input and farming, e.g. by a) re-establishment of wetlands and meandering rivers to enhance denitrification, b) changes in agricultural practices (winter crops, restricted use of fertilisers and manure), c) highly effective sewage treatment and d) buffer strips and filter systems in drained agricultural areas (re-establishment of macrophytes, mussel beds).
4. Use spatial planning instruments, e.g. for the integration of CC impacts on coastal protection in regional planning and the regulation of buildings, identification of buffer zones/hazard zones, and restrictions for development in protected zones in coastal areas or setback zones.

Infrastructure

1. Improved information and knowledge distribution to stakeholders.
2. Development of new concepts for increased coastal resilience: coastal realignment, non-technical options, new techniques, vegetation and stabilisation of dunes and combination of hard and soft measures.
3. Integration in spatial planning/regional plans (e.g. ICZM): identification of buffer zones, flood plains and hazards.

Tourism (all with the same final ranking)

1. Monitoring programmes (e.g. beach and water quality)
2. Adaptation of water policies
3. Information campaigns (public and industry)

Food supply

Fisheries

1. Include CC considerations when EU multiannual management plans for Baltic Sea fish stocks are developed or reviewed.
2. Ensure that fisheries aspects are fully integrated in national action plans according to the MSFD and ensure an integrative

Methodology for prioritisation

For the purpose of prioritisation of adaptation actions from a list of possible actions, a method was applied based on de Bruin, K. et al (2009) to evaluate and rank promising and feasible adaptation options. In the following, the different steps of this methodology are described:

1. List of adaptation actions

To apply this method, first a list of adaptation actions was extracted from the Baltadapt impact assessments. The adaptation actions listed in the impact assessments have been selected and identified on the basis of a literature review and stakeholder consultation, in order to obtain the best inventory for the sectors. The inventory of actions presented CC impacts and the corresponding adaptation options.

2. Selection of adaptation options

Based on the main CC impacts for the BSR (see Baltadapt Strategy chapter 3), only the corresponding adaptation actions for these impacts were selected for the next steps.

policy approach for a) the sustainable use of the Baltic Sea, b) the protection and conservation of marine environments and c) the achievement of a “good environmental status” of the sea by 2020.

3. Implement management approaches to reduce eutrophication (in agriculture).
4. Ensure that the management of Baltic Sea living resources is based on the ecosystem approach (do not evaluate the different sectors of human activities in an isolated manner).

Agriculture

1. Strengthen farm advisory services to support farmers with regard to adapted and optimised manure management.
2. Develop climate adapted nutrient management supported by forecasting and calculation models for fertilisation, N_{min} -analysis, output procedures of slurry (liquid manure) and rests of fermentation.
3. Improve accessibility of data (knowledge about dimension, pace and insecurity of CC with parameters relevant for agriculture).
4. Reinforce research and development plans to improve knowledge about the relation between climate conditions and performance/fitness of livestock.
5. Reinforce research and develop plans to improve knowledge about the biology of new agents/pathogens, vectors and hosts.

3. Criteria for evaluating the adaptation options

In order to evaluate the adaptation options, criteria were identified (see info box for further description of the criteria). Based on the fact that not every criterion is equally important or relevant for the evaluation of the adaptation actions, each criterion received a specific weight (from 1 to 4). The weights were a result of discussion and consultation with the Baltadapt partners. They are not objective, nor can they be, but they represent the experience of the Baltadapt project partners.

4. Evaluation of the adaptation options

Based on the previous steps, a survey was prepared containing the main impacts, the adaptation actions and the criteria for evaluation for each Baltadapt sector. Baltadapt project partners were asked to fill out the survey and score each criteria for each action according to scores of 0–4 (no, low, medium, high, very high). The final result for each action was the weighted sum of scores for each criterion. For the criteria of feasibility the sub-criteria were pooled.

5. Ranking of the adaptation options

In the final step the evaluation of all experts was brought together and the adaptation actions were identified based on the highest final scores.

Other methods to assess and prioritise adaptation options are available and can be used to identify the relevant and needed adaptation actions (see good practice boxes).

GOOD PRACTICE

EU Guidelines on developing adaptation strategies

Accompanying the EU Strategy on adaptation to CC, guidelines for development of adaptation strategies were published. The recommended step-wise approach includes the assessment of adaptation options in terms of various criteria.

GOOD PRACTICE

Guiding principles for adaptation to climate change in Europe

The aim of the study is to provide a starting point for further work on identifying success cases and examples of how good adaptation could work in practice at various governance levels and in different sectors. In order to achieve this, the paper presents a set of guiding principles for good adaptation in Europe and therein identifies specific elements that support their successful implementation. Furthermore, it illustrates a few practical examples that are meant to highlight how certain aspects presented in the guiding principles can be put into practice.

http://acm.eionet.europa.eu/docs/ETCACC_TP_2010_6_guiding_principles_cc_adaptation.pdf



Photo: Ecologic Institute

INFO

Criteria for evaluation of adaptation options

Importance/Effectiveness

The level of need to implement the option in order to avoid/decrease negative impacts and/or increase resilience

Urgency

The need to implement the adaptation option immediately vs. possibly deferring it to a later point in time (long-term measures/investments could also need short-term development/planning)

(Note: A high score on urgency does not necessarily imply that the option deserves a very high final ranking. It indicates that postponing action may result in higher costs or irreversible damage)

Flexibility

The level of flexibility to adapt or develop the measure further in the future (reversibility)

No-regret characteristic

The level of usefulness of the measure, irrespective of any benefits in avoidance of CC impacts

Side effects

The level of side effects (adverse side effects, conflicts, positive synergies, within the sector or with other sectors)

Cost efficiency

Level of cost efficiency (long-term benefit is higher than short-term costs, implementation with low costs)

Feasibility

- Technical feasibility
Level of technical complexity (experience with this measure)
- Acceptance
Level of social acceptance (within stakeholders, politicians, inhabitants)
- Practical feasibility
Level of practical feasibility (planning efforts, administrative efforts, governance structure, institutional complexity)





6. FINANCING CLIMATE CHANGE ADAPTATION IN THE BSR

RECOMMENDED ACTIONS

Area- / sector-specific financing opportunities:

INTERREG V BSR

- Transnational adaptation measures on *infrastructure* (esp. maritime traffic and ports) as well as tourism might very well be tackled in projects addressing the thematic objective “Promoting sustainable transport and removing bottlenecks in key network infrastructures”.
- Transnational adaptation measures in the field of *biodiversity* might very well be tackled in projects addressing the thematic objective “Protecting the environment and promoting resource efficiency”. The same thematic objective may allow for some adaptive measures regarding fish stocks.

Horizon 2020

- Transnational adaptation measures in the field of *infrastructure* (esp. maritime traffic and ports) might very well be tackled in transnational projects under the headline “Smart, green and integrated transport”.
- Transnational adaptation measures in the field of *fisheries and biodiversity* might be tackled in transnational projects under the headline “Food security, sustainable agriculture, marine and maritime research, and the bio-economy”.
- Transnational adaptation measures in the field of *coastal tourism* might be tackled under various headlines. In the context of tourism it is very important that Horizon 2020 provides (other than the former FP7 projects) the link between research and the market, i.e. so private enterprises can engage as well.

BONUS

- Research gaps in the field of *biodiversity and fisheries* might very well be tackled in transnational projects under the thematic calls of the BONUS Programme.

EU Cohesion Fund

- Provides good opportunities for large scale investments.
- Can build, like other Cohesion Policy programmes, on spatial and developmental planning.

Rural Development Programmes

- Particularly interesting for the inclusion of CC adaptation issues in the agricultural sector.

LIFE+

- Research on adaptation, using synergies of CC and biodiversity as well as research activities on interdisciplinary aspects including coastal zone management.

Funding programmes constitute an essential regulatory instrument for the BSR states and have a crucial influence on, for example, the investment and land use decisions taken by other actors.

At the EU level the “Common Strategic Framework” governs the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF), the European Agricultural Fund for Rural Development (EAFRD) and the future European Maritime and Fisheries Fund (EMFF) in order to ensure achievement of the objectives of the EU 2020 strategy. One of the five core objectives of the EU 2020 strategy relates to CC. Under the Multi-Annual Financing Framework (MFF)¹⁹ it was agreed that the climate related expenditure will represent at least 20% between the years 2014–2020 (see section 6.1). What is more, “Promoting climate change adaptation, risk prevention and management” is one of the eleven priorities of the Commission’s proposal for a Common Strategic Framework.¹⁸

To foster governance and implementation, the aim of the EUSBSR is to identify and recommend available transnational funding opportunities for CC adaptation. Furthermore, it is intended to ensure common development of policies for funding of CC issues. The EUSBSR foresees

General actions to stakeholders

- Be aware of different directions of fundraising, from pure investments to education and social measures as well as nature adaptation and preservation measures.
- Include specific needs of the respective funding programme even if they do not directly relate to CC adaptation.
- Include as many beneficial groups as possible.²⁰
- Integrate case studies for adaptation measures.
- Regarding cooperation with Russia, the EUSBSR External Action Programme, INTERREG cross border programs and FP7 projects are very supportive.
- Develop a guidance/task force at the national level to provide information and guidance to stakeholders wishing to ask for financial support from the existing programmes but not sure how to do so.

RECOMMENDED ACTIONS

¹⁸ www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/135344.pdf

¹⁹ http://ec.europa.eu/clima/policies/adaptation/what/docs/swd_2013_133_en.pdf

²⁰ E.g. Cooperated Federal-Länder-Financing Programmes in DE are not focusing on cc adaptation but on supporting the development of education, infrastructure or economic sectors. However, while focusing e.g. on infrastructure, adaptation issues with possibly different stakeholders can be involved successfully when applying as community. Another example is the current Federal Programme on Biological Diversity in DE (led by BMU), which channels EUR 15 million each year for the implementation of the National Strategy on Biological Diversity. “Safeguarding adaptability to climate change” is expressly mentioned within the key funding area “Ecosystem Services”.

Recommended actions for mainstreaming adaptation in programming:

General

- Mainstreaming at the national or local level might take precedence over other issues. Therefore, the added value of e.g. macro-regional research cooperation is to bridge the gaps between national and EU-wide research foci. Future European and BSR wide research programmes need to consider these needs in order to have funding available to address them.
- Task force/guidance for stakeholders developed by national governments.

INTERREG V BSR

- Strengthen the link to the EUSBSR and further support CC related topics like risk prevention and management.

Horizon 2020

- Foster requirements for relevant policy outcomes and end-user involvement.

BONUS

- Support more research projects concerning the horizontal topic of adaptation and include it into both types of calls.

Cohesion Fund:

- Adaptation needs should be specifically formulated in the future cohesion policy, which will more strongly focus on the urban dimension.
- Only measures like green and grey infrastructures that improve the resilience of urban areas against CC impacts should be funded.
- The proponent of a building plan or any development needs to verify that the project is climate proof in order to receive support from the CF (COM, 2006), as suggested in the orientation paper on future Cohesion Policy.²² This can be conducted e.g. through a brief climate assessment as a part of the building approval.
- Cohesion policy investments should be climate proofed. Competitiveness measures will need to take into account constraints and opportunities of a low carbon economy.
- The CF shall offer financial support for the implementation of Heat Health Warning Systems or health information systems.
- Use cross-cutting issues and approaches to include adaptation.
- In general, see the technical guidance on integrating CC adaptation in programmes and investments of Cohesion Policy (SWD (2013) 135 final); besides the CF, the ERDF and the ESF are included.

Rural Development Programmes

- Include climate adaptation features as horizontal issues in the development of Partnership Agreements.
- Build on existing rural and sectoral strategies including adaptation strategies (see Annex C for more information about national and regional adaptation policies and ClimateAdapt (<http://climate-adapt.eea.europa.eu/web/guest/countries>)).
- For further information, see Recommendations for integrating CC adaptation considerations under the 2014–2020 rural development programmes (RDP) (SWD (2013) 139 final) http://ec.europa.eu/clima/policies/adaptation/what/docs/swd_2013_139_en.pdf

EU LIFE+

- Enhance new mainstreaming programmes.
- Promote cross-border coastal and marine Natura 2000 sites.

the possibility of financial assistance by the Seed Money Facility, which is operational as of early 2013.²¹ The preparation phase of project applications contributing to the objectives of the EUSBSR can hereby be supported.

In addition to this, actions and projects might require financing on national, regional and local levels including the private sector (see section 6.2).

6.1. Transnational financing opportunities for climate change adaptation in the BSR

The following overview provides information on which funding programmes at the transnational and national levels are relevant to adaptation, and to which extend they are able to address adaptation to CC.

In addition, some first ideas for projects possibly funded by various financing opportunities are outlined.

6.1.1. INTERREG V - Baltic Sea Region Programme (2014–2020)

The BSR Programme for the period 2014–2020 is not out for tender yet. In fact, several necessary steps still need to be taken before the Operational Programme (OP) for the new programming period 2014–2020 is endorsed in early 2014.

Currently the OP is being drafted.²³ As a preliminary result the following can be stated: The OP will refer to Europe's growth strategy "EU 2020" focusing on the EU becoming a smart, sustainable and inclusive economy. Furthermore, the OP will be closely linked to the EUSBSR as its macro-regional policy framework. Within the EUSBSR, CC and adaptation will be important parts of the horizontal action "Sustainable Development and Bioeconomy". The objectives of the OP will also consider numerous other relevant development policies of the region including e.g. Russia's Northwest Strategy.

Taking this into account, it has become obvious that at least the following three thematic objectives will be addressed by the new OP, including its future projects:

- Strengthening research, technological development and innovation,
- Protecting the environment and promoting resource efficiency,
- Promoting sustainable transport and removing bottlenecks in key network infrastructures.

The topic of CC (including risk prevention and management) will be included, together with other topics, like

²¹ See SEC(2009)712/2, version of 2013, p. 20

²² http://ec.europa.eu/regional_policy/newsroom/pdf/paweL_samecki_orientation_paper.pdf

²³ Before the OP can be finalised, agreed by the participating countries and submitted to the European Commission for approval, the legal regulatory framework for 2014–2020 has to be agreed between the European Council, the European Commission and the European Parliament. The Structural and Investment Funds regulations, as well as the multiannual Financial Perspective, are further protracted.

SME support or low-carbon economy, in the further development of the above-mentioned thematic objectives. A fourth thematic objective “Enhancing institutional capacity and effective public administration” is under debate.

Relevance for climate change adaptation in the BSR

The INTERREG V BSR Programme is of high relevance for adaptation needs and measures, given its cross-cutting potential.

Within Europe, the BSR serves as a model region in the field of CC adaptation with an already high adaptive capacity. From this perspective, other macro-regions have an even higher need for action. However, in a funding programme that is geographically limited to the BSR, the topic of CC adaptation in the BSR remains very high on the agenda.

Looking at the four focus sectors of the Baltadapt project (food supply, infrastructure, biodiversity and tourism), and the therein identified necessary adaptation measures, the following approach seems feasible:

- Transnational adaptation measures in the field of infrastructure (esp. maritime traffic and ports) as well as tourism might very well be tackled in projects addressing the thematic objective “Promoting sustainable transport and removing bottlenecks in key network infrastructures”.
- Transnational adaptation measures in the field of biodiversity might very well be tackled in projects addressing the thematic objective “Protecting the environment and promoting resource efficiency”. The same thematic objective may allow for some adaptive measures regarding fish stocks.

Target group of the BSR Programme 2014–2020

National/governmental, regional and local authorities can apply for INTERREG projects. Applicants could be “bodies governed by public law” (e.g. public research and training institutions, public business development institutions), associations formed by one or several regional or local authorities or associations formed by one or several bodies governed by public law. Furthermore, bodies established under public or private law for the specific purpose of meeting needs in the general interest, not having an industrial or commercial character, and having legal personality (e.g. private non-profit organisations) can also apply.

In the new programming period it is also foreseen to allow the participation of private project partners.

The target countries are Denmark, Germany, Poland, Lithuania, Latvia, Estonia, Finland, Sweden from the EU as well as Norway, Belarus and the Russian Federation from non-EU countries.

Further Information

<http://eu.baltic.net/>

Other information / useful reading

- Project database of the 2007–2013 programming period (useful for getting an idea of what projects look like in this funding programme): http://eu.baltic.net/Project_Database.5308.html
- Programme Manual of the 2007–2013 programming period (useful for getting an idea of the administrative framework for project application and implementation) http://eu.baltic.net/Programme_document.98.html

Call for project applications for the BSR Programme

The 1st call for project applications is likely to be opened in autumn 2014 (usually a call remains open for approx. 3 months).

INFO

Funding figures

The Programme will (most likely according to available information):

- Operate at least within a budget of approx. EUR 200 million,
- Provide up to 85% co-financing, the rest needs to be funded by the partners themselves or by national funding sources,²⁴
- Will co-finance projects with an average budget of EUR 2–4 million,
- Allow projects of up to three years duration,
- Explore scope for simplification, esp. regarding eligibility of costs and reporting.

INFO

Cross-border sectoral strategies

For all four Baltadapt sectors cross-border strategies with infrastructural and non-infrastructural (incentives, regulations, MPA designations) measures could be developed. Feasibility studies could be prepared to test the outlined macro-regional measures and guidelines and should be based on impact assessments and available databases to create informative maps.

Marine biodiversity and habitats:

Supporting local/regional authorities in spatial planning issues to support adaptation of protected areas; provide ideas for financial support of nature conservation measures and adaptation.

Fishery and agriculture:

Promoting resource efficiency and resilient ecosystems when implementing organisational and technical improvements within the fisheries industry (reduction of bycatch, use of alternative, sustainable fishing methods, stronger collaboration between nature conservation and fisheries, flexibility towards changing fish species due to CC); adaptive management of fish stocks.

Coastal infrastructure/ports:

Spatial planning in ports: relocation of infrastructure and restrictions on existing port developments and limitations for new projects; ‘climate-proof’ investments in ports, ship construction and related infrastructure facilities.

Tourism:

Providing extra capacity and technical support for local municipalities to identify their adaptation priorities and draft local adaptation plans with respect to tourism and/or biodiversity, which could serve as the basis for consultations with neighbouring municipalities and national officials.

PROJECT PROPOSAL

²⁴ The co-financing rates of these thematic objectives will be up to: 75% for partners from DE, DK, FI and SE; 85% for partners from BY, EE, LT, LV, PL and RU, and 50% for partners from Norway (see BSR Programme Newsletter, June 2013).

6.1.2. Horizon 2020

The 'Framework Programmes for Research and Technical Development' (FPs), e.g. the FP7 running from 2007 to 2013, have been the main financial tools for the EU to support research and development activities covering almost all scientific disciplines. The FP7 Programme will not be continued from 2014 onwards, but Horizon 2020 is the new EU funding instrument. Its objective is to implement the 'Innovation Union', a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with an EUR 80 billion budget, Horizon 2020 will combine all research and innovation funding currently provided through the FPs, the innovation related activities of the Competitiveness and Innovation Framework Programme and the European Institute of Innovation and Technology.

Relevance for climate change adaptation in the BSR

The relevance for CC adaptation in the BSR is high. The thematic focus area of Horizon 2020 is "to help address major concerns shared by all Europeans such as climate change, developing sustainable transport and mobility, making renewable energy more affordable, ensuring food safety and security, or coping with the challenge of an ageing population."

INFO

Funding figures

For CC, as one pillar of the Horizon 2020 Programme, approx. EUR 32 billion are earmarked until 2020. Horizon 2020 fits very well as the link between science and society and is highly important in the context of CC adaptation as well. The preliminary programme foresees that in order to achieve the objective to gain a "Better Society", Horizon 2020 will bring together resources and knowledge across different fields, technologies and disciplines, including social sciences and the humanities.

Furthermore, new requirements for policy relevant outcomes and end-user involvement are included. Funding will be focused on the following challenges:

- Health, demographic change and wellbeing,
- Food security, sustainable agriculture, marine and maritime research, and the bio-economy,
- Secure, clean and efficient energy,
- Smart, green and integrated transport,
- Inclusive, innovative and secure societies,
- Climate action, resource efficiency and raw materials.

Focusing on the four sectors of the Baltadapt project (food supply, infrastructure, biodiversity and tourism) and the therein identified necessary adaptation measures, an application could use the following approach:

- Transnational adaptation measures in the field of infrastructure (esp. maritime traffic and ports) might very well be tackled in transnational projects under the headline "Smart, green and integrated transport".
- Transnational adaptation measures in the field of fisheries and biodiversity might be tackled in transnational projects under the headline "Food security, sustainable agriculture,

marine and maritime research, and the bio-economy".

- Transnational adaptation measures in the field of coastal tourism might be tackled under various headlines. In the context of tourism it is very important that Horizon 2020 provides (other than the former flagship projects) the link between research and the market, i.e. private enterprises can engage as well.

Call for project applications

The 1st calls for project applications for the Horizon 2020 programme will be launched from early 2014 onwards.

INFO

Target groups

- Private companies (especially small and medium sized enterprises (SMEs), private research institutes or other industrial participants),
- Public organisations (e.g. public universities, regional authorities, public research organisations (PROs),
- Individual researchers (from both the public and private sectors),
- Researchers and organisations outside the EU – e.g. from candidate countries, associated states, developing countries, emerging economies etc.

Further information:

<http://ec.europa.eu/research/horizon2020/>

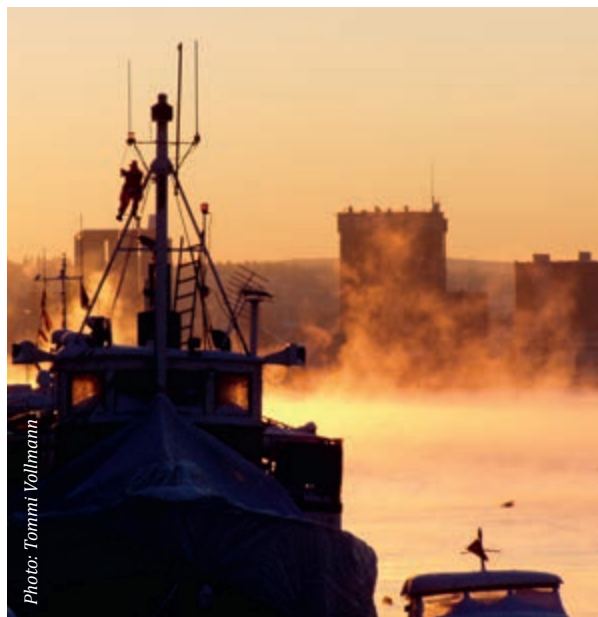


Photo: Tommi Vollmann

6.1.3. BONUS Programme

As a kind of macro-regional sub-division of the FP7, BONUS brings together the research communities of marine, maritime, economic and social research to address the major challenges faced by the BSR. As such, the BONUS Programme follows a similar funding pattern as that applied by FP7. But as opposed to FP7, it sets a geographic focus on the BSR.

The overall framework of the BONUS strategic research agenda 2011–2017 consists of five main strategic objectives that form the backbone for a total of 19 specifically defined themes:

- The first strategic objective aims at understanding the complexity of the Baltic Sea ecosystem structure and functioning.
- The second strategic objective aims to meet the multi-faceted challenges of linking the Baltic Sea with its coast and catchment area.
- The goal of the third strategic objective is to enhance sustainable use of coastal and marine goods and services of the Baltic Sea.
- The fourth strategic objective aims at improving the capabilities of society to respond to the current and future challenges directed to the BSR.
- The goal of the fifth strategic objective is to develop improved and innovative observation and data management systems, tools and methodologies for marine information needs in the BSR.

Relevance for climate change adaptation in the BSR

Although the geographic focus is on the BSR, the programme is only suited for selected adaptation measures. Therefore the relevance is medium to high.

Knowledge gaps that require further research can be especially well addressed by this financial instrument.

The ‘thematic calls’ address the complexity of the Baltic Sea ecosystem, the role and management of coastal areas as well as changes in the catchment. Also, research needs related to fisheries management and maritime risk management and pollution from shipping will be included. Issues related to governance, policy, lifestyles and maritime spatial planning will also be on the agenda.

The ‘innovation calls’ will address eco-technological approaches, aquaculture as well as measurement techniques and information and communication technology services. They will give small and medium sized enterprises a chance to participate actively in developing knowledge and products for the benefit of the Baltic Sea.

Research gaps concerning biodiversity and fisheries, as identified within the Baltadapt project, might very well be tackled in transnational projects under the thematic calls of the BONUS Programme.

Target group

The BONUS programme targets mainly research organizations. Depending on the type of project, also enterprises (esp. SMEs) can participate (funding rates differ depending on the size of the enterprise). National public entities or international organisations can become project partners but cannot receive any funding from BONUS.

The BONUS programme is implemented via multi-partner, transnational projects involving at least three eligible legal entities that are independent of each other, referred to as project participants. The participants must be from three different EU member states or associated countries (such as e.g. NO), of which at least two are BONUS participating states (DK, EE, FI, DE, LV, LT, PL and SE). The project participants can also include legal entities from third countries (e.g. RU).

Participants established in associated countries receive less co-financing and participants established in third countries can't receive any co-financing from the BONUS Programme.

Further information:

<http://www.bonusportal.org>

Call for project applications

BONUS invites proposals for projects that address strategic objectives of the research agenda. The first two calls were already closed in early 2013.

The second round of calls is due in the second half of 2013 (most probably starting from October / November 2013). It will consist of thematic and innovation calls for tender.

INFO

Funding figures

The maximum funding available is EUR 100 million for the years 2011–2017. Half of the sum is provided by the EC, the other half by the participating funding institutions.

INFO

Funding figures

Participants established in the BONUS participating states can receive:

- Up to 100% co-financing for research organisations (i.e. a legal entity established as a non-profit organisation which carries out research or technological development as one of its main objectives)
- Between 25% (large enterprises) and 70% (small enterprises) co-financing for profit-making enterprises

INFO

Transboundary coastal protection

Development of a transboundary coastal protection programme for the Baltic Sea based on existing analyses and maps, e.g. provided by the Baltadapt assessments regarding future erosion along the coastline.

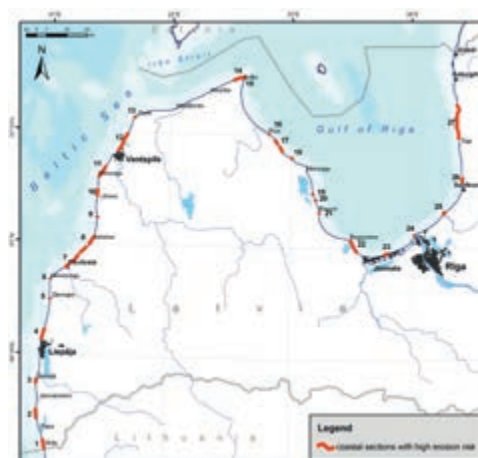


Figure 5 Coastal sections with high erosion risk and recommendations for coastal protection measures in each section

Source: Baltadapt Report #5

PROJECT PROPOSAL

6.1.4 EU Cohesion Fund (CF)

In contrast to the other funding programmes presented in this chapter, the CF is not a programme to which applicants can apply directly. Rather, the responsible governmental bodies of the Member States themselves submit their applications for assistance for projects to the EC. Managing authorities²⁵ support this process and involve stakeholders in choosing the projects they propose.

The CF is aimed at Member States whose Gross National Income per inhabitant is less than 90% of the Community average. The fund is dedicated to strengthening the social and economic cohesion of the Community through the balanced financing of projects, technically and financially independent project stages and groups of projects forming a coherent entity.²⁶ Targeting the fields of environment and trans-European transport infrastructure networks, it is a key for climate proofing existing and future EU policies.

Relevance

Despite the fact that the programme usually does not finance CC adaptation related projects, the CF provides a good opportunity for large-scale investment projects. Internal rules in each Member State decide whether or not applicants should be allowed to receive funding from the government. Important to know is that CF and other Cohesion Policy programming can build on spatial and development planning, particularly for infrastructural interventions. In addition, opportunities are offered for developing new economic sectors linked to adaptation policy. The relevance for the BSR is therefore medium to high.

Target group

The programme takes CC impacts in several sectors into account, among others health infrastructure, housing expenditure, tourism, water supply and transport infrastructure. The public sector is the main target group including research institutions and public-private partnerships.

During the last programme period (2007–2013) not all Member States were eligible, but Lithuania, Latvia, Estonia and Poland in the BSR were.²⁷

INFO

Funding figures

In terms of financial volume, the CF is among the most important funding schemes of the EU, representing a share of 20% of the EU resources for cohesion policy in the present period of funding 2007–2013.²⁸ According to the Commission Proposal for the MFF (Multi-Annual Financing Framework) 2014–2020, resources for the CF will be as high as EUR 68.7 billion.

Recommendations for climate proofing the EU CF

The CF is divided into a Partnership Agreement and an OP. Within the Partnership Agreements there is the opportunity to include CC adaptation throughout the process given its binding character. Horizontal principles²⁹ include CC adaptation and should be used to ensure the coverage of CC impacts. CF should directly fund more research and strategic planning for CC adaptation where information is lacking. A new focus on result indicators may support the inclusion of adaptation into indicators for all programmes.³⁰

Further information:

http://ec.europa.eu/regional_policy/thefunds/cohesion/index_en.cfm

6.1.5. Rural Development Programmes (RDP)

The current RDP already provides several adaptation measures related to agriculture. Pillar 2 of the programme is particularly important. It funds targeted measures that address specific adaptation concerns in different regions. Therefore, funding levels should be maintained or strengthened. Moreover, additional technical support to farmers should be provided. The relevance for the BSR is therefore high.

Further information

http://ec.europa.eu/agriculture/rurdev/index_en.htm



6.1.6. EU LIFE+

The LIFE+ programme focuses on environment and biodiversity within the whole EU. It does not have a transnational imperative or focus at the local level. New features are the mainstreaming aspect and a component for climate action.

The programme's aim is co-funding in nature conservation and in other environmental fields that are of European interest (e.g. water). It has three components:

- Nature and Biodiversity,
- Environment Policy and Governance,
- Information and Communication.

²⁵ RegioAtlas provides information about the Structural Funds Managing Authority per country: http://ec.europa.eu/regional_policy/atlas2007/index_en.htm; in some cases national Managing Authorities delegate responsibility to regional bodies ("Delegated Managing Authorities"). In such cases, the delegated Managing Authority may apply.

²⁶ It is now subject to the same rules of programming, management and monitoring as the ESF and the ERDF.

²⁷ Eligibility is restricted to Member States whose per capita gross national product (GNP) is less than 90% of the Community average and which have a programme designed to achieve the conditions of economic convergence as set out in Article 104 of the Treaty establishing the European Community. At the moment Greece, Spain, Ireland and Portugal are eligible to benefit from the CF. The 10 new EU Member States are also eligible.

²⁸ http://www.bundesfinanzministerium.de/nn_1310/DE/Wirtschaft_und_Verwaltung/Europa/was-macht-europa-mit-unserem-geld/EU_Strukturpolitik/2204.html?_nnn=true.

²⁹ (Article 8 of General regulation proposal)

³⁰ See Technical guidance on integrating climate change adaptation in programmes and investments of Cohesion Policy, SWD (2013) 135 final.

Within the component „Nature“, the objective is the implementation of the Birds and Habitats Directive and the development of best practice and demonstration projects. The focus is on long-term investments in Natura 2000 sites and on the conservation of species and habitats.

For the component “Biodiversity”, the implementation of the EU Biodiversity Strategy has the highest priority. “Environment policy and governance” focus on implementation, updating and development of European Union (EU) environmental policy and legislation. The approach of demonstration and/or innovation is thereby followed. When focusing on implementation the aim is to bridge the gap between research and development results and widespread implementation, and to promote innovative solutions with a public dimension. Actions can be on CC, water, air, soil, urban environment, noise, chemicals, environment and health, waste and natural resources and forests.

The objective of the component „Information and Communication” is communication and awareness raising campaigns and actions for implementing, updating and developing European environmental policy and legislation. Visible communication and awareness raising have to target a defined environmental problem. The project does not have to be innovative or demonstrative.

Regulation of the LIFE+ 2014–2020 programme

The proposed regulation of the LIFE+ 2014–2020 programme includes a mainstreaming aspect. The idea behind it is to catalyse changes in policy development and implementation by disseminating into other policies. In addition to the previous elements there is a new climate action component (mitigation and adaptation). This includes climate governance and information.

Although the budget is still not decided and estimations range between EUR 3.2–3.9 billion, innovative financing instruments shall be applied. In general, there will be a shift from a pure bottom-up approach to a flexible top-down approach. Same as in the previous programming periods, multiannual work programmes are planned. However, integrated projects (30% of funds) are a new type of projects.

Currently there are still some issues under discussion. While the management of the projects remains central, co-financing rates are not yet determined, as member states have applied for higher rates to support communities (a mere 50%, such that co-financing constitutes a barrier for many communities). The Commission and EU Parliament do not support higher co-financing rates. In terms of funding, a more geographical balance as well as national allocations instead of pure quality based funding are aimed at, given the low success rates of proposals by new member States. Another aspect introduced is the idea of linking LIFE+ projects more intensively to regional strategies. Integrated projects will become more relevant.

The proposed regulation of the LIFE+ 2014–2020 programme also includes elements relevant for coastal zones as indicated in the Communication on an EU Strategy on adaptation to CC.³¹ Projects on adaptation include work on coastal erosion, coastal defences, flooding, controlling development, rehabilitation works and sea level rise.

Relevance for climate change adaptation in the BSR

The relevance for the BSR is high, as the new programme includes components of climate action and especially adaptation. It supports integrated projects linked to regional strategies and elements relevant for coastal zones.

According to the Baltadapt project, transnational adaptation measures in the field of coastal zone management (as a soft tool to support biodiversity along with human uses) as well as tourism might very well be tackled in projects addressing the thematic objective “Promoting sustainable use and nature protection in coastal areas”.

The new programme phase will shift from a pure bottom-up to a flexible top-down approach, meeting the integrative aspects of adaptation, which should be governed by both sides.

Duration and target group

- Duration between 2 and 5 years, average project grant EUR 1 million,
- Up until now purely a bottom up instrument,
- Maximum 50% co-financing (exceptions for LIFE+ Nature) for whole project budget, 50% of the eligible costs,
- Numbers of partners not limited,
- One call for proposals per year,
- Actions within the EU only,
- Public or private bodies, actors or institutions registered in the EU,
- Overall success rates: 20% (2007), 32% (2008), 34% (2009) in the whole EU.

Possible fields for transnational cooperation under LIFE+

- Demonstration projects of communities (or a transnational community network) showing good examples of innovation on CC,
- Enhance transnational knowledge exchange,
- Enhance transnational science-policy cooperation,
- Flooding,
- Implementation of MSFD,
- Cross-border protected areas,
- Cross-border MPAs,
- Chances for funding of adaptation actions under LIFE+ lie especially in the new mainstreaming aspect of the programme and the Climate Action component,
- Evaluation criteria should be developed for these components which ensure that adaptation is taken into account in the projects; important would be that funded transnational actions have to respect existing macro-regional or transnational strategies.

INFO

³¹ COM(2013) 216 final

Enlarging transboundary bio-corridors

The stronger enforcement of bio-corridors across borders built on existing maritime and coastal Natura 2000 sites could further enhance mainstreaming of adaptation measures and support biodiversity. Green infrastructure means can support the establishment of stepping stones and transition areas. Furthermore, each infrastructure project of a special size and kind is based on an EIA examining how the Natura 2000 network is affected. Enlarging transboundary bio-corridors would lead to an inherent examination of e.g. pipeline buildings and ship routes, supporting a more biodiversity friendly infrastructure and higher resilience of ecosystems throughout the BSR. Terrestrial approaches like that of the project "Baltic Green Belt" (www.baltic.green.belt.eu) could serve as best practice examples. Existing Natura 2000 maps, like the one for Estonia (see Figure 6), could be a planning basis for transition zones with safeguarded areas for no land use change, opportunity areas for possible land use change and intermediate areas.

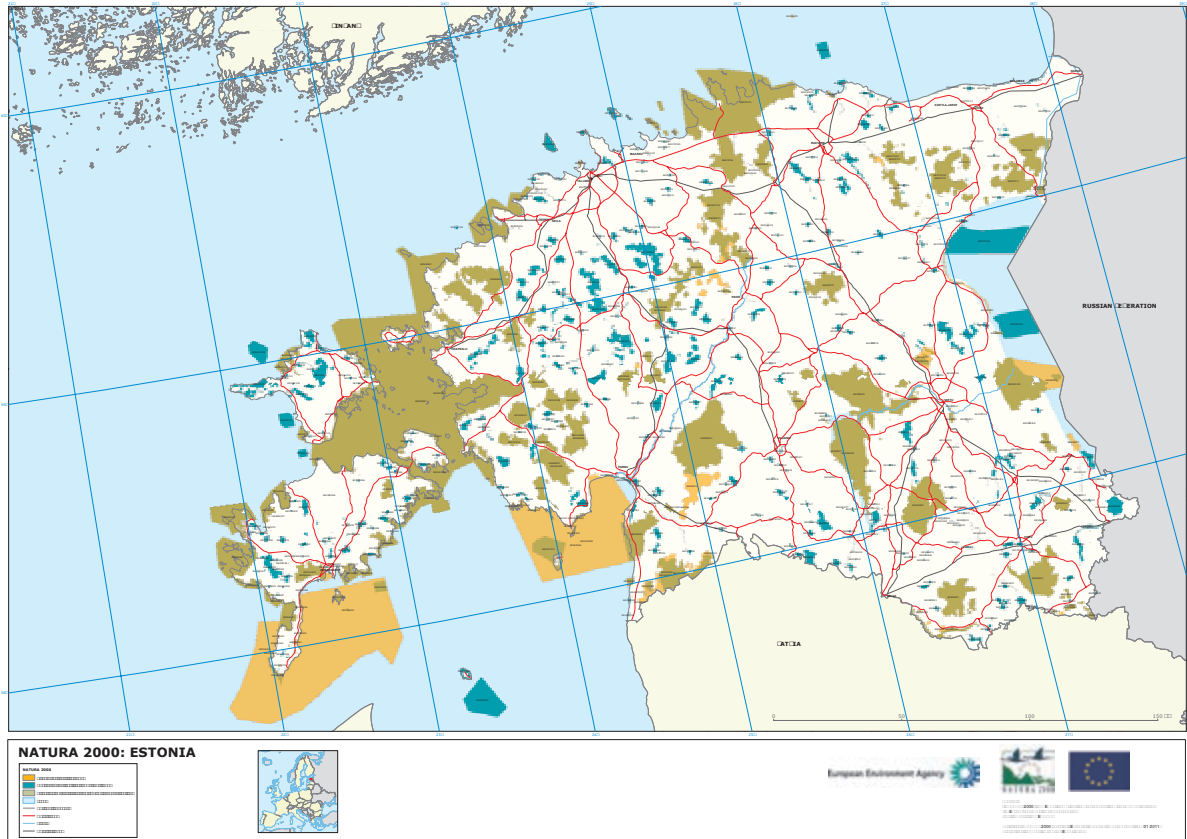


Figure 6 Estonian Natura 2000 sites based on the 1979 Birds Directive and the 1992 Habitats Directive
Source: www.eea.europa.eu/data-and-maps/figures/natura-2000-birds-and-habitat-directives-3

Funding figures

- 1/2007-12/2013, budget over EUR 2 billion
- 78% for projects, of which 50% were oriented towards nature and biodiversity; aim: 15% for transnational projects
 - The 15% target was already reached but in 2014 funding for transnational projects will be available again

Further information

<http://ec.europa.eu/environment/life/index.htm>

6.1.7. European Maritime and Fisheries Fund (EMFF)

In the future, CC (adaptation and mitigation) is to be integrated into the five specific EU priorities which will be pursued under the EMFF, namely increasing employment and territorial cohesion in fisheries areas, fostering innovative, competitive and knowledge based fisheries, promoting sustainable and resource efficient fisheries,

fostering innovative, competitive and knowledge based aquaculture and promoting a sustainable resource efficient aquaculture.

6.2. National, regional and local financing of actions for adaptation

Besides EU funding programmes, it is possible to finance adaptation measures by property owners or communities. In some BSR countries coastal zone management is the main tool to support innovative initiatives although it is treated differently. In some countries it is mainly a sub-national matter like in Sweden and Finland. Special funds are in place and municipalities do not have to use local taxes to finance coastal protection works (see info box on p. 43).

In Denmark private initiatives have been developed by communities to finance adaptation measures independently (see good practice box).

Coastal zone management within the BSR

National authorities have only a limited role in coastal defence since spatial planning falls under the responsibility of the respective municipalities. Coastal protection work needs to be initiated and financed by landowners. In practice, when the property of a private landowner is at risk of a natural disaster, the municipality can verify which other surrounding landowners are affected and may act as the coordinator of the coastal protection work. Municipalities might bear (part of) the costs and can apply for financial support from the Swedish Civil Contingencies Agency (MSB). With the exception of erosion, this agency may grant co-financing for all preventive measures against flooding and other natural disasters up to 80%. MSB grants are only available for existing built-up zones. New development projects are expected to take certain safety margins into account. For the period 2007–2009, the MSB has an annual budget of about EUR 4.3 million, whereas yearly applications are in the range of EUR 10–12 million.

Private initiatives to finance adaptation measures, example of Northern Zealand, Denmark

- Initiative of property owners in the community of Gribskov
- Long-term project: sand embankment
- Costs: EUR 5.4 million for the first three years, afterwards approx. EUR 400,000 per year
- Tax for property in a 1 km zone
- Graded after distances (the nearer you live to the coast the more you have to pay)

Helpful links:

<http://klimatilpasning.dk/en-us/service/cases/sider/give-usoursandybeachesback.aspx>

www.safecoast.org/public_download/

www.safecoast.org/national/index.php?nat=2

<http://eng.kyst.dk/coastal-protection-in-denmark.html>

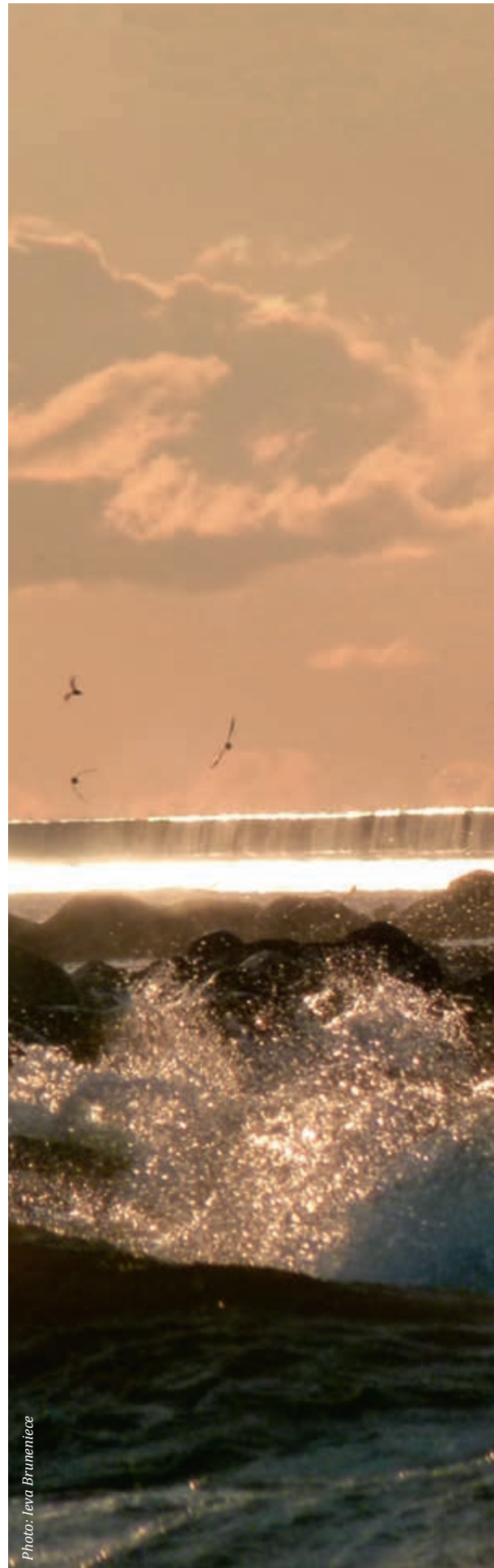


Photo: Jeva Bruumentee

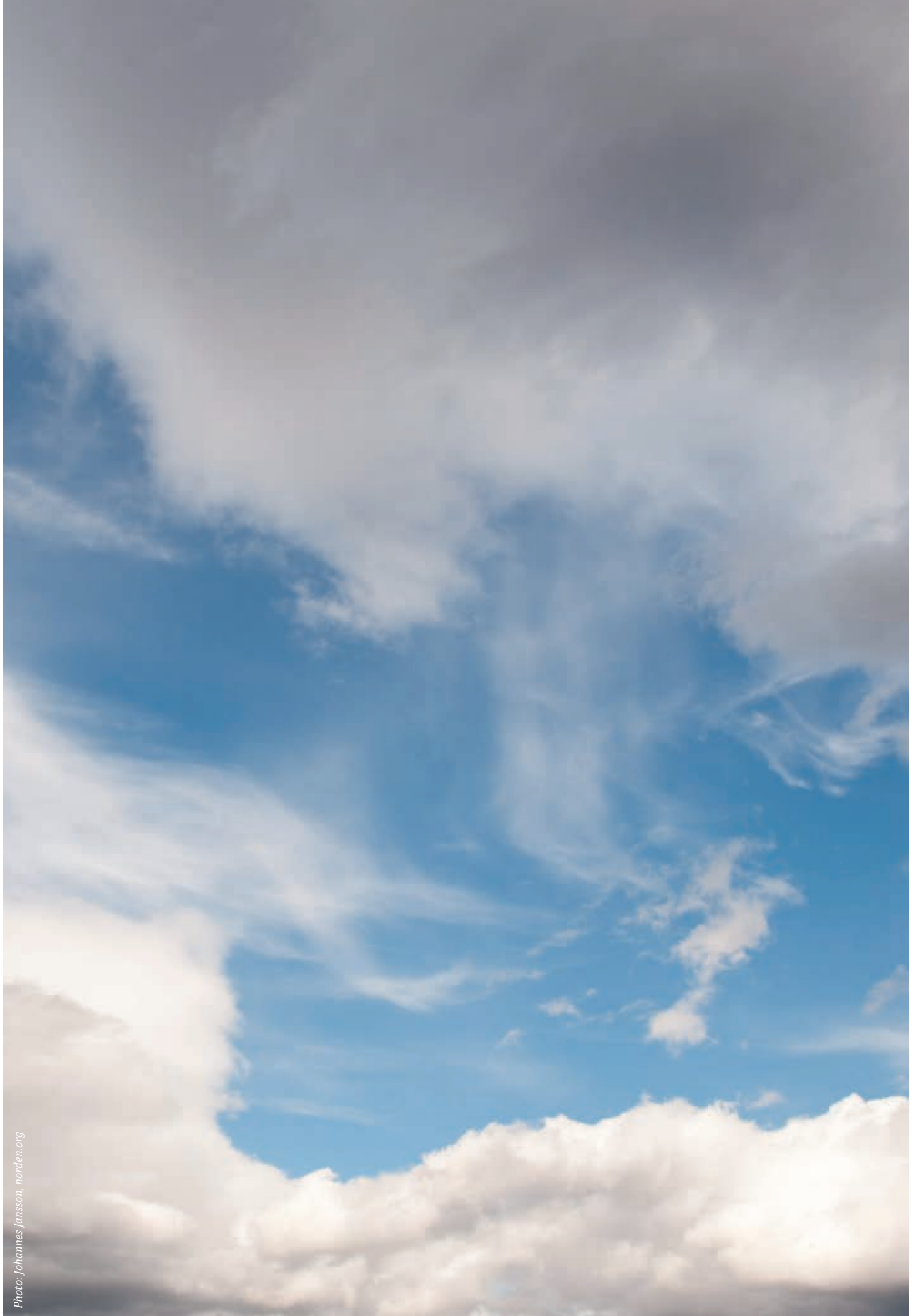


Photo: Johannes Jansson, norden.org

7. EVALUATION AND UPDATING OF THE ACTION PLAN

In the course of implementation, the need to monitor and evaluate adaptation measures on their effectiveness rises. One way to do so is with the help of indicators, whereas the focus of the indicators will depend strongly on the desired purpose of the evaluation, which can be:

- to evaluate the success of adaptation policies and inform future policy development,
- to evaluate the impact of adaptation actions supported across the region and within Member States to account for funding and inform programme planning, and
- to evaluate the standard of adaptation across the region and within Member States to justify funding and programme decisions.

Given the range of potential evaluation needs, most likely a set of different, sector-specific indicators has to be developed since various sectors and policy areas are affected (see info box for more information on the development of indicators).

With regard to updating the EUSBSR Action Plan, the European Commission has developed a 'typology of updates to the Action Plan' of the EUSBSR to serve as a general rule of thumb when evaluating proposals for updates. Broadly, the typology distinguishes between:

- A. Updates for the purpose of clarifying, correcting or 'filling the gaps'
- B. Updates that propose to cover new ground or are required because of a change in circumstances
- C. Updates proposing to move, significantly amend or delete flagship projects. While proposals to move projects are generally accepted, the other two types are evaluated on a case-by-case basis.

A similar approach could be applied to updating this Baltadapt AP, which could be undertaken by the recommended implementers (see chapter 6 in the Baltadapt Strategy).

Adaptation indicators

The last step of the six-step adaptation tool in the CLIMATE-ADAPT platform provides information on developing monitoring and evaluation systems that can track the success and failure of adaptation measures and plans. Monitoring is necessary to determine whether changes or refinements are needed to respond to new conditions and information. Moreover, monitoring can enhance the adaptation process itself.

In addition, links to the EEA work as well as other national initiatives or guides are given for the development of monitoring and evaluation of adaptation with the help of indicators.

EEA - Topic Centre on Climate Change and Air Quality

The EEA wants to provide a theoretical and practical framework for the development of adaptation indicators with its work to monitor the implementation of adaptation policies, measures and actions. A first set of indicators was presented in 2008 and an updated version is expected in 2013.

UK

In response to a growing demand for practical support in evaluating adaptation progress and performance, the toolkit 'AdaptME' was developed. It aims to help practitioners to think through some of the factors that can make an evaluation of adaptation activities inherently challenging and equip them to design a robust evaluation. Process indicators are suggested useful tools in this context, as they provide means of measuring the ways in which a service or intervention has been delivered. www.ukcip.org.uk/adaptme-toolkit/

Germany

The German set of indicators is developed at the moment. It aims to complement the EEA indicators for the Germany-specific purpose of supporting the national report in the context of international CC negotiations and to link the indicator system to other reporting efforts such as biodiversity and sustainability reporting. The preparation of a first indicator-based report on adaptation to climate change in Germany is expected to be published towards the end of 2014.

Finland

In 2009 Finland was the first country to carry out an evaluation of its NAS. The main objective of the evaluation was to determine the progress made in different sectors since the strategy was published in 2005. www.mmm.fi/attachments/mmm/julkaisut/julkaisusarja/2009/5IEsngZYQ/Adaptation_Strategy_evaluation.pdf

For further information please refer to the recent EEA reports:

www.eea.europa.eu/publications/adaptation-in-europe

8. REFERENCES

Baltadapt reports

Alberth, J. 2012: Review of Stakeholder Dialogues in Climate Adaptation Related Projects in the Baltic Sea Region. Baltadapt Report # 11. Danish Meteorological Institute, Copenhagen. www.baltadapt.eu.

Alberth, J.; Hjerpe, M. & Schauser, I. 2012: Conceptualization of Vulnerability and Review of Assessments around the Baltic Sea Region. Baltadapt Report # 7. Danish Meteorological Institute, Copenhagen. www.baltadapt.eu.

Andersson, L.; Alberth, J.; Van Riper, F., 2013: Baltadapt Stakeholder Dialogues - Stakeholder Input from the Tourism and Agricultural Sectors to the BSR Climate Adaptation Strategy. Baltadapt Report #10. Danish Meteorological Institute, Copenhagen. www.baltadapt.eu.

Bruneniece, I. 2012: Gap-fit Analysis on Adaptation to Climate Change Research and Policy Design. Synthesis Report. Baltadapt Report # 1. Danish Meteorological Institute, Copenhagen. www.baltadapt.eu.

Dahl, K.; Josefson, A. B.; Göke, C., Aagaard Christensen, J. P.; Hansen, J.; Markager, S.; Rasmussen, M.B.; Dromph, K.; Tian, T.; Wan, Z.; Krämer, I.; Viitasalo, M.; Kostamo, K.; Borenäs, K.; Bendtsen, J.; Springe, G.; Bonsdorff, E. 2012: Climate Change Impacts on Marine Biodiversity and Habitats in the Baltic Sea – and Possible Human Adaptations. Baltadapt Report # 3. Danish Meteorological Institute, Copenhagen. www.baltadapt.eu.

Hjerpe, M.; Schauser, I.; Alberth, J: Guideline on the System Vulnerability. Analysis of the Baltic Sea Region Vulnerability to the Impact of Climate Change. Baltadapt Report # 8. Danish Meteorological Institute, Copenhagen. www.baltadapt.eu.

Krämer, I.; Borenäs, K.; Daschkeit, A.; Filies, Ch.; Haller, I.; Janßen, H.; Karstens, S.; Kule, L.; Lapinskis, J. & Varjopuro, R. 2012: Climate Change Impacts on Infrastructure in the Baltic Sea Region. Baltadapt Report # 5. Danish Meteorological Institute, Copenhagen. www.Baltadapt.eu.

Peltonen, H.; Varjopuro, R. & Viitasalo, M. 2012: Climate Change Impacts on the Baltic Sea Fish Stocks and Fisheries. Review with a Focus on Central Baltic Herring, Sprat and Cod. Baltadapt Report # 4. Danish Meteorological Institute, Copenhagen. www.baltadapt.eu.

Baltadapt Climate Info Bulletins

Baltadapt Climate Info #1: Air Temperature (Bøssing Christensen, O., & Kjellström, E., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #2: Precipitation (Bøssing Christensen, O., & Kjellström, E., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #3: Wind Climate (Bøssing Christensen, O., & Kjellström, E., 2012). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #4: Sea Level Rise (Borenäs, K., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #5: Oxygen Content (Borenäs, K., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #6: Salinity (Borenäs, K., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #7: Water Temperature (Borenäs, K., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #8: Biodiversity and Habitats (Dahl, K., Frederiksen, M., Peltonen, H., Bonsdorff, E., 2012). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #9: Biological Production (Dahl, K., Peltonen, H., Viitasalo, M., Wan, Z 2012). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #10: Wind Waves (Dobrynin, M., Krarup Leth, O, 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #11: River Discharge (Wallman, P., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #12: Nutrient Loads to the Baltic Sea (Wallman, P., 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #13: Eutrophication (Borenäs, K., Krämer, I, 2011). <http://climate-info.baltadapt.eu>.

Baltadapt Climate Info #14: Sea Ice (Kjellström, 2013). <http://climate-info.baltadapt.eu>.

Others

Bauer, A., Feichtinger, J. and R. Steurer (2011): The governance of climate change adaptation in the OECD countries: Challenges and approaches. Institute of Forest, Environment, and Natural Resource Policy, 2011

Biesbroek, G.R., Swart, R.J., Carter, T.R., Cowan, C., Henrichs, T., Mela, H., Morecroft, M.D., Rey, D. (2010) Europe adapts to climate change: Comparing National Adaptation Strategies. *Global Environmental Change* 20, 440-450.

de Bruin K, Dellink RB, Ruijs A, Bolwidt L, van Buuren A, Graveland J, de Groot RS, Kuikman PJ, Reinhard S, Roetter RP, Tassone VC, Verhagen A, van Ierland EC (2009) Adapting to climate change in the Netherlands: an inventory of climate adaptation options and ranking of alternatives. *Clim Change* 95:1-2.

BMU, 2012: Adaptation Action Plan for the German Strategy for Adaptation to Climate Change. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

Burton, I., Diringer, E., Smith, J., (2006) Adaptation to Climate Change: International Policy Options. University of Toronto, Toronto, p. 36.

Ciscar J-C., Ana Iglesias, Luc Feyen, László Szabó, Denise Van Regemorter, Bas Amelunge, Robert Nicholls, Paul Watkiss, Ole B. Christensen, Rutger Dankers, Luis Garrote, Clare M. Goodess, Alistair Hunt, Alvaro Moreno, Julie Richards, and Antonio Soria (2011) "Physical and economic consequences of climate change in Europe".

European Commission, (2013) Green Paper on the insurance of natural and man-made disasters; 213 final, Strasbourg 16.4.2013

COM(2009) 248, EUSBSR final

European Commission, (2007) Green Paper from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, Adapting to climate change in Europe – options for EU action.

European Environment Agency, (2005) Environmental Policy Integration in Europe: Administrative Culture and Practices. European Environment Agency, Copenhagen.

FAO, (2007) Adaptation to climate change in agriculture, forestry and fisheries: Perspective, framework and priorities. Inter-departmental working group on climate change, Food and Agriculture Organization of the United Nations, Rome.

Füssel, H.-M., Jol, A., Hildén, M. (2012) Climate change, impacts and vulnerability in Europe. An indicator-based report. EEA Report/No 12/2012

Helmholtz Association (2012) Helmholtz-Position paper on HORIZON 2020 On the activities „Climate Action,

Resource Efficiency and raw materials” and “Food security, sustainable agriculture, marine and maritime research and the Bio-economy”

IPCC, (2007) Summary for Policy-Makers, in: Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J., Hansen, C.E. (Eds.), *Climate change 2007: Impacts, adaptation and vulnerability. Contribution of Working Group II to the fourth assessment report of the Intergovernmental Panel on Climate Change*. Cambridge Univ. Press, Cambridge [et al.], pp. 7-22.

Isoard, S. & M. Winograd (2013) Adaptation in Europe: Addressing risks and opportunities from climate change in the context of socio-economic developments; EEA Report/ No 3/2013.

Keskitalo, E.C.H., (2010b) Introduction - Adaptation to Climate Change in Europe: Theoretical Framework and Study Design, in: Keskitalo, E.C.H. (Ed.), *Developing adaptation policy and practice in Europe: Multi-level governance of climate change*.

Neset, T.-S., Lilja, A., Navarra, C., Opach, T., Linnér, B.-O. & J. Johansson (2013): study presented during the ECCA Conference in Hamburg 2013, publication not available yet; Linköping University, SMHI Norrköpping, Sweden and NTNU Trondheim, Norway.

Priest, S. & E. Penning-Rovsell (2013): study presented during the ECCA Conference in Hamburg 2013, publication not available yet; Middlesex University, FHRC, Oxford, GB. Russian Action Plan (2011): Action Plan to implement the Climate Doctrine of the Russian Federation until 2020, Government of the Russian Federation, 25 April 2011.

SEC(2009)712/2, European Union Strategy for the Baltic Sea Region – Action Plan

Surminski, S. (2013), study presented during the ECCA Conference in Hamburg 2013, publication not available yet, London School of Economics, Great Britain.

SWD (2013) 134 final and Annex 6

Vulturius, G. & C. H. Keskitalo (2013): study presented during the ECCA Conference in Hamburg 2013, publication not available yet; Umea University, Sweden.

Watkiss, P (Editor), 2011. The ClimateCost Project. Final Report. Volume 1: Europe. Published by the Stockholm Environment Institute, Sweden, 2011. ISBN 978-91-86125-35-6.

ANNEX

A) Relevant adaptation projects for some sectors

Key findings

From the 237 EU-funded projects collected, 186 projects do address (cross-sectoral) one or more of the main key themes “climate change impacts” and “adaptation to climate change”. Most of the research projects focus on climate change impacts. In this context, the water sector and the biodiversity sector are most covered. A medium amount of research activities can be found for the sectors of agriculture, forestry, coastal areas and urban areas. Little research on climate change impacts exists for sectors such as fishery, energy, industry and health. A similar picture can be drawn for research on adaptation to climate change. Not all of the research projects which address the issue of adaptation will provide concrete adaptation measures as an output.

When looking at the vulnerability criteria outlined in the Baltadapt Report # 7, it becomes clear that questions on costs (adaptation and damage costs) are not well researched. Only a few projects are addressing the issue at all. The situation is similar for social issues. Little research has been carried out so far and some sectors such as agriculture, forestry or fisheries do not cover social issues at all.

Please note: *The four sectors especially analysed by Baltadapt are marked in bold.* The compilation of research projects is the result of internet research carried out between May 2012 and March 2013. Research in the field of climate change is highly dynamic and thus this overview on research projects is not exhaustive. Question marks in the table relate to some uncertainty in the judgement.

THEMES	CLIMATE SCENARIOS	CLIMATE IMPACTS	ADAPTATION TO CLIMATE CHANGE	DAMAGE COSTS	ADAPTATION COSTS	SOCIAL ISSUES	ADAPTATION MEASURES	DECISION SUPPORT/ GUIDANCE
Soils and land use	- SUDPLAN? - ESPON climate	- CLISP - SEAREG - SUDPLAN - ESPON climate	- ESPACE (I and II) - CLISP - C-Change - SUDPLAN	- SEAREG? - ESPON climate?	- C-Change?	- C-Change - SEAREG - SUDPLAN - ESPON climate	- ESPACE (I and II) - ESPON climate	- SEAREG? - SUDPLAN
Agriculture	- ADAGIO	- ADAGIO - ACCRETe - AGRISAFE - CLIVAGRI - GLOBAL-CHANGEBIOL-OGY - VEG-i-TRADE - CARAVAN	- ADAGIO - Aquarius - ClimaFruit - AGRISAFE - VEG-i-TRADE - CARAVAN	- AGRISAFE?	- Aquarius?		- ADAGIO - Aquarius - ClimaFruit - AGRISAFE	- CLIVAGRI - GLOBAL-CHANGEBI- OLOGY - CARAVAN
Forestry		- BACCARA - MANFRED - ForeStClim - ILAND - ISEFOR - PYR- - TREELINE- - MOD - TRANZFOR - TRECC - FUTURE- - forest - MOTIVE	- ALP FFIRS - MANFRED - REINFFORCE - ECHOE - ILAND - NOVELTREE - TRANZFOR - FUTUREforest - MOTIVE	- BACCARA? - ForeSt- - Clim?	- NOVELTREE?		- ALP FFIRS - REINFFORCE - NOVELTREE - TRANZFOR	- MANFRED - ForeStClim - ECHOES - ILAND - ISEFOR - FUTURE- - forest - MOTIVE
Biodiversity	- HAB- - IT-CHANGE? - ECOSPACE? - EMMA?	- ATEAM - MACIS - HAB- - IT-CHANGE - AIM-HI - INCREASE - ALIENFISH&- - CLIMCHANGE - ALPINE- - FRAGMENTA- - TION - AVIAN - FLIGHT - BALTIC - SEALS HIS- - TORY - BIOTIME - CHAOS - CLIMBIO- - HOTSPOTS - CORAL- - CHANGE - ECOSPACE - EMMA - GEDA - LRSB - MAREA - RECLAIM - THE WEAK- - EST LINKS	- BRANCH - MACIS - HAB- - IT-CHANGE - Biochar - BIOTIME - CORAL- - CHANGE - ECOSPACE - EMMA - GEDA - MAREA - THE WEAK- - EST LINKS	- RECLAIM?	- ECOSPACE?	- ECOSPACE	- BRANCH - MACIS - HAB- - IT-CHANGE - ECOSPACE - GEDA	- ATEAM - BRANCH - HAB- - IT-CHANGE - Biochar - ALPINE- - FRAGMENTA- - TION - BIOTIME - CHAOS - EMMA
Fisheries and Aquaculture		- MERSEA - ATP	- MERSEA - MESMA - BALANCE	- ATP			- MERSEA	- MESMA - BALANCE

THEMES	CLIMATE SCENARIOS	CLIMATE IMPACTS	ADAPTATION TO CLIMATE CHANGE	DAMAGE COSTS	ADAPTATION COSTS	SOCIAL ISSUES	ADAPTATION MEASURES	DECISION SUPPORT/ GUIDANCE
Water management: water safety, scarcity and droughts	- CLIME? - AMICE - DI-NAS-COAST - BaltSeaPlan	- CLIWAT - DMCSEE - DiPol - CLIME - NeWater - SCENES - WATCH - CLIMATEWATER - WATER-WORLDS - IMVUL - ACQWA - Euro-limpacs - SILMAS - CC-WaterS - NO REGRET - ATP - CLAMER - CLIMB - EPOCA - HERMIONE - GENESIS - BASIN - PARAWARM - REFRESH - URBAN-FLOOD - VIROCLIME - WASSERMed - THOR? - CARBO-CHANGE - MedSeA - DI-NAS-COAST - HERMES - ORFOIS - SESAME IP	- PREPARED - ALFA - CLIWAT? - FloodResilientCity - MARE - WATER CoRe - AlpWater-Scarce - CLIME - NeWater - SCENES - CLIMATEWATER - WATER-WORLDS - ACQWA - Euro-limpacs - LABEL - EULAKES - INARMA - SAWA - AMICE - WAVE - CC-WaterS - FLOWS - FRaME - NO REGRET - CORFU - HERMIONE - REFRESH - URBANFLOOD - SIGMA for Water - SHARP - MESMA - DINAS-COAST - EMWIS - BaltSeaPlan - WATER-PRAXIS - SPICOSA	- PREPARED? - ALFA? - WATER CoRe? - CLIME? - SCENES? - ACQWA - INARMA - SAWA - AMICE - CC-WaterS - FLOWS? - FRaME - ATP - CLAMER? - CORFU? - WAS-SERMed - MedSeA? - DI-NAS-COAST? - ORFOIS?	- PREPARED - ALFA? - WATER CoRe? - CLIME? - SCENES? - ACQWA - INARMA - SAWA - AMICE? - CC-WaterS - FLOWS - FRaME - CORFU - REFRESH	- PREPARED - ALFA - WATER CoRe - CLIME - NeWater - SCENES - WATCH? - WATER-WORLDS - ACQWA - INARMA - AMICE - CC-WaterS - FLOWS - FRaME - CLAMER - CORFU - MedSeA - DI-NAS-COAST - ORFOIS	- PREPARED - ALFA - MARE - WATER CoRe - AlpWater-Scarce - CLIME - NeWater - CLIMATEWATER - WATER-WORLDS - ACQWA - Euro-limpacs - LABEL - INARMA - SAWA - AMICE - WAVE - CC-WaterS - FLOWS - FRaME - NO REGRET - CORFU - REFRESH - DINAS-COAST	- CLIWAT - DMCSEE - DiPol - FloodResilientCity - AlpWater-Scarce - CLIME - SCENES - WATCH - Euro-limpacs - EULAKES - SILMAS - FLOWS - CLIMB - HERMIONE - GENESIS - URBAN-FLOOD - SIGMA for Water - SHARP - MESMA - EMWIS - HERMES - BaltSeaPlan - WATER-PRAXIS - SPICOSA
Energy			- BTN - AEOLUS		- AEOLUS?		- BTN - AEOLUS	
Infrastructure and transport	- ECCONET - EWENT	- ECCONET - EWENT - EXTREME SEAS	- QUANTIFY? - MoCuBa - ECCONET - EWENT - WF - EXTREME SEAS	- ECCONET - EWENT	- ECCONET - EWENT		- QUANTIFY? - MoCuBa - ECCONET - EWENT - EXTREME SEAS	- WF
Industry and Services, including Tourism		- ClimAlpTour - CCH	- ClimAlpTour - CCH	- CCH		- CCH	- ClimAlpTour	- CCH
Health		- CCASHh - EDEN - ARCRISK - CLEAR - ICEPURE	- CCASHh - ARCRISK	- CCASHh	- CCASHh	- CCASHh - CLEAR	- CCASHh - ARCRISK	- EDEN
Coastal areas		- ASTRA - ATLANTOX - IMCORE - CoastAdapt - Ice2sea - THESEUS - Coastal Sustainability as a Challenge	- COASTANCE - ASTRA - Safecoast - BLAST - IMCORE - CoastAdapt - ESCAPE - THESEUS	- Coast-Adapt - THESEUS		- Coast-Adapt - THESEUS	- COASTANCE - ASTRA - Safecoast - BLAST - IMCORE - ESCAPE - THESEUS	- ATLANTOX - IMCORE - Ice2sea - THESEUS

THEMES	CLIMATE SCENARIOS	CLIMATE IMPACTS	ADAPTATION TO CLIMATE CHANGE	DAMAGE COSTS	ADAPTATION COSTS	SOCIAL ISSUES	ADAPTATION MEASURES	DECISION SUPPORT/ GUIDANCE
Urban areas, buildings and telecom	- SUDPLAN?	- GRaBS - NOAH'S ARK - SUDPLAN - URBAN-FLOOD	- GRaBS - NOAH'S ARK - PREPARED - FloodResil-ienCity - Future Cities - CAT-Med - MoCuBa - CORFU - SUDPLAN - URBANFLOOD	- GRaBS - NOAH'S ARK? - PREPARED? - Future Cities? - CAT-Med? - CORFU?	- NOAH'S ARK? - PREPARED - Future Cities? - CAT-Med? - CORFU	- PREPARED - CAT-Med - CORFU - SUDPLAN	- NOAH'S ARK - PREPARED - Future Cities - CAT-Med - MoCuBa - CORFU	- GRaBS - NOAH'S ARK - FloodResil-ienCity - SUDPLAN - URBAN-FLOOD
Cross cutting	- ADAM - BaltCICA - ClimChAlp - DAMOCLES - ENSEMBLES - MICRODIS - PESETA - CLIMATE-COST - CCTAME - CECILIA - Clim-ATIC - Clavier - PRUDENCE - CLARIS LPB - WCC 3	- CLIMSAVE - BaltCICA - BalticClimate - CPA - CIRCE - CIRCLE(2) - ClimChAlp - DAMOCLES - ACCELERATES - ENSEMBLES - MERSEA - MICRODIS - PESETA - MEECE - CLIMATE-COST - CCTAME - ENSURE - CECILIA - PermaNET - Clim-ATIC - Clavier - GLOCHAMORE - PRUDENCE - ENHANCE - ASIAN MONSOON - CCECON - CLARIS LPB - WCC 3	- ADAM - AMICA - CLIMSAVE - BaltCICA - CPA - Future Cities - REGIOCLIMA - CIRCE - CIRCLE(2) - ClimChAlp - MERSEA - MICRODIS - CLIMATECOST - CCTAME - Mountain Trip - THARMIT - PermaNET - CAT-Med - Clim-ATIC - GLOCHAMORE - ENHANCE - SIC adapt! - CLARIS LPB - LOWTEV - RESPONSES - RSC	- ADAM? - BaltCICA - Future Cities? - CIRCE - ClimChAlp - MICRODIS - PESETA - CLIMATE-COST - CCTAME - THARMIT - CAT-Med? - Clavier - CCECON? - WCC 3?	- ADAM? - BaltCICA - Future Cities? - CIRCE - ClimChAlp - CLIMATECOST - CCTAME - THARMIT - CAT-Med? - CCECON?	- ADAM? - CIRCE - ClimChAlp - MICRODIS - PESETA - CLIMATE-COST - THARMIT - CAT-Med - WCC 3	- ADAM - AMICA - CLIMSAVE - BaltCICA - CPA - Future Cities - CIRCE - ClimChAlp - MERSEA - MICRODIS - MERSEA - CCTAME - THARMIT - CAT-Med - Clim-ATIC - SIC adapt! - CLARIS LPB - LOWTEV - RESPONSES	- BalticClimate - REGIOCLIMA - CIRCLE(2) - MEECE - CLIMATE-COST - Mountain Trip - PermaNET - GLOCHAMORE - PRUDENCE - ENHANCE - SIC adapt! - WCC 3 - RSC

B) EUSBSR Flagship projects (non exhaustive)

Only the flagship projects relevant to Baltadapt are included, e.g priority areas related to CC impacts and adaptation in the BSR.

PRIORITY AREA	FLAGSHIP PROJECTS (EXISTING, PROPOSED)	PROJECT COORDINATOR (INCL. MS)
PA Nutri – Reducing nutrient inputs to the sea to acceptable levels		
	PRESTO	Union of the Baltic Cities, Commission on Environment (Finland)
	Putting best agricultural practices into work – the Baltic deal	Federation of Swedish Farmers and Latvian Rural Advisory and Training Centre
	Assessment of regional nutrient pollution load and identification of priority projects to reduce nutrient inputs from Belarus to the Baltic Sea	NEFCO (Finland)
PA Hazards – Reducing the use and impact of hazardous substances		
	Reduce the use of the Substances of Very High Concern (SVHC) in the BSR	The International Chemical Secretariat
	Make the BSR a lead in sustainable management for pharmaceuticals	Swedish Medical Products Agency
	Assess the need to clean up chemical weapons	Chief Inspectorate of Environmental Protection, Poland
	CHEMSEA	Institute of Oceanology PAS, Sopot, Poland
	Development of HELCOM Core Set Indicators	HELCOM secretariat
PA Bio – Preserving natural zones and biodiversity, including fisheries		
	Create MPAs	Finland
	Restrict the introduction of new alien species by ships	HELCOM, Sweden and Germany
	Establish measures to facilitate migration and reproduction of migratory fish species	HELCOM
	Managing Fisheries in Baltic MPAs (BALTFIMPA)	HELCOM
PA Agri – Reinforcing sustainability of agriculture, forestry and fisheries		
	Sustainable forest management in the BSR – EFINORD	NCM/SNS; Ministry of Agriculture and Forestry/ Finland, EFINORD
	Sustainable rural development	Poland/ Ministry of Agriculture and Rural Development and Sweden/ National Rural Network
	Network of institutions for management and conservation of plant genetic resources	NordGen
	Reinforcement of animal health and disease control	Nordic Council of Ministers
	Develop and improve coordination and cooperation among Member States and stakeholders on fisheries management in the Baltic Sea	Sweden/ Ministry of Rural Affairs
	Eradicating discards	Denmark/ Ministry of Food, Agriculture and Fisheries
	Ensure sustainable fishing	Sweden/ Swedish Agency for Marine and Water Management
	Aquabest	Finland/ Finnish Game and Fisheries Research Institute
	Baltic forum for innovative technologies for sustainable manure management	MTT Agrifood Research/Finland and Agro Business Park/Denmark
	Recycling of phosphorus	Germany/ Julius Kühn Institute together with Baltic MANURE
PA Secure – Protection from emergencies and accidents on land		
	Develop risk scenarios based on risk assessments and identify gaps for all main hazards of the BSR	CBSS Secretariat
	Strengthen training activities and exercises in cooperation with the countries of the BSR	CBSS Secretariat and/or the Swedish Civil Contingencies Agency (MSB)
	Applying APELL (Awareness and Preparedness for Emergencies at the Local Level) (potential flagship project)	tbd
	Effective learning and exchanging best practices on urban safety through a local city network (potential flagship project)	Union of the Baltic Cities (UBC) Commission on Local Safety
	Form a network of key civil protection actors in the BSR through the “Baltic Leadership Programme”	Swedish Institute

PA Tourism – Reinforcing cohesiveness of the macro-region through tourism		
	Network of regional tourism innovation centres for BSR (potential flag-ship project)	Regional Council for Southwest Finland and Turku Touring/Centre of Expertise for Tourism and Experience Management
	Facilitate sustainable land excursions of cruise ship operators in the Baltic Sea	AIDA Cruises, Germany
	Attract tourists to rural areas especially the coastal ones (potential flag-ship project)	
	Promote the cultural and natural heritage	Office of the Marshal of the Pomorskie Voivodeship; Pomorskie Tourist Board
	Develop strategies for sustainable tourism	University of Greifswald (Germany)
PA Innovation – Exploiting the full potential of the region in research and innovation		
	BSR Stars	Sweden and Lithuania
	Create Funding models for transnational Innovation and Research in the BSR	Region Skåne
	The Baltic Ring: establish an infrastructure for free movement of knowledge in the Baltic Sea Area	Nordic Council of Ministers
	ScanBalt Health Region: cross-sectoral and transnational projects for innovation in health and in life sciences	BioCon Valley® GmbH Greifswald (Germany), Lithuanian Biotechnology Association (Lithuania) and ScanBalt fmba (Denmark)
	Setting up a Baltic Science Link	Sweden: Swedish Research Council
	SUBMARINER (Sustainable Uses of Baltic Marine Resources)	Ministry of Economic Affairs of the Land Schleswig-Holstein, Germany; Co-leaders: the Swedish Agency for Marine and Water Management and the Maritime Institute in Gdańsk/Poland
HA Spatial – Encouraging the use of maritime and land-based spatial planning in all Member States around the Baltic Sea and develop a common approach for cross-border cooperation		
	Multi-level Governance in MSP (Maritime Spatial Planning) throughout the BSR - PartiSEApate	Maritime Institute Gdansk

C) National and regional strategies / Governance Analysis

COUNTRY	REGION	ADAPTATION STRATEGY OR PART OF A CLIMATE STRATEGY	NATIONAL RESPONSIBILITIES/ INFORMATION PLATFORMS	NATIONAL RELEVANT STRATEGIC DOCUMENTS/FURTHER INFORMATION
GERMANY				NAS
<i>National</i>			Federal Ministry for the Environment www.bmu.de/en Platform: KomPass http://goo.gl/SVyYmG , responsible is the Federal Environment Agency www.uba.de	German Adaptation Strategy (2008): http://goo.gl/RGwNG and Action Plan (2011): http://goo.gl/dN9gCL Further information: http://goo.gl/aI2PKL ; http://goo.gl/z57Bq (German only); relevant links http://goo.gl/0x4NN ; report "Adaptation is necessary", 2008 http://goo.gl/1Lnm3
<i>Regional</i>	Bavaria	Bavarian strategy for climate change adaptation (BayKLAS), 2009: http://goo.gl/YRCJz		
	Brandenburg	Catalogue for measures to climate protection and for adaptation to the consequences of climate change, 2008: http://goo.gl/b1Gn0		
	Lower Saxonia	Recommendations for an Adaptation Strategy to Climate Change in Lower Saxonia, 2012: http://goo.gl/000KY		
	North-Rhine-Westphalia-	Adaptation to climate change – A Strategy for NRW, 2009: http://goo.gl/v0Zhib		
	Saxony	Climate Change and Agriculture: Strategy for adaptation of the Saxonian agriculture to climate change, 2009: http://goo.gl/2b6nu and http://goo.gl/TErBm		
	Saxony-Anhalt	Adaptation strategy and action plan, 2010: http://goo.gl/uPMYkL		
	Saarland	Climate Protection concept 2008-13 (including adaptation strategies): http://goo.gl/GS2jCC		
	Schleswig-Holstein	Climate Protection programme (Climate protection and adaptation to cc), 2009: http://goo.gl/wC8fn		
	Thuringia	Climate- and adaptation programme, 2009: http://goo.gl/1Xwlj		
	Baden-Wuerttemberg	Concept for climate protection 2020PLUS (Adaptation strategy under development), 2011: http://goo.gl/dqcmVo		
	Berlin	Laender Energy Programme (LEP) 2006-2010 (no own strategy for Berlin): http://goo.gl/G03RQ		
	Bremen	Concept regarding Climate Change in Bremen: Consequences and Adaptation, 2012: http://goo.gl/ZEioIG		
	Hamburg	Adaptation strategy under development http://goo.gl/B5cHNN Climate Action in Hamburg (Update 2009-10): http://goo.gl/DZCde		

	Hesse	Hessian adaptation strategy (under development): http://goo.gl/MN2lPf		
	Mecklenburg-West Pomerania	Adaptation strategy under development: http://goo.gl/lJTXz		
	Rheinland-Pfalz	Climate Report 2007 (with adaptation options): http://goo.gl/5rLdG		
DENMARK				NAS
National			Task Force on cc adaptation within the Danish Ministry of the Environment/Danish Nature Agency http://goo.gl/8F9Ms Platform: Danish Portal for Adaptation to cc http://goo.gl/x1tuaG CC Adaptation Platform: http://goo.gl/YXmgma and Information Centre for cc adaptation www.dmi.dk	Danish Adaptation Strategy http://goo.gl/vUTYvf Further information: see Danish publication list for 2007-2013: http://goo.gl/bTVm7E
Regional	Nordjylland	No information in English available		
Adaptation strategies can be mainly found in regional development plans. "The municipalities are thus left with sole responsibility for the carrying out of adaptation work." Examples of municipalities: Hedensted, Greve Source: Nordregio, http://goo.gl/vhkM3	Hedensted (Danish municipality), eastern Jutland	Community Plan for cc and cc adaptation http://goo.gl/9vAvx		
	Midtjylland	Regional Development Plan: http://goo.gl/S6Hs4 "The Regional Council will: Cooperate with the municipalities on mapping the expected consequences of climate changes." Project CLIWAT (http://cliwat.eu), also Northern Sea		
	Syddanmark	Strategy for Sustainable Development http://goo.gl/Evyb4		
	Hovedstaden (Capital Region)	Regional Development Plan http://goo.gl/diBzu		
	Sjælland	Regional Climate Strategy (First in Denmark, Climate Adaptation is a focal part) http://goo.gl/ZYwW4 Annual 2009: http://goo.gl/GCEZSK		
	SWEDEN			
National			Ministry of Environment and its Environmental Protection Agency, Ministry for Rural Affairs, Swedish Civil Contingencies Agency for financial support, Swedish Agency for Marine and Water Management, Ministry for Enterprise, Energy and Communications http://goo.gl/EfZAaN Platforms: Klimaanpassnings-Portal http://www.klimatanpassning.se sowie Climate Change adaptation portal by SMHI http://goo.gl/Bwj7au	Report of 2007: "Sweden facing cc – threats and possibilities, not available in English http://goo.gl/Qe19pa in 2008 implementation by the Swedish government of a climate and energy policy with a section on cc adaptation http://goo.gl/Aqfj5 Further information: Swedish research programme on Climate, Impacts and Adaptation Program http://www.mistra-swecia.se CLIMATOOLS http://goo.gl/wFwAl3

Regional		County Administrative Board and municipalities are responsible Municipalities: “The question of adaptation has only gradually arisen” (Source: Nordregio, http://goo.gl/ZK1PuK “...the de-centralised nature of the political system means there can be large differences between municipalities in terms of their commitment to developing climate change adaptation strategies. This varies according to a municipalities size, vulnerability to climate change and wealth” http://goo.gl/lz3jU		
	Stockholm	The City of Stockholm’s Climate Initiatives (See: Adapting to a warmer, more humid climate), 2010: http://goo.gl/tjqm15		
	Åre	Climate Adaption Measures: Destination Åre, transport solutions for tourist destinations: http://goo.gl/pBuHFq		
	Lycksele	Climate Adaption Strategy: Lycksele http://goo.gl/Qf4GcU http://goo.gl/RFcid		
FINLAND				NAS
National			Coordination Group for Adaption to cc (evaluation report): http://goo.gl/03CXg Platform: FINADAPT: http://goo.gl/EhEzc	Finish Adaption Strategy and Action Plan: http://goo.gl/G3SMD
Regional (No local approaches on local level)	Helsinki Metropolitan Area	Preparation of Urban adaptation strategy for the Helsinki Metropolitan Area: http://goo.gl/NMZWR See also Project Julia 2030 (Mitigation of and Adaption to the Climate Change in the Helsinki Metropolitan Area): http://goo.gl/evKuu		
RUSSIA				No NAS yet
National			Government of the Russian Federation, Russian Federal Forestry Agency, Russian Federal Service for Hydrometeorology and Environmental Monitoring http://goo.gl/Qg50B	Russian Action Plan (2011): Action Plan to implement the Climate Doctrine of the Russian Federation until 2020 http://goo.gl/qfVdl
Regional	Europe and Central Asia	Adapting to Climate Change in Europe and Central Asia, 2009: http://goo.gl/nM45S		
ESTONIA				No NAS yet
National			Ministry of the Environment http://www.envir.ee Platforms about major emergencies and practical information: http://goo.gl/oRPPd	Estonia’s Fifth National Communication http://goo.gl/Sintp National Forest Development Plan until 2020 http://goo.gl/BT144 National Health Plan http://goo.gl/SE98o Astra Project (Developing Policies and Adaptation Strategies to cc in the BSR http://www.astra-project.org
Regional		No information about RAS Only Astra Project http://www.astra-project.org/		

LATVIA				No NAS yet
National			Ministry of the Environment http://www.vdm.gov.lv/eng Ministry of Agriculture http://goo.gl/sn0nMy Spatial Planning Department at Ministry of Environmental Protection and Regional Development http://goo.gl/bj0YO Ministry of Economics http://goo.gl/jY8XP	Astra Project (Developing Policies and Adaptation Strategies to cc in the BSR http://www.astra-project.org
Regional	Salacgrivas novads	Climate Change Adaptation Strategy for Salacgriva municipality (Salacgrivas novada klimata pārmaiņu adaptācijas stratēģija) http://goo.gl/szQhv http://goo.gl/jwTqJ		
	Riga City	Flood Risk Management Plan for Riga City (adopted in 20.11.2012) as result of the project "Integrated Strategy for Riga City to Adapt to the Hydrological Processes Intensified by Climate Change Phenomena" Life plus Project No. LIFE08 ENV/LV/00045; http://goo.gl/zsiah		
LITHUANIA				NAS
National			Ministry of Environment with its Environmental Protection Agency EPA http://goo.gl/tsjYY Ministry of Energy http://www.enmin.lt/en/ Platform: Climate Adaptation Platform http://goo.gl/DAsuqY	Strategy for National Climate Management Policy 2013-2050, 2012 http://goo.gl/lm9L5I Law on Financial Instruments for cc Management, 2009 http://goo.gl/08iwq National Strategy for the Implementation of the UNFCCC until 2012, from the year 2008 http://goo.gl/tEjwP Astra Project (Developing Policies and Adaptation Strategies to cc in the BSR http://www.astra-project.org
Regional		No information about RAS		
POLAND				No NAS yet
National			Ministry for Environment http://www.mos.gov.pl Institute of Environmental Protection http://www.ios.edu.pl Ministry for Agriculture with its agricultural agencies ARMA (Agency for Restructuring and Modernisation http://goo.gl/qPHCD and ANR (Agricultural Property Agency, http://goo.gl/HKgcZ as well as the Parliament of the Federal States "voivodeships" as central element of the administration	Fifth National Communication for the UNFCCC Conference of the Parties http://goo.gl/qWsnj
Regional	Pomorskie Voivodeship	The Pomorskie Voivodeship Development Strategy (rather protection than adaptation) http://goo.gl/2g3PR		





ABBREVIATIONS

Baltadapt AP	Baltadapt Action Plan – Recommended actions and proposed guidelines for climate change adaptation in the Baltic Sea Region	ERDF	European Regional Development Fund
Baltadapt Strategy	Baltadapt Strategy for Adaptation to Climate Change in the Baltic Sea Region	EE	Estonia
BMU	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	ESF	European Social Fund
BSAP	Baltic Sea Action Plan	EU	European Union
BSR	Baltic Sea Region	EUSBSR	EU Strategy for the Baltic Sea Region
BY	Belarus	FI	Finland
CAP	Common Agricultural Policy	GDV	German Insurance Association
CBSS	Council of the Baltic Sea States	HELCOM BSPAs	HELCOM Baltic Sea Protected Areas
CC	Climate change	ICZM	Integrated Coastal Zone Management
CF	EU Cohesion Fund	JPI	Joint program initiative
CFP	Common Fisheries Policy	KNMI	Royal Netherlands Meteorological Institute
CIEMAT	Research Centre for Energy, Environment and Technology	LDGK	Local Government Denmark
COM	European Commission	LT	Lithuania
DE	Germany	LV	Latvia
DG CLIMA	The Directorate-General for Climate Action	MFF	Multi-Annual Financing Framework
DG ENV	The Directorate-General for the Environment	MPA	Marine Protected Area
DG MARE	The Directorate-General for Maritime Affairs and Fisheries	MSFD	Marine Strategy Framework Directive
DG REGIO	The Directorate-General for Regional and Urban Policy	MSP	Maritime Spatial Planning
DK	Denmark	NAS	National adaptation strategy
DTU	Technical University of Denmark	Natura 2000	Birds and Habitats directives
EAFRD	European Agricultural Fund for Rural Development	NGOs	Non-Governmental Organisations
ECRA	European Climate Research Alliance	NMI	Norwegian Meteorological Institute
EMFF	European Maritime and Fisheries Fund	NO	Norway
ENEA	Italian National Agency for New Technologies, Energy and Sustainable Economic Development	OP	Operational Programme
		PL	Poland
		RDP	Rural Development Programme
		RU	Russia
		SE	Sweden
		SMHI	Swedish Meteorological and Hydrological Institute
		WFD	Water Framework Directive

IMPRINT

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Recommended Reference:

Altvater, S. & Stuke, F. 2013: Baltadapt Action Plan. Recommended actions and proposed guidelines for climate change adaptation in the Baltic Sea Region. Danish Meteorological Institute. Copenhagen.

Commissioned by:

Federal Ministry for the Environment, Nature Protection and Nuclear Safety (BMU), Germany

Language & editorial check:

Cecilia Torres & Tommi Vollmann | s.Pro – sustainable projects GmbH, Germany

Design and printing:

ArtBerries Ltd., Latvia

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www.baltadapt.eu

ISBN: 978-87-7478-636-8

