

REPORTING ON NATIONAL ADAPTATION ACTIONS

UNDER ARTICLE 15 OF REGULATION (EU) No. 525/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (MONITORING MECHANISM REGULATION)

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POLICY AND LEGAL FRAMEWORK

The national adaptation framework is essentially defined by the National Strategy for Adaptation to Climate Change (ENAAC) that was adopted by the Portuguese Government on 1st April 2010, through the Resolution of the Council of Ministers No.24/2010.

ENAAC sets the ground for adaptation, through a synthesis of the main observed changes in the climate over the 20th century and a summary of the conclusions of climate scenarios and projections for Portugal¹. ENAAC is structured around four objectives that reflect its approach to the problem:

1. **Information and knowledge.**
Basis for the development of the strategy, focusing on the need to collect, consolidate, and develop a strong technical and scientific basis;
2. **Reducing vulnerability and increasing the response capacity.**
The core of ENAAC, frames the work of identification of vulnerabilities, definition of priorities and implementation of the main adaptation measures;
3. **Participation, awareness raising and dissemination.**
Highlights the importance of educating and involving all relevant agents in the efforts to identify and implement the most adequate adaptation measures;
4. **International cooperation.**
Addresses cooperation efforts within the European Union, the UNFCCC and other international forums to promote coordination and information sharing and to support adaptation efforts in developing countries.

The implementation of the strategy is supported by a coordination group, sectorial groups and a scientific panel. The chosen approach was based on the definition of domains and strategic sectors. This way we can identify the performance in terms of sectorial adaptation in a more consistent way and promote the integration of adaptation into sectorial policies, contributing in this way to the principles of “mainstreaming”. The framework also brings together the actors with interest and know-how in each particular sector and thus identifies the most adequate adaptation measures.

The identification of lines of action and adaptation measures to reduce or mitigate the impacts of climate change at the sectoral level was part of the mandate of the various sectoral groups in the 1st phase of the implementation of the ENAAC. In general, this goal was achieved.

The next phase of ENAAC, in a final stage of approval, shall be built on the strengths and address some of the weaknesses which were identified in the previous phase. The revision of ENAAC was proposed by its Coordination Group and it is expected to be adopted during 2015. Revised ENAAC will be focused on better articulation between the domains (particularly the cross-cutting ones), and on the implementation of adaptation, along with mainstreaming in sectorial policies. No Adaptation Action Plan is intended to be defined at national level, instead it is promoted sectoral, local and/or regional planning. Furthermore it will be given particularly attention to financing which, besides being one of the main obstacles for implementation of adaptation, will need to be accompanied within the scope of the Common Strategic Framework 2014 – 2020.

The difficulties of access to financing were quickly identified in ENAAC as potential limiting factors for the development and deepening of an adaptation policy in Portugal, which has been seen as a non-priority investment. This difficulty was felt by many of the sectoral groups that were immediately limited in their ability to hire external support to address weaknesses in its services (information, training, human resources).

¹ From following projects: SIAM Project - Climate Change in Portugal: Scenarios, Impacts, and Adaptation Measures (Santos et al, 2002); SIAM II Project - Alterações Climáticas em Portugal. Cenários, Impactos e Medidas de Adaptação (Santos et al, 2006); Project CLIMAAT (Climate and Meteorology of the Atlantic Archipelagos); CLIMAAT II Project Impactos e Medidas de Adaptação às Alterações Climáticas no Arquipélago da Madeira (Santos et al, 2006)

Facing some of the needs identified on ENAAC, Programme AdaPT was developed in the EEA Grants 2009-2014 context, with a total budget of € 3,529,412.00 (€ 3,000,000.00 € EEA + 529,412.00 from Portuguese Carbon Fund – FPC). This financial support mechanism to underprivileged Member States of the European Union has the following general objectives:

1. To help reducing economic and social disparities in the European Economic Area;
2. Strengthening of bilateral relations between the Donor States (Iceland, Liechtenstein and Norway) and the Beneficiary States, seeking thereby the encouragement of a long-term cooperation.

The strategy of the Programme AdaPT is structured around four lines of action, namely:

1. A project to develop an Internet site called "Local Warming" in which information will be produced and disseminated related to regions and to past trends and future scenarios. Climatic indicators created for specific sectors of Portugal based on climate change scenarios on a global scale for IPCC AR5 will also be developed. The results will serve as a basis for other projects of this program and for the general public. The IPMA will be responsible for this project.
2. The project "Adaptation Strategies at Local Scale" that consists in training local officers on adaptation and to develop local strategies to adapt to climate change, bearing in mind the integration of the concept of adaptation in municipal planning.
3. "Climate Change in schools and Award " consisting in a major educational project on climate change, at a school scale, which will focus on faculty training, the production of educational materials and the promotion of a competition on measures related to climate change to be applied to the school context.
4. "Sectoral Projects" consisting in a set of 4 to 10 sectoral projects to support work produced around the ENAAC, focusing on vulnerability assessment and cost-benefit analyses of adaptation.

Risk Assessment:

The year 2014 has seen several efforts for risk assessments, particularly within the scope of safety of people and goods and on spatial planning. The report on National Risks Assessment (including the ones related to climate change) was published by the national authority for civil protection. Another report has been prepared defining a strategy to assure the integration of risks in the Regional and Local Territorial Plans.

Financing:

The adaptation funding mechanisms to climate change include EEA Grants Programme AdaPT, the Common Strategic Framework 2014 – 2020 (ERDF; ESF; CF; EAFRD; EFMAF) as well as programmes such as Horizon 2020, the Interreg IV-C and LIFE. This Common Strategic Framework is implemented at national level by several national Programmes (Portugal 2020) where Operational Programme on Sustainability and Resource Use Efficiency (PO SEUR), stands-out as the most significant in matter of adaptation action.

Also at national level and besides Portuguese Carbon Fund (Decree-Law No. 71/2006 of 24th March, other financing mechanisms include the Fund for the Conservation of Biodiversity (Decree-Law No. 171/2009 of 3rd August), the Permanent Forest Fund (Decree-Law No. 63/2004 of 22nd March) and the Foundation's grants for Science and Technology (FCT).

IMPACT, VULNERABILITY AND ADAPTATION INFORMATION

Observations and projections

Within the scope of national observation programmes, it can be highlighted the following initiatives that manage national databases for extreme weather-related events:

- The National Authority of Civil Protection (ANPC) has a national database on disaster response and losses since 2006 and publishes that information on the yearbooks of civil protection events;
- The Portuguese Environmental Agency (APA) keeps the records of the historical marks of floods and of its network of meteorological and hydrological monitoring stations, this data is available on SNIAMB (National System of Environmental Information – <http://sniamb.apambiente.pt>).

- The Portuguese Sea and Atmosphere Institute (IPMA) is the body responsible for carrying out the observations for meteorological and climatological purposes. IPMA has the responsibility for deployment, exploration and maintenance of the country network of meteorological stations; it is also responsible for archive and quality control of weather observations. Also promotes a project "MeteoGlobal" (<http://meteoglobal.ipma.pt/>) that allows any citizen to report in almost real-time the occurrence of severe weather events.

It shall be highlighted the following contributions on climate projections for the national territory:

- Climate Change in Portugal: Scenarios, Impacts, and Adaptation Measures – SIAM Project (Santos et al, 2002)
- Alterações Climáticas em Portugal. Cenários, Impactos e Medidas de Adaptação – SIAM II Project (Santos et al, 2006)
- Project CLIMAAT (Climate and Meteorology of the Atlantic Archipelagos)
- Impactos e Medidas de Adaptação às Alterações Climáticas no Arquipélago da Madeira – CLIMAAT II Project (Santos et al, 2006)
- Alexandre M. Ramos, Ricardo M. Trigo and Fátima E. Santo (2011). Evolution of extreme temperatures over Portugal: recent changes and future scenarios. *Climate Research*, Vol. 48:177-192. DOI: 10.3354/cr00934.
- Ana C. Costa, João A. Santos and Joaquim G. Pinto (2012). Climate change scenarios for precipitation extremes in Portugal. *Theoretical and Applied Climatology*, 108:217-234. DOI 10.1007/s00704-011-0528-3.
- Ricardo Filipe Domingos Tomé (2013). Mudanças climáticas nas regiões insulares. Tese de Doutoramento em Física. Universidade dos Açores.
- C. Andrade, H. Fraga and J. A. Santos (2014). Climate change multi-model projections for temperature extremes in Portugal. *Atmospheric Science Letters*, Volume 15, Issue 2, pages 149-156.
- Climate Impacts in Europe. The JRC PESETA II Project (Ciscar et al, 2014)
- Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2013)
- Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2014)
- de Lima MIP, Espírito Santo F, Ramos AM, de Lima JLMP (2013) Recent changes in daily precipitation and surface air temperature extremes in mainland Portugal, in the period 1941-2007. *Atmos Res* 27:195-209. doi:10.1016/j.atmosres.2012.10.001
- de Lima MIP, Espírito Santo F, Ramos AM, Trigo RM (2015) Trends and correlations in annual extreme precipitation indices for mainland Portugal, 1941-2007. *Theor Appl Climatol*: 119 55-75. DOI 10.1007/s00704-013-1079-6
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- Espírito Santo F, Ramos AM, de Lima MIP, Trigo RM (2014) Seasonal changes in daily precipitation extremes in mainland Portugal from 1941 to 2007. *Reg Environ Change* 14: 1765-1788. doi:10.1007/s10113-013-0515-6
- Ramos A, Trigo RM, Santo FE (2011) Evolution of extreme temperatures in Portugal: reporting on recent changes and future scenarios. *Clim Res* 48:177-192. doi:10.3354/cr00934.

Furthermore the above mentioned project currently being developed by IPMA under the EEA Grants' Programme AdaPT will publish a website in 2016 as an easy access platform for the general public making available, namely: time series, climate change projections and sectoral climatic indicators for the geographical coverage of mainland Portugal.

According to the climate projections evaluated from global simulations performed within the Ec-earth consortium (<http://eearth.knmi.nl/>), average annual temperature for Portugal is expected to rise by 2040, from 0.5° to 1.0° C and by 2100 between 2° and 5°, depending on region and emission scenario. Warming is expected to be greater in the south and in the east than in the north and west. Annual precipitation will

decrease about 15% by 2040 and 30% by 2100. The decrease in precipitation will be more severe in the southern part of Portugal. Portugal will continue to get warmer and drier.

Impacts & vulnerability assessments

The SIAM project was the most comprehensive and integrated assessment on the impacts and vulnerability associated with climate on mainland Portugal and was also the first one in southern Europe. The study was based on future climate scenarios derived from atmospheric general circulation models, analysing their effects on a number of socio-economic sectors and biophysical systems including hydrological resources, coastal areas, energy, forests and biodiversity, fishing, agriculture and health. A sociological analysis of climate change in Portugal was also performed.

The second phase of the SIAM project (SIAM II) broadened the previous analysis to include the autonomous regions of the Azores and Madeira and for mainland Portugal, incorporating also a case study for the Sado river estuary. SIAM II included the dissemination of results obtained in the previous phase among the various stakeholders through consultation, whilst collecting inputs for the SIAM II.

Besides other less comprehensive assessments of the impacts & vulnerability, it must be highlighted the Progress Report of ENAAC (APA, 2013) that was produced by the coordination group of ENAAC. This report resulted from the involvement with sectoral stakeholders and compiles the impacts and vulnerabilities of the sectors, the barriers for adaptation, and the adaptation measures.

Research

Although Portugal has never had a specific research programme dedicated to Climate Change, over the past decade, the Portuguese public funding agency, the Foundation for Science and Technology (FCT), has launched calls for research proposal in all scientific domains, including Climate Change in general.

The research on adaptation was recently been focused within CIRCLE-2, which is a European network of 34 institutions from 23 committed countries to fund research and share knowledge on climate adaptation and the promotion of long-term cooperation among national and regional climatic change programs. CIRCLE-2 maintains a searchable European InfoBase (<http://infobase.circle-era.eu/>) of Climate Adaptation projects (this database is not exhaustive).

The INFOBASE report (2014) pointed out that there was a 2010 peak of adaptation-relevant funded projects due to the public spending being drastically reduced since 2009. By October 2013, the CIRCLE-2 INFOBASE contained a total of 128 adaptation research projects in Portugal following the distribution by sectors and by categories indicated on figure 1. These distributions reflect more the interests of the research communities rather than any policy need or the development of any dedicated research programme. This gap will be one of the weaknesses of the Portuguese Adaptation Framework to be addressed on the next National Adaptation Strategy. In this way research can be guided to fulfil the knowledge needs identified as priorities for short-medium time, which includes:

- Research with focus on territorial vulnerability to climate change.
- Uncertainty of climate scenarios at a regional level.
- Potential effects of extreme weather events and related events, such as heavy rainfall, droughts and forest fires.

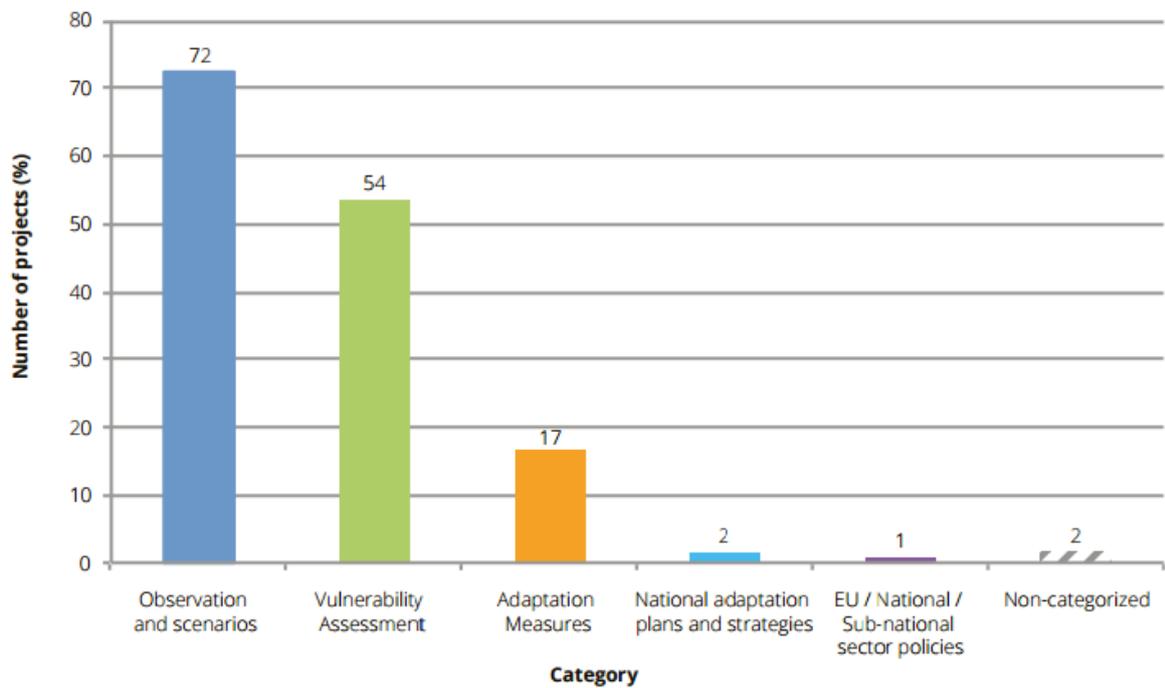


Figure 1. Distribution of Portuguese research projects per category. Projects can be tagged with more than one category (FFCUL, 2014).

Monitoring progress

ENAAAC doesn't have any formal provisions on monitoring progress and effectiveness beyond the progress report delivered in 2013. This issue will be addressed on the revised National Adaptation Strategy in order to establish a monitoring and review system for the adaptation process. Presently the monitoring has been guaranteed for reporting purposes through ENAAAC's Coordination Group.

PRIORITY SECTORS AND ADAPTATION ACTION

ENAAC identifies nine priority sectors and creates respective sectoral working groups: territory and urban development; water resources; safety of people and goods; human health; energy and industry; tourism; agriculture, forests and fisheries; coastal areas; and biodiversity.

The first stage of ENAAC and its reflexive process within the sectors took place until September 2013. Through this period each sector involved their specific stakeholders proceeding with an exhaustive collection of key action areas and adaptation measures published in sectoral reports. In some cases, it also was set targets and means of verification of the implementation of measures as well as the factors that may condition positively or negatively their achievement.

Nevertheless some difficulties have risen in this first stage of ENAAC and expressed the needs for: better articulation between sectors, a more solid and regularly updated scientific base, the prioritization of actions, the institutional and political support. All these aspects are now being addressed on the revision of ENAAC.

Territory and urban development

For the sector "territory and urban development" the following stand-out:

- Preparation of a report on Risk Prevention and Reduction in the Scope of Spatial Planning together with the National Authority for Civil Protection, in collaboration with several public administration sectors. This report defines a strategy to assure that the Regional and Local Territorial Plans, for the different types of risks inventoried (natural or entropic, including those ones which are related to climate change), define the hazard/dangerous areas, the supported uses for those areas and the respective measures to risk reduction and prevention (including adaptation measures), including an approach of risk assessment integrated in spatial planning and a perspective of adoption of measures for risk reduction and prevention in spatial planning plans.
- Municipal Adaptation Strategies of the municipalities Cascais, Sintra and Almada.
- Project on local adaptation strategies ClimAdaPT.Local, in the context of AdaPT programme, aiming the training of local government agents for the development of Local Strategies for Adaptation to Climate Change.

Water resources

Adaptation to climate change is being considered in the framework of the Regulation No 525/2013 of the European Parliament and of the Council of 21 May 2013, work to be completed until the end of 2015 by the development of River Basin Management Plans and Flood Risk Management Plans in the context of the measures to achieve the objectives of the two directives:

- Protection of inland surface waters, transitional waters, coastal waters and groundwater; and
- Reduction of potential adverse consequences of flooding to human health, the environment, cultural heritage and economic activity.

Some positive signs have been recorded in the world of business. For example EPAL, the largest production, transport and water distribution company in Portugal, which is always aware of the vulnerability of its activities under a likely climate change scenario, has recently completed a study to define medium and long term adaptation strategy for the company.

Alqueva Multipurpose Project is a strategic water reserve in the Alentejo region in terms of climate change, an important contribution to minimize the effects of long lasting droughts, identified in the most common scenarios of climate change. It can also enhance positive externalities, such as the fight on desertification and the increase of carbon sequestration in irrigated lands when compared to the non-irrigated ones. That is why it is considered one of the national key projects on adaptation.

Safety of people and goods

For the sector "safety of peoples and goods" the following stand-out:

- Publication in April 2014 of the Report on National Risks Assessment, including the ones related to climate change (<http://www.prociiv.pt/RiscosVulnerabilidades/Documents/Avalia%C3%A7%C3%A3o%20Nacional%20de%20Risco.pdf>).

- Portugal had developed various acts to support disaster reduction policy at the sectorial level, namely in forest fires, floods; climate change adaptation and critical infrastructure protection-
- Other good practices in place include the warning systems: under adverse weather conditions, monitoring of water resources (droughts and floods), heat waves, warning in affected areas within the risk of dam break.

Human health

For the sector "human health" the following stand-out:

- Implementation of plans for improved efficiency on water and energy use, and on waste management for all the buildings of the health sector.
- Since 2004 there is a Contingency Plan for heat waves, with warning system and responses to emergencies.
- Since 2007 there is a Surveillance System on Vector Born Diseases.

Energy and industry

For the sector "energy and industry" the following stand-out:

- The energy sector prepared a progress report in 2012, in the framework of ENAAC, which aimed to identify actions on adaptation, mitigation and prevention for vulnerabilities identified in the sector. The report concludes that larger companies have already undertaken a number of measures, some with large investments, in order to reduce the impact of climate change. Actions were also identified to be undertaken in the near future by business and society in general.
- The report also contains proposals for "win-win" and "no regrets" measures, concerning horizontal measures (sector-wide) and specific measures (linear and fixed infrastructure). For example, horizontal measures for the short/medium term can incorporate best practices in building design, vulnerability analysis, and stress testing for vulnerable infrastructure. As far as the long term is concerned firms may think of technological diversification and geographical distribution of its assets and strengthening its distribution network and transportation.

Tourism

For the sector "tourism", the following stand-out:

- Publication of the annual reports about the Best Environmental Practices on Touristic Resorts based on surveys to all Touristic Resorts in Portugal. These surveys were conducted since 2008, and are specially focused on the improvement of the efficiency on resources management (energy, water and waste).
- The National Strategic Plan for Tourism (2013, currently being revised) aims, among other things, to promote sustainability and rational use of natural resources, and to protect natural and cultural landscapes focusing on the relation with the tourist. Both these aspects have synergies with adaptation action.
- The Programme of Touristic Destinations also stresses the importance to develop sustainable destinations, contributing with activities of impact assessment and identification of corrective measures, given the long-term geophysical nature concerns that interfere with the development of tourism or that are conditioned by it (bathing areas, dynamic coastlines, hydrological regime, availability of drinking water, etc.).
- In the 2020 Tourism Action Plan climate change is also integrated, stressing the concerns on sustainable practices and on efficient resource use, accompanied with the rising on environmental certification and on environmental regulation. On its strategic objectives it is highlighted the requalification of consolidated tourist areas and the adaptation to climate change in coastal areas.

Agriculture, forests and fisheries

For the sector "agriculture, forests and fisheries", the following stand-out:

- There are already some aspects from the Common Agriculture Policy that contribute directly and indirectly to the implementation of adaptation measures of ENAAC, namely: support to soil conservation, efficient use of water in agriculture, maintenance of local breeds at risk, risk prevention and restoration of productive potential.

- The Portuguese Carbon Fund supported agricultural and forestry projects (biodiverse grasslands and shrubland management) contributing both to mitigation (by increasing carbon sequestration in soil) and adaptation (by improving the content of soil organic matter, fighting erosion and desertification, increasing the resilience of grassland and forest areas) to new climatic conditions.
- The National Action Programme to Combat Desertification - PANCD (2014) also includes guidelines that interact with ENAAC. Similarly, two other instruments at strategic level but with a stronger operational component, the National Strategy for Forests - NSF (2015) and the National Strategy for Nature Conservation and Biodiversity - ENCNB (2001, currently being revised) include specific objectives and corresponding measures, covering also adaptation to climate change. These objectives and measures are supported within the scope of rural development, the structural funds, the permanent forest fund and regular budget. In particular, some measures identified in the NSF are:
 - Implementation of the National Plan of Integrated Management of Fire, encompassing the implementation of primary and secondary fuel management networks, increasing the area of intervention and the number of the fire prevention teams' better operationalizing their action.
 - Emergency restoration after large fires, regeneration of affected stands and restoring forestry production potential in stands affected by biotic agents.
 - Installation of well-adapted forest stands and conversion of stands in inadequate ecological conditions.
 - Promotion of resilience of the stands, adjusting the density of maritime pine stands and the improvement of the stands' condition for the cork oak and holm oak.
 - Expansion of the area under management plans improving the economic value of the goods and services they provide.

Coastal areas

For the sector "coastal areas", the following stand-out:

- Coastal protection is one of the main areas of investment given our particular vulnerability. There are several types of implementing actions under the National Action Plan on Coastal Protection 2012-2015, in priority sites:
 - Insertion of buffer strips in spatial planning rules;
 - Monitoring systems of coastal;
 - Conclusion of risk evaluation and vulnerability for most of Portuguese coast.
- In the past reactive measures were privileged, such as sand deposition and construction of coastal protection hard infrastructure, but now it is intended to privilege a shift towards prevention, according to knowledge and experience accumulated, with cost-benefit evaluation. This can include measures such as replacements of people and infrastructures.
- In response to the winter of 2013/2014 where Portuguese coastal areas were greatly affected by storm surges which lead to the creation of the Coastal Working Group with contributions of academia and governmental organizations for a deeper reflection on the coastal areas for the definition of a set of measures. These aim to reduce the exposure to risk in the medium term, including a reflection on sustainable development within climate change scenarios.
- A significant component of PO SEUR, is particularly destined to fund the Coastal Areas protection, taking into account adaptation (200 M€).

Biodiversity

For the sector "biodiversity", the following stand-out:

- The National Strategy for Nature Conservation and Biodiversity - ENCNB (2001, currently being revised²) considers particularly important, studies on the impact of climate change to the stability of ecosystems and biodiversity.

² Considering the new legal and programmatic framework and international commitments undertaken by the Portuguese State, including on adaptation to climate change.

- There are also documents from other sectors (e.g. agriculture, water resources and soil) that show integrated orientations with specific measures to conserve and enhance biodiversity and to promote mitigation and adaptation to climate change.
- The sector has adopted a framework for the climate validation of plans and programs, which allows diagnosing the extent to which programs integrate biodiversity adaptation to climate change, improving the outcomes of the mechanism for strategic environmental assessment of plans and programs (Decree-Law No. 232/2007).
- The currently ongoing actions are:
 - Conservation of *Anaocypris hispanica* (e.g. preservation of the riparian vegetation of its habitat, ex-situ reproduction plan and reintroduction program, reduce the pressure of invasive alien species, implementation of the action plan of *Anaocypris hispanica*, conservation at the Guadiana Basin (Life Saramugo - LIFE13/NAT/PT/786).
 - Implementation of actions of forest fires prevention such as the conservation and reforestation of forests of native vegetation as a fire management measure.
 - Implementation of the action plan for Bottlenose dolphins and for *Lynx pardinus*.
 - Development of management plans for the areas classified under the RAMSAR convention in order to include adaptation to climate change.
 - *Aquila adalberti* conservation in Portugal (Life Imperial - LIFE13/NAT/PT/1300).
 - Conservation of temporary ponds in the southwest coast of Portugal (Life Charcos - LIFE12 NAT/PT/000997).
 - Falco & Otis Project: Protect *Falco naumanni* and *Otis tarda*.

ENGAGING STAKEHOLDERS: PARTICIPATION & CAPACITY BUILDING

Governance

The implementation of ENAAC is supported by a coordination group that implements the strategy and consists of the Portuguese Environment Agency, the entities which coordinate sectoral groups, the Ministry of Foreign Affairs, the Autonomous Regions (Madeira and Azores) and the National Association of Portuguese Municipalities. Participation of stakeholders from private, public, non-governmental and other agents in the sectoral groups was active, as reported in the Progress Report. The revision of ENAAC was proposed by its Coordination Group and it is expected during 2015.

Several Portuguese municipalities are evolved in adaptation action and significant initiatives:

- Águeda, Alfândega da Fé, Anadia, Cascais, Estarreja, Ílhavo, Lisboa, Torres Vedras, Vagos and Vila do Conde signed up the Covenant of Mayors Initiative on Adaptation to Climate Change, initiative willing to create a community with synergies, visibility and communication on cities' commitment to adaptation, practical and knowledge support.
- Almada, Cascais and Sintra are three of the 11 partners in the project financed by the AdaPT program on local adaptation strategies ClimAdaPT.Local. Their local developments in adaptation to climate change is used as a starting point for the work with the other 26 municipalities benefiting from the project from all over the country.
- Municipalities involved in the Campaign Making Cities Resilient are very active in public education to enhanced awareness of risk and protective measures. Besides the local governments, most local authorities are involved in campaigns to improve resilience and awareness campaign. Major risks are forest fires, floods and heat waves.

The establishment of the Portuguese National Platform for Disaster Risk Reduction, in May 2010, was a key issue towards better coordination of prevention, preparedness and response activities. The Platform is chaired by the Minister for Internal Affairs and composed by Delegates of Ministries and other national entities. A consultative Sub-Committee was also created within this Platform to promote DRR activities. This sub-committee includes representatives from ministries and from private sector, academic institutions, resilient cities and professional associations (engineers; architects). In 2014 the Sub-Committee constituted also the Working Group on Safety of Public and Property from ENAAC.

Portugal subscribed to the Hyogo Framework for Action (HFA) in 2005, since then, concrete steps were taken to integrate and streamline Disaster Risk Reduction (DRR) into national development strategies and legislation, recognizing its importance for the promotion of sustainable economic growth and progress.

Under the framework of European Commission, Portugal is involved in regional hazard monitoring, namely in the area of forest fire risk (EFFIS-European Forest Fire Information System: <http://forest.jrc.ec.europa.eu/effis/>) and meteorological events (Meteoalarm-alerting Europe for extreme weather: <http://www.meteoalarm.eu/>).

Adaptation capacity, dissemination, education, training

Dissemination:

InfoBase from Circle 2 (EU FP7 ERA-NET Project Climate Impact Research & Response Coordination for a Larger Europe) includes references to more than 100 Portuguese research projects on climate change adaptation (<http://infobase.circle-era.eu/>).

Civil protection authority (ANPC) provides warnings and information to general population and through the media (television, radio and newspapers).

Adaptation capacity and training:

INTERREG IVC project F:acts! – Forms for Adapting to Climate Change through Territorial Strategies, directed to exchange good practices, and transfer knowledge about climate change adaptation (Directorate General of Spatial Planning-DGT participation). Two publications have resulted:

- A handbook (which provides a framework to define and implement territorial integrated strategies in the context of climate change adaptation in risk areas);
- A study directed to a specify area, which previously defined as a pilot areas – Landscape Multifunctionality of Baixo Vouga Lagunar: a contribution for climate change adaptation - which offers a set of measures and recommendations to promote an implementation of a local governance model and a definition strategy for territorial management and landscape.

During the implementation of the project several events, about climate e adaptation through territorial strategies have been taken place in Portugal, including study visits, workshops to promote local stakeholders involvement, and coaching visits from foreign partners to increase adaptation capacity, for which it were also invited local stakeholders.

The project on local adaptation strategies **ClimAdaPT.Local** (program AdaPT financed by the EEA Grants and the Portuguese Carbon Fund) intends to effectively promote adaptation at local level in Portugal. Main objectives are: embedding the climate change adaptation dimension on local and municipal level in Portugal; creating a community of municipal actors aware of climate change issues and trained for the use of decision support tools on adaptation; promotion and provision of local adaptation knowledge particularly in the definition of strategies, planning and implementation of measures and results communication; the reduction of barriers and constraints on the local actors involvement on adaptation process; and integrating adaptation into municipal and sectoral agents decision and planning processes. Web site and "HelpDesk" Platform: <http://climadapt-local.pt/>.

Education:

Civil protection authority (ANPC) provides a national wide educational programme to children (<http://www.prociiv.pt/clube/>) already implemented in more than 300 schools. Subjects related to Disaster Risk Reduction are included in students curricula on several education levels. Universities include these

issues not only in the area of civil protection but also in other areas, like land use planning, engineering and geography.

The project on education and climate change award **Clima@EduMedia** (programme AdaPT) seeks innovative approaches for teaching and learning content related to climate change in the areas of mitigation and adaptation. The project includes several activities such as training on the use of media to communicate science, educational materials with tutorials for teachers on how to introduce media contents for climate change awareness, workshops and labs for collaborative content production, online platform for experience sharing and a final contest for schools to present their best ideas for mitigation and adaptation of climate change.

SUMMARY TABLE

ITEM	STATUS	WEB LINKS
National ³ Adaptation Strategy	<ul style="list-style-type: none"> Adopted (currently being revised) 	<ul style="list-style-type: none"> https://dre.pt/application/file/612572
Action Plans	<ul style="list-style-type: none"> Adopted within the Biodiversity sector 	<ul style="list-style-type: none"> http://www.apambiente.pt/_zdata/Politic/AlteracoesClimaticas/Adaptacao/ENAA/Relat_Detalhados/Relat_Setor_ENAA_C_Biodiversidade.pdf
Impacts, vulnerability and adaptation assessments - National (screening NAS) - Sectoral & Other (territorial)	Completed General <ul style="list-style-type: none"> SIAM I and II http://www.siam.fc.ul.pt/ Local <ul style="list-style-type: none"> Siam-Sintra http://www.siam.fc.ul.pt/siam-sintra/ Siam-Cascais http://www.siam.fc.ul.pt/PECAC/ Biodiversity <ul style="list-style-type: none"> PORTCOAST - Clima Costeiro Presente e Futuro de Portugal e seus impactos nas comunidades biológicas http://www.io.fc.ul.pt/zoologia/projectos/portcoast Iberia Change - Forecasting impacts of climate change on Iberian biodiversity http://www.ibiochange.mncn.csic.es/ Master's thesis "Climate change and biodiversity: assessment of vulnerability and adaptation measures for the Portuguese herpetofauna", by Tiago Costa (2012) Tourism <ul style="list-style-type: none"> CLITOP Alterações Climáticas e Turismo em Portugal: Impactos Potenciais e Medidas de Adaptação http://www.siam.fc.ul.pt/clitop Health <ul style="list-style-type: none"> ImpactE - Impactos na Saúde em Portugal de Eventos Extremos: Passado, Presente e Futuro http://www.siam.fc.ul.pt/ImpactE/ 	
Research programs - National Programmes - Key research initiatives (added value)	<ul style="list-style-type: none"> CIRCLE - Climate Impact Research Coordination for a Larger Europe (includes references to more than 100 Portuguese research projects on climate change adaptation) 	<ul style="list-style-type: none"> http://www.circle-era.net/
Climate Services / Met Office - Observation - Climate projections and services	<ul style="list-style-type: none"> Observation: Established <ul style="list-style-type: none"> SNIAMB (National System of Environmental Information) 	<ul style="list-style-type: none"> http://sniamb.apambiente.pt

³ Länder/national/subnational regions information shall be included in this section

	<ul style="list-style-type: none"> Disaster response and losses Met Office Climate projections: Project under progress (funded within EEA Grants' Programme AdaPT) 	<ul style="list-style-type: none"> http://www.prociv.pt/ http://www.ipma.pt/en/ http://meteoglobal.ipma.pt/
Web Portal(s) / Adaptation platform(s) (5a)	<ul style="list-style-type: none"> Planned to be developed under the Common Strategic Framework 2014 – 2020 	<ul style="list-style-type: none"> (information about adaptation policy is available at: http://www.apambiente.pt/index.php?ref=16&subref=81&ub2ref=118)
Monitoring, Indicators, Methodologies	<ul style="list-style-type: none"> Planned to be addressed on the revised National Adaptation Strategy 	
Training and education resources	<ul style="list-style-type: none"> Completed - Civil protection National programme to children Planned to be - program AdaPT-ClimAdaPT.Local Planned to be - program AdaPT-Clima@EduMedia 	<ul style="list-style-type: none"> http://www.prociv.pt/clube/ http://climadapt-local.pt/
National Communication to the UNFCCC	<ul style="list-style-type: none"> NatCom Submitted (2014) 	<ul style="list-style-type: none"> http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/prt_6cn_2ressubmission_final.pdf http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/prt_nc6_addendum.pdf (addendum)

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