EUROPEAN
COMMISSION

Adaptation preparedness scoreboard:

Country fiche for Greece

NOTE TO THE READER

Under Action 1 of the EU's Strategy on adaptation to climate change (COM(2013)216), in collaboration with the Member States, the Commission developed an 'adaptation preparedness scoreboard'. Using the scoreboard, the Commission prepared country fiches on each Member State in an iterative consultation process.[1] The country fiches assess the Member States' adaptation policy as of June 2018, including the content of NASs and plans, for the following aspects:

- Institutional structure
- Quality of national vulnerability assessments
- Knowledge creation (national observation systems in relevant sectors[2] and climate modelling), transfer and use
- Action plans:
  - Quality (incl. the basis used for assessment of adaptation options)
  - Actual implementation mechanisms
- Funding mechanisms
- Mainstreaming into sectoral policies, in particular:
  - Disaster risk reduction
  - Spatial planning
  - Environmental impact assessment (EIA) (how the Directive is transposed)
  - Insurance policy
- Transboundary cooperation
- Monitoring mechanisms in different sectors and governance levels

[1] The first versions of the fiches, prepared in consultation with the Member States in 2014-15, were unpublished and used to fine-tune the scoreboard. The second drafts were published, after consulting the Member States, as background documents to the public consultation on this evaluation in December 2017. https://ec.europa.eu/clima/consultations/evaluation-eus-strategy-adaptation-climate-change_en The final Member State consultation on the draft fiches took place in June 2018.

[2] These relate for example to meteorology, floods, drought, sea level, coastal erosion, biodiversity, human/animal/plant health etc.

The fiches are based on internal work by the Commission and on targeted assistance from an external contractor. They also served as input to the assessment of Action 1 of the Strategy during its evaluation. Annex IX of the Commission's SWD(2018)461 on the evaluation of the Strategy presents a horizontal assessment of the 28 country fiches, while Annex X presents the list of scoreboard indicators and the methodology used in applying them.

The assessments in the country fiches (yes/no/in progress) need to be read in conjunction with the narrative that accompanies them. They assess the state of play within each EU Member State. 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 Member States. 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".

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List of abbreviations

CCISC	Climate Change Impacts Study Committee
CoM	Covenant of Mayors
CUGM	Central Union of Greek Municipalities
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
FFWI	Forest Fire Weather Index
FRMPs	Flood Risk Management Plans
HNMS	Hellenic National Meteorological Service
LIFE IP AdaptInGR	LIFE Climate Action Integrated Projects Call.
MEEN	Ministry of Environment and Energy
MD	Ministerial Decision
MoU	Memorandum of Understanding
NAS	National Adaptation Strategy
NCCAC	National Climate Change Adaptation Committee
NSRF	National Strategic Reference Framework
RAAP	Regional Adaptation Action Plan
RBMP	River Basin Management Plan
SEA	Strategic Environmental Assessment
UGR	Union of Greek Regions

POLICY FRAMEWORK

Adaptation strategies

A1. National adaptation strategy

Following public consultation, the Greek National Adaptation Strategy (NAS) was finalised in April 2016, and formally endorsed by the Greek Parliament in August 2016, through Law 4414/2016 (Article 45)[3]. The Greek NAS has a 10-year implementation horizon (i.e. it should be reviewed and revised by 2026). Law 4414/2016 defined the Ministry of Environment and Energy (MEEN) as the national competent authority for national adaptation policy and to oversee the process for the revision of the NAS over a 10-year planning cycle.

The MEEN has signed a Memorandum of Understanding (MoU) with the Climate Change Impacts Study Committee of the Bank of Greece (CCISC) and the Biomedical Research Foundation of the Academy of Athens, which commits them to undertake climate adaptation actions. The drafting of the NAS was included in this MoU. The CCISC, in cooperation with the MEEN, prepared a draft NAS, building on its existing work and the extensive CCISC report[4] on climate impacts and vulnerability assessment. The draft NAS underwent public consultation. The MEEN assessed the comments received during the public consultation, completed and finalised the draft NAS.

Law 4414/2016 also foresaw the establishment of a National Climate Change Adaptation Committee (NCCAC), to act as the formal advisory body of the MEEN at national level for adaptation policy design and implementation. The NCCAC comprises representatives from all Ministries that have a sectoral role in adaptation policy planning and in funding of adaptation actions, as well as representatives of other stakeholder bodies and governmental authorities with a role in adaptation policy support and knowledge enhancement.

A2. Adaptation strategies adopted at sub-national levels

Based on a careful assessment of needs, preparation of strategies at the regional (sub-national) level has been considered redundant and, thus, no adaptation regional (sub-national) strategies will be developed.

The Greek NAS is an overarching policy document, which defines the goals, principles and priorities for adaptation and lists potential adaptation measures (actions) for all environmental and socio-economic sectors that are likely to be significantly affected by climate change in Greece. As such, it provides guidance, insight and priorities, which should be further detailed at regional level and translated into Regional Adaptation Action Plans (RAAPs). Vertical coordination (i.e. between the national and the regional level) is achieved through the MEEN, on the basis of the NAS priorities.

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[3] ΕΦΗΜΕΡΙΔΑ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ, 2016, ΝΟΜΟΣ ΥΠ' ΑΡΙΘΜ. 4414, URL: http://www.ypeka.gr/LinkClick.aspx?fileticket=aG0JrbpJmSA%3d&tabid=303&language=el-GR

[4] Climate Change Impacts Study Committee, June 2011, The Environmental, Economic and Social Impacts of Climate Change in Greece, URL: http://www.bankofgreece.gr/BogEkdoseis/ClimateChange_FullReport1.pdf

Adaptation action plans

B1. National adaptation plan

There is no national adaptation plan (NAP) existing independently from the NAS and the RAAPs. According to Greece, the NAP will in due course be comprised of the 13 RAAPs.

B2. Adaptation plans adopted at sub-national level

Law 4414/2016 required the 13 Regional Authorities of Greece to develop and implement RAAPs (within a 7-year planning cycle). Law 4414/2016 sets the minimum technical specifications for their content. The RAAPs content has been further elaborated by Ministerial Decision (MD) 11258/2017 (Government Gazette, issue B, 873/2017), which provides the detailed specifications/template for the content of the RAAPs. The MD requires Regional Authorities to: perform a detailed assessment of potential climate impacts for short, mid-term and long-term time horizons; identify and map relevant climate-related risks, vulnerabilities and hotspots; prioritise adaptation action on the basis of their cost-effectiveness and benefits; identify synergies with other policies and regional plans (e.g. land-use plans, water management and flood risk management plans); and integrate, as necessary, priority measures into regional planning. Each RAAP will examine the potential measures/actions included in the NAS based on the particular regional circumstances, priorities and needs and will develop regional action plans. Wherever there is a case for sector or sub-regional analysis, specific actions per sector or sub-regional area will be indicated. The development of the 13 RAAPs is ongoing with several regions being more advanced than others. It is expected that the majority of the RAAPs will have been finalised by mid-2019[5].

It should be noted that the diversity of climate, socio-economic and environmental conditions vary substantially across the country. As such, detailed plans can only be developed and implemented at sub-national (i.e. regional) level to address vulnerable sectors and hotspots regionally and locally. To this end, each RAAP will define priority actions on the basis of the specificities and characteristics of each region.

Due to the limited administrative and financial resources available, the MEEN submitted a proposal (LIFE IP AdaptInGR) in the September 2017 LIFE Climate Action Integrated Projects Call. LIFE IP AdaptInGR is planned as an 8-year project. It includes actions to a) coordinate cross-regional and enhance national-regional-local adaptation action, in close collaboration with the Union of Greek Regions, the Central Union of Greek Municipalities and individual Regions and Municipalities that are full partners in the project proposal; b) build the capacity of national and regional stakeholders; c) support cross-regional cooperation and transnational cooperation with countries from the Balkans and the wider Mediterranean area; d) develop and operate a National Adaptation Knowledge Hub; e) develop and test

[5] Personal communication with MS contact.

methodologies to monitor the progress of NAS and RAAP implementation; f) assess the existing level of mainstreaming and integration of climate adaptation priorities in other sectors at national level. The National Centre for Environment and Sustainable Development and the MEEN will take over training, information sharing and monitoring activities at the end of the project.

B3. Sectoral adaptation plans

As mentioned above, actions per sector will be embedded in the RAAPs. After the finalisation of the RAAPs, it will be possible to better mainstream adaptation in existing sectoral strategies and to identify potential additional needs for sectoral adaptation action plans. Nevertheless, adaptation-related actions are already embedded in some sectoral strategies: i.e. the National Biodiversity Strategy, the National Research & Innovation Strategy for Smart Specialisation, the recent Maritime Spatial Planning Law[6], the National Strategy for Forests (currently under consultation), and the National Plan for Energy & Climate (which is under preparation)[7]. Further information, on the sectoral aspects of the NAS and RAAPs can be found in relation to Indicators 3c, 6a and 8a-8e below.

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 MEEN[8] is the competent national authority for climate mitigation and adaptation, as well as the enhancement of mechanisms and institutions for environmental governance. In this capacity, the MEEN has been the leading body in the development of the NAS. In addition, pursuant to the Law 4414/2016 (Article 42), the MEEN is responsible for the NAS's evaluation and revision.

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

Yes / In progress / No

The Law 4414/2016 (Article 44) established the National Climate Change Adaptation Committee (NCCAC) as the formal coordination and advisory mechanism body for adaptation policy monitoring, evaluation and formulation.

[6] Law 4546/2018
[7] Personal communication with MS contact.
[8] Ministry of Environment and Energy, URL: www.ypeka.gr, Date accessed: 11/05/2018

The NCCAC is chaired by the MEEN Minister and comprises representatives of all competent ministries (Environment and Energy, Economics, Internal Affairs, Economy & Development, Tourism, Infrastructure & Transport, Health, Maritime Affairs & Insular Policy, Rural Development & Food, Education, Research & Religious Affairs, Culture and Sports, National Defence). The NCCAC also includes representatives from the Union of Greek Regions, the Central Union of Greek Municipalities, the Hellenic Meteorological Service, the Association of Industries, NGOs and academics specialising in climate adaptation issues. Additional participants can be invited to participate on the basis of identified needs.

The Ministerial Decision for the formal appointment of the NCCAC members was issued on 15th September 2017, including the procedures for its operation. According to the provisions of Law 4414/2016, the NCCAC is responsible for: (a) the specification and operationalisation of adaptation policies, and proposals to the MEEN and other competent ministries of relevant policies, measures, actions and legislative/regulatory measures; (b) the specification of horizontal policies and actions included in the NAS, especially those concerning awareness, dissemination and capacity building; (c) the development of recommendations for the review or revision of the NAS and of the RAAPs; (d) the development of recommendations for any matter relating to climate adaptation, as put forward by the MEEN.

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 formalised channel for vertical coordination among national, regional and local authorities is through the NCCAC (see Indicator 1b), which includes representatives from the Union of Greek Regions (UGR) and from the Central Union of Greek Municipalities (CUGM), as well as from the Ministry of the Interior (the competent authority for coordinating regional and local authorities).

In addition, several meetings and seminars are held regularly, at the initiative of the MEEN, UGR and CUGM to spread awareness, and exchange information on adaptation progress, issues and knowledge developments. Examples include: (a) consultation with the Regional Authorities in May 2015 regarding the NAS priorities and the specifications of the RAAPs, (b) a consultation/information seminar in December 2016 regarding the specifications of the RAAPs, and (c) conferences organised by CUGM on climate adaptation in April 2017 and in June 2017 on adaptation needs, progress, and knowledge developments. In order to further facilitate the exchange of information between national and regional experts, contact persons for climate change have been nominated in each region.

The consultation procedure leading to the formal endorsement of RAAPs ensures good vertical coordination across the three levels of governance (national, regional and local). Specifically, pursuant to the Law 4414/2016 (Article 43), the MEEN is checking the compliance of the RAAPs with the NAS, while the local authorities participate in the

Regional Consultation Committees giving formal opinions on the RAAPs of the respective regions.

The Covenant of Mayors (CoM) also fosters vertical cooperation by enabling local authorities to influence climate adaptation policy making. A total of 48 signatories from Greece joined the Mayors Adapt initiative, 38 of which have also committed to the integrated 2030 Covenant of Mayors for Climate and Energy[9]. Coordinators[10] of the CoM include the Regions of Attica, Crete, Central Macedonia and Western Macedonia. Supporters[11] to the CoM, besides the Central Union of Greek Municipalities, include the Regional Union of Municipalities of Central Greece, which is the union of municipalities of the Region of Central Greece; the Regional Union of Municipalities of Attica (PEDA), which is the union of municipalities of Attica; the Network of Sustainable Greek Islands, the Network of Cities with Lakes, and the Association for the Sustainable Development of Cities. The CoM Coordinators and Supporters support and help to coordinate adaptation efforts by their corresponding members.

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

The draft NAS was subject to a public consultation[12] prior to its finalisation. Stakeholders who provided feedback included academia, ministries, the Hellenic National Meteorological Service and NGOs[13].

Stakeholder engagement and public consultation have been made mandatory for the development of the RAAPs through the Ministerial Decision 11258/2017. The main regional stakeholders (public authorities, scientific community, business and industry, civil society etc.) are invited to identify/submit their views on measures that can contribute to the adaptation of their region/area of interest. In addition, regional authorities are required to consult and coordinate with neighbouring regions, in the case of shared vulnerability hotspots (e.g. shared protected areas or river basins).

Public consultation on the RAAPs will also take place through the Strategic Environmental Assessment (SEA) process, as the RAAPs will have to undergo this step before their final endorsement.

[9] At the end of 2015, the Covenant of Mayors and the Mayors Adapt initiatives merged under the new integrated Covenant of Mayors for Climate and Energy.
[10] Covenant community, URL: http://www.covenantofmayors.eu/about/covenant-community/coordinators.html, Date accessed: 11/05/2018
[11] Covenant community, URL: http://www.covenantofmayors.eu/about/covenant-community/supporters.html, Date accessed: 11/05/2018
[12] Public consultation has been made obligatory for the development of future or revised NAS by Law 4414/2016 (Article 42). Individual citizens, public authorities and other stakeholders are able to submit written views and contributions through an open online process.
[13] Personal communication with MS contact.

As already mentioned, the draft RAAPs will be subject to an opinion-giving procedure by the Regional Consultation Committee. The Regional Consultation Committee comprises the mayors of the relative municipalities and the representatives of the government authorities within the territorial boundaries of the respective region, as well as regional stakeholders and citizens representatives (Law 3852/2010 "Kallikratis Administrative Programme", Article 178).

Furthermore, the NCCAC (see Indicator 1b) is an essential instrument for stakeholder engagement at the national level.

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

Yes / No

The NAS recognises that Greece shares a significant amount of water resources, mountainous areas and forests with neighbouring countries and that it is, therefore, important to establish communication channels with those countries. A number of specific actions are mentioned in the NAS, including identifying and recording transboundary adaptation issues, creating processes for the development of common policies, creating shared data collection stations, training and capacity building. The development of these actions is still in progress.

The RAAPs assess the transboundary character of climate impacts (Ministerial Decision 11258/2017) to identify needs for international cooperation. There are already bilateral and sectoral programmes in this field. For example, a Greece-Bulgaria bilateral cooperation programme funded through Interreg foresees the development of common technical specifications for national flood risk management plans covering the border area and the subsequent revision of the existing plans to improve cohesion and coordination.

Cooperation on adaptation issues is a priority in the 2017 trilateral cooperation agreements between Greece-Cyprus-Israel and Greece-Cyprus-Egypt mainly focusing on the exchange of knowledge and know-how on adaptation policy monitoring, evaluation and good practice at regional and local scales.

Transboundary public consultations on the RAAPs will also occur through the Strategic Environmental Assessment (SEA) process to consider potential transboundary impacts. Transboundary public consultations, as part of the SEA process, are currently ongoing for the transboundary flood risk management plans (the consultation on the Evros River Basin shared by Greece and Bulgaria has recently been concluded).

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

Observation systems are in place to monitor climate change, extreme climate events and their impacts. The Hellenic National Meteorological Service[14] (HNMS) operates a network of 79 land surface and three upper air measurement stations[15]. Several other stations are operated by other entities, such as the Ministry of Rural Development and Food (agrometeorological stations), the Institute of Mediterranean Forest Ecosystems and Forest Products Technology[16], the National Observatory of Athens[17], and a number of national research centres. The country's oceanic observation is highly developed. Greece is a member of the European organisation for the exploitation of Meteorological Satellites (EUMETSAT).

Further information on the observation systems in place and Greece's contribution to the Global Climate Observing System can be found in the corresponding national report submitted to UNFCCC[18]. The HNMS is updating their monitoring strategy plans focusing on climate change needs, as is the National Observatory of Athens. The General Secretariat for Civil Protection also tracks records of extreme events (forest fires, floods, extreme weather conditions, etc.) and presents impacts kept by relevant national authorities, according to their competences.

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

The NAS was based upon a national multi-sectoral climate impact and vulnerability assessment developed by the CCISC in 2011. The assessment used model simulation datasets for four Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report (AR4) greenhouse gas (GHG) emissions scenarios (A2, A1B, B2 and B1), developed by the Research Centre for Atmospheric Physics and Climatology of the Academy of Athens, to estimate variation in the mean seasonal and annual values of six climate parameters (air temperature, precipitation, humidity, cloud cover, total incident short-wave radiation, wind speed) for the periods 2021-2050 and 2071-2100. Extreme weather events and their impacts were also assessed. A regional climate model (ENSEMBLES) was used to project changes in maximum summer and minimum winter temperatures, number of warm days and nights, number of days with precipitation and dry days, number of frost days and growing seasons. The degree-days method was used to assess changes in energy demand for heating and

[14]Hellenic National Meteorological Service, URL: http://www.emy.gr/emy/en/climatology/climatology, Date accessed: 11/05/2018
[15]Hellenic National Meteorological Service, URL: http://www.emy.gr/emy/en/observation/, Date accessed: 11/05/2018
[16]Institute of Mediterranean Forest Ecosystems and Forest Products Technology, URL: http://www.fria.gr/EngPage/, Date accessed: 11/05/2018
[17]National Observatory of Athens, URL: http://www.meteo.noa.gr/ENG/iersd_research.htm, Date accessed: 11/05/2018
[18]Hellenic Ministry of Environment, Energy and Climate Change, January 2013, Greek report on activities with respect to the GCOS Implementation Plan, URL: http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/gcos_2014_greece.pdf

cooling, the Forest Fire Weather Index (FFWI) to assess the wildland fire potential, and the Humidex to estimate the number of days with high thermal discomfort. Moreover, the ECHAM5 and the HadCM3 models were used to assess changes in the intensity and distribution of landslides and floods. In addition, changes in mean sea level and its impact on Greece's shoreline were assessed.

The risks and impacts of climate change by sector were assessed based on the outcomes of the climate projections using state-of-the-art impact assessment models. The economic cost of climate change was estimated using the GEM-E3 general equilibrium model (estimations per climate scenario and per sector). Priority sectors were identified based on the climate change costs per sector. The results per sector were further downscaled to a regional level in the NAS report, based on the mix and intensity of economic activities in each region.

Pursuant to Law 4414/2016 (Article 42), multi-sectoral climate impact and vulnerability assessments will be an integral part of the NAS in the future. In particular, the NAS will include projections of future climate trends for various GHG emissions scenarios, climate vulnerability analyses of various sectors and activities, and climate impact assessments of the most vulnerable sectors at national level. Priority sectors for action will be identified based on vulnerability analyses and impact assessments.

In addition, detailed regional climate impact and vulnerability assessments will be undertaken as part of the RAAPs (Ministerial Decision 11258/2017). The RAAPs will include: projections of future climate trends and sea-level rise for multiple GHG scenarios and three time periods (i.e. short-term, 2050, 2100); climate vulnerability analyses for specific sectors and geographical areas within the region; climate impact assessments of the most vulnerable sectors and geographical areas considering probability, magnitude, intensity, complexity, timing, reversibility, cross-border and cross-sectoral aspects. Priority sectors and priority geographical areas for action will be identified based on the vulnerability analyses and impact assessments.

Geographical specificities have been considered in the NAS but will be further analysed within the regional climate impact and vulnerability assessments for the RAAPs.

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

Yes / In progress / No

As mentioned in relation to Indicator 3b, the NAS was built on a national multi-sectoral climate impact and vulnerability assessment developed by the CCISC in 2011. The vulnerability of 11 priority sectors was assessed: biodiversity and ecosystems; agriculture; forest ecosystems; fisheries and aquaculture; water resources; coastal zones; tourism; human health care; built environment; transport; and mining industry. The climate risks and impacts by sector were assessed based on the outcomes of climate projections using state-of-the-art impact assessment models.

The RAAPs will also include multi-sectoral climate impact and vulnerability assessments. The climate risks and impacts identified by sector and geographical area will drive decision making and adaptation action planning at regional level.

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

Yes / In progress / **No**

Transboundary risks and the need to raise awareness of vulnerable sectors at a transboundary level is mentioned in the NAS. However, it is unclear whether transboundary risks were considered in the vulnerability assessments. Nevertheless, it is planned that the regional climate impact and vulnerability assessments will take transboundary risks into account.

According to the RAAPs' technical specifications (Ministerial Decision 11258/2017), climate impacts will be assessed based on, *inter alia*, their cross-border character. Adaptation plans in areas shared by neighbouring regions should be compatible and coordinated accordingly (Ministerial Decision 11258/2017, Article 2, Paragraph 7).

Transboundary cooperation regarding shared rivers in the north of the country is linked to the protection and management of Greece's water resources rather than being specific to climate change considerations.

4. Knowledge gaps

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

Yes / **In progress** / No

The research priorities and knowledge gaps outlined in the NAS were based on a thorough assessment of available information through the CCSIC, and have been subjected to stakeholder and public consultation. The NAS outlines sectoral knowledge gaps that need to be closed.

It is expected that the development of the RAAPs will allow the MEEN to identify additional regional and/or sectoral knowledge and information needs arising from the climate impact and vulnerability assessments and/or for specific geographical areas/hotspots. This information will be communicated through the NCCAC to relevant bodies (e.g. academic institutions and the Ministry of Education, Research and Religious Affairs) to also inform their work.

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 need to create an online National Adaptation Knowledge Hub that pools together adaptation relevant data, information, good practices and approaches has already been

identified but is not yet implemented due to resource constraints. The MEEN has developed a plan to: a) build capacities and foster cooperation at local, regional and national level; and b) allow sharing of information, knowledge and good practices through the Hub. The MEEN is trying to secure necessary funding to implement this plan.

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 need to create training materials and build the capacities of the key national, regional and local stakeholders was identified at an earlier stage, however, no evidence was found of a systematic and coordinated approach driven by the NAS. The MEEN is trying to secure necessary funding (see Section B2) to provide a capacity building and a training programme targeting key regional and national stakeholders.

It is worth noting that a number of projects under the Seventh Framework Programme for Research (FP7) address relevant issues that could lead to future capacity building (ClimateCost[19], MEECE — Marine Ecosystem Evolution in Life-IPa Changing Environment[20], ADAGIO[21], SERPEC-CC[22], Climate-KIC[23]).

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 RAAPs will include actions aiming to address impacts on the priority sectors and/or geographical areas, identified through the climate impact and vulnerability assessments mentioned in relation to Indicators 3b and 3c. The NAS is a guiding document and contains a list of potential actions per sector based on best available scientific knowledge, international and European practice.

The elaborate national risk assessment for all priority sectors undertaken by the CCSIC in 2011 provided background evidence for development of the NAS.

[19]Climate Cost, URL: http://www.climatecost.cc/, Date accessed: 11/05/2018
[20]MEECE, URL: http://www.meece.eu/, Date accessed: 11/05/2018
[21]ADAptation of AGriculture in European RegIOns at Environmental Risk under Climate Change, URL: http://www.adagio-eu.org/, Date accessed: 11/05/2018
[22]European Commission, Sectoral emission reduction potentials and economic costs for climate change, URL: http://cordis.europa.eu/project/rcn/84044_en.html, Date accessed: 11/05/2018
[23]EIT- Climate-Kic, URL: http://www.climate-kic.org/, Date accessed: 11/05/2018

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 methodology used to identify priority sectors and/or priority geographical areas is described in relation to Indicators 3b and 3c above. The NAS priority sectors have been identified through the climate impact and vulnerability assessment conducted by the CCISC, using robust modelling methods to quantify risks and potential economic losses associated with climate impacts.

The list of potential actions included in the NAS was the outcome of an extensive consultation with experts from various disciplines, the national administration, which has thorough knowledge of sectoral planning, as well public stakeholders.

Pursuant to the respective technical specifications for RAAPs, the adaptation actions per sector or geographical area are prioritised based on cost-effectiveness and cost-benefit analyses. The effectiveness of actions corresponds to their climate change prevention, mitigation and restoration capacity (in order of priority). The wider economic, environmental and social benefits arising from their implementation are considered in order to focus on 'win-win' and 'no-regret' actions. Stakeholders will also be involved in the selection of adaptation actions through the public consultation processes described in relation to Indicator 2a.

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

There are mechanisms in place to coordinate disaster risk management and climate adaptation and thereby ensure coherence between the two policies.

The MEEN (notably the Climate Change & Air Quality Directorate, the Forest Protection & Forest Environment Directorate, and the Special Secretariat for Water) is represented within the structure of the Hellenic National Platform for Disaster Risk Reduction. The Platform is coordinated by the Ministry of Interior (i.e. General Secretarial for Civil Protection)[24].

The NCCAC is chaired by the MEEN Minister and includes representatives of the Ministry of Interior (see Indicator 1b above), which is responsible for Civil Protection.

[24] United Nations Office for Disaster Risk Reduction, URL: https://www.unisdr.org/partners/countries/grc, Date accessed: 11/05/2018

7. Funding resources identified and allocated

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

Yes / **In progress** /No

Adaptation actions are primarily financed by EU funds. The Sectoral Operational Programme on 'Transport Infrastructure, Environment and Sustainable development' and the 13 Regional Operational Programmes (one for each administrative region of Greece) of the National Strategic Reference Framework 2014-2020 (NSRF, cohesion policy) include specific budget and measures under the Thematic Objective 5 'Climate Change Adaptation & Disaster Risk Management'. These instruments, together with the Rural Development Programme, are the main source of EU funding for adaptation actions nationally and in the 13 administrative regions until 2020.

A Greek LIFE Task Force[25] was established to support potential LIFE Programme beneficiaries and to facilitate the exchange of experiences and good practices, inter alia, on climate adaptation issues. In September 2017, a proposal was submitted to the LIFE Climate Action Integrated Projects Call to support NAS implementation.

Step D: Implementing adaptation action

8. Mainstreaming adaptation in planning processes

Pursuant to the Law 4416/2014 (Article 43) and the Ministerial Decision 11258/2017 (Article 2, Paragraphs 6 and 7), synergies of proposed adaptation actions with other existing national policies (e.g. for biodiversity, disaster risk management and infrastructure) will be addressed by the RAAPs, which will suggest ways of integrating adaptation. The complementarity and compatibility of RAAPs with other regional plans (e.g. spatial plans, flood risk management plans) will be investigated in order to inform these plans and thereby mainstream adaptation considerations. The climate projections and climate impact and vulnerability assessments conducted as part of the RAAPs will provide useful data and information for planners and decision makers. In short, the RAAPs will provide the necessary information to mainstream adaptation into planning processes and, more specifically, to revise existing plans and policies.

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

Yes / No

[25] URL: http://www.lifetaskforce.gr/en/

The transposition of the revised EIA directive has been completed (the joint ministerial decisions 1915/24.01.2018 and 5688/ 12.03.2018 are available online[26]) and takes all necessary provisions into account[27].

Climate adaptation is not explicitly mentioned in the national legislation for Strategic Environmental Assessment (SEA). However, the competent national authority for climate adaptation gives its opinion on draft plans (e.g. RBMPs, FRMPs) and their SEA reports before their adoption, through the existing official SEA information and consultation process.

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

Yes / **No**

The General Secretariat for Civil Protection is the national competent authority for the coordination of all actions for prevention, preparedness, response and recovery concerning natural and manmade disasters. Climate change is considered during the formation of national disaster risk management plans. Long-term climate risk prevention, which is the focus of climate adaptation planning, will be integrated into the RAAPs. As already mentioned, RAAPs have to take into account synergies with existing planning (e.g. for flood risk management) and integrate relevant measures into sectoral plans.

In addition, the regional climate impact and vulnerability assessments (to be conducted as part of the RAAPs) will improve climate-related disaster risk analyses and, thus, enable better integration of climate change considerations in disaster risk management plans. As mentioned previously, the RAAPs will analyse the synergies between proposed adaptation actions and disaster risk management policies and plans, and will suggest ways to integrate adaptation.

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

Yes / **No**

Climate impacts appear to be taken indirectly into account in land-use and spatial planning policies. The General National Framework for Spatial Planning and Sustainable Development 2008[28] includes priorities that may contribute to climate adaptation, such as energy-saving measures, forest-fire prevention and reforestation measures, implementation of bioclimatic energy, food etc.

[26] Εθνικό Τυπογραφείο- Αναζήτηση ΦΕΚ, URL: http://www.et.gr/index.php/anazitisi-fek, Date accessed: 16/05/2018, ΕΦΗΜΕΡΙΣ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ ΤΗΣ ΕΛΛΗΝΙΚΗΣ ΔΗΜΟΚΡΑΤΙΑΣ ΤΕΥΧΟΣ ΔΕΥΤΕΡΟ Αρ. Φύλλου 304/2018 και 988/2018

[27] Personal communication with MS contact.

[28] ΒΟΥΛΗ ΤΩΝ ΕΛΛΗΝΩΝ, July 2008, ΕΦΗΜΕΡΙΣ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ ΤΗΣ ΕΛΛΗΝΙΚΗΣ ΔΗΜΟΚΡΑΤΙΑΣ ΤΕΥΧΟΣ ΠΡΩΤΟ Αρ. Φύλλου 128, URL: http://www.ypeka.gr/LinkClick.aspx?fileticket=znJpFQj917U%3d&tabid=513&language=el-GR

On coastal zone management, reference is made to climate impacts in the law concerning the creation of new settlements or the expansion of existing ones. Additional useful provisions exist in the Specific Framework Spatial Plans published in 2009[29] and refer to climate change with regards to fisheries, tourism, industry, renewable energy and sustainable development. The majority of spatial plans date back to 2009. Several of these spatial plans are being or will be revised. In addition, the new framework for maritime spatial planning aims to ensure, inter alia, resilience to climate impacts (Law 4546/2018, Article 4)

Furthermore, as mentioned above, the RAAPs will propose ways to integrate adaptation into existing strategies, policies and plans, including urban and spatial (land and marine) policies and plans. Future climate projections and climate impact and vulnerability assessments used by the RAAPs will also be valuable input for land-use, urban and spatial plans and studies, and in other sectoral planning, such as flood risk management plans.

The RAAPs will refer to regional level plans and policies, which take into account climate impacts.

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

Adaptation is mainstreamed in some sectors, but it is unclear whether the NAS has been the driver. Examples of sectors where adaptation has been mainstreamed include:

- Agriculture and forests (supported by Civil Protection): concerning operations to prevent forest fires and natural disasters[30], reforestation and mountain anti-flood actions for burned forest areas[31]
- Biodiversity (supported by the MEEN): the National Biodiversity Strategy[32] includes "Prevention & Reduction of climate change impacts on biodiversity"
- Health (supported by the Ministry of Health): the 'Response to Environmental Hazards Threatening Health' for 2008-2012[33] includes a special action dedicated to 'Exploring Climate Change Impacts on Health'.

[29]ΧΩΡΟΤΑΞΙΚΟΣ ΣΧΕΔΙΑΣΜΟΣ ΕΘΝΙΚΟΥ ΕΠΙΠΕΔΟΥ, URL: http://www.ypeka.gr/?tabid=513, Date accessed: 11/05/2018

[30]Γενική Γραμματεία Πολιτικής Προστασίας, http://civilprotection.gr/el, Date accessed: 11/05/2018

31Γενική Γραμματεία Πολιτικής Προστασίας, Σχέδια-Εγκύκλιοι, URL: http://civilprotection.gr/el/εγκυκλιοι, Date accessed: 11/05/2018

[32]Υπουργείο Περιβάλλοντος & Ενέργειας, Βιοποικιλότητα, URL: http://www.ypeka.gr/Default.aspx?tabid=237&language=el-GR#biodiv, Date accessed: 11/05/2018

[33]Υπουργείο Υγείας & Κοινωνικής Αλληλεγγύης, 2008, Εθνικό Σχέδιο Δράσης για την Αντιμετώπιση των Περιβαλλοντικών Κινδύνων που Απειλούν την Υγεία 2008 – 2012, URL: http://www.moh.gov.gr/articles/health/domes-kai-draseis-gia-thn-ygeia/ethnika-sxedia-drashs/95-ethnika-sxedia-drashs?fdl=223

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

Yes / **No**

The NAS recognises that insurance schemes could be updated to ensure that they incentivise climate adaptation. However, no evidence could be found that adaptation is already mainstreamed in insurance policies or alternative policy instruments in order to provide incentives for investments in risk prevention.

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**

Sectoral adaptation measures have been implemented in relation to specific vulnerabilities, as documented by the CCISC in 2011 (see Indicator 3c). The measures include responding to sectoral impacts at a regional level, such as the regional river basin management plans, the regional framework spatial plans, and the anti-flooding measures implemented by important coastal cities and regions (City of Thessaloniki, Heraklion, etc.). Several research projects/programmes (e.g. MEDROPLAN, ORIENTGATE) address climate adaptation options.

Implementation of adaptation-related actions is ongoing at sectoral, regional and local levels. For example, the bioclimatic restoration of urban areas, underway in several regions of Greece, is embedded in municipalities existing sustainable urban development plans. However, coordinated implementation of the NAS has only just begun.

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

Yes / **No**

The implementation of adaptation actions is not yet completed. However, the framework to foster and support implementation at local and regional levels is in place and is described in Sections B1 to B3 and in relation to Indicator 1c above.

A relevant project proposal (LIFE IP AdaptInGR) for funding, submitted to the September 2017 LIFE Climate Action Integrated Projects Call, is described in Section B2.

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**

Apart from various guidelines issued by the European Commission, no specific procedures or guidelines issued or used by the Greek authorities for assessing climate impacts on major projects or programmes and for facilitating their adaptation could be identified.

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

Yes / **No**

As already mentioned in relation to Indicator 2a, the MEEN will invite regional stakeholders (public authorities, scientific community, business and industry, civil society, etc) to identify measures that they could take to contribute to the climate resilience of their region and to support the implementation of adaptation policies and measures.

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**

As of May 2018, no monitoring reports have been published.

Pursuant to the Law 4416/2014 (Article 44), the NCCAC will regularly monitor NAS implementation and propose changes to political, legislative or other means and arrangements necessary to promote action. Pursuant to the same Law (Article 43) and the Ministerial Decision 11258/2017 (Article 2, Paragraph 11), an indicator-based system will be developed for each RAAP, which will be used to continually monitor the progress and effectiveness of implementation. The timeline and the periodicity of monitoring is not indicated.

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

Yes / **No**

As of May 2018, no sectoral monitoring reports have been published.

Sector-specific adaptation actions will be included in the RAAPs. It is expected that the majority of the RAAPs will have been finalised by mid-2019[34] and will be monitored through the respective regional monitoring plans.

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

Yes / **No**

As of May 2018, no sub-national level monitoring reports have been published.

Monitoring and reporting of RAAPs is described under Indicator 10a. The Central Union of Greek Municipalities and the Union of Greek Regions will also provide feedback to the NCCAC.

[34] Personal communication with MS contact.

11. Evaluation

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

Yes / No

The NAS (adopted in 2016) and RAAPs (to be adopted by mid-2019) will be subject to evaluation and revision at least once every ten years and at least once every seven years, respectively (pursuant to Law 4414/2016, Articles 42 and 43). Furthermore, the NCCAC plans to regularly monitor and evaluate the NAS and suggest political, legislative or other measures and arrangements necessary to promote action (see Indicator 10a).

11b. Stakeholders are involved in the monitoring and review of the national adaptation policy

Yes / **No**

As indicated in 10a and 11a, monitoring and evaluation have not taken place yet.

Pursuant to Law 4414/2016 (Article 42), any future revisions of the NAS will be subject to open online public consultation for minimum of 30 days to allow individual citizens, public authorities and other stakeholders to submit written views and contributions.

SUMMARY TABLE

Adaptation Preparedness Scoreboard		
No.	**Indicator**	**Met?**
Step A: Preparing the ground for adaptation		
1 Coordination structure		
1a	A central administration body officially in charge of adaptation policy making	**Yes** / No
1b	Horizontal (i.e. sectoral) coordination mechanisms exist within the governance system, with division of responsibilities	**Yes** / 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.	**Yes** / In progress / No
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
2b	Transboundary cooperation is planned to address common challenges with relevant countries	**Yes** / No
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
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
3c	Sound climate risks/vulnerability assessments for priority vulnerable sectors are undertaken to support adaptation decision making.	**Yes** / In progress / No
3d	Climate risks/vulnerability assessments take transboundary risks into account, when relevant	Yes / In progress / **No**

Adaptation Preparedness Scoreboard		
No.	**Indicator**	**Met?**
4	***Knowledge gaps***	
4a	Work is being carried out to identify, prioritise and address the knowledge gaps	Yes / **In progress** / No
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**
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**
Step C: Identifying adaptation options		
6	***Identification of adaptation options***	
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
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
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
7	***Funding resources identified and allocated***	
7a	Funding is available to increase climate resilience in vulnerable sectors and for cross-cutting adaptation action	Yes / **In progress** /No
Step D: Implementing adaptation action		
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
8b	Prevention/preparedness strategies in place under	Yes / **No**

Adaptation Preparedness Scoreboard		
No.	**Indicator**	**Met?**
	national disaster risk management plans take into account climate change impacts and projections	
8c	Key land use, spatial planning, urban planning and maritime spatial planning policies take into account the impacts of climate change	Yes / **No**
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
8e	Adaptation is mainstreamed in insurance or alternative policy instruments, where relevant, to provide incentives for investments in risk prevention	Yes / **No**
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**
9b	Cooperation mechanisms in place to foster and support adaptation at relevant scales (e.g. local, subnational)	Yes / **No**
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**
9d	There are processes for stakeholders' involvement in the implementation of adaptation policies and measures.	Yes / **No**
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**
10b	The integration of climate change adaptation in sectoral policies is monitored and the results of the monitoring are disseminated	Yes / **No**
10c	Regional-, sub-national or local action is monitored and the results of the monitoring are disseminated	Yes / **No**
11 Evaluation		
11a	A periodic review of the national adaptation strategy and	**Yes** / No

Adaptation Preparedness Scoreboard		
No.	**Indicator**	**Met?**
	action plans is planned	
11b	Stakeholders are involved in the assessment, evaluation and review of national adaptation policy	Yes / **No**