



# Adaptation preparedness scoreboard

## Draft country fiche for Estonia

### Disclaimer

This draft country fiche was prepared in the context of the implementation of the EU's Strategy for Adaptation to Climate Change (EUAS). The indicators were developed and agreed with experts from the Member States (MS). This draft version of the fiche is published as background information to the public stakeholder consultation about the evaluation of the EUAS running from early December 2017 to early March 2018. It constitutes work in progress, a particular stage of information collection and dialogue between the Commission and the Member States. It presents a snapshot of the status in the country as of September or October 2017. The fiches are planned to be finalised and published as an annex to the strategy's evaluation report in the fourth quarter of 2018, before which they will be further updated and modified. Should you have any specific comments on the draft fiche, please send it to the mailbox CLIMA-CLIMATE-CHANGE-ADAPTATION@ec.europa.eu

Please note that the assessments (yes/no/in progress) need to be read in conjunction with the narrative that accompanies them. They assess the state of play within each country. While all effort has been made to ensure the coherence across fiches in the assessment of the same indicator, it should not be directly compared across the MS. Two countries with a "yes" on the same indicator could have a different national situation leading to that assessment. Not all indicators have the "in progress" status, some can only be "yes" or "no". For a more detailed explanation of what each indicator means and how its value is determined, please refer to the description of the scoreboard, a document published alongside the country fiches.

### Contents

POLICY FRAMEWORK .....	2
Adaptation strategies.....	2
A1. National adaptation strategy.....	2
A2. Adaptation strategies adopted at subnational levels.....	3
B. Adaptation action plans.....	4
B1. National adaptation plan .....	4
B2. Adaptation plans adopted at sub-national level.....	4
B3. Sectoral adaptation plans .....	4
SCOREBOARD .....	5

## DRAFT

Step A: preparing the ground for adaptation .....	5
1. Coordination structure.....	5
2. Stakeholders' involvement in policy development.....	6
Step B: assessing risks and vulnerabilities to climate change.....	7
3. Current and projected climate change .....	7
4. Knowledge gaps .....	10
5. Knowledge transfer.....	11
Step C: identifying adaptation options .....	12
6. Adaptation options' identification .....	12
7. Funding resources identified and allocated.....	13
Step D: Implementing adaptation action.....	13
8. Mainstreaming adaptation in planning processes.....	14
9. Implementing adaptation .....	17
Step E: Monitoring and evaluation of adaptation activities .....	18
10. Monitoring and reporting .....	18
11. Evaluation.....	18
SUMMARY TABLE.....	20

## POLICY FRAMEWORK

### Adaptation strategies

#### A1. National adaptation strategy

**The national strategy on climate change adaptation named "Development Plan for Climate Change Adaptation until 2030"<sup>1 2</sup> was adopted by the Government on 2nd March 2017.**

The strategy was developed under a project "Elaboration of Estonia's Draft National Climate Change Adaptation Strategy and Action Plan" agreed between the Ministry of Environment and the Estonian Environmental Research Centre, with support from the European Economic Association Financial Mechanism. Relevant contributions were received from the representatives of relevant ministries, local governments, non-governmental organisations and research institutions.

The strategy presents a framework for action which serves as a basis for reducing the vulnerability of the state of Estonia in relation to climate change<sup>3</sup>. The strategic goal of

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<sup>1</sup> <http://www.envir.ee/en/news-goals-activities/climate/climate-change-adaptation>

<sup>2</sup> <http://www.envir.ee/et/eesmargid-tegevused/kliima/kliimamuutustega-kohanemise-arengukava>

<sup>3</sup> [http://www.envir.ee/sites/default/files/climate\\_change\\_adaptation\\_development\\_plan\\_until\\_2030\\_summary\\_0.pdf](http://www.envir.ee/sites/default/files/climate_change_adaptation_development_plan_until_2030_summary_0.pdf)

## DRAFT

the Strategy is to increase the readiness and ability to adapt to the impacts of climate change at the national, regional and local levels. The goal is measured by an overall metrics - by 2030 at least 35% of people acknowledge the risks of climate change and take appropriate measures. The Strategy calls for eight sub-goals for the following priority areas, following the economic and administrative structure in the country:

1. Human health and rescue preparedness;
2. Land use and spatial planning, including coastal areas, other flood-risk areas, landslide risk areas, land reclamation, planning of cities;
3. Natural environment, including biodiversity, terrestrial ecosystems, freshwater ecosystems and environment, marine ecosystems and environment, ecosystem services;
4. Bio-economy, including agriculture, forestry, fishing, hunting, tourism, peat production;
5. The economy, including insurance, banking, employment, businesses and industry;
6. Society, awareness and cooperation, including awareness, education and science, international relations and cooperation;
7. Infrastructure and buildings, including transport and transport infrastructure, technical support systems, buildings;
8. Energy and energy supply systems, including energy independence, energy security, energy resources, energy efficiency, heat production and electricity generation.

The strategy was prepared based on comprehensive studies and analyses which were carried out by experts and scientists from different institutions. These studies and analyses determined the impact of climate change on priority areas and the adaptation measures which need to be taken in the short term until 2030 and also those that are part of a long-term vision until the year 2100. According to the scenarios, there will be possible changes in temperature, sea level and mode of wind and precipitation.

The Strategy is accompanied by a detailed action plan supporting the goals and sub-goals set in the Strategy.

### **A2. Adaptation strategies adopted at subnational levels**

There is no information or evidence about adaptation strategies existing at relevant subnational levels. Climate change adaptation is, however, considered in the county and local municipal level risk assessments and crisis management plans. In addition, the capital city of Estonia, Tallinn, and the cities of Rakvere, Jõgeva, Tartu, Viimsi and Rõuge municipalities have started the process of developing strategies and action plans for climate change adaptation (they are signatories of the Covenant of Mayors and Covenant of Mayors for Climate and Energy).

So far, the majority of activities in climate change adaptation at the sub-national level have occurred through EU funded projects such as ASTRA<sup>4</sup>, BaltCICA<sup>5</sup>, BalticClimate<sup>6</sup> and BaltAdapt<sup>7</sup> (see 9a below). Implementation is done through devolved government offices in the 15 counties (which are a subdivision of the Nomenclature of Territorial Units (NUTS) level III) and at the municipal level.

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<sup>4</sup> [http://www.astra-project.org/01\\_aims\\_astra.html](http://www.astra-project.org/01_aims_astra.html)

<sup>5</sup> <http://www.baltcica.org/casestudies/estonia.html>

<sup>6</sup> <http://www.balticclimate.org/en/project/target-ares/estonia>

<sup>7</sup> <http://www.baltadapt.eu/>

## DRAFT

Traditionally, the regional level has not been very relevant in Estonia. Regions currently have no defined role in climate change adaptation. On the other hand, local authorities (municipalities) could have an important role to play, particularly regarding implementation of adaptation action.

### **B. Adaptation action plans**

#### **B1. National adaptation plan**

The detailed adaptation action plan (hereafter NAP) to implement the national adaptation strategy was developed in parallel with the adaptation strategy itself, by the EEA project mentioned above. The NAP was adopted by the government in March 2017. The NAP includes the specific activities and series of measures in the 8 sectors identified in the NAS and their costs for four years, distributed by year and by responsible authority.

#### **B2. Adaptation plans adopted at sub-national level**

Some activities related to climate adaptation have taken place at the local level in several municipalities but not as part of a systematic process. The capital city of Estonia, Tallinn and the cities of Rakvere, Jõgeva, Tartu, Viimsi and Rõuge municipalities have started the process of elaboration of adaptation strategies and action plans with it. Some major towns, such as Pärnu, Tartu, Tallinn that have been influenced by extreme weather conditions (e.g. following a particularly strong storm in 2005) have been implementing adaptation measures. These include the flood warning system<sup>8</sup> that was established in Pärnu City within the Astra project. The aim of the system is to notify the citizens about potential hazards and what actions to take in case of significant sea level rise. Since 2008, there has been a 24-hour weather monitoring system used in Tallinn in order to inform citizens of extreme weather conditions, especially of those that could cause floods.

At the moment no sub-national or regional adaptation strategy has been adopted, but Tallinn has started the process of elaboration of an adaptation strategy and action plan. In county-regions the risk assessments and crisis management plans have to be in place and be up-dated regularly. Cities are participating in regional crisis committees. They have performed risk analyses which include extreme weather events such as storms, floods and heavy rain. Local action plans have been developed for minimising the risks (flood boundaries, flood construction level, etc.).

#### **B3. Sectoral adaptation plans**

Some adaptation measures have been included in sectoral development plans, action plans and laws (e.g., "The Estonian Forestry Development Plan until 2020", "The Nature Conservation Development Plan until 2020", the Water Act, the Emergency Act and the risk analyses of emergencies, "The Action Plan for Climate Change mitigation and Adaptation to the Impact of Climate Changes in the Agricultural Sector", "The Public Health Development Plan for 2009–2020", "The Estonian Rural Development Plan for 2014–2020", "The National Security Concept of Estonia until 2020").

The Estonian low-carbon strategy named „General principles of Climate Policy until 2050"<sup>9</sup>, which was approved by the Parliament on 5th April 2017, set sectoral political

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<sup>8</sup> Electronic landscape maps of the flood exposure areas in Tallinn, Kuressaare, Haapsalu, Pärnu and Tartu are available on the website of the Land Board at <http://geoportaal.maaamet.ee>

## DRAFT

guidelines for adapting to the effects of climate change. The strategy considers, amongst others, the energy, health, and bio-economy sectors.

### SCOREBOARD

#### Step A: preparing the ground for adaptation

##### 1. Coordination structure

###### 1a. A central administration body officially in charge of adaptation policy making

Yes / No

The Estonian Ministry of Environment (MoE) is the institution responsible for all climate change mitigation and adaptation related activities in Estonia, including developing national policies, implementing measures, transposing the EU climate policy legislation and integrating climate policy objectives and concerns into sectors which are not under MoE's responsibilities.

Within the Ministry, the Climate and Radiation Department is responsible for coordinating reporting activities under the United Nations Framework Convention on Climate Change (UNFCCC), its Kyoto Protocol and EU legislation and also for the development and implementation of climate change mitigation and adaptation policies.

###### 1b. Horizontal (i.e. sectoral) coordination mechanisms exist within the governance system, with division of responsibilities

Yes / In progress / No

A Steering Committee was formed for development of the National Adaptation Strategy. The Steering Committee was led by the Estonian Environmental Research Centre, and included representatives of concerned government authorities, associations and organizations, including: Ministry of Environment, Ministry of Rural Affairs, Ministry of Social Affairs, Ministry of Finance, Ministry of the Interior, Ministry of Economic Affairs and Communications, Ministry of Education and Science, Government Office, Rescue Authority, Estonian Association of Municipalities, Association of Estonian Cities, Estonian Science Agency, Estonian Academy of Sciences and Estonian Fund for Nature.

All ministries are responsible for coordinating the development of these activities that fall under the responsibility of each respective ministry in the action plan. The Ministry of Environment will however organise the annual reporting on the implementation of the NAP and coordinate adaptation related ministerial communication. By 1<sup>st</sup> March every year, from the year 2018, the Ministry of Environment will report to the government on the implementation of the Strategy and its goals.

###### 1c. Vertical (i.e. across levels of administration) coordination mechanisms exist within the governance system, enabling lower levels of administration to influence policy making

Yes / In progress / No

The Estonian Association of Municipalities and the Association of Estonian Cities were part of the Steering Committee that led the development of the National Adaptation Strategy. Local governments have co-responsibility in the implementation of the relevant actions in the action plan, under the coordination of the responsible ministries relevant for the action.

## DRAFT

The Association of Estonian Cities (AEC) is the voluntary union established for representing the common interests and arranging co-operation of cities and rural municipalities. This association disseminates the information about the Covenant of Mayors to the local municipalities.

Sub-national sectoral policies, such as flood risk and water management take into account the possible impacts of climate change.

### **2. Stakeholders' involvement in policy development**

#### **2a. A dedicated process is in place to facilitate stakeholders' involvement in the preparation of adaptation policies**

**Yes** / No

In the process of developing the adaptation policy in Estonia, stakeholders from national governmental bodies as well as the scientific research communities were consulted. Some information was collected from regional level governmental stakeholders.

The development of NAS was promoted and followed up by a Steering Committee. Several science and research institutions were included in the Steering Committee, including the Estonian Science Agency and the Estonian Academy of Sciences.

There was a 3-week period of public review of the NAS draft (in parallel to the public review of the strategic environmental impact assessment report) with a public hearing at the end of the period. The NAS draft was published for public consultation through an online portal, and several public information seminars were held.

#### **2b. Transboundary cooperation is planned to address common challenges with relevant countries**

**Yes** / No

There is some evidence of transboundary cooperation to address common challenges with relevant countries.

Transboundary cooperation has taken place at many levels. In the frame of the EEA Financial Mechanism project "Elaboration of Estonia's Draft National Climate Change Adaptation Strategy and Action Plan", bilateral cooperation contracts were signed between the Estonian Environmental Research Centre and the Norwegian Directorate for Civil Protection and Emergency Planning (donor country). The aim of the bilateral contract was to transfer Norwegian know-how on climate change adaptation to Estonia and to provide consultation. The aforementioned research groups that developed adaptation research studies also had partners from EEA Financial Mechanism donor countries: Agricultural University of Iceland, Norwegian Fridtjof Nansen Institute, Norwegian Institute for Urban and Regional Research, NIBR.

The Ministry of Environment participates in the Baltic Sea Region working group on climate change adaptation<sup>10</sup>. Estonia takes active part in the implementation of the EU Strategy for the Baltic Sea Region (EUSBSR, 2009)<sup>11</sup> and is a member of the Baltic Sea Region Climate Dialogue Platform<sup>12</sup>.

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<sup>10</sup> <https://cpmr-baltic.org/policy-work/energy-climate/>

<sup>11</sup> <http://www.balticsea-region-strategy.eu/>

<sup>12</sup> <http://www.cbss.org/strategies/horizontal-action-climate/>

## DRAFT

Several projects on adaptation to climate change in the Baltic Sea region have been implemented. Estonia has taken part in several transboundary projects, including Astra<sup>13</sup>, Baltadapt<sup>14</sup>, BaltCICA<sup>15</sup>, BalticClimate<sup>16</sup>, Baltclim<sup>17</sup>, RADOST<sup>18</sup>, iWater<sup>19</sup>.

In the NAS, the transboundary components are taken into consideration mainly in the fishing sector, especially in the Baltic Sea and Lake Peipus context.

### **Step B: assessing risks and vulnerabilities to climate change**

#### **3. Current and projected climate change**

##### **3a. Observation systems are in place to monitor climate change, extreme climate events and their impacts**

**Yes** / In progress / No

Climate observations comprise of systematic meteorological, atmospheric, oceanographic and terrestrial monitoring. Ensuring operative and continuous provision of meteorological and hydrological forecasts, warnings and monitoring of data for the public and for authorities is the strategic objective of the Estonian Environment Agency weather service.

Other institutions involved in climate observations include Tartu Observatory<sup>20</sup>, the Estonian Marine Institute of the University of Tartu<sup>21</sup> and the Marine Systems Institute of Tallinn University of Technology<sup>22</sup>.

The Estonian Environmental Agency Weather Service publishes data and climatological information on weather observations and scenarios, weather events and climate change science. The Estonian Weather Service also publishes the climate averages, weather warnings, weather events, anomalies and weather records data<sup>23</sup>. The Weather Service also alerts the public to the possible occurrence of severe weather, such as heavy rain with risk of flooding, severe thunderstorms, gale-force winds, heat waves, forest fires, fog, snow or extreme cold with blizzards, avalanches or severe coastal tides (this information is also published on the European extreme weather alert portal [www.meteoalarm.eu](http://www.meteoalarm.eu) and is based on country awareness reports).

The on-line Sea Level Information System run by the Marine Systems Institute at Tallinn University of Technology provides information about the sea level status, trends, projections and water temperatures in different coastal regions of Estonia.

The Estonian Rescue Board website<sup>24</sup> publishes practical emergency instructions, including in extreme weather conditions (like storms, thunderstorms, extremely cold weather conditions, floods).

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<sup>13</sup> [http://www.astra-project.org/02\\_estonia\\_tallin\\_paernu.html](http://www.astra-project.org/02_estonia_tallin_paernu.html)

<sup>14</sup> <http://www.baltadapt.eu/>

<sup>15</sup> <http://www.baltcica.org/>

<sup>16</sup> <http://www.balticclimate.org/>

<sup>17</sup> <http://www.bef-de.org/index.php?id=52>

<sup>18</sup> <http://www.klimzug-radost.de/en>

<sup>19</sup> <https://www.integratedstormwater.eu/content/integrated-storm-water-management>

<sup>20</sup> <https://www.to.ee/>

<sup>21</sup> <http://www.sea.ee/en>

<sup>22</sup> <https://www.ttu.ee/en/?id=147569>

<sup>23</sup> <https://www.ilmateenistus.ee/kliima/kliimanormid/ohutemperatuur/?lang=en>

<sup>24</sup> <https://www.rescue.ee/et/kodanikule/elanikkonnakaitse/>

## DRAFT

### **3b. Scenarios and projections are used to assess the economic, social and environmental impacts of climate change, taking into account geographical specificities and best available science (e.g. in response to revised IPCC assessments)**

**Yes** / In progress / No

Along with the National Adaptation Strategy and Action Plan on climate change adaptation (NAS/NAP) development, the Estonian Environment Agency developed a report of short-term and long-term climate scenarios for Estonia and described past trends<sup>25</sup>. The Estonian specific climate change future scenarios provide an overview of the projections and assessments to the future climate in Estonia up to 2100 using calculations of 28 global climatic models according to Intergovernmental Climate Change Panel (IPCC) the Fifth Assessment Report (AR5) and Second Assessment of Climate Change for the Baltic Sea Basin (BACC II) and results of Baltadapt project and IPCC special report SREX (Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation), which are downscaled to our region.

This report presents an overview of observed climate changes during the 19th and 20th centuries in Estonia, as well as assessments and projections of future climate until the year 2100. This report gathers existing scientific knowledge concerning the surface and atmospheric climate changes in Estonia and Baltic Sea region, local context derived from the global one has been taken into account.

The report focuses on two greenhouse gas emission scenarios, which are recommended as basis for development of Estonian climate change adaptation strategy and action plan:

- RCP4.5 – recommended as a main scenario; moderate, significant mitigation measures are expected from the countries;
- RCP8.5 – recommended as an additional scenario; pessimistic, weak international cooperation and mainly carbon-based economy.

The AR5 RCP2.6 and RCP6 scenarios were not considered for the following reasons:

- They give little additional information. RCP2.6 has a very weak warming signal and little detectable changes in climate for adaptation and it seems too optimistic, its low greenhouse gas emissions seem unlikely to be achieved. The RCP6 gives little information by being between RCP4.5 and RCP8.5 in most of its outcomes.
- Less modelling information is available for RCP2.6 and RCP6 scenarios and none for high-resolution EURO-CORDEX simulations, which were used for the current project.

The objective of climate scenarios is to forecast the temporal-spatial variability of the anthropogenic factors influencing the climate. The focus must be at least on two greenhouse gas emission scenarios, since the development of the society as a whole and especially the related environmental effects cannot be unambiguously predicted

The future climate scenarios are used as a basis for developing adaptation strategy and action plan for Estonia.

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<sup>25</sup> [http://www.envir.ee/sites/default/files/kliimastenaariumid\\_kaur\\_aruanne\\_ver190815.pdf](http://www.envir.ee/sites/default/files/kliimastenaariumid_kaur_aruanne_ver190815.pdf)



## DRAFT

While the available climate projections and socio-economic scenarios were used in the development of the NAS, it cannot be verified if they were consistently used for assessing the economic, social and environmental impacts of climate change.

A thorough overview of the expected effects of climate change in Estonia is also given in the document "Estonia's Sixth National Communication Under the United Nations Framework Convention on Climate Change"

During the development of NAS the strategic environmental impact assessment process was held where all the possible economic, social and environmental impacts of NAS were assessed.

### **3c. Sound climate risks/vulnerability assessments for priority vulnerable sectors are undertaken to support adaptation decision making**

**Yes** / In progress / No

To date, there have not been many risk analyses concerning vulnerability to climate change at national level in Estonia, however the NAS/NAP is an independent policy document (development plan) with a comprehensive sectorial climate change impact analysis including undertaking a climate change risks and vulnerability assessment.

Not many risk analyses, concerning climate change vulnerability, have been compiled in Estonia. In the European Environment Agency report 'Climate Change, impacts and vulnerability to climate change in Europe 2012'<sup>26</sup>, Estonia is considered to be among countries with no or marginal potential vulnerability to climate change and this has not changed in the most recent findings<sup>27</sup>.

The EEA project "Elaboration of Estonia's Draft National Climate Change Adaptation Strategy and Action Plan" has presented the following elements, still to be fed back into the National Climate Change Adaptation Strategy:

- Assessment of sectorial positive and negative impacts on climate change;
- Approach for addressing the knowledge gaps and dealing with uncertainties;
- Identification of adaptation options;
- Assessment of adaptation options and forecasting costs;
- Assessment of cross-cutting issues and trade-offs;
- Prioritization of adaptation options;
- Identification of entry points for adaptation into existing instruments and/or specifying required new instruments for adaptation;
- Monitoring and evaluation provisions for adaptation options along with indicators.

The NAS was drawn up based on four in-depth scientific studies, which identified the sectoral impacts and vulnerabilities of climate change and determined the measures for adaptation to climate change in short-term perspective (up to 2030) and long term perspective (up to 2050 and 2100). The analysed sectors in these scientific studies and also in NAS were as follows:

1. Health and rescue capability;
2. Land use and planning, including coastal areas, other areas with a risk of flooding, areas with a risk of landslides, land improvement, towns;
3. Natural environment, including biodiversity, land ecosystems, freshwater ecosystems and environment, marine ecosystems and environment, ecosystem services;

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<sup>26</sup> <https://www.eea.europa.eu/publications/climate-impacts-and-vulnerability-2012>

<sup>27</sup> <https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016>

## DRAFT

4. Bioeconomy, including agriculture, forestry, fishing industry, hunting, tourism, peat production;
5. Economy, including insurance, banking, employment, entrepreneurship and industry;
6. Society, awareness and cooperation, including awareness, education and science, international relations and cooperation;
7. Infrastructure and buildings, including transport and infrastructure of transport, technical support systems, buildings;
8. Energy and security of supply, including energy independence, security, resources, efficiency, and heat and electricity production.

The information about the NAS baseline studies:

- Climate change adaptation strategy and measures for thematic fields of natural environment and bioeconomy (BIOCLIM), link: <http://pk.emu.ee/struktuur/maastikukorralduse-ja-loodushoiu-osakond/projektid/bioclim/projekt/>
- Estonian Climate Adaptation Strategy for Infrastructure and Energy (ENFRA), link: <http://kliima.seit.ee/>
- Assessment of climate change impacts elaboration of adaptations measures: planning, land use, health and rescue management (KATI), link: <http://www.geograafia.ut.ee/et/teadus/kati-kliimakohanemine> Climate change impact assessment and elaboration of suitable adaptation measures in the fields of the economy and society (RAKE), link: [https://www.envir.ee/sites/default/files/rake\\_lopparuanne.pdf](https://www.envir.ee/sites/default/files/rake_lopparuanne.pdf)

### **3d. Climate risks/vulnerability assessments take transboundary risks into account, when relevant**

Yes / **In progress** / No

Climate risk/vulnerability assessments take transboundary risk into account in some sectors, such as the fishing sector, especially in the Baltic Sea and Lake Peipus context. However, it is not clear whether transboundary risks are taken into account by the risk and vulnerability assessments for other relevant sectors.

NAS identifies international relations and development cooperation as essential areas to promote adaptation to the effects of climate change, but it is not clear whether transboundary risks are enshrined in NAS.

Estonia has engaged in a number of transboundary initiatives relating to climate impacts, as also described in 2b. Climate risks/vulnerability assessments take transboundary risks into account, within the framework of the Baltic Sea Region Climate Change Adaptation Strategy, which focuses on such sectors as food supply (including fishery and agriculture), coastal infrastructure and coastal tourism.<sup>28</sup>

## **4. Knowledge gaps**

### **4. Work is being carried out to identify, prioritise and address the knowledge gaps**

Yes / **In progress** / No

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<sup>28</sup> <http://climate-adapt.eea.europa.eu/countries-regions/countries/lithuania>, under 'Assessments - Impacts & Vulnerability assessments'

## DRAFT

The NAS and four in-depth scientific studies contributed to a more climate-resilient Estonia and this was the first time when Estonia developed a coherent approach to adaptation and assembled all the available knowledge about different impacts caused by climate change in the region. Previously information on climate change impacts in different sectors was fragmented and scattered between different authorities and institutes, but since NAS adoption, Estonia can plan and implement its climate change adaptation policy comprehensively through one development plan.

The MoE has conducted four in-depth sectorial adaptation studies for supporting the development of NAS/NAP covering the priority areas listed in A1. National adaptation strategy

This sector-specific research are containing also an approach for addressing the knowledge gaps and dealing with uncertainties.

The adaptation measures in the NAS and NAP are directed to increase the awareness and resilience as well as to the implementation of the principle of caution, An important principle of the NAS/NAP is to increase the awareness of the general public and to reduce the knowledge gaps related to climate change and the uncertainty due to them (scientific measures).

### 5. Knowledge transfer

#### **5a. Adaptation relevant data and information is available to all stakeholders, including policy makers (e.g. through a dedicated website or other comparable means)**

**Yes** / In progress / No

The national climate change adaptation web portal is part of the MoE's website. This website (in Estonian) is regularly updated with new information regarding the NAS, with relevant adaptation procedures and NAS/NAP materials and guidelines.

There is also information on the EERC homepage<sup>29</sup>.

Additionally, all of the NAS baseline studies have their own websites which contain much more detailed information of sectorial climate change adaptation (see the links under point 3c).

#### **5b. Capacity building activities take place; education and training materials on climate change adaptation concepts and practices are available and disseminated**

**Yes** / In progress / No

The capacity-building activities were implemented in the framework of the development of Estonia's adaptation strategy, as one of the priority sectors in the frame of developing NAS and NAP is "society, awareness and co-operation".

The EEA Financial Mechanism project "Elaboration of Estonia's Draft National Climate Change Adaptation Strategy (NAS) and Action Plan" organised several public awareness and knowledge transfer events in 2015.

The NAS subobjective 6 is to increase the awareness of risks from climate change and its opportunities, and it elaborates on server maeasures to achieve this objective, such as

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<sup>29</sup> <http://www.klab.ee/kohanemine/en/>

## DRAFT

disseminating updated adaptation knowledge to schools, education institutes and public bodies.

### **Step C: identifying adaptation options**

#### **6. Adaptation options' identification**

##### **6a. Adaptation options address the sectoral risks identified in 3c, the geographical specificities identified in 3b and follow best practices in similar contexts**

**Yes** / No

The NAS/NAP is an independent policy document (development plan) including identification and description of adaptation options, assessments of adaptation options and forecasting costs and development of the actions for the adaptation options.

NAS identifies the domains that are most vulnerable to the climate change and specifies the actions that improve Estonia's readiness and capability to cope with the climate change. In each scientific baseline study the scientists and experts mapped the current situation, i.e. described problems, opportunities, and threats in thematic areas/sectors, set the objectives and listed the most crucial measures for adaptation, as well as impacts of past weather events. Existing adaptation measures were also analysed. Risks, vulnerabilities and climate change impacts on the topical areas and their sub-themes were assessed. Recommendations for future research were also given. The baseline studies created a set of scientifically based suggestions for developing the national climate adaptation policies. The baseline studies also created a network of scientists and stakeholders who have the potential for further cooperation for knowledge co-generation in this field.

Before the elaboration of NAS and its baseline studies the knowledge on climate change in Estonia concerned mainly water-related issues. The NAS and Estonian future climate scenarios 2100 provide more knowledge about sea level rise, coastal erosion, floods and increased precipitation.

##### **6b. The selection of priority adaptation options is based on robust methods (e.g. multi-criteria analyses, stakeholders' consultation, etc.) and consistent with existing decision-making frameworks**

**Yes** / No

The adaptation options and measures in NAS are based on the analysis of existing scientific literature, (national) policies and legislation and information from different databases, as well as expert knowledge also gathered in the expert groups for the baseline studies. The selection of priority adaptation options is based on multi-criteria analyses, stakeholder and consultations, and the opinion of the interministerial committee.

##### **6c. Mechanisms are in place to coordinate disaster risk management and climate change adaptation and to ensure coherence between the two policies**

Yes / In progress / **No**

Crisis management in Estonia is regulated by the Emergency Act, which entered into force in 2009 and provides the legal basis for crisis management, including ensuring the continuous operation of vital services, preparing for and resolving emergencies. Each ministry is responsible for the implementation of the activities related to crisis management in their field of governance, with the Ministry of the Interior as the coordinator. Under the Emergency Act, emergency risk assessment and response plans must be prepared.

## DRAFT

Estonia is planning work for further coordination between climate change adaptation and disaster risk reduction. In the NAS, objective 5.1 deals with "health and rescue capability," and has as a sub-goal to improve rescue capacity and the ability of people to protect their health and property, as well as reduce the negative effects of climate change on health and the quality of life. An identified measure is to improve risk management, such as in relation to climate change. This entails, amongst others, early warning to the public, increasing hazard awareness, and cooperation between the civil and military institutions as well as between public authorities and the private sector.

A working group tasked with implementing and updating the NAS and NAP is to be formed, and will be comprised, amongst, others, representatives from the Ministry of the Interior and from the Rescue Board, who are responsible authorities in the field of ensuring preparedness for emergencies and crisis management (also the disaster risk management strategies and actions).

### **7. Funding resources identified and allocated**

#### **7. Funding is available to increase climate resilience in vulnerable sectors and for cross-cutting adaptation action**

**Yes** / In progress /No

The cost estimation for the implementation of the NAS for the period 2017–2030 is 43,745,000 euros. The implementation of the measures and the activities takes into consideration the objectives and means of development plans from other fields, including the following: Estonian Rural Development Plan for 2014–2020, Operational Programme for the European Maritime and Fisheries Fund for 2014–2020 and Operational Programme for Cohesion Policy Funds 2014–2020. Many activities related to adaptation together with their budget are also reflected in the implementation plans of the development plans of many other fields, such as Nature Conservation Development plan Until 2020, Estonian Forestry Development Plan Until 2020, Internal Security Strategy 2015–2020, National Transport Development Plan 2014–2020, Development Plan for the Energy Sector Until 2030.

The NAS will be implemented based on the NAP. The NAP includes the specific activities and their costs for four years, presented based on the years and the responsible authorities. The NAP will be prepared based on the state budget strategy. The cost of the NAP for 2017–2020 is 6,700,000 euros, whereas the state budget expenditure form 3,310,000 euros and the support from the environmental programme of the Environmental Investment Centre and foreign sources is 3,390,000 euros. Financing of the activities from the state budget is ensured within the cost limits of the implementing agencies in the financial strategy of the budget strategy.

The Estonian NAS and NAP has been developed in the framework of European Economic Area Financial Mechanism 2009-2014 program's "Integrated Marine and Inland Water Management" project "Elaboration of Estonia's Draft National Climate Change Adaptation Strategy and Action Plan" with the total budget 1.3 million euros (10% of it was national co-financing)<sup>30</sup>.

#### **Step D: Implementing adaptation action**

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<sup>30</sup> <http://www.envir.ee/et/euroopa-majanduspiirkonna-toetused-2009-2014>

## DRAFT

### 8. Mainstreaming adaptation in planning processes

#### 8a. Consideration of climate change adaptation has been included in the national frameworks for environmental impact assessments

Yes / No

Climate change adaptation considerations are included in the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) national legislation (Environmental Impact Assessment and Environmental Management System Act<sup>31</sup> § 3<sup>1</sup> (2), § 40 (4) 6)).

In urban planning, strategic environmental assessment and risk analysis must take into consideration the risks of future floods, storms and heat waves which may occur in urban areas.

#### 8b. Prevention/preparedness strategies in place under national disaster risk management plans take into account climate change impacts and projections

Yes / No

This indicator has the assessment options "yes" and "no." However, the Estonian Rescue Board has prepared risk analyses for the emergency events which may occur as a result of extreme climate events and circumstances: "Floods on Densely Populated Areas", "Extremely Cold Weather", "Extremely Hot Weather" and "Extensive Forest or Landscape Fires". Risk analysis "Epidemic Emergency Risk Assessment" has been prepared under the guidance of the Health Board. It is however not clear how these studies including future climate projections are factored in disaster risk management plans.

The "Internal Security Strategy 2015–2020" notes the increased risk of extreme weather conditions caused by climate change. The Water Act establishes the obligation to prepare maps of the flood risk areas, give an assessment for flood risks and prepare the risk management plans for flood risks.

Early warning systems are operating and risk-prone communities receive timely, understandable warnings of impending hazard events. Some websites have been created for giving information to stakeholders:

- on the Estonian Rescue Board website<sup>32</sup>, agencies and authorities publish notices about their response to emergencies and provide guidance on how to cope with various emergencies, including extreme weather conditions;
- the real-time sea level information system<sup>33</sup> provides information about the sea level in various parts of Estonia.

#### 8c. Key land use, spatial planning, urban planning and maritime spatial planning policies take into account the impacts of climate change

Yes / No

NAS includes "spatial planning and land use" as a priority area with sub-sectors including:

- Coastal areas

<sup>31</sup> <https://www.riigiteataja.ee/en/eli/ee/Riigikogu/act/507072017002/consolide>

<sup>32</sup> <https://www.rescue.ee/et/kodanikule/elanikkonnakaitse/>

<sup>33</sup> <http://on-line.msi.ttu.ee/kaart.php?en>

## DRAFT

- Other areas with risk of flooding or soil instability
- Landscape planning, irrigation and drainage
- Planning of cities

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 shall be prepared based on the general plan. 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, and often also on its political intentions. Changes in weather phenomena owing to climate change are not taken into consideration when taking planning decisions, partially because there are no guidance materials for more accurate calculation of the effects, especially when making planning decisions at the local level.

The NAS includes actions to provide guidance materials on managing the risks related to climate change and also to prepare recommendations for climate-proofing design criteria (e.g. buildings and landscaping, stormwater drainage), The NAS also includes projects that will test and will clarify the circumstances and problems which should be focused on at different levels of planning. These 'test' projects will also give an input for an effective legislative process and for preparing a spatial database.

### **8d. National policy instruments promote adaptation at sectoral level, in line with national priorities and in areas where adaptation is mainstreamed in EU policies**

Yes / **In progress** / No

Certain strategy documents include indirect adaptation measures, mostly related to disaster risk reduction (based on the Emergency Act and the Water Act). However, it is not clear whether the NAS has driven the sectoral mainstreaming.

The Estonian Environmental Strategy Until 2030 also focuses on the health of people and the development of knowledge. The Nature Conservation Development Plan Until 2020 and the development plan for the Ministry of the Environment for 2017–2020 address awareness as well as the development of environmental education and climate research.

As regards Estonian legislation, the topic of adaptation to the effects of climate change is most handled in the Emergency Act, based on which the Rescue Board has prepared the risk analyses for emergency events which may occur as a result of extreme climate events and circumstances.

In relation to the assessment and management of risks related to floods (updating the management plans), the effects of climate change are also handled in the Water Act. The Water Act establishes the obligation to prepare maps of the flood risk areas, give an assessment for flood risks and prepare the risk management plans for flood risks.

Climate change adaptation is included, to varying degrees, in the following national development plans, vision documents and strategies:

- Estonian low-carbon strategy "General Principles of Climate Policy until 2050"
- Estonian Forestry Development Plan until 2020 and its action plan
- Strategy for Estonian Development Cooperation and Humanitarian Aid 2016–2020
- Estonian Lifelong Learning Strategy 2020

## DRAFT

- Estonian National Strategy on Sustainable Development "Sustainable Estonia 21
- Estonian National Development Plan for the Energy Sector Until 2020 and Development Plan for the Energy Sector 2030+
- Estonian Environmental Strategy Until 2030
- Competitiveness strategy 'Estonia 2020'
- Estonian Rural Development Plan for 2014–2020
- Action plan 2012–2020 for mitigation of and adaptation to climate change for agricultural sector 2012–2020
- Programme of Measures of the Estonian Marine Strategy
- Estonian National Tourism Development Plan 2014–2020
- National Renewable Energy Action Plan Until 2020
- Estonian Research and Development and Innovation Strategy "Knowledge Based Estonia 2014–2020
- Development plan for the Ministry of the Environment for 2017–2020
- Nature Conservation Development Plan Until 2020
- Internal Security Strategy 2015–2020
- Estonian Regional Development Strategy 2014–2020
- National Development Plan for the Use of Oil Shale 2016–2030
- National Security Concept of the Republic of Estonia 2010
- Action programme of the Government of the Republic 2015–2019
- Estonian National Health plan 2009-2020
- Aquaculture Sector Development Strategy for 2014–2020
- National plan 'Estonia 2030+'
- National Waste Management Plan 2014–2020
- National Transport Development Plan 2014–2020
- Water Act and River Basin Management plans 2015-2021
- Emergency Act and national risk analysis.

The agriculture sector has been relatively active in raising awareness on the impact of climate change. In accordance with Directive no. 24 of the Ministry of Agriculture of 26 January 2011, a working group was established to draw up an action plan to mitigate and adapt to climate change in agriculture, including by mapping and analysing the possibilities of reducing greenhouse gas emissions, revising existing measures, making proposals for their improvement.

Under the steer of the Ministry of Finance and the Government Office, a guidance document for drafting development plans entitled 'Mandatory topics of all area-based development plans' is being updated, including mitigation and adaptation to climate change as a horizontal area that should start running through various development plans. A list of the climate criteria that should be taken into account when drawing up development plans will be made.

### **8e. Adaptation is mainstreamed in insurance or alternative policy instruments, where relevant, to provide incentives for investments in risk prevention**

Yes / **No**

In the NAS, one of the priority sector is economy, which also includes insurance. Insurance plays a very important role in the adaptation process and helps to hedge and manage risks related to extreme weather conditions. It is very important to collect new data for insurance regarding the coverage of risks and therefore an additional survey must be conducted in this field.

Global climate change has increased the probability and extent of extreme weather conditions and led to the emergence of several new risks which could considerably change the issues related to the field of insurance. Although while adapting to climate change, the insurance sector has indeed evolved into one of the most important



## DRAFT

economic sectors, the volume of the Estonian insurance market is small and the population is rather poor, which is why the compulsory and semi-compulsory types of insurance are prevalent here (motor third party liability insurance, home insurance). So far, the Estonian insurers have basically not dealt with spreading the climate risk.

### 9. Implementing adaptation

#### 9a. Adaptation policies and measures are implemented, e.g. as defined in action plans or sectoral policy documents

Yes / In Progress / **No**

8d gives an overview of national action plans and sectoral policy documents which are connected to the implementation of climate change adaptation policy. Implementation of adaptation policy is in early stages.

Some autonomous adaptation actions are being undertaken and measures developed in the areas of agriculture, forestry, floods and human health, but their efficiency and sustainability has not been analysed yet.<sup>34</sup>

Some activities related to climate adaptation have taken place in several municipalities or at *county* level, but not as part of a systematic process. Some major towns, such as Pärnu, Tartu, Tallinn that have been influenced by extreme weather conditions (a particularly strong storm in 2005) have been most active in implementing adaptation measures. These measures include the flood warning system that was established in Pärnu City within the Astra project. The aim of the system is to notify the citizens about potential hazards and what actions to take in case of the significant rise of the sea level. Since 2008 there is a 24-hour weather monitoring system used in Tallinn in order to inform citizens of extreme weather conditions, especially of those that could cause floods.

#### 9b. Cooperation mechanisms in place to foster and support adaptation at relevant scales (e.g. local, subnational)

Yes / **No**

The planned working group to implement the NAS and the NAP is expected to foster and support adaptation at subnational level. The working group of the NAS will be formed by the representatives from the following different institutions: The MoE, the Ministry of Social Affairs, the Ministry of Finance, the Ministry of the Interior, the Ministry of Economic Affairs and Communications, the Ministry of Rural Affairs, the Ministry of Education and Research, the Republic of Estonia Government Office, the Rescue Board, the Association of Municipalities of Estonia, the Association of Estonian Cities, the Estonian Research Council, the Network of Estonian Nonprofit Organisations, Kodukant, the Estonian Village Movement.

#### 9c. Procedures or guidelines are available to assess the potential impact of climate change on major projects or programmes, and facilitate the choice of alternative options, e.g. green infrastructure

Yes / **No**

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<sup>34</sup>Project proposal for the EEA Grants project "Elaboration of Estonia's Draft National Climate Change Adaptation strategy (NAS) and Action Plan"

## DRAFT

Apart from various guidelines issued by the European Commission, the MoE Estonia is planning to issue the guidelines for assessing the impact of climate change on spatial planning with the recommendations for climate-proof implementation of design criteria.

### **9d. There are processes for stakeholders' involvement in the implementation of adaptation policies and measures**

Yes / **No**

The involvement of stakeholders in implementation of adaptation policies and measures is expected through the working group described in 9b.

## **Step E: Monitoring and evaluation of adaptation activities**

### **10. Monitoring and reporting**

#### **10a. NAS/NAP implementation is monitored and the results of the monitoring are disseminated**

Yes / **No**

The MoE organises the annual reporting of the NAS and coordinates the exchange of adaptation-related information between the ministries.

The working group of the NAS with the chair of the MoE discusses the NAP of the NAS once a year before presenting it to the Government of the Republic for approval, monitors the implementation of the NAS, gives recommendations for changing the NAS and if necessary, solves the open issues related to the NAS.

As of 2018, the Ministry of the Environment shall annually present to the Government of Republic an overview about the execution of the development plan and the achievement of its objectives by 1 March, making also the proposals about amending or changing the development plan if necessary.

#### **10b. The integration of climate change adaptation in sectoral policies is monitored and the results of the monitoring are disseminated**

Yes / **No**

The sectoral mainstreaming is monitored and will be reported annually with the centralised single NAS/NAP report, which is organised by the MoE and presented to the Government of the Republic for approval.

#### **10c. Regional-, sub-national or local action is monitored and the results of the monitoring are disseminated**

Yes / **No**

There isn't any formal regional/local level specific reporting commitment, but the feedback from the sub-national to national level will be collected via working group of the NAS, where are also members from the Association of Municipalities of Estonia, the Association of Estonian Cities and Kodukant, the Estonian Village Movement. This information will be published also in annual NAS/NAP report.

### **11. Evaluation**

#### **11a. A periodic review of the national adaptation strategy and action plans is planned**

**Yes** / No

The working group of the NAS with the chair of the Ministry of the Environment discusses the NAP once a year before presenting it to the Government of the Republic for

## DRAFT

approval, monitors the implementation of the NAS, gives recommendations for changing the NAS and if necessary, solves the open issues related to the NAS

As of 2018, the Ministry of the Environment shall annually present to the Government of Republic an overview about the execution of the NAS and the achievement of its objectives by 1 March, making also the proposals about amending or changing the NAS if necessary.

### **11b. Stakeholders are involved in the assessment, evaluation and review of national adaptation policy**

**Yes** / No

The stakeholders in the working group of the NAS (see indicator 9b) are involved in the assessment, evaluation and review of national adaptation policy.

# DRAFT

## SUMMARY TABLE

<b>Adaptation Preparedness Scoreboard</b>		
No.	Indicator	Met?
<b>Step A: Preparing the ground for adaptation</b>		
<b>1      <i>Coordination structure</i></b>		
1a	A central administration body officially in charge of adaptation policy making	<b><u>Yes</u></b> / No
1b	Horizontal (i.e. sectoral) coordination mechanisms exist within the governance system, with division of responsibilities	<b><u>Yes</u></b> / In progress / No
1c	Vertical (i.e. across levels of administration) coordination mechanisms exist within the governance system, enabling lower levels of administration to influence policy making.	<b><u>Yes</u></b> / In progress / No
<b>2      <i>Stakeholders' involvement in policy development</i></b>		
2a	A dedicated process is in place to facilitate stakeholders' involvement in the preparation of adaptation policies	<b><u>Yes</u></b> / No
2b	Transboundary cooperation is planned to address common challenges with relevant countries	<b><u>Yes</u></b> / No
<b>Step B: Assessing risks and vulnerabilities to climate change</b>		
<b>3      <i>Current and projected climate change</i></b>		
3a	Observation systems are in place to monitor climate change, extreme climate events and their impacts	<b><u>Yes</u></b> / In progress / No
3b	Scenarios and projections are used to assess the economic, social and environmental impacts of climate change, taking into account geographical specificities and best available science (e.g. in response to revised IPCC assessments) Yes / In progress / No (e.g. in response to revised IPCC assessments)	<b><u>Yes</u></b> / In progress / No
3c	Sound climate risks/vulnerability assessments for priority vulnerable sectors are undertaken to support adaptation decision making.	<b><u>Yes</u></b> / In progress / No
3d	Climate risks/vulnerability assessments take transboundary risks into account, when relevant	Yes / <b><u>In progress</u></b> / No
<b>4      <i>Knowledge gaps</i></b>		
4	Work is being carried out to identify, prioritise and address the knowledge gaps	Yes / <b><u>In progress</u></b> / No
<b>5      <i>Knowledge transfer</i></b>		
5a	Adaptation relevant data and information is available to all stakeholders, including policy makers (e.g. through a	<b><u>Yes</u></b> / In progress / No

## DRAFT

<b>Adaptation Preparedness Scoreboard</b>		
<b>No.</b>	<b>Indicator</b>	<b>Met?</b>
	dedicated website or other comparable means).	
5b	Capacity building activities take place; education and training materials on climate change adaptation concepts and practices are available and disseminated	<b>Yes</b> / In progress / No
<b>Step C: Identifying adaptation options</b>		
<b>6 Identification of adaptation options</b>		
6a	Adaptation options address the sectoral risks identified in 3c, the geographical specificities identified in 3b and follow best practices in similar contexts	<b>Yes</b> / No
6b	The selection of priority adaptation options is based on robust methods (e.g. multi-criteria analyses, stakeholders' consultation, etc.) and consistent with existing decision-making frameworks	<b>Yes</b> / No
6c	Mechanisms are in place to coordinate disaster risk management and climate change adaptation and to ensure coherence between the two policies	Yes / In progress / <b>No</b>
<b>7 Funding resources identified and allocated</b>		
7	Funding is available to increase climate resilience in vulnerable sectors and for cross-cutting adaptation action	<b>Yes</b> / In progress / No
<b>Step D: Implementing adaptation action</b>		
<b>8 Mainstreaming adaptation in planning processes</b>		
8a	Consideration of climate change adaptation has been included in the national frameworks for environmental impact assessments	<b>Yes</b> / No
8b	Prevention/preparedness strategies in place under national disaster risk management plans take into account climate change impacts and projections	Yes / <b>No</b>
8c	Key land use, spatial planning, urban planning and maritime spatial planning policies take into account the impacts of climate change	Yes / <b>No</b>
8d	National policy instruments promote adaptation at sectoral level, in line with national priorities and in areas where adaptation is mainstreamed in EU policies	Yes / <b>In progress</b> / No
8e	Adaptation is mainstreamed in insurance or alternative policy instruments, where relevant, to provide incentives for investments in risk prevention	Yes / <b>No</b>
<b>9 Implementing adaptation</b>		
9a	Adaptation policies and measures are implemented, e.g. as defined in action plans or sectoral policy documents	Yes / In Progress / <b>No</b>
9b	Cooperation mechanisms in place to foster and support adaptation at relevant scales (e.g. local, subnational)	Yes / <b>No</b>

## DRAFT

<b>Adaptation Preparedness Scoreboard</b>		
<b>No.</b>	<b>Indicator</b>	<b>Met?</b>
9c	Procedures or guidelines are available to assess the potential impact of climate change on major projects or programmes, and facilitate the choice of alternative options, e.g. green infrastructure	Yes / <b><u>No</u></b>
9d	There are processes for stakeholders' involvement in the implementation of adaptation policies and measures.	Yes / <b><u>No</u></b>
<b>Step E: Monitoring and evaluation of adaptation activities</b>		
<b>10      <i>Monitoring and reporting</i></b>		
10a	NAS/NAP implementation is monitored and the results of the monitoring are disseminated	Yes / <b><u>No</u></b>
10b	The integration of climate change adaptation in sectoral policies is monitored and the results of the monitoring are disseminated	Yes / <b><u>No</u></b>
10c	Regional-, sub-national or local action is monitored and the results of the monitoring are disseminated	Yes / <b><u>No</u></b>
<b>11      <i>Evaluation</i></b>		
11a	A periodic review of the national adaptation strategy and action plans is planned	<b><u>Yes</u></b> / No
11b	Stakeholders are involved in the assessment, evaluation and review of national adaptation policy	<b><u>Yes</u></b> / No