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Local governments role on adapting to the climate change. Overview of regulatory requirements in Baltic Sea Region Countries.

Stockholm, November 2018.

Current overview of Baltic Sea Region countries regulatory frameworks, setting obligations to local governments in respective countries to tackle climate change related risks and adapting to the climate change as well comparison of current practices for increasing resilience to negative impacts to climate change at local level, has been compiled by Valdur Lahtvee as part of the Technical Assistance project for coordination of Horizontal Action Climate of the EU Strategy for Baltic Sea Region, financed by INTERREG Baltic Sea Programme. Report is mostly based on latest National communications of the countries under the Framework Convention on Climate Change, submitted on the end on 2017 and beginning of 2018. Also, some specific analysis reports available in Internet were used to amend somewhat fragmented data from the National Communications.

Table below reflects what aspects are covered by national legislation to deal with climate risks by local authorities in all BSR countries.

Table 1: Excising policy and regulatory framework for CCA for Local Governments in BSR.

Policy measure Country	National CCA Strategy	LG-s role specifically determined in NCCAS	Requirement for Local CCA Strategy or Action plan	Requirement for LG climate risks assessment	LG-s networking on CCA	Guidance for LG-s in nat. lang. on CCA	CCA Funding for LG-s	CCA information web-portal for LG-s
Denmark	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Estonia	Yes	Yes	No	No	No	No	Yes	No
Finland	Yes	No	No	Yes	Yes	Yes	No	Yes
Germany	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Iceland	No	No	No	No	No	No	No	No
Latvia	No	Yes	No	No	No	No	Yes	No
Lithuania	Yes	No	No	No	No	Yes	Yes	No
Norway	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Poland	Yes	No	No	No	Yes	Yes	Yes	No
Russia	No	No	No	No	No	No	No	No
Sweden	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

Obligation carry out climate risks assessments and /or take climate risks into account while planning municipality actions are in most countries where such requirements are adopted at national level, imposed by the legislation on water management (specifically related to implementation of the European Directive 2007/60/EC on the assessment and management of flood risks), emergencies and natural disasters as well spatial planning. Obligation to prepare (mandatory) Climate Change Adaptation strategy or Action Plan for Local Government has been imposed only in one of eleven countries in the region.

Denmark



In 2008, Denmark launched its first national climate adaptation strategy, Strategy for adapting to climate changes in Denmark (Danish Government, 2008) in which climate adaptation was put on the agenda at national and local level. Focus in the strategy is on presenting a range of options that local government can take to prepare for a changing climate of the future, and on assessing the risks of impacts for particular types of Danish landscape and society. No specific obligations are attached, and the strategy presents climate changes as an opportunity for the future as well as introduces a range of threats and risks that must be countered. Critics complained that the strategy was too unambitious, too short-sighted and vague (see e.g. IDA, 2012; Danish Society of Nature Conservation, 2009).

By 2012, the strategy was followed by a specific action plan, How We Manage Cloudbursts and Rains (Danish Government, 2012). The Action Plan requires each Municipality to develop a local action plan to adapt to climate changes in a short and medium-term perspective. To assist local government in the process, the Action Plan establishes a national task force with detailed and specific expertise in local adaptation issues, as well as a web-based mapping of risks for flooding, rain falls and storm surges in various time perspectives from 5 to 100 years, modelled according to IPCC 2007 scenarios (Danish Government, 2012). As a further support following the launch of the 2012 Action Plan, the Planning Act was amended with the option for local governance to make Climate Plans (*Klimaplaner*) with mandatory, locally specific regulations, positioned alongside the Local Plans (*Lokalplaner*) under the Municipal Plan (*Kommuneplanen*). This change of law responded to uncertainty among municipalities as to how far they could include climate adaptation related regulations in the municipal and/or local plans (Helleesen et al., 2010). In parallel with plans and regulations, the national level in Denmark exerts strong influence on local government through the annual Financial Agreement for Municipalities (*Aftale om Kommunernes Økonomi*) between the Government (i.e. Ministry of Finance) and Local Government Denmark (*Kommunernes Landsforening*). The annual Financial Agreement for Municipalities provides the framework for local policy through mandating policy actions, economic compensation schemes and binding agreements on specific issues such as water management, environmental protection, schools and welfare services. In the Financial Agreement for Municipalities 2008-2011, adaptation has not been a targeted issue, while the 2012 Action Plan was directly linked to the Financial Agreement for Municipalities 2013 (Danish Government and Local Government Denmark, 2012). The Annual Financial Agreement 2013 specified



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



as a novel issue climate adaptation among mandatory priority tasks for the municipalities, whereby all municipalities were obligated to map risks of flooding and high-risk areas and to develop climate adaptation plans by December 2013. Moreover, the Financial Agreement allocated Euro 0.33 bill (DKK 2.5 bill) to investments in waste water infrastructure in 2013 (Danish Government and Local Government Denmark, 2012).

At the local scale, municipalities must translate overall strategies for adaptation to tangible actions. In Denmark, the sectoral organisation of municipalities, the 2007 reform of local government and the extensive Danish coastline is a basic framework condition for performing this task (Hellesen et al., 2010). In addition, the privatisation of water management has led to the establishment of local water companies that are in charge of water and waste water infrastructures, as well as of securing payment from the private households. Thus, for many municipalities, the organisation of municipal government, water as a main issue, and subsequently also the more or less formalised structures of collaboration with the private water companies are at centre stage of local adaptation to climate change.

With the national 2012 Action Plan, all Danish municipalities are required to complete a comprehensive plan for local climate adaptation by December 2013, either as a supplementing plan to the Municipal Plan or as integrated in the Municipal Plan (Danish Government, 2012). Each municipal plan must include a mapping of the risks associated with climate changes at vulnerable localities of the municipality and specify local actions that address relevant impacts of climate change in the particular context of the municipal governance structure. Moreover, the national strategy opened the formulation of local climate plans as a possibility for municipal actions, i.e. that specific planning requirements could be justified solely with reference to climate impacts. By January 2014, the local climate plan had been through the mandatory public hearing in half of the 98 municipalities while the remaining would be subject to the public hearing during the first half of 2014 (klimatilpasning.dk, 2014).

<http://en.klimatilpasning.dk/>

Estonia



In 2015, the Estonian Environment Agency drew up a report of the climatic changes in Estonia, which occurred in the course of the last century, as well as of the projections and assessments of the future climate in Estonia until 2100. The report formed the scientific basis for the assessment of the sectors influenced by the climatic condition in drafting the national development plan for adaptation to the impacts of climate change. The sectoral impacts of climate change in Estonia and vulnerability were thoroughly assessed during the period of 2014–2016.

Development plan for adaptation to the impacts of climate change, which was adopted by the Government on March 2017, enables planning and managing the area of adaptation to the impacts of climate change through a single strategy document both in the short (up to 2030) and in the long (up to 2100) perspective. The estimated cost of the implementation of the development plan for adaptation to the impacts of climate change in the period of 2017–2020 amounts to 6.7 million euros and, in the period of 2017–2030, to 43.75 million euros.

The General Principles of Estonian Climate Policy until 2050 specifies the long-term vision of Estonian climate policy and the sectoral and comprehensive policy directions, which set a clear path to the management of climate change, i.e. reduction of the emissions of GHGs and adaptation to the impacts of climate change until 2050. The majority of the climate change adaptation related input and analyses to the draft of the GPCP 2050 came from the same experts involved in the draft of Climate Change Adaptation Development Plan. Accordingly, the approaches to the goals of adaptation to climate change in the two documents are also largely similar.

The strategic development documents of Estonia include direct and indirect measures, which may help the society in adapting to the impacts of climate change. Most of the measures are concerned with climate change mitigation and the regulation of emergency situations (pursuant to the Emergency Act and Water Act). A lot of attention is paid to human health and development of environmental education in the Estonian Environmental Strategy 2030. The Estonian Nature Conservation Development Plan until 2020 and the Development Plan of the Area of Government of the Ministry of the Environment 2017–2020 cover public awareness as well as development of environmental education and climate research. Unfortunately, awareness is discussed in these documents in the traditional key of information campaigns and materials, which is not very efficient.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



The development plans adopted so far have also not addressed the transfer of the global impacts of climate change to Estonia.

Of the acts of legislation of Estonia, the topic of adaptation to the impacts of climate change is discussed most extensively in the Emergency Act. The Emergency Act is the basis to the following Rescue Board initiated emergency situation risk analyses, which may arise as a result of extreme climate events or conditions: Floods in densely populated areas, Extremely cold weather, Extremely hot weather, and Extensive forest or landscape fires. The Health Board led the drawing up of the Risk analysis of the emergency of an epidemic outbreak. The Emergency Act governs the drawing up of risk analyses of emergencies and plans for responding in emergency situations, emergency-related trainings, notification of emergencies, management of responding to emergencies, as well as declaring of emergency situations and the measures applied during emergency situations. This includes the obligation to work for third parties, expropriation of movables, prohibition on staying and other restrictions on the freedom of movement. Although the risk analyses do not highlight the impacts of climate change or the importance of adaptation to climate change, the existing measures help to manage climate risks and are, by nature, works, which should be performed by the administrator of the systems anyway or which should be ordered by the state from enterprises. That includes modernisation of storm drains, maintenance of dams, drawing up of detailed maps of at-risk areas and risk management plans, training of local governments on emergency-related issues. The law also provides the legal basis for ensuring the continuous operation of vital services, such as functioning of the power and gas supply, emergency medical care, water supply and sewerage. This may also be impacted by climate change if extreme weather phenomena become more frequent.

Risk analyses of continuous operation and continuous operation plans must be drawn up to ensure continuous operation of vital services. The measures related to the Emergency Act are mainly focused on increasing the awareness of the population and those providing vital services, notification of at-risk groups, and cooperation, as well as on increasing the efficiency of weather forecasts and weatherproof infrastructure.

The impacts of climate change are also discussed in the Water Act in connection with the assessment and management of the risks related to floods (updating of management plans). The Water Act establishes the obligation to draw up maps of flood hazard areas, to assess flood hazards, and to draw up flood hazard management plans (water management plans 2015–2021). The aim of these activities and plans is to manage the potential damaging consequences arising from floods to human health, property, environment, cultural heritage, and economic activities and decrease the likelihood of such damages in the future primarily by increasing awareness, as well as by identifying and assessing new, increasing risks. Implementation of the measures will commence at the national level, at the level of the local government of the area at risk, or at the level of companies, organisations, or residents. The management plans for hydrographic basins have been drawn up based on the current use of land, rather than the existing spatial plans. Integration of the management plans into the spatial plans could be organised within the framework of a pilot project, otherwise, integration of the management plans into the plans may simply remain a formality. The activities discussed in the Water Act are coordinated by the MoE in cooperation with the Ministry of the Interior (MoI), the Ministry of Finance, and the Ministry of Rural Affairs, by involving local governments and county governments. Certain obligations have also been placed on landowners.

Pursuant to the valid Planning Act, in planning, the organiser of planning works shall take into consideration the strategies, risk analyses, valid plans, development plans and other documents and relevant information which influence the spatial development, including the emergency risk analysis which includes the approach to flood risks in densely populated areas. Detailed plans



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



shall be prepared based on the general plan. Substantial consideration of the estimated increase in sea level and the increasing flood risk when making planning decisions, especially at the level of the detailed plan, depends on the awareness of the local government, often also on the political intention.

The role of the national level (incl. regional agencies of ministries – the Rescue Board, the Health Board, the Environmental Board) is to shape the common understanding with respect to the important adaptation goals (strategies and policies), to support (training, technical and financial support) and monitor implementation of the policies (general and detail spatial plans, inspection of the existence of evacuation and local crises management plans). The role of local governments is to shape, plan, and undertake specific adaptation activities, as this level is best-acquainted with the local conditions. The level of local governments is responsible for the application of measures, which would facilitate the local initiatives of different institutions and stakeholders. The community as well as the volunteer groups, which will later be implementing the measures, should be involved in shaping these measures.

The continuous work of local governments in planning for climate change and preparing for extreme weather conditions are supported by the development of environmental and weather monitoring systems. A public water information system was created within the framework of the National Environmental Action Plan of Estonia for 2007–2013, which enables keeping the population updated about the condition of waterbodies. This information system is supported by bathing and drinking water-related response plans for entrepreneurs and local governments. The National Environmental Action Plan also supported the development of the judicial area, models, analyses, and warning systems for the prevention of emergencies related to the natural environment. Continuing cooperation between officials also strengthens better preparedness in an actual emergency situation. In the course of the implementation of the Environmental Action Plan, methods for the involvement of volunteers in emergency situations and a respective training system at schools were also modelled and trainings were organised. The cooperation between local governments and citizens was supported even further by the Development Plan of the Area of Government of the Mol for 2013–2016. The measures of the plan supported taking into consideration risk analyses for emergencies in the planning activities of local governments, updating the emergency response handbooks, and practicing the cooperation between local governments and the Rescue Board in the form of joint work of crisis committees, organisation of trainings, exercises, and rescue work (natural process of social and administrative learning). The same plan also supported the development of cooperation within local governments, which is a supporting factor in emergency situations.

The regional level has been involved in drawing up situation-based risk analyses in very different manners in Estonia. Based on the guidelines for the preparation of risk analyses, a competent authority is required to submit the regional part of the risk analysis of an emergency situation to the regional crisis committee to express their opinion. So far, local governments have not been involved much in drawing up the risk analyses of emergency situations. Some local governments have drawn up risk analyses on their own initiative, such as the cities of Pärnu and Tallinn. Some other local governments have also taken the hazards arising from climate change into consideration in their development plans as well as in the renovation of water and sewerage or other lines, and in drawing up of detailed plans and comprehensive plans. Water undertakings are regularly monitoring the conditions of water pipelines in order to ensure the quick outflow of storm water from the city in the case of heavy rain.

Four regional crises committees have been formed pursuant to the Emergency Act (Northern,



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EU STRATEGY
FOR THE BALTIC
SEA REGION



ACTION
CLIMATE

Interreg
Baltic Sea Region



Western, Southern, and Eastern Estonian) as well as permanent crises committees of local governments. A local government with fewer than 40,000 inhabitants may form a joint crisis committee with one or several other local governments.

<http://www.klab.ee/kohanemine/en/>

Finland



At national level Finland's climate policy is defined in government policies and programmes, and since 2003, strategic work has been steered by ministerial working groups. In addition, national energy and climate strategies have been prepared since 2001 to implement the international and EU commitments as well as national targets, and to define sectoral policies and measures. Since 2003, every Finnish government has appointed ministerial working groups responsible for energy and climate policy with representatives from all government parties. These ministerial working groups have been responsible for preparing and updating the national strategies on energy and climate policy. The ministerial working group has a network of officials acting as its preparatory body, comprising representatives from the Ministry of Economic Affairs and Employment, the Ministry of Transport and Communications, the Ministry of Agriculture and Forestry, the Ministry of Education and Culture, the Ministry for Foreign Affairs, the Prime Minister's Office, the Ministry of Finance, and the Ministry of the Environment. The network of officials is led by the Ministry of Employment and the Economy, which is in charge of the overall coordination of the strategy work. The current strategy on energy and climate policy was updated in 2016.

The preparation of the Medium-term Climate Change Policy Plan and the Government's annual climate change report is coordinated by the Ministry of Environment and all relevant ministries are involved in the work. Also, Finnish Government reports to the Parliament once in a year, among other things, the progress of agreed measures in the energy sector.

The Finnish Climate Change Panel is appointed as an independent body to support planning and decision making of climate policy. The Government nominated the current 15-member Panel in January 2016 for a term of four years.

Finland was also one of the first countries to prepare a national climate adaptation strategy in 2005. The strategy was evaluated in 2013 and the new Climate Change Adaptation Plan 2022 prepared based on the conclusion of the evaluation.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



The second evaluation of the implementation of the adaptation strategy in 2013 found that overall progress had been made compared to the first evaluation in 2009: Climate change impacts are recognized in most of the sectors and adaptation measures identified in the strategy have been launched. The 2013 evaluation included recommendations for the revision of the strategy such as further promotion of cooperation between authorities and other actors in different sectors and administrative levels, as well as further promotion of regional and local adaptation measures. The evaluation also recommended clarification of the division of labour and responsibilities between the state, municipalities and private sector. The recommendations from the evaluation of the previous strategy and the vulnerability analysis in 2013 were considered in the preparation of the National Climate Change Adaptation Plan 2022 (Government Resolution on 20 November 2014), which describes the current national adaptation policy framework.

Finland's Climate Act was approved on 6 March 2015. It provides a framework for planning, implementing and assessing climate policies and improves cooperation among government offices in mitigation and adaptation. The law stipulates that the Government approves long-term and medium-term strategic mitigation plans and it will approve a national plan on adaptation at least every ten years. Adaptation is also included in the revised National Energy and Climate Strategy 2016. The Monitoring Group on Climate Change Adaptation was appointed in 2015 replacing the Coordination Group for Adaptation to Climate Change. The monitoring group is broadly-based, with representatives from the relevant ministries and other authorities, regional and local actors, research institutes, expert organisation in fire and rescue services, and financial services. Several sectors also have an action plan for adaptation.

A significant share of adaptation measures are implemented at the regional and local level. Various measures promoting the preparedness for climate change, such as flood protection, have already been implemented on regional or municipal level quite a long time ago, though they have not been seen as adaptation measures as such. 16 out of 18 regions have published a climate strategy, which include a certain degree of adaptation. Two regions have decided to include climate and energy issues directly in the regional program in order to give them more emphasis and thus to make resources more efficient. In 2017, most of the municipalities were undertaking systematic climate actions and, although their focus has been on climate change mitigation, climate change adaptation has also been promoted.

The 15 Centres for Economic Development, Transport and the Environment (ELY Centres) are currently responsible for the regional implementation and development tasks of the government. Regional environmental strategies guide environmental and land-use planning.

Since April 2016 the reform of regional government according to the government policy outline has been under preparation. The reform will bring changes to the organisation of climate change related tasks in the regions. The role of municipal authorities in both mitigation and adaptation is widely recognized in Finland. They have significant responsibilities in land-use and transport planning and in providing public transport and waste management services. Some Finnish municipalities are still major local energy suppliers or owners of energy supply companies, even though this role has changed in many municipalities during the last 15 years due to the privatisation and liberalisation processes of the electricity market. The municipalities also grant building permits, and can therefore promote energy efficiency and renewable energy. The municipalities can also influence the behaviour of people, for example, via information measures.

The Government Resolution of 16 December 2010 on the Security Strategy for Society defines the operations vital to society and outlines the threat scenarios and disturbances that jeopardise



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



these operations, the strategic tasks of the ministries for securing and guaranteeing that the operations will continue, the criteria for crisis management, implementation tasks and the principles of the exercises. Business actors, NGOs, municipalities and regional government authorities and security research all have a significant role in ensuring the preparedness of society and managing disturbances. The Security Strategy for Society is supplemented and followed up by other strategies and guidance documents relating to preparedness and management of disturbances in various sectors. Preparation for natural disasters like floods will take place through preparedness planning, exercises, surveillance, information exchange, and other cooperation practices and situation reports, as well as by implementing, for example, the necessary flood protection measures at critical sites. An updated Security Strategy for Society was published in October 2017.

By the end of 2015, regional flood risk management plans were published for every significant flood risk areas (16 areas), and currently the implementation of identified measures is going on. In addition, several bigger cities and municipalities have been active in adaptation especially in the area of HSY, i.e. the city of Helsinki (in vulnerability assessment) and the city of Vantaa (nature-based solutions in runoff water management).

Current legislation on building and other statutes include requirements for taking climate change into consideration. For new construction, climate change and adaptation are taken into consideration already during the planning stage through planning guidance. Local conditions that may affect construction are increasingly being taken into account through existing instruments, such as building ordinances and municipal instructions for building.

The most significant measure regarding land use and building was the Government Decision of 13 November 2008 on revising the national land use guidelines. Addressing the challenges posed by climate change was a key theme for the revision, and the guidelines include the need to follow objectives concerning adaptation to climate change: in land-use planning, new construction should not be located in areas that are prone to flooding. An exception can only be made if need and impact studies indicate that the risks of flooding can be controlled, and that the construction work is in line with sustainable development. Local master planning and detailed planning should take account of the increasing possibility of storms, heavy rainfall and flooding in built areas. The preservation of ecological corridors between protection areas is to be promoted and, where necessary, these areas and other valuable natural areas should also be protected. The Flood Risk Management Act and the Government Decree on Flood Risk Management regulate flood risk management and the management of river basins, while taking into account the needs relating to sustainable use and the protection of water resources. The Centres for Economic Development, Transport and the Environment bear the main responsibility for the planning of flood risk area management in river basins and coastal areas. Municipalities are responsible for planning how to manage floods caused by heavy rainfall in urban areas. According to the Act, the Finnish Environment Institute will ensure that information on significant flood risk areas, flood hazard maps and flood risk maps, and approved flood risk management plans are made available to the public via information networks. Much of this information is provided through the operational Flood Centre managed jointly by the Finnish Environment Institute and the Finnish Meteorological Institute. Research has shown that public disclosure of detailed flood risk maps generates quite accurate housing price corrections in affected and neighbouring city areas. Zoning indicated by flood risk maps also steers adaptive urban growth more cost-efficiently than pertinent urban zoning. An assessment of possible sea level rise along the shores of the Baltic Sea (coastal flooding) has been completed and consequently, the guide for Flood preparedness in building was updated in 2014. The guide contains recommendations for determining the lowest building elevations in inland shore areas and along the shores of the Baltic Sea.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



Legislation sets the foundation for preparedness and crisis management for all actors. According to the Emergency Powers Act, the Government, the state administrative authorities, state businesses and other state authorities, as well as municipalities shall ensure, by means of emergency plans, prior preparation of emergency operations and other measures, that their duties will be performed with the least amount of disruption also in emergency conditions.

According to the Rescue Act, the owner and occupants of a building and the business and industrial operators shall prevent and, when necessary, take measures to protect people, property and environment in dangerous situations. In addition, state and municipal authorities, agencies and enterprises are obliged under the Rescue Act to take part in the planning of rescue operations under the direction of rescue departments, and to take action in accidents and dangerous situations so that rescue operations can be carried out in an effective manner.

<http://ilmasto-opas.fi/en/>

Germany



Three key mainstays of German climate policy are: Germany's long-term climate action strategy, the Climate Action Plan 2050; the Climate Action Programme 2020, geared to the targets for 2020; and Germany's energy transition.

In November 2016, the German government adopted the country's long-term climate action strategy – the Climate Action Plan 2050 – as required under the Paris Agreement. The Climate Action Plan builds on the long-term climate targets previously adopted in 2010 and makes them more specific in light of the Paris Agreement. In 2018 the Climate Action Plan 2050 will be underpinned with a programme of measures having quantifiable effects on reductions, which is intended to ensure that the 2030 reduction target is achieved.

In order to combat challenges opposed by climate change, the federal cabinet, with the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) serving as lead agency, agreed on the German Strategy for Adaptation to Climate Change (DAS) in December 2008.

The overarching aim of the DAS is to identify and reduce Germany's vulnerability to climate change impacts and increase its climate change adaptation capacity, thus ensuring that existing operational objectives in the different policy areas remain as achievable as possible, even in conditions resulting from advancing climate change. The Strategy is divided into 15 fields of action in the following areas: building, biodiversity, soil, the energy industry, the finance and insurance industry, fisheries, forestry, trade and industry, agriculture, human health, tourism, transport and transport infrastructure, water, flooding and coastal protection, and spatial, regional and physical development planning, and civil protection and disaster control.

In order to flesh out the DAS, the federal cabinet subsequently approved an initial Adaptation Action Plan (APA I) on 31 August 2011. APA I underpins the DAS with specific federal government activities and identifies links with other national strategy processes. The first DAS progress report and an Action Plan II were adopted by the German government in December 2015. The progress report led to a regular reporting cycle being agreed with the following deliverables: monitoring report every 4



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



years (2019), vulnerability analysis every 5–7 years (2021), evaluation report (2019), and progress reports and action plans every 5 years (2020).

The supervision and interministerial coordination of DAS efforts is carried out through the federal government's Interministerial Working Group on Adaptation Strategy with BMUB as lead agency. Furthermore, the Conference of Federal and Länder Environment Ministers (UMK) set up a Permanent Committee on Adaptation to the Consequences of Climate Change (StA AFK), which is part of the Joint Working Party of the Federal Government and the Länder on Climate, Energy, Mobility - Sustainability (BLAG KliNa). The Länder also take part in the progress report work through the StA AFK. Key DAS products and updates are adopted through federal cabinet decisions.

BMUB created a Competence Centre on Climate Impacts and Adaptation (KomPass) at the Federal Environment Agency to help design and further develop a national strategy for adapting to climate changes. KomPass provided the technical-strategic groundwork for drafting and updating the DAS. KomPass is an information platform for specialized expertise on climate change impacts and adaptation and for Germany's adaptation activities.

The second Adaptation Action Plan (APA II) was published as part of the 2015 progress report. The APA II comprises measures that are specific to fields of action or sectors as well as those that are of fundamental importance for all/many fields of action. In many ways, the latter serve to make available to planners and decision-makers the country-wide, standardised groundwork for action needed over the long term. In this way, APA II marks the transition from one phase of primarily project-based, fixed-term measures to a phase in which designated tasks are established on a longer-term basis. This also partly applies to measures that are specific to fields of action or sectors and are intended to become part of the administrative operations of federal agencies in future. The measures presented in the progress report and APA II are the responsibility of the specific ministries and – subject to available budgetary resources – are earmarked for financing through the respective budgetary and financial planning strategies in effect (including human resources in those ministries).

The most important APA II activities are:

Spatial planning and civil protection. Tackling climate change, including its regional manifestations, remains a long-term and dynamic challenge in spatial planning. This will be taken into account in the further development of the Principles and Action Strategies for Spatial Development in Germany drafted by the Standing Conference of Ministers Responsible for Spatial Planning (MKRO).

Activities under the APA II, such as the Climate-Change-Sensitive Regional Plan research project, the KlimaMORO transfer of results into broader practice, and Climate-Resilient Urban Restructuring, build on experience gained through the federal government's APA I model projects.

Another priority of federal government activities is the further development of planning instruments to facilitate better integration of climate change adaptation requirements into planning processes. This objective led to the establishment of the Climate-Change-Sensitive Regional Plan (Klimawandelgerechter Regionalplan) project, which aims to integrate risk and hazard maps into spatial planning and assess opportunities to make spatial and land-use planning goals more flexible. An overarching activity that connects civil protection and spatial planning is the continuation of the Strategic Agencies' Alliance for Adaptation to Climate Change (in place since 2007), consisting of the Federal Office of Civil Protection and Disaster Assistance (BBK), the Federal Environment Agency (UBA), the Federal Agency for Technical Relief (Technisches Hilfswerk) (THW), the Deutscher Wetterdienst (German Meteorological Service, DWD) and the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR). There is another partnership with the



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



German Committee for Disaster Reduction (DKKV), whose members include a broad range of governmental institutions, research institutions, industry, non-governmental organisations and independent experts.

One measure to improve information and data resources on water regime, water management is the DAS field of action on the general provision of data and advisory services on water resources. It will deal with historical data, current data from ongoing measuring networks and future-oriented projection data that will be generated. An integral component of flood risk management and a key instrument to improve flood protection in Germany is the National Flood Protection Programme (Nationales Hochwasserschutzprogramm) (NHWSPP) in conjunction with the Measures for Preventative Flood Protection (Massnahmen des präventiven Hochwasserschutzes) special framework plan (SRP) of the Federal Government/Länder Joint Task for the Improvement of Agricultural Structures and Coastal Protection (GAK). Furthermore, the federal government plans to work with the Länder to revise other material flood defence regulations in order to improve preventative protection. The Development of Risk and Hazard Maps for Heavy Rains and Flash Floods (Erstellung von Risiko- und Gefahrenkarten für Starkregen und Sturzfluten) instrument was assessed for its potential to improve the handling of floods and the impact of heavy rain events on sewage networks and treatment plants. Work is being done to introduce a formal planning module for determining and assessing climate change impacts in management plans and the Water Framework Directive in order to adequately take into account the impacts of climate change on the status of water bodies.

A range of measures will be carried out in Coastal and marine protection, that relate to monitoring and provision of data on water levels and to the physical and chemical status of water bodies. The Federal Government/Länder Joint Task for the Improvement of Agricultural Structure and Coastal Protection (GAK) serves as the framework for collaboration on coastal protection between the federal government and the Länder. In response to the dangers of climate change, the GAK special framework plan entitled Coastal Protection Measures in Response to Climate Change (Massnahmen des Küstenschutzes in Folge des Klimawandels) was developed for 2009–2025.

The German government is establishing a comprehensive portfolio of services addressing climate change and adaptation. In implementing the Global Framework for Climate Services (GFCS) at national level, the government set up the German Climate Service (Deutsche Klimadienst, DKD) in autumn 2015, which has its office at the Deutscher Wetterdienst (German Meteorological Service, DWD). The partners involved in the DKD supply the climate information and services needed to implement the DAS and its associated action plans. The German Climate Service is to be expanded by a portfolio of climate change adaptation services (KlimAdapt Germany). They will include the observation and assessment of climate change impacts, an analysis of vulnerabilities to identify risks, the development and assessment of climate change adaptation measures and instruments, the establishment of suitable frameworks for developing and enhancing adaptive capacities and the evaluation and implementation of adaptation activities. Setting up the offices for the German Climate Service (at DWD) and the KlimAdapt adaptation services (at UBA/KomPass) creates organisational structures for designing the tasks and work processes – which are already being carried out today in part through DAS implementation – more efficiently and for establishing them as permanent tasks. The Interministerial Working Group on Adaptation to Climate Change has taken on the role of steering committee for DKD and KlimAdapt and secures the participation of Länder in cross-cutting decisions (e.g. by inviting them to attend as guests).

The Länder have addressed climate change adaptation in many different ways:

- Implementation and assessment of research projects;

- Further development or revision of new political strategies and plans for measures with varying degrees of binding force;
- Initiation and implementation of (pilot) projects;
- Establishment of competence centres;
- Holding regional conferences.

A substantial number of tools, guidelines and methodology handbooks were developed in the federal research projects for the various phases of the adaptation process. They can support regions and municipalities in determining climate changes and impacts, adaptation opportunities and implementation strategies (e.g. Tatenbank (a catalogue of projects on the impacts of and adaptation to climate change), Klimalogtse (climate guide), Stadtklimalogtse (urban climate guide), Klimanavigator (climate navigator)).

<https://www.umweltbundesamt.de/en/topics/climate-energy/climate-impacts-adaptation>
<https://www.klimanavigator.eu/>

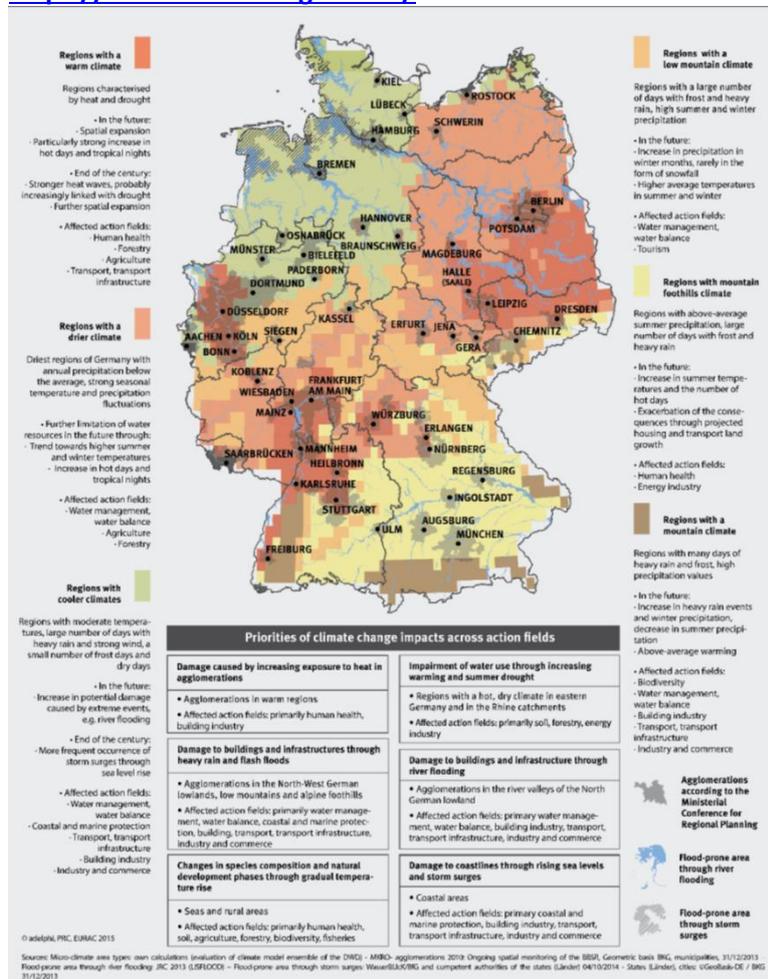


Figure: Regional impact and consequences of climate change across the fields of action in Germany

Iceland



The Icelandic government adopted a Climate Change Strategy in 2007. It is conceived as a framework for action and government involvement in climate change issues. The Strategy sets forth the Icelandic government's five principal objectives with respect to climate change, which aim toward the realization of the above-described long-term vision:

- The Icelandic government will fulfil its international obligations according to the UN Framework Convention on Climate Change and the Kyoto Protocol.
- Greenhouse gas emissions will be reduced, with a special emphasis on reducing the use of fossil fuels in favour of renewable energy and climate-friendly fuels.
- The government will attempt to increase carbon sequestration from the atmosphere through afforestation, revegetation, wetland reclamation, and changed land use.
- The government will foster research and innovation in fields related to climate change affairs and will promote the exportation of Icelandic expertise in fields related to renewable energy and climate-friendly technology.
- The government will prepare for adaptation to climate change.

On the basis of the Strategy, two expert work groups were appointed to support the further development of climate policy. One group had the role of compiling and summarizing the best available scientific knowledge of the likely impact of climate change on Iceland and to present proposals on adaptation efforts.¹⁸ The second work group was given the task of exploring the technical possibilities of mitigating greenhouse gas emissions in different sectors of the Icelandic economy.

A Climate Change Action Plan was endorsed by the government in 2010. The Action Plan is a main instrument for defining and implementing actions to reduce emissions of greenhouse gases and enhance carbon sequestration. A committee appointed in 2011 oversees the implementation of the action plan, makes proposals for new projects, and provides information and advice. The committee is composed of representatives from the Prime Minister's Office, the Ministry of Finance and Economic Affairs, the Ministry of Industries and Innovation, the Ministry of Transport and Local Government, the Association of Local Authorities in Iceland and the Ministry for the Environment and Natural Resources who chairs the committee. The committee issues annual status reports where the Action Plan is reviewed both in terms of implementation of key actions, and actual emissions trends compared to set objectives. The committee's third annual report was released in 2015

In 2015, the government launched a special climate action plan to supplement the climate action plan from 2010. The special plan was intended inter alia to strengthen mitigation actions, such as financing charging stations for electric cars, and designing road maps for reduced emissions in



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



agriculture and fisheries. The programme also increased funds to afforestation, revegetation and wetland restoration.

Act No. 70/2012 on Climate Change is the first comprehensive act on climate change in Iceland. The purpose of the legislation is twofold, to set a comprehensive act covering regulations set with the purpose to mitigate and adapt to climate change, and to cover the regulatory framework related to the European Union Emission Trading System, EU-ETS.

In June 2017, a new regulation No 520/2017 was published, in accordance with the Act on Climate Change, on data collection and information from institutions related to Iceland's inventory on GHG emissions and removal. The new regulation clarifies institutional, legal and procedural arrangements between different government agencies and sets deadlines for delivering information. The regulation replaces the role a Coordinating Team had previously, with regards to cooperation between different entities.

The Act on Nature Conservation No 44/1999 is framework legislation and sets general criteria for nature conservation and concerns all human interference with nature. The act is also the main legal base for protection of areas, organisms, ecosystems and biodiversity. According to the Act the Minister shall call an Environmental Assembly following national elections and again two years later. The Environmental Assembly shall discuss environmental and nature protection and sustainable development. Members of parliament, representatives from government and municipal agencies, representatives from employers and NGOs shall be invited to the Assembly. Every four years the Environmental Assembly shall discuss implementation plans for sustainable development. The Environmental Assembly convened in November 2017, put focus on Climate change and climate mitigation.

Since 2008 the Icelandic Meteorological Office is responsible for risk assessment of natural hazards, including coastal floods.

Iceland already has substantial experience in dealing with risk management of natural hazards, and existing frameworks can be adopted to deal with some climate risks, such as possible increases in extreme weather, flooding and volcanic eruptions.

Climate change impacts on infra-structure sectors are the subject of ongoing studies. While the results of these studies show that significant impacts can be expected plans for adaptation to climate change are in most cases not well developed. The most notable exception is the Icelandic Power Company, but the likely impacts of expected climate change are taken fully into account in their operational strategies and investment planning. Following recommendations from a 1992 report on expected sea level rise, consideration has been made for this in the design of new harbours in Iceland.

At the local level little information on adaptation and related actions is very scarce. Stefán Gíslason at Environice Consulting conducted an informal survey in all 77 Icelandic municipalities in February 2010. He received responses from 21 of those. Four municipalities responded that they "had done something" to adapt to climate change, whereas 17 responded that they "had done nothing". None of these had a climate adaptation strategy in place, and only one, the capital Reykjavík, had a strategy focused on mitigation

Latvia



The overarching goal of the Latvia's National Climate Change Adaptation Strategy for the period to 2030 (to be adopted by the end of 2018) is to reduce the risks and vulnerabilities of people, economy, infrastructure, buildings and nature in Latvia as a result of climate change and to promote the opportunities offered by climate change. The 4 focal points of the Strategy are: (1) people, (2) national economy, (3) infrastructure and construction, (4) nature. They unitedly form the framework for implementation of the Strategy in two directions:

- Reduction of negative effects, risks and vulnerabilities caused by the climate change;
- Promoting opportunities provided by the climate change.

Among the principles for the development and implementation of Latvia's climate change adaptation policy, the Strategy also states the following principles relevant for Local Governments:

- Preventive action – prevention of existing impacts, vulnerabilities and risks related to climate change is aimed at preventing potential future losses, taking into account that today's investments can offset much greater losses in the event of a future risk, as well as allows to use the potential benefits. The development of the strategy takes into account potential scenarios for future climate development and the associated risks and benefits;
- Integration in policy planning and decision making – an assessment of climate change impacts, risks, vulnerabilities and appropriate adaptation measures become an integral part of the planning and decision-making process in all relevant areas and levels of activity. Emphasis is placed on actions aimed at integration of adapting aspects of climate change, such as territorial development, spatial and policy planning.

The action of the Strategy 2.3.: Conservation and protection of tourism and landscape resources and values from the negative impacts of climate change foresees Integrating the aspects of climate change, mitigation and adaptation into the landscape planning, tourism planning and relevant documents (at national, regional, municipal level). Continue integrating landscape planning into territorial development and spatial planning.

The Action of the Strategy 5.4.: Integration of mitigation solutions of anticipated climate change impact and risk mitigation solutions into policy making and territorial development planning foresees following measures:

1. In the framework of the methodological guidance of the planning regions and local governments, integrate climate change, mitigation and adaptation issues into the development or updating of territorial development planning documents, including regular updating of the guidelines of sectoral policies and organizing educational and informative measures for specialists of planning regional and local governments.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



2. Municipalities (large cities, coastal areas, etc.), vulnerable to the climate change are recommended to develop climate change adaptation policy strategies.
3. Make the necessary changes in environmental legislation, in particular the Law on Environmental Impact Assessment, providing for the climate impact assessment and adaptation to be taken into account within the EIA procedure.

Funding for identified priority measures is to be provided within the framework of state, local government and external funding, depending on the content of the measure. The Strategy recommends that municipalities, when preparing and updating development programmes and other development planning documents, including spatial planning documents, take into account the need for adaptation to climate change and develop and incorporate appropriate targeted measures, as well as further assess climate risk and adaptation aspects in the already planned measures also, generally considering adaptation as one of the horizontal actions. No additional funding for adaptation to climate change is planned in the current budget framework. Adaptation measures are largely related to the activities already underway (e.g. civil protection, flood control, building climatology, construction standards, etc.), and the Strategy provides a common view, coordination and effective operation.

Historically, the first strategy of climate change adaptation in Latvia was adopted in Salacgrīva region in 2011. The Daugavpils City, Valka county and Smiltene county have joined the new “Adapt” section of the Covenant of Mayors.

<http://www2.meteo.lv/klimatariks/>



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



Lithuania



In order to ensure the implementation in the international agreements and the EU legal acts defined targets for Lithuania, on 6 November 2012 by the Decree No XI-2375 the Parliament of the Republic of Lithuania approved the National Strategy for Climate Change Management Policy which lays down the targets and objectives for climate change mitigation and adaptation by 2050. The Strategy implements the EU legal acts of the Climate change and energy package till 2020 and replaces the National Strategy for the Implementation of the UNFCCC until 2012.

The goal of this Strategy is to develop and implement climate change management policy in Lithuania. Strategy sets the short-term (until 2020), indicative mid-term (until 2030 and until 2040) and long-term (until 2050) goals and objectives in the field of climate change mitigation and adaptation. The Strategy in English is available on website of the Ministry of Environment of Republic of Lithuania: <http://www.am.lt/VI/index.php#a/12869>

For the implementation of goals and objectives of the Strategy, the Inter-institutional Action Plan on the implementation of the Goals and Objectives for 2013-2020 of the Strategy for the National Climate Change Management Policy has been approved by the Government Resolution No 366 and it is annually updated. The purpose of the Action Plan is to provide financing for climate change mitigation and adaptation measures foreseen for the implementation of the goals and objectives of the Strategy and to ensure an inter-institutional cooperation. In 2014 Action Plan with measures for 2015-2017 was adopted by the Resolution No 833 of the Government of the Republic of Lithuania, followed by the latest amendment in 2016 by the Resolution No 846 of the Government of the Republic of Lithuania with measures for 2017-2019.

The implementation of the Plan is coordinated by the Ministry of Environment. The Ministries of Finance, Energy, Transport and Communications, Economy, Education and Science, Agriculture and the Interior, as well as municipalities, the Research Council of Lithuania, state research institutions and universities, companies, entities, organisations and other persons participate in the implementation of the measures within their competence and allocating funds for their implementation of the measures. While drawing up sectorial development programmes, interinstitutional action plans or other planning documents for their respective management areas, the ministries shall mainstream the targets and objectives for climate change mitigation and adaptation set out in the Strategy, in order to provide for specific measures to implement those targets and objectives and to ensure close interinstitutional cooperation.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



The strategic goal of Lithuania's climate change adaptation policy as determined by the Strategy is to reduce vulnerability of natural ecosystems and domestic economic sectors by implementing measures for maintaining and increasing their resilience to climate change and ensuring favourable conditions for social life and economic activities. The implementation of the strategic goal of adaptation to climate change follows directions:

- The integrated approach on the climate change impact on the particular territories at the regional level. Such approach encourages compromise solutions taking into account different needs, involves other processes of regional changes (for example, demographical changes) and may optimise the sectoral and inter-sectoral interaction of adaptation measures, applicable for that region.
- The synergy of climate change mitigation and adaptation to climate change measures and the avoidance of their conflict. The chosen climate change adaptation measures should not oppose the climate change mitigation efforts but should contribute to them.
- The contribution of country-specific scientific research to adaptation to climate change. Mutually beneficial cooperation between governmental, municipal and financial institutions, funds, universities, with other countries and the EU projects should be encouraged in the area of climate research. Adaptation to climate change should become a separate component of the climate scientific research.
- A strong knowledge basis about the climate change impact and consequences, which is composed of the constant and systematic scientific research methods and results, data, projections, experience and to the information collection, transmission and exchange between the parties.

The specific short-term by 2020 climate change adaptation goals and objectives are set in the following sectors: agriculture, soil; forestry, ecosystems, biodiversity, landscape; water resources; energy, transport, industry; public health. Indicative medium-term (by 2030 and 2040) and long-term (by 2050) adaptation to climate change goals and objectives are the following:

The first goal is related to continuous monitoring and survey of the most vulnerable economic sectors and ensuring resilience of such sectors, especially agriculture, to climate change. This goal will be reached implementing the following objectives:

- ensuring continuous monitoring of climate change sensitive sectors and effective implementation of measures reducing climate change effects;
- ensuring the resilience of the engineering infrastructure to climate change;
- monitoring, investigating and assessing the impact of climate change on the agricultural sector and, in the context of changes, adapting agricultural production to climate change;
- organising proper selection and implementation of measures increasing resilience of agricultural and other sensitive sectors to climate change;
- ensuring sparing use of such natural resources as water, biodiversity and soil.

The second goal is related to promotion of cooperation with other countries in relation to climate change adaptation. In order to attain the goal these objectives are set:

- ensuring long-term effective management of financial and technical resources and implementation of measures in third countries;
- continuous support for preparation and implementation of pilot climate change adaptation projects in developing countries in order to increase their resilience to climate change.

Update of the Strategy aiming to set legally binding adaptation to climate change goals and objectives for the period 2021-2030 is planned by the end of 2019.

The strategic goal of Lithuania's climate change adaptation policy is to reduce vulnerability of natural ecosystems and domestic economic sectors by implementing measures for maintaining and increasing their resilience to climate change and ensuring favourable conditions for social life and economic activities. The implementation of this strategic goal will be assessed in relation to the achievement of special climate change adaptation goals in most sensitive domestic economic sectors,



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



such as agriculture, forestry and protection of biodiversity, management of water resources, energy, transport, industry, public health, etc.

The implementation of the strategic goal will take the following directions:

1. integrated approach to the impact of climate change on specific territories at the regional level. Such an approach encourages compromises among different needs, integrates other regional processes of change (e.g. demographic changes) and may optimise the interaction between sectoral and cross-sectoral adaptation measures relevant to a given region;
2. synergy of climate change mitigation measures and climate change adaptation measures and avoidance of their conflict. Chosen climate change adaptation measures should contribute to climate change mitigation efforts rather than be in conflict with them;
3. contribution of national research to climate change adaptation. Mutually beneficial cooperation of the state, municipalities and financial institutions, funds, universities, other countries and EU projects must be promoted in the area of climate research. Climate change adaptation must become a separate component of climate research;
4. solid base for knowledge about the impact and effects of climate change consisting of regular and systematic collection, transfer and cross-country exchange of research methods and results, data, projections, experience and information.

The National Climate Change Committee has been established for advisory purposes on the development of the Lithuanian climate change policy and coordination of its implementation. The Committee includes 21 representatives of ministries, municipal authorities, research and study, industrial and non-governmental organisations.

The Ministry of Environment of Republic of Lithuania administrates a Special Programme for Climate Change. As it is stated in the Law on Financial Instruments for Climate Change Management (approved by the Parliament in 2009) a Special Programme for Climate Change was developed in order to collect additional funding for climate change management measures. All the Funds are used only for climate change mitigation and adaptation measures nationally and internationally.

The Funds for the Programme are accumulated in a separate account of the State Treasury and is regarded as part of national state budget. The Law states that the sources of financing of the Programme these:

- The funds obtained from the transfer of assigned amount units;
- The funds obtained from the auctioned allowances under the EU ETS;
- The funds obtained from the economic penalties in accordance with the procedure laid down in Chapter VI of this Law;
- The funds donated by natural and legal persons for implementation of the measures aimed at mitigation of climate change;
- Other funds received in legal ways.

The funds of the Programme are used for:

1. Energy consumption and production efficiency enhancement processes: modernization of dwelling houses and public buildings, implementation of other projects permitting most efficient reduction of GHG emissions in the energy, industry, construction, transportation, agriculture, waste management and other fields – at least 40%;
2. Promotion of the use of renewable energy resources, introduction of environment-friendly technologies, including efficient energy production by cogeneration – at least 40%;
3. Implementation of the plan of implementation measures of the Strategy for the National Climate Change Management Policy;
4. Reforestation and afforestation;



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



5. Provision of information to and education of the public, scientific research and dissemination thereof, consulting and training of operators and other persons on topical issues of management and implementation of the climate change policy, enhancement of energy consumption efficiency, use of renewable energy resources and introduction of environment-friendly technologies;
6. Implementation, in the territory of the Republic of Lithuania and third countries, of measures of adaptation to climate change and mitigation of climate change effects as stipulated under legal acts of the European Union, the UN Convention on Climate Change, the Kyoto Protocol and other international agreements;
7. Implementation of other measures of efficient management of climate change policy which, by means of State assistance, would allow operators and other economic entities whose activities are not included in the list of categories of activities indicated in Annex 1 to this Law to reduce the financial and economic burden of the commitments of GHG emissions reduction. For administration of the Programme and the Union GHG registry.

Rules for the use of the Special Programme for Climate Change funds were approved by the Order of the Minister of Environment on 6 of April 2010, No. D1-275. Programme's funds are managed by the Ministry of Environment, and Programme's project selection process and monitoring is done by designated institution – Lithuanian environment investment fund (LEIF) and the Housing Energy Efficiency Agency for the multi-apartment buildings modernization projects. The Ministry of Environment (MoE) is the main coordinating institution responsible for development of climate change mitigation and adaptation policy and its implementation, transposing the EU climate policy legislation and advising for other institutions on integrating climate policy objectives and concerns into sectors which are not under MoE's responsibilities. Other Ministries (Energy, Finance, Transport and Communications, Health, Education and Science, Foreign Affairs, Economy, Interior, Agriculture), municipal and other institutions within their remit are responsible for mainstreaming climate goals and objectives into sectoral strategies and programmes and implementing related activities in Lithuania. Creation of a central climate adaptation portal for Lithuania is underway (expected completion in 2018), with the purpose of simplifying the exchange of information on climate change adaptation and aid cooperation.

Lithuania's climate change adaptation practice also includes various studies and individual projects that are not purely Lithuanian, but involve the whole Baltic region. In 2016-2017 Lithuania's municipalities participate in the project: "Climate change mitigation and adaptation at the local level". The project is funded under the Norwegian Financial Mechanism Program LT10 "Capacity-building and institutional cooperation between beneficiary state and Norwegian public institutions, local and regional authorities". The main goal of the project is to strengthen the capacity of Lithuanian municipalities in the climate change management and adaptation. During the project methodological guidance for municipalities "Climate change mitigation and adaptation guidelines for municipalities" was prepared. Lithuania has taken part in several transboundary projects, including Astra, Baltadapt, BaltCICA, BalticClimate, Baltclim, RADOST. Baltadapt (2010-2013) was a flagship project under the EU Strategy for the Baltic Sea Region, developing a Baltic Sea Region-wide climate change adaptation strategy. The overriding goal of the Baltadapt Action Plan was to promote the implementation of the Baltic Sea Region Strategy for Adaptation to Climate Change, and to specify priority activities for the macro-region in the field of adaptation to climate change impacts.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



Lithuania has been active within the Baltic Sea Region Climate Change Adaptation Strategy and Action Plan. In these projects the adaptation options to be applied at local level are analysed and elaborated. In addition, Lithuania takes part in the implementation of the EU Strategy for the Baltic Sea Region (EUSBSR).

<http://www.am.lt/VI/index.php#a/12840>

Poland



First steps towards development of a strategy for adaptation to climate change (Strategic Adaptation Plan) were taken in 2009. These were based on the “Government’s Position”, adopted on 3 July 2009 by the European Committee of the Council of Ministers, as the response to the EU’s strategic document: COM (2009) 147/4. WHITE PAPER. Adapting to climate change: Towards a European framework for action, that set out a framework to reduce the EU’s vulnerability to the impact of climate change.

The Government’s Position laid down the basis for the implementation (2011–2013) of the project entitled “The Development and Implementation of a Strategic Adaptation Plan for the Sectors and Areas Vulnerable to Climate Change” (KLIMADA; (http://ios.edu.pl/pol/aktualnosci/15.01.14/adaptacja_wrazliwych_sekt_i_obsz_Polski_do_zmian_klimatu.pdf)). The results provided the basis for development of the Strategic Adaptation Plan 2020 (SAP 2020) with an Outlook until 2030. This new strategy forms part of the EU’s Adaptation Framework with the objective to improve the EU’s resilience to deal with the impact of climate change, with special attention paid to better preparedness for extreme weather events and to the current and future multi-annual financial framework.

In 2015 the Working Group on Adaptation to Climate Change was set up within the framework of the national network “Partnership: Environment for Development”.

The Working Group on Adaptation to Climate Change addresses:

- implementation of Strategic Adaptation Plan for sectors and areas sensitive to climate change by 2020 with a vision to 2030 (SPA 2020);
- support for the monitoring and reporting process of regional and local adaptation measures,
- establishment of forum for cooperation and exchange of experience between national and regional units and international cooperation,
- support for a project on adaptation to climate change in cities above 100 thousand inhabitants (planned to be implemented within POIŚ 2014–2020).

Issues related to adaptation to climate change were included in the Responsible Development Strategy adopted by the Council of Ministers on 14 February 2017. The need for adaptation measures are addressed in the chapters on Environment, Small and Medium Enterprises and Territorial Sustainability.

A chapter on climate change (in the field of mitigation and adaptation) is planned in the document “State Ecological Policy” (PEP) prepared by the Ministry of Environment.

The SPA 2020 paper outlines the priorities for adaptation measures to be taken by 2020 in the area’s most sensitive to climate change such as water management, agriculture, forestry, biodiversity, health, energy, construction and spatial management, urban areas, transport, mountain areas and coastal areas. These actions, undertaken both by public and private entities, are



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



accomplished through policy implementation, infrastructure investment, and technology development. These include technical ventures such as the construction of the necessary flood and coastal protection infrastructure as well as regulatory changes.

In 2016, a project was launched to develop City Adaptation Plans for 44 cities with a population of over 100,000 (MPA). The project will be continued until 2019. The project is financed by the EU Infrastructure and Environment Operational Program. At the same time, several other projects related to this issue were launched, including the Polish-Norwegian project CLIMCITIES, implemented by IOŚ–PIB, preparing adaptation strategies for five cities with populations over 50 thousand residents.

The National Fund for Environmental Protection and Water Management (NFOŚiGW) proposes, as part of its financial offer, support for adaptation actions in Poland. The part of the financial offer that relates to this issue is included in the priority program: Counteracting environmental threats with the elimination of their effects. In the first section of above programme “Adaptation to climate change”, it is possible to finance preventive measures to adapt to climate change, in line with the Strategic adaptation plan for sectors and areas sensitive to climate change until 2020, with an outlook until 2030, in particular:

- infrastructural activities (flood embankments, water reservoirs, polders, rainwater retention systems – including in urban areas);
- activities to develop and implement a threat monitoring and early warning system, including the development of monitoring and warning systems for extreme climatic events;
- implementation of measures and methods for analyzing threats caused by climate change, including local and regional adaptation plans and strategies;
- financing of projects implemented from the Operational Programme Infrastructure and Environment 2014–2020 and the next financial perspective of the EEA FM and NMF – support of the NFOŚiGW in the form of a loan.

The second part of the programme: “Preventing and eliminating the effects of emergency threats” is meant for financing of undertakings focused on eliminating the effects of environmental hazards, natural events (floods, fires, droughts) and accidents (events resulting from human activities), and the purchase of equipment used in rescue operations. as well as the development of methods and tools for analyzing the abovementioned threats:

- mitigation of effects of environmental accidents and hazards on environmental and water management facilities, coastal areas and natural bodies;
- purchase of specialized equipment necessary for effective rescue operations
- and forecast, prevent, reduce and eliminate the effects of natural hazards and major accidents;
- implementation of measures and methods to analyze failures and threats to the environment.

On the role of local Governments, the SPA2020 states following: “ at the local level, a large part of adaptation actions indicated in SPA 2020 will be implemented. A particular role in the implementation of SPA 2020 will fall to cities in which the adverse effects of climate change are accumulated, which points to the need to take account of adaptation in programming development actions, e.g. through the development of urban adaptation plans (especially for the largest cities). The implementation of integrated adaptation actions (e.g. through the preparation of local strategies/plans of adaptation to climate change) should also include other territories...”

<http://klimada.mos.gov.pl/en/>

Russia



In the Russian federation laws and regulations as well as actions concerning combating and mitigation of climate change are formatted and implemented at federal and regional levels. For purposes of productive interdepartmental interplay of the federal executive branch, governmental bodies, non-governmental, scientific and other organisations in planning and implementation of national climate change policy and in regard to the UNFCCC and Kyoto protocol as well as in order to provide sustainable development, a special interdepartmental working group (the Resolution of the President of the Russian Federation No. 563-pn dated 13 December 2012) was formed under the Administration of the President of the Russian Federation.

The Climate Doctrine of the Russian Federation (adopted by the Resolution of the President of the Russian Federation No. 861-pn dated 17 December 2009) is currently the most significant policy among national programmes, providing a range of measures for reducing anthropogenic greenhouse gas emissions, protection and enhancement of greenhouse gases absorption and accumulation. According to the Climate doctrine, the strategic aim of the Russia's climate policy is securing safe and sustainable development of the country in the realities of changing climate, threats and challenges connected with it.

In 2011 the Government of the Russian Federation adopted a comprehensive plan regarding the implementation of the Climate Doctrine until 2020 (the Resolution of the Government of the Russian Federation No. 730-p dated 25 April 2011). The main implementation actions of the Climate doctrine include:

- reinforcement and development of informational, scientific, socio-economic and professional direction in climate policy
- development and implementation of current and long-term measures for climate change adaptation
- development and implementation of current measures for mitigation of the human impact on climate
- international cooperation in climate change.

Implementation of the actions mentioned in the comprehensive plan is managed by the Ministry of Economic Development, Ministry of Regional Development, Ministry of Health, Ministry of Agriculture, Ministry of Energy, Ministry of Industry and Trade, Ministry of Transport, Ministry of Natural Resources and Environment, Federal Forestry Agency, Federal Service for Hydrometeorology and Environmental Monitoring and State Atomic Energy Corporation Rosatom. Supervision and analysis of productive implementation of the comprehensive plan is based on the annual reports derived from the contributions sent by the responsible agencies and institutions to the Government of the Russian Federation.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



The Environmental Security Strategy of the Russian Federation until 2025 was approved by the Executive Order No. 176 of the President of the Russian Federation dated 19 of April 2017. The policy is a document of strategic planning for enhancing national security in the Russian Federation. The Strategy identifies the main threats and challenges, aims and goals, tools and approaches for state policy implementation at federal, municipal and sectoral levels, which include detection, prevention and liquidation of internal and external environmental threats and challenges. The Strategy considers the consequences of climate change as one of the most significant global issues, while the internal challenge is loss of biological diversity and population of endangered species. The aim of the state environmental security policy is protection and restoration of environment, enhancement of environmental quality necessary for prosperous life and sustainable economy as well as waste treatment caused by human activity and others in response to increasing economic activity and global climate change. Besides, among the goals the Strategy also identifies the conservation of biological diversity, marine and terrestrial ecosystems as well as mitigation of negative climate change consequences on natural environment components. The Government of the Russian Federation was commissioned to develop and adopt the action plan for the implementation of the Environmental Security Strategy.

The relevance of developing and implementing measures for economic and societal adaptation in the Russian Federation is stated in the Climate doctrine, elaborated in accordance to the instructions of the Government of the Russian Federation dated 9 April 2008 and 18 April 2008 and adopted by the President of the Russian Federation on 17 December 2009.

The development and implementation of current and long-term measures for climate change adaptation are taken in action in accordance to the Comprehensive Implementation Plan of the Climate Doctrine until 2020 (adopted by the Resolution of the Government of the Russian Federation No. 730-p dated 25 April 2011) and many other resolutions by governmental institutions and agencies of the Russian Federation.

Climate risks, mitigation of human impact on climate as well as adaptation to climate change are currently taken in account in several strategic documents on socio-economic development in the Russian Federation:

- The Concept of long-term social and economic development of Russian Federation until 2020 (adopted by the Resolution of the Government of the Russian Federation No.1662-p dated 17 November 2008);
- The Forecast of long-term social and economic development of the Russian Federation until 2030;
- The Strategy for Hydrometeorology and Related Areas until 2030 (in view of climate change) adopted by the Resolution of the Government of the Russian Federation No. 120 dated 3 September 2010;
- The Doctrine of Food Security of the Russian Federation adopted by the Resolution of the President of the Russian Federation dated 30 January 2010.

Climate aspects are also considered in other governmental policies and federal targeted programmes of the Russian Federation:

- The State Environmental Program of the Russian Federation for 2012 – 2020 adopted by the Resolution of the Government of the Russian Federation No. 326 dated 15 April 2014;
- The State Programme Socioeconomic Development of the Russian Arctic Zone until 2020 adopted by the Resolution of the Government of the Russian Federation No. 366 dated 21 April 2014;
- The State Programme of the Russian Federation Civil and Territorial Protection in Emergency Situations, Fire Safety and Maritime Safety, adopted by the Resolution of the Government of the Russian Federation No. 300 dated 15 April 2014;
- The Federal Targeted Programme Developing Agricultural Land Reclamation in 2014-2020, adopted by the Resolution of the Government of the Russian Federation No. 922 dated 12 October 2013.



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



In 2016 there was work on the project development and approval of the Environmental Security Strategy of the Russian Federation until 2025 and the project of the Energy Strategy of Russia until 2035. Besides, the Resolution of the Government of the Russian Federation No. 2344 dated 3 November 2016 adopted the plan for implementing a range of measures for improving state control on greenhouse gas emissions and preparation for ratification of the Paris Agreement adopted 12 December 2015 at the 21st session of the Conference of the United Nations Framework Convention on Climate Change. Since 2013 there is going work on creating a national segment of the Global Framework for Climate Service (GFCS) in Russia, established at the 3rd World Climate Conferences organized by the World Meteorological Organization (WMO) in 2009 with the coordination from the Hydrometeorological Centre of Russia.

The main aim of the GFCS is to provide a better risk management, connected with climate variability and change, adaptation to climate change by increasing scientific and predictive information about climate, its usage in planning, policy, practice at global, regional and national levels. The priorities for climate service at the WMO are public health, agriculture and food security, decrease of threats, energy, water resources. At global level this initiative is meant to unite the efforts of a world community to increase the potential of all countries in climate service as well as to provide cooperation and coordination with the UN system and other international organisations working on climate change adaptation.

After the heat 2010 there was developed the Action Plan of Government of Moscow on Decrease of Impacts of Heat Wave and Air Pollution on Public Health upon the initiative of the Department of Natural Resources Management and Environmental Protection of the city of Moscow, in partnership with the Hydrometeorological Centre of Russia, the Meteorological Office of Moscow and Moscow Oblast, the Institute for National Economic Forecasts (the Russian Academy of Sciences) and other institutions. A draft project of Decree Environmental Strategy of the City of Moscow for the Period up to 2030 of the Government of Moscow was issued in March 2017, which established and provided the following gradual indicators for the period until 2030:

- the reduction of human impact on the atmosphere to the levels of an acceptable risk generated from environmental pollution to public health; a target risk value of 10^{-5} - 10^{-6} throughout the city;
- the reduction of air pollution by 20% over residential areas of the city;
- the upgrading of water quality of surface water bodies in Moscow;
- the restriction of groundwater pollution of the first hydrogeological horizon and restriction of water losses by 20-25%;
- the rehabilitation of the soil cover on 17% of Moscow's territory in the old borders occupied by industrial zones;
- the formation of Specially Protected Natural Areas on an area of 4.5 thousand hectares (the area of territories that have the status planned for the formation of protected areas in the old boundaries of Moscow);
- the increase the rate of planting in the old boundaries of the city from 54.5% to 61%, including the formation of continuous herbaceous soil covering of unprotected by hard coating patches of soil in order to prevent water and wind erosion.
- by 2030 to reduce greenhouse gas emissions by 20-25% of the level of greenhouse gas emissions in 1990;
- the increase to 5% of energy production using alternative and renewable sources in the energy balance of Moscow with a simultaneous gradual decrease of energy consumption by to energy saving in all sectors;
- the reduction of disposed waste by 35%, by sorting and sending municipal waste for recycling.



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EU STRATEGY
FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



During developing of measures for climate change adaptation in the city, the following is expected: the formation of an early warning system about adverse hydrometeorological phenomena for the municipal service and facilities; structural parts adaptation of the drainage facilities (storm drain) to accident free passage of rainwater during heavy rainfalls; development and implementation of efficient heating, ventilation and air conditioning systems with regard to climate change for maintaining comfortable living conditions at abnormal temperatures; support of rational water consumption, preservation and protection of reserve water supplies; development and implementation of innovative technologies for protection from icing on roofs and other structural parts of buildings and constructions in order to prevent from icefalls; monitoring of flooding and flooding risk areas.

In 2015, the city of St. Petersburg also developed the Strategy for Climate Adaptation of the City. This policy paper is integrated into the Strategy for the Economic and Social Development of St. Petersburg until 2030. It is expected that climate change will damage the most transportation utility infrastructure of the city - roads, sewage systems, gas pipelines. Experts forecast heat waves, intense rainfalls and earth movements will affect the quality of highways and roads, construction expenses, and slow down the development of the city. The main goal of the Climate Adaptation Strategy of the City of St. Petersburg is the mobilization of the municipal economy for taking timely measures to reduce and prevent current and future climate threats.

In addition to the action plans for Moscow and St. Petersburg, the Climate Change and Adaptation Strategy for Human Health in Arkhangelsk oblast and Nenets Autonomous Okrug (NAO), 2012 was prepared as part of the WHO project Climate Change Impact on Public Health and adaptation assessment in the North of the Russian federation, 2009-2010. This project is based on the agreement between the Ministry of Health and Social Development of the Russian Federation and the WHO and was executed by the regional Ministry of Health, the Northern State Medical University, the territorial directorate of Rospotrebnadzor (The Federal Service for Supervision of Consumer Rights protection and Human Well-being) in partnership with the Northern directorate of Hydrometeorological Centre, the department of Social Security, the regional office of the Ministry of Emergency Situations and other governmental agencies. Currently, it is one of the few territories (except for Moscow and St. Petersburg) which has managed to create a concept policy aimed at the implementation of adaptation mechanisms in various fields considering regional specifics and providing a good example for other northern regions.

The strategy envisages strengthening interaction with the regional emergency management, which is very important, taking into account the floods in the region, enhancing the laboratory base of sanitary service, the development of health service in remote areas of the NAO, the creation of mobile medical units. The Ministry of Health of the Arkhangelsk Oblast, which approved this strategy, sets a goal to optimise the healthcare system in a situation of changing climate. Therefore, it is planned to change working hours of medical institutions during the heat, temporarily abandon planned surgery, provide mobile medical services for the population, reinforce medical education about the danger of heat waves and other climatic changes. It is important to note that the Strategy pays special attention to higher risk groups – elderly people, children, social groups at risk. Countermeasures (adaptation measures) to climate-dependent infections are preventive healthcare (vaccination), better monitoring of the species composition and the number of vectors and reservoirs of infections, scaling-up the efficiency of disease control.

<http://global-climate-change.ru/index.php/en/adapt>

Sweden



In 2009 the Swedish Parliament adopted a coherent policy for climate and energy (Govt. Bill 2008/09:162. 2008. An Integrated Climate and Energy Policy), which includes the initial steps for Swedish society to adapt to a changing climate. It lays the foundation for a medium-term process to progressively identify the effects of climate change, assess the risks, and develop and implement adaptation measures. The strategy commits to concrete steps in the further development and implementation of adaptation measures. It follows an integrated approach that takes account of the interactions between sector and regional activities and strives to incorporate consideration of the possible impacts of climate change in all relevant policies.

As the work on adaptation cuts across many different disciplines, it is to a large extent guided by existing legislation, frameworks and targets, both national and international. Examples include the work on Agenda 2030 and the Swedish Environmental Quality Objectives. Many Swedish authorities play an important role in adaptation work through their respective sectoral responsibilities and are working on preventive measures, building knowledge and improving resilience.

The regional government offices (County Administrative Boards, or CABs) are responsible for coordinating the regional adaptation work and supporting local actors in their adaptation work. The CABs report annually to the Government about the actions taken to adapt to climate change.

In 2012, SMHI was tasked to form the National Knowledge Centre for Adaptation, to assist municipalities, regions, authorities and other stakeholders in their adaptation efforts. In 2017, the Centre has a budget of approximately SEK35 million. In 2018, the Centre has a budget of SEK42 million.

To underpin the national strategy with specific actions, the regional government offices have adopted 21 regional action plans covering the entire country of Sweden with nearly 800 proposed actions. The main actions proposed in the plans concern flood protection, protection of drinking water, shoreline protection, infrastructure (roads, railways), adaptation of agriculture and forestry, resilience for heatwaves and health care.

Several national authorities have developed or are developing action plans for the sectors that fall under their responsibility. Prioritised sectors have been food production, human health, national environmental objectives and planning/construction. So far, sectors that have received funds for developing such plans include forestry, human health, construction/land use and reindeer



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FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



herding/Sami culture. Using the same funds, 12 tools to assist with adaptation work have been developed. These include tools to handle uncertainties in adaptation work, nature-based methods to prevent flooding and designs to prevent beach erosion. Some local authorities have also developed adaptation action plans for their municipality.

Following the climate and energy bill in 2009, the Government has financed measures of some SEK 100 million per year to improve knowledge about the impacts of climate change and to address these impacts, for example by implementing prevention measures against landslides and flooding. In the budget proposal for 2018, the government proposes that the allocation “Adaptation to climate change” to be raised to SEK 214 million. It will then also include funding for actions preventing landslides in a particularly vulnerable area of Sweden.

The Swedish climate change adaptation work is primarily organised by sector. During 2016 the previous network of authorities behind the National Portal for Climate Change Adaptation became the National Network for Adaptation, with a wider remit and the aim to increase the resilience of society to climate change. 18 national authorities with responsibilities for adaptation participate in the network, as well as the regional CABs. The secretariat for the network is provided by SMHI.

The Government also distributes assignments related to various measures to sector agencies. Most adaptation issues are, however, multidisciplinary, meaning that work on climate adaptation is largely performed in collaboration between different actors and sectors at the national, regional and local levels. Sweden has a well-established and functioning framework for disaster risk reduction (DRR), including work in forums for crisis preparedness. The work is coordinated by the Swedish Civil Contingencies Agency (MSB). Cooperation is promoted on all levels and between sectors and actors working with land use planning, risk management, natural disasters and climate adaptation, in order to reduce risks and enhance preparedness. Several coordination forums currently exist in Sweden where sector agencies and other stakeholders can share experiences and plan key actions. These stakeholders include:

- Agency network for shore erosion
- Committee on dimensioned flows in hydroelectric dams in a changing climate
- Delegation for landslides
- National network for drinking water
- Network for adaptation

Sweden’s municipalities are obliged to carry out risk and vulnerability assessments as a basis for coping with extraordinary events and crises. Such analyses also cover events that will be affected by climate change. Concrete adaptations have been started, above all, in municipalities hit by extreme weather events. In particular, this has involved measures in the areas of physical planning and building. Some municipalities have also raised the minimum level for construction, built levees and invested in pump systems to protect against flooding. Some have begun to modify water and sewerage systems to avoid the harmful effects of heavy downpours. In built-up areas where the risk of natural disasters is particularly high, municipalities can apply for state funding for preventive actions. There is about SEK75 million available annually for the years 2017–2020. The funding is administrated by the Swedish Civil Contingencies Agency. Contributions can be made with up to 60% of eligible costs or to a maximum of 60% of the threatened objects’ value. Natural disaster in this context refers mainly to landslides or flooding.

There is a positive trend regarding municipal climate adaptation work. However, the progress of the



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SEA REGION



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Baltic Sea Region



municipalities vary widely. Large municipalities have generally made more progress compared to small and medium-sized municipalities, and coastal municipalities have gradually established their climate adaptation work compared with inland municipalities.

Several new strategic developments have taken place within climate change adaptation legislation and policy in Sweden in 2018.

A National strategy for climate change adaptation (Sweden's first) was presented by the government (Govt. Bill 2017/18:163), with the aim of strengthening the long-term climate change adaptation work and its coordination in Sweden. The strategy includes a set of guiding principles on climate change adaptation.

Together with the National strategy for climate change adaptation, two changes to the Swedish Planning and Building Act (PBL) were adopted by the Swedish Parliament and entered into force on 1 August 2018. The changes to the PBL require Sweden's municipalities to include an assessment, in their comprehensive plans, of the risks of damage to the built environment from climate related landslides and erosion and how these risks can be reduced or prevented. The amended legislation also allows municipalities, in their detailed plans, to demand ground permits for actions that reduce the permeability of the ground.

Furthermore, the government's instruction to SMHI has been changed as of 15 August 2018, requiring the establishment of a National Expert Council on Climate Change Adaptation, with a secretariat located at SMHI. The council's eight members are appointed by the government and their task is to deliver a report every five year, detailing the orientation, prioritization, monitoring and evaluation of Sweden's work on climate change adaptation.

A government regulation, on the climate change adaptation work of government agencies (Regulation 2018:1428), has been issued, and will enter into force on 1 January 2019. It requires 33 major government agencies to work with adaptation as well as SMHI to regulate how the agencies report their work on climate change adaptation within their responsibilities, to collect the reports of the agencies annually, and to submit a summarized analysis to the government.

The Swedish National Board of Housing, Building and Planning, has been tasked with coordinating the national work on climate change adaptation within the built environment, since 7 June 2018. This mission should be carried out in cooperation with other agencies, including SMHI, the CABs and MSB.

<http://www.klimatanpassning.se/en>

Norway



In 2007, an inter-ministerial working group was appointed to promote coordination and dialogue in the national climate adaptation work. The working group was led by the Ministry of Climate and Environment and in 2008 the Government presented a five-year platform to enhance society's resilience to climate change, to reduce vulnerability and strengthen Norway's ability to adapt. The inter-ministerial working group was supported by a programme-secretariat that was established in the Directorate for Civil Protection (DSB). A committee consisting of experts from government agencies, research institutes and civil society published an Official Norwegian Report (NOU) on Norway's vulnerability and adaptive needs in 2010. As follow-up of NOU, the Norwegian Parliament adopted the first white paper on climate change adaptation in 2013, outlining national policies and guidance for adaptation in Norway.

In accordance with the principle of responsibility, the issue of climate change adaptation is addressed in several sectoral policy documents published recently. Among these are:

- The White paper Nature for life – Norway's national biodiversity action plan (Meld.St. 14 (2015-2016)).
- The White paper Risk in a Safe and Secure Society – on public security (Meld.St. 10 (2016-2017), executive summary in English)
- The White paper *Friluftsliv – natur som kilde til helse og livskvalitet* (Meld.St 18 (2015-2016) Outdoor recreation – nature as a source of improved health and life quality, in Norwegian only)
- The White paper *Hvordan leve med farene, om flom og skred* (Meld.St 15 (2011-2012) How to live with the hazards – floods and landslides, in Norwegian only)
- The White paper *Verdier i vekst – konkurransedyktig skog- og trenæring* (Meld.St 6 (2016-2017) Values in growth – a competitive forestry and timber industry, in Norwegian only)
- The White paper *Endring og utvikling – en fremtidsrettet jordbruksproduksjon* (Meld. St 11 (2016-2017) Change and development – a future-oriented agricultural production, in Norwegian only)
- The White paper *Reindrift. Lang tradisjon, unike muligheter* (Meld. St 32 (2016-2017) Reindeer husbandry. Old tradition – unique opportunities, in Norwegian only).

188

- The White paper National transport plan 2018-2029 (Meld. St 33 2016-2017, English summary)
- Several agencies have prepared strategies and action plans addressing climate change adaptation.

In June 2017, the Norwegian Parliament adopted a Climate Change Act (*Lov om klimamål*), which establishes by law Norway's emission reduction target for 2030 and 2050. The act will have an



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FOR THE BALTIC
SEA REGION



Interreg
Baltic Sea Region



overarching function in addition to existing environmental legislation. According to the act the government shall submit to the Parliament updated information on how Norway prepares for and adapts to climate change.

A key principle in Norway's adaptation policy is that all sectors – private and public – are responsible for assessing and addressing the impacts of climate change on their areas of competence. All government agencies and local and regional authorities carry a responsibility for climate change adaptation within their field. The Norwegian Environment Agency supports the Ministry of Climate and Environment in the work on climate change adaptation and is the coordinating agency. The Environment Agency assists the Ministry in the follow-up of the White Paper on climate change adaptation (Meld.St 33 (2012-2013)) and in policymaking. Furthermore, it contributes to ensure that the Government's climate change adaptation work is being implemented in the public administration as well as in society in general and supports the Ministry in its international climate change adaptation work.

In its role as coordinating agency for climate change adaptation, the Environment Agency works to ensure that actors on local, regional and national level are taking account of and adapting to climate change. As part of the coordination tasks, the Environment Agency also gives guidelines and guidance to the county governors in their climate change adaptation work. As part of the role as coordinator, the Environment Agency works to strengthen climate adaptation efforts in Norway, among other things by increasing the knowledge base for climate adaptation. The Agency has a particular responsibility for disseminating and sharing knowledge and experience, contribute to competence and capacity building, and facilitate cooperation between different public administration levels, sectors and actors in the field.

The county governor is important in following up the government's policy on regional and local level. It plays an important role in supporting and guiding the municipalities in their work on adaptation, particularly related to risk and vulnerability analysis and land use planning. They also coordinate and cooperate the civil protection efforts, both prevention and preparedness, on the regional level. The county governors have to ensure that climate change has been taken into consideration and followed up, both in planning and risk and vulnerability assessments. The county municipalities also play an important role regarding guidance and coordination in relation to municipal and regional plans.

The municipalities have the overall responsibility for community development within their geographical catchment areas. They have obligations and exercise authority under various acts of legislation, and their responsibility for planning is regulated by the Planning and Building Act. The future consequences of climate change for the municipalities will be partly determined by decisions taken today, for example on land use and the development of municipal infrastructure. The Government will therefore require municipalities to use relevant knowledge about current and future climate change as a basis for their planning activities and exercise of authority. This will be necessary for example in their application of legislation relating to civil protection and nature management, where they have vital tasks. The local authorities must also take climate change into account when applying the rules on the construction of housing, roads and other infrastructure.

Climate change will also affect a number of other municipal services, such as provision of drinking water and waste water and waste management. Climate change considerations are particularly important in long-term planning for the development of municipal services and associated infrastructure.



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SEA REGION



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Planning is a core tool in the work to meet the challenges related to consequences of climate change. The Planning and Building act provides the framework for planning in Norway. This framework includes tools and requirements for local, regional and national planning. One such tool is the Central Government Planning Guidelines, which define certain areas of interest to be implemented in local and regional planning. Another tool is the national expectations regarding regional and municipal planning, issued every 4th year by the ministry. The Planning and building act is based on the principle of sustainable development.

The Environmental Impact Assessment framework and various guidelines and policies is revised as of 2017 and ensures that vulnerability due to climate change is included in environmental impact assessments.

Pursuant to the Act of 25 June 2010 No. 45 relating to the Municipal Preparedness Duty, Civil Protection Measures and the Norwegian Civil Defense (Civil Protection Act), municipalities have a duty to identify the adverse events that could occur in their municipality, assess the likelihood of these events occurring and assess how they could affect their municipality. The results of this work must also be assessed and compared in a comprehensive risk and vulnerability analysis. Municipalities must draw up contingency plans based on this analysis, have a municipal crisis team, and carry out exercises and other skills enhancing measures to ensure they are able to handle adverse events.

In 2009 the Ministry of the Environment set up the website www.klimatilpasning.no to coordinate this type of information and make it easily accessible for regional and municipal authorities. The website, which is managed by the Norwegian Climate Adaptation Programme, is also intended as a tool for municipalities and others who find it difficult to start on adaptation work and contains a set of practical guidelines. Norwegian Centre for Climate Services (NCCS) was officially established in 2013 for providing information on the current and future climate and play a part in translating climate science into practical adaptation work. The development of a national centre for climate services involves the Norwegian Meteorological Institute, the Norwegian Water Resources and Energy Directorate and the Bjerknes Centre for Climate Research including Uni Research. The Meteorological Institute has overall responsibility for the centre.

Networks and regional cooperation have been shown to be effective learning tools for strengthening the adaptive capacity of municipalities and enabling them to exchange experience. Cities of the Future is an example of an ongoing cooperation focusing on climate change adaptation. In 2008, Norway's 13 largest cities and urban areas were invited by the Ministry of the Environment to join together to reduce greenhouse gas emissions and create cities that will be better places to live. In addition to the cities and the Ministry of the Environment, which heads the cooperation, three other ministries are involved: the Ministry of Local Government and Regional Development, the Ministry of Petroleum and Energy and the Ministry of Transport and Communications, together with the Norwegian Association of Local and Regional Authorities and the business sector. The practical cooperation takes the form of a network. Adaptation to climate change is also an important element of the cooperation. The focus area is adaptation to climate change. So far 10 of the cities have included specific objectives or strategies relating to adaptation in the social element of their municipal master plans and 10 have included provisions concerning climate change adaptation in the land-use element. All 13 have developed action programmes that will play a part in climate change adaptation.

<http://www.klimatilpasning.no/infosider/english/>

<http://www.miljokommune.no/Temaoversikt/Klima/Eksempler-pa-klima--og-energitiltak-1/>



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SEA REGION



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