

Adaptation preparedness scoreboard:

Country fiche for Spain

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 sectors² 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

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

¹ The first versions of the fiches, prepared in consultation with the Member States in 2014-15, were unpublished and used to fine-tune the scoreboard.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.

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".

Table of contents

List of abbreviations	2
POLICY FRAMEWORK	2
Adaptation strategies	2
A1. National adaptation strategy	2
A2. Adaptation strategies adopted at subnational levels	2
Adaptation action plans	2
B1. National adaptation plan	2
B2. Adaptation plans adopted at sub-national level	2
B3. Sectoral adaptation plans	2
SCOREBOARD.....	2
Step A: Preparing the ground for adaptation.....	2
1. Coordination structure	2
2. Stakeholders' involvement in policy development	2
Step B: Assessing risks and vulnerabilities to climate change	2
3. Current and projected climate change	2
4. Knowledge gaps	2
5. Knowledge transfer.....	2
Step C: Identifying adaptation options.....	2
6. Adaptation options' identification.....	2
7. Funding resources identified and allocated	2
Step D: Implementing adaptation action	2
8. Mainstreaming adaptation in planning processes	2
9. Implementing adaptation	2
Step E: Monitoring and evaluation of adaptation activities	2
10. Monitoring and reporting.....	2
11. Evaluation.....	2
SUMMARY TABLE.....	2

List of abbreviations

AEMET	State Meteorological Agency
CCPCC	Coordination Commission of Climate Change Policies
CENEAM	National Centre for Environmental Education
CNC	National Climate Council
DRR	Disaster Risk Reduction
EIA	Environmental Impact Assessment
GTIA	Impacts and Adaptation Working Group
IPCC	Intergovernmental Panel on Climate Change
MFF	Multiannual financial framework
NAP	National Adaptation Plan
NAS	National Adaptation Strategy
NCC	National Climate Council
OECC	Oficina Española de Cambio Climático
PAND	Programa de Acción Nacional contra la Desertificación
PIMA	Plan to Support the Environment for Adapting to Climate Change
PNACC	National Climate Change Adaptation Plan (Plan Nacional de Adaptación al Cambio Climático)
SEA	Strategic Environmental Assessment
WP	PNACC work programmes, e.g. Work Package 1 (WP1)

POLICY FRAMEWORK

Adaptation strategies

A1. National adaptation strategy

Spain adopted its national adaptation strategy, the National Climate Change Adaptation Plan (Plan Nacional de Adaptación al Cambio Climático: PNACC) in 2006³. The PNACC is the reference framework for the coordination of the public administrations to address the climate impacts across key sectors and resources in the country. It aims to support policymakers in tackling climate adaptation, defining a cyclical process to generate knowledge, and building capacity to address the effects of climate change.

A2. Adaptation strategies adopted at subnational levels

Apart from Asturias and Rioja, all Spanish regions have adopted regional action plans, or adaptation strategies⁴, which address 97% of the country's population and territory.⁵

Adaptation action plans

B1. National adaptation plan

The PNACC is implemented through work programmes (WPs)⁶, which describe the priority activities to be implemented under its framework. WPs have become more complex and mature over the years: addressing more sectors, improving governance and stakeholder involvement, and reinforcing coordination across all levels of administration. The Third Work Programme (WP3) was adopted in December 2013 and aims to address adaptation and its governance comprehensively, by further integrating stakeholder coordination vertically (across administrations) and horizontally (across sectors). This is the first work programme that contains a clear timeline (2014-2020), which has also been aligned with the EU multiannual financial framework (MFF). WP3 promotes actions to be implemented at national level, and seeks to reinforce coordination and synergies between the PNACC and subnational (regional and local) strategies and the EU Adaptation Strategy. Implementation of WP3 for the period 2014-2017 was to be reported in the Fourth Monitoring Report by end of 2017 but is not yet published as of June 2018⁷.

³ PNACC (2006). Available at http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/pna_v3_tcm7-12445_tcm30-70393.pdf. Date accessed: 15/05/2018

⁴ AdapteCCa, URL: <http://www.adaptecca.es/administracion-autonomica-local/comunidades-autonomas>, Date accessed: 07/05/2018; Committee of the Regions, 2016, Regional and Local Adaptation in the EU since the Adoption of the EU Adaptation Strategy in 2013, URL: <http://cor.europa.eu/en/documentation/studies/Documents/Local%20and%20regional%20adaptation.pdf>. Date accessed: 15/05/2018

⁵ INE, 2018, [Población por comunidades y ciudades autónomas y tamaño de los municipios](http://www.ine.es/jaxiT3/Datos.htm?t=2915), URL: <http://www.ine.es/jaxiT3/Datos.htm?t=2915>, Date accessed: 07/05/2018. Date accessed: 15/05/2018

⁶ PNACC Work Programmes, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/planificacion_seguimiento.aspx. Date accessed: 15/05/2018

⁷ MAPAMA, 2017, [7ª Comunicación Nacional de España. Convención Marco de Naciones Unidas sobre el Cambio Climático](http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/planificacion_seguimiento.aspx). Date accessed: 15/05/2018

B2. Adaptation plans adopted at sub-national level

As noted above, apart from Asturias and Rioja, all Spanish regions have adopted regional action plans, or adaptation strategies (97% of Spanish population and 97% of territory covered).⁸ To date, 1,817 municipalities are signatories to the Covenant of Mayors for Climate and Energy in relation to adaptation (of which 94 are cities with over 50,000 inhabitants)⁹.

B3. Sectoral adaptation plans

WP1 was adopted in 2006 and focused on priority actions, namely the launch of a national programme on regional climate scenarios, and the assessment of vulnerability in key horizontal sectors: water resources, biodiversity and coastal areas.¹⁰ WP2, adopted in 2009, continued WP1 activities and set additional goals by: enlarging the target sectors and reinforcing the adaptation goals within them; promoting detailed vulnerability assessments; integrating adaptation into sectoral regulations and planning tools; and mobilising, building capacity and raising awareness of key actors. The sectoral approach was complemented by: establishing an indicators system; further promoting research; development and innovation; and reinforcing inter-administrative coordination to strengthen the governance system. WP3 for the period 2014-2020 follows the same structure as WP2, it also enlarges the vulnerable sectors and territories to be assessed¹¹ (to include e.g. islands and rural and urban areas) and focuses on governance and stakeholder engagement (public and private) to mainstream adaptation into all vulnerable sectors and territories.¹² Areas of work and general lines of activity in WP3 remain the same as WP2, focused mainly on sectoral vulnerability assessments, sectoral impact assessments, establishment of climate change indicators, and evaluations of climate impacts. Adaptation actions in WP3 have been mainstreamed, for example, in the National Biodiversity Plan¹³, Spanish Forest Plan¹⁴ and the Basic Law on

⁸ AdapteCCa, URL: <http://www.adaptecca.es/administracion-autonomica-local/comunidades-autonomas>, Date accessed: 07/05/2018; Committee of the Regions, 2016, Regional and Local Adaptation in the EU since the Adoption of the EU Adaptation Strategy in 2013, URL: <http://cor.europa.eu/en/documentation/studies/Documents/Local%20and%20regional%20adaptation.pdf>

⁹ Pacto de los Alcaldes para el Clima y la Energía, URL: <http://www.pactodelosalcaldes.eu/sobre-nosotros/la-comunidad-del-pacto/firmantes.html>, Date accessed: 07/05/2018

¹⁰ Climate-ADAPT, 2018, URL: <http://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 07/05/2018

¹¹ The following sectors have been considered by the PNACC-WP3 to address adaptation actions during the period 2014-2020: Biodiversity; Forestry; Water; Soils; Agriculture, fishing, aquaculture; Tourism; Health; Finances/ Insurance; Energy; Industry; Transport; Urbanism and building; Hunting and inland fishing; Geographic Territories (Islands; Marine environment; Countryside; Urban areas; Mountains; Coastal Areas.

¹² Ministerio de Agricultura, Alimentación y Medio Ambiente, 2013, Plan Nacional de adaptación al cambio climático (III Programa de trabajo (2014/2020), URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/3er_programa_trabajo_pnacc_tcm30-70400.pdf, Date accessed: 15/05/2018

¹³ MAPAMA, Plan Estratégico del Patrimonio Natural y la Biodiversidad, URL: http://www.mapama.gob.es/es/biodiversidad/temas/conservacion-de-la-biodiversidad/valoracion-y-aspectos-economicos-de-la-biodiversidad/cb_vae_plan_estrategico_patrimonio_nat_bio.aspx, Date accessed: 07/05/2018

¹⁴ MAPAMA, Desarrollo Rural Política forestal Planificación forestal, URL: http://www.mapama.gob.es/es/desarrollo-rural/temas/politica-forestal/planificacion-forestal/politica-forestal-en-espana/pfe_descargas.aspx, Date accessed: 15/05/2018

Mountains (Law 43/2003)¹⁵ and the National Action Programme against Desertification (PAND)¹⁶.

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 Spanish Climate Change Office (Oficina Española de Cambio Climático - OECC by its Spanish acronym), a General Directorate of the Ministry for the Ecological Transition, is in charge of adaptation policy-making. OECC developed the PNACC and have since coordinated, managed and implemented it.

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

Yes / In progress / No

The bodies coordinating and participating in climate change action in Spain are the National Climate Council (CNC), the Coordination Commission of Climate Change Policies (CCPCC) and the Environmental Sector Conference.

The CNC is an inter-ministerial body linking the Ministry for the Ecological Transition (through the Secretary of State for the Environment and involving different government departments) with the regions (Autonomous Communities), the Spanish Federation of Municipalities and Provinces, representatives from research institutions, social actors and NGOs. The CNC develops proposals and recommendations to define climate change policies, including the drafting of adaptation strategies.¹⁷ However, CNC's main role is to inform and encourage the participation of policymakers and other organizations representing social and environmental interests in the preparation and monitoring of climate change policies and measures promoted by the State.¹⁸ Hence, CNC is a horizontal coordination body for the central administration.

¹⁵ BOE, Ley 43/2003, de 21 de noviembre, de Montes, URL: <https://www.boe.es/buscar/act.php?id=BOE-A-2003-21339>, Date accessed: 15/05/2018

¹⁶ MAPAMA, Programa de Acción Nacional contra la Desertificación (PAND), URL: http://www.mapama.gob.es/es/desarrollo-rural/temas/politica-forestal/desertificacion-restauracion-forestal/lucha-contra-la-desertificacion/lch_pand_descargas.aspx, Date accessed: 15/05/2018

¹⁷ Climate-Adapt, Countries, regions and cities / Country Information / Spain, Engaging Stakeholders, URL: <https://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 08/05/2018

¹⁸ MAPAMA, El Consejo Nacional del Clima (CNC), URL: <http://www.mapama.gob.es/es/cambio-climatico/temas/organismos-e-instituciones-implicados-en-la-lucha-contra-el-cambio-climatico-a-nivel-nacional/el-consejo-nacional-del-clima/>, Date accessed: 07/05/2018

The CCPCC¹⁹ is the national coordination body for climate change and adaptation. It represents all key Spanish Ministries²⁰ (horizontal coordination and cooperation) and all 17 regional governments. The CCPCC adopts all of the Spanish adaptation planning and reporting documents.

The Environmental Sector Conference is a political high-level cooperation body with a multilateral composition that brings together members of: the Ministry for the Ecological Transition, the State General Administration, and the Environmental Council, representing the Administrations of the Autonomous Communities²¹. It thereby also acts as horizontal coordination body.

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 CCPCC coordinates and collaborates with the national and regional administrations in relation to all climate change and adaptation-related matters. The CCPCC established the Impacts and Adaptation Working Group (GTIA), which is a technical working group involving the central and regional governments. The GTIA pursues coordination and integration of adaptation strategies and activities, and decides upon activities to implement the PNACC²². The GTIA meets regularly, usually twice a year, and the European Commission has often participated in the meetings. The GTIA reports to the CCPCC.

The Spanish Network of Cities for Climate (RECC)²³ is a thematic network created in 2009 by the Spanish Federation of Municipalities and Provinces and the Spanish Ministry for the Ecological Transition for joint action on climate adaptation and mitigation. The network coordinates, fosters, provides technical support and contributes to translation of national climate and energy objectives at the local level. As of May 2018, the network included 312 Spanish cities, towns and villages (60% of the Spanish population).

¹⁹ Climate-ADAPT, 2018, URL: <http://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 07/05/2018

²⁰ Ministry of Agriculture and Fisheries, Food and Environment; Ministry of the Treasury and Public Function; Ministry of Public Works; Ministry of Justice; Ministry of Energy, Tourism and Digital Agenda; Ministry of Economic Affairs, Industry and Competition; Ministry of Health, Social Services and Equality; Ministry of Home Affairs; Ministry of the Presidency.

²¹ Climate-Adapt, Countries, regions and cities / Country Information / Spain, Engaging Stakeholders, URL: <https://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 08/05/2018

²² PNACC, 2006, Marco para la coordinación entre Administraciones Públicas para las actividades de evaluación de impactos, vulnerabilidad y adaptación al cambio climático, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/pna_v3_tcm7-12445_tcm30-70393.pdf

²³ La Red Española de Ciudades por el Clima, URL: <http://www.redciudadesclima.es>, Date accessed: 07/05/2018

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 PNACC was adopted after a public consultation process channelled through various key national bodies, namely the CCPCC, the CNC, the Inter-Ministerial Climate Change Commission and the Sectoral Conference on Climate Change²⁴. The stakeholders consulted included representatives from the public administration, NGOs and interested social sectors²⁵.

The CNC is the national participatory body where most relevant stakeholders are represented: national sectoral ministries, regions (Autonomous Communities), local governments, key research institutions, social actors and NGOs. The CNC drafts proposals and recommendations about Spanish climate policies, and channels information to the Spanish society about climate science and policies, including adaptation.

Forums, such as the sectoral seminars described under Indicator 5b (below), or other activities with actors (administrations, private sector) are also used to frame and define the contents of the PNACC work plans and associated stakeholder involvement.

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

Yes / No

Transboundary cooperation is neither explicitly mentioned in the PNACC nor in its work programmes, however, cooperation mechanisms in place.

In 2016, the State Meteorological Agency (AEMET) signed a transboundary agreement to initiate climate research in the Pyrenees with a consortium of Spanish, French and Andorran institutions. This Working Community of the Pyrenees (Comunidad de Trabajo de los Pirineos in Spanish: CTP), which spans six Spanish, French and Andorran regions, decided to create the Pyrenees Climate Change Observatory (Observatorio Pirenaico del Cambio Climático: OPCC) in 2010 in order to monitor and have a better understanding of climate change phenomena in the Pyrenees. The resultant project (CLIM'PY²⁶) is compiling existing information and developing climate indicators for different sectors affected by climate change. Although the OPCC is focused on adaptation-related issues²⁷, it is not mentioned in

²⁴ PNACC, 2006, LIFE SHARA - Sharing Awareness and Governance of Adaptation to Climate Change in Spain, LIFE15 GIC/ES/000033, URL: http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5679, Date accessed: 07/05/2018

²⁵ The specific list of NGOs and other parties were not specified.

²⁶ AEMET, URL: http://www.aemet.es/en/noticias/2016/02/convenio_pirineos, Date accessed 07/05/2018

²⁷ OPCC, 2007, URL: <http://www.opcc-ctp.org/en/who-are-we/historycontextobjectives>, Date accessed: 07/05/2018

the PNACC. In 2017, the OECC accepted an invitation from the CTP to become a member of the Advisory Committee of the Observatory.

Transboundary adaptation cooperation exists with Portugal. On 19th December 2017, the first joint meeting of the Spanish and Portuguese administrations' climate adaptation teams took place. This marked the beginning of Action C.10 of the LIFE SHARA project (LIFE15 GIC/ES/000033)²⁸, which aims to establish a systematic cooperation between Spain and Portugal regarding exchange of information and identification of common priorities and actions in the field of transboundary risks associated with climate impacts. The general objective of LIFE SHARA is to strengthen adaptation governance and resilience to climate change. LIFE SHARA lays the ground for a long-term transnational cooperation mechanism between the Adaptation Units of Portugal and Spain, which it is intended will catalyse joint actions and projects and will lead to organisation of the first Iberian Conference on Adaptation to Climate Change in 2020.²⁹

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

Atmospheric climate data and analyses are provided by the Spanish Meteorological Agency (AEMET)³⁰. Other key climate variables are collected by several institutions, such as the National Aerospace Technical Institute³¹, the Spanish Oceanographic Institute³², and the State Ports authority. The OECC coordinates compilation of these climate variables periodically. The OECC collected the main evidence available on climate impacts in Spain, covering several relevant systems and sectors (forestry, agriculture, extractive industries, extreme events, human and health), in a study published in 2012³³.

According to Law 10/2001, Spanish Basin authorities have created Special Plans on Droughts³⁴. These plans include chapters analysing historical droughts. Basin authorities have

²⁸ LIFE SHARA - Sharing Awareness and Governance of Adaptation to Climate Change in Spain, LIFE15 GIC/ES/000033, URL: http://www.lifeshara.com/http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5679, Date accessed: 07/05/2018

²⁹ LIFE SHARA, Actions, URL: <http://lifeshara.com/en/actions>, Date accessed: 07/05/2018

³⁰ AEMET, URL: <http://www.aemet.es/es/portada>, Date accessed: 07/05/2018

³¹ INTA, URL: <http://www.inta.es/opencms/export/sites/default/INTA/es/>, Date accessed: 07/05/2018

³² IEO, URL: <http://www.ieo.es/>, Date accessed: 07/05/2018

³³ PNACC, 2012, Evidencias del cambio climático y sus efectos en España, URL: http://adaptecca.es/sites/default/files/documentos/oecc_evidencias_2012.pdf

³⁴ MAPAMA, Planes Especiales de Sequía de los Organismos de cuenca, URL: http://www.mapama.gob.es/es/agua/temas/observatorio-nacional-de-la-sequia/planificacion-gestion-sequias/Observatorio_Nacional_Sequia_3_1_planes_especiales_sequia.aspx, Date accessed: 07/05/2018

developed hydrological indicators to project drought situations and assess the severity with which they occur.³⁵

In relation to Directive 2007/60/EC, flood risk management plans identify areas prone to significant coastal and fluvial flood risks, including their flood history.

The Spanish Insurance Compensation Consortium (“Consortio de Compensación de Seguros”) is a public business institution attached to the Ministry of Economy and Competitiveness covering insurance on extraordinary risks. This Consortium has a register of insured damages caused by floods (fluvial and coastal) and high winds (up to 120 km/h).

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 production of regional climate scenarios is identified as a key element of the PNACC.

The national Meteorological Service, AEMET, provides a set of reference climate projections for Spain. Regional scenarios have been produced by AEMET in line with developments by the Intergovernmental Panel on Climate Change (IPCC): the first set was produced in 2007, based on IPCC 3rd Assessment Report (AR3) scenarios; a second generation, the ‘Scenarios-PNACC 2012’, which offer both dynamic and statistical models were based on IPCC AR4 scenarios; and a third generation were based on the IPCC AR5 scenarios³⁶.

Vulnerability assessments, which are promoted by the WPs as the starting point for sectoral adaptation action, make use of the regional climate scenarios in combination with expert judgement.

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

Yes / In progress / No

The first report that summarized and integrated the foreseeable climate impacts on a variety of socio-economic sectors and ecological systems was the ‘Preliminary Assessment of the ‘Impacts in Spain due to the Effects of Climate Change’ in 2005³⁷. Promoted by the OECC, and with the participation of over 400 experts, the report laid the foundations for the PNACC by identifying key sectors and the status of climate impacts, vulnerabilities, adaptation options and knowledge gaps in Spain. It assessed the following sectors: terrestrial

³⁵ MAPAMA, Sistemas de indicadores de estado hidrológico, URL: http://www.mapama.gob.es/es/agua/temas/observatorio-nacional-de-la-sequia/planificacion-gestion-sequias/Observatorio_Nacional_Sequia_3_2_sistemas_indicadores.aspx, Date accessed: 07/05/2018

³⁶ AEMET, Proyecciones climáticas para el siglo XXI. Gráficos, URL: http://www.aemet.es/es/serviciosclimaticos/cambio_climat/result_graficos?opc6=0, Date accessed : 07/05/2018

³⁷ MAPAMA, 2005, A Preliminary General Assessment of the Impacts in Spain due to the Effects of Climate Change, URL: http://www.mapama.gob.es/en/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/eval_impactos_ing.aspx, Date accessed: 07/05/2018

ecosystems, agriculture, inland aquatic ecosystems, coastal areas, marine ecosystems and the fisheries, natural hazards of climatic origin, plant biodiversity, energy, animal biodiversity, tourism, water resources, insurance, soil resources, human health, forestry.

Sectoral vulnerability assessments are planned in cooperation with the relevant sectoral authorities, and aim to integrate knowledge generated into specific policymaking tools and instruments. The OECC finances and coordinates periodic updates of the status of climate impacts, vulnerabilities and adaptation in different sectors and systems by engaging with sectoral experts and leading researchers.

Since the report on the 'Impacts in Spain due to the Effects of Climate Change' in 2005, many sectoral assessments of climate impacts and vulnerabilities have been produced within the PNACC framework, including on water resources, forestry, biodiversity, winery, aquaculture, energy, tourism, the private sector, and at a local level.³⁸ One of the most recent assessments is an OECC report³⁹ from 2016 on the climate impacts on desertification in Spain. It includes desertification maps based on an analysis of physical and biological indicators (e.g. soil erosion, acidity levels, overexploitation of aquifers) used in the National Action Programme Against Desertification (PAND). Other assessments include: a study by the OECC from 2016⁴⁰ focusing on climate impacts on the marine environment, which assesses various physicochemical indicators of climate change in the marine environment; a similar study⁴¹ on climate impacts and adaptation for the agriculture sector; and a study⁴² specifically on cattle.

Vulnerability assessments are promoted by the WPs as the starting point for sectoral adaptation action.

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

Yes / **In progress** / No

Transboundary impacts are not systematically addressed by either the PNACC or the WPs. However, there are some joint efforts with neighbouring countries to evaluate transboundary impacts. For example, the LIFE SHARA project plans address vulnerable issues of mutual

³⁸ Climate-ADAPT, Countries, regions and cities / Country Information / Spain, URL: <https://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 09/05/2018

³⁹ MAPAMA, 2016, Impactos del cambio climático en los procesos de desertificación en España, URL: http://www.mapama.gob.es/es/cambio-climatico/publicaciones/publicaciones/impactos-desertificacion_tcm30-178355.pdf, Date accessed: 07/05/2018

⁴⁰ MAPAMA, 2016, Cambio Climático en el Medio Marino Español: Impactos, Vulnerabilidad y Adaptación, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/kersting_2016_cambio_climatico_medio_marino_tcm30-70535.pdf, Date accessed: 16/05/2018

⁴¹ MAPAMA, 2016, Impactos, Vulnerabilidad Y Adaptación Al Cambio Climático En El Sector Agrario, URL: http://www.mapama.gob.es/es/cambio-climatico/publicaciones/publicaciones/impactos_vulnerabilidad_adaptacion_cambio_climatico_sector_agrario_tcm30-178448.pdf, Date accessed: 16/05/2018

⁴² MAPAMA, 2017, Impactos, vulnerabilidad y adaptación al cambio climático en los sistemas extensivos de producción ganadera en España, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/informe_ganaderia_extensiva_tcm30-435573.pdf, Date accessed: 16/05/2018

relevance to Portugal and Spain in areas such as biodiversity, marine ecosystems and forestry (see Indicator 2b).

4 Knowledge gaps

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

Yes / In progress / No

The PNACC is mostly defined as a knowledge-generation and capacity-building programme. Since the PNACC was launched, it has been supported by national research strategies and various programmes. The PNACC is supported by the National Strategy for Science, Technology and Innovation (2013-2020), which explicitly addresses adaptation. One of Strategy's eight challenges is 'Climate Change action and resource and raw materials efficiency'; adaptation is also mentioned in other challenges. The Strategy is implemented through four-year plans that reflect most European priorities in the research field.

The State Plan for Scientific and Technical Research and Innovation 2017-2020⁴³ explicitly prioritises knowledge gaps identified by the PNACC in the fields of: systematic observation, climate scenarios and projections; and vulnerability, impacts and adaptation. The State Plan is implemented through annual calls.

Adaptation knowledge development is funded at the national level through grants for research on global change in protected areas, such as national parks, and through grants from the Biodiversity Foundation for climate change and adaptation projects. At the regional level, there are strategies and instruments for planning research, development and innovation, and a management system is in place.

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

Spain has a dedicated web-based adaptation platform developed by the OECC: AdapteCCa⁴⁴. The platform is available to experts, organisations, institutions and interested stakeholders, for the exchange and consultation of information, knowledge and experience about climate impacts, vulnerability and adaptation. It provides information on territorial (vertical) and sectoral (horizontal) adaptation action in Spain, as well as technical resources, tools, links, news, funding opportunities, etc. It is also an instrument for interactive communication within the adaptation community in Spain. AdapteCCa provides a user friendly online viewing tool for freely consulting and downloading regional climate scenarios⁴⁵. The tool has

⁴³ PECTI, 2017, Plan Estatal de Investigación Científica, Técnica y de Innovación, URL: <http://www.idi.mineco.gob.es/stfls/MICINN/Prensa/FICHEROS/2018/PlanEstatalIDI.pdf>, Date accessed: 16/05/2018

⁴⁴ AdapteCCa, URL: <http://www.adaptecca.es/>, Date accessed : 07/05/2018

⁴⁵ Visor de Escenarios de Cambio Climático, URL: <http://escenarios.adaptecca.es/>, Date accessed: 07/05/2018

a visual and intuitive interface with graphic and cartographic facilities and products. The scenarios build on work begun in the ESCENA project (2008-2011)⁴⁶. To facilitate use and understanding of the scenarios, they are accompanied by some supporting material: a report "Generation of Regional Climate Change Scenarios for Spain"⁴⁷, and a set of user-tailored products, including indicators for different sectoral policies, graphs and other material to facilitate communication with policymakers, the media, etc. Combined, this online information provides the initial basis of a national climate service.

The PNACC is producing educational and awareness-raising materials to disseminate knowledge about impacts, vulnerability and adaptation options, mostly targeting a technically-proficient audience. Books and leaflets⁴⁸ about the PNACC, presenting the results of risk assessments, as well as other relevant sectoral publications, have been produced. The OECC has compiled and produced its own brochure on the latest findings from the IPCC AR5⁴⁹. There are also specific web resources (e.g. a map viewer for impacts in coastal areas), periodic brochures (e.g. on impacts in national parks), summaries of IPCC reports for non-specialists, etc.

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

Sectoral 'seminars' are held regularly, developed by the OECC and the National Centre for Environmental Education (CENEAM) in the framework of the PNACC. The programme of seminars brings researchers, policymakers from central and regional administrations and civil society together. The seminars examine research results and the outcomes of sectoral vulnerability assessments, and discuss their use by policymakers and further priorities for informing policies. Seminars have been held on: conservation of biodiversity (2010), forestry (2011), forests and biodiversity (2013), agriculture (2014), marine environment (2015), planning and management of protected areas (2016), the insurance sector (2017) and herbaceous and industrial crops (2018).⁵⁰

The PNACC is presented in many capacity building and training initiatives, including university courses and summer schools. For example, the OECC developed and ran a training course for civil servants in the central administration on 'Integration of adaptation to climate change in the policies of the Ministry for Agriculture and Environment'. Officials from the

⁴⁶ SMG, A set of regional climate change scenarios over Spain: ESCENA Project, URL: <http://www.meteo.unican.es/en/node/73284>, Date accessed: 07/05/2018

⁴⁷ SMG, Climate change and regional scenarios, URL: http://www.meteo.unican.es/en/research/climate_change, Date accessed : 07/05/2018

⁴⁸ MAPAMA, Publicaciones y documentación, folletos, URL: <http://www.mapama.gob.es/es/cambio-climatico/publicaciones/publicaciones/folletos.aspx>, Date accessed: 07/05/2018

⁴⁹ MAPAMA, 2016, Quinto Informe del IPCC, URL: http://www.mapama.gob.es/es/ceneam/recursos/mini-portales-tematicos/Climatico/informe_ipcc.aspx, Date accessed : 07/05/2018

⁵⁰ MAPAMA, Seminarios del Plan Nacional de Adaptación al Cambio Climático (PNACC), URL: <http://www.mapama.gob.es/es/ceneam/grupos-de-trabajo-y-seminarios/seminarioPNACC/pnacc.aspx>, Date accessed: 15/05/2018

fields of biodiversity, water management, coastal areas, forestry, desertification, agriculture and farming were among the course participants.

The PNACC has evolved, since it was adopted, from an *ad hoc* approach to capacity building towards a more coordinated one. In WP2, 'mobilisation of key actors' was included and, in WP3, a more systematic approach to sectoral capacity and awareness-raising activities was adopted.

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

Preliminary assessment of climate impacts in Spain in 2005 (see Indicator 3c.) identified adaptation options conceived by specialists in charge of each of the sectoral chapters. The sectoral impact and vulnerability assessments carried out since then (e.g. for coastal areas, biodiversity, water resources, forestry, health, tourism) also sought to identify adaptation options.

Geographical specificities are considered in identifying adaptation options. WP3 added a set of geographical units to be considered in relation to sectoral assessments of impacts, vulnerability and adaptation: coastal areas, mountain areas, urban areas, rural areas, islands and marine environment.⁵¹ Other reports and works carried out under the PNACC have also identified existing planning and management practices and adaptation options (e.g. low-regret).

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

Stakeholders have been consulted about the selection of priority adaptation options for the PNACC. The sectoral 'seminars' described under Indicator 5b have been one of the tools used for this purpose, as they aim to:⁵²

- Provide key stakeholders with information on projected impacts of climate change
- Present ideas and experiences on adaptation
- Provide an opportunity to debate and reflect on adaptation measures.

⁵¹ Personal communication with MS contact.

⁵² MAPAMA, 2014, Plan Nacional de Adaptación al Cambio Climático, Tercer Programa de Trabajo 2014-2020, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/mitigacion-politicas-y-medidas/3PT-PNACC-enero-2014_tcm30-70397.pdf, Date accessed: 15/05/2018

The PNACC work programmes identify that further developments are needed to enable cost-benefit analyses of adaptation options.

Different methods are being explored to identify adaptation priorities. For example, since 2016, the PIMA-Adapta Programme has been used to fund independent analysis of adaptation options undertaken by stakeholders. An example of this approach is the InfoAdapta-Agri initiative⁵³, a project developed by the Spanish farmer's union UPA to analyse from a farmer's perspective 130 adaptation measures in agriculture.

Another pilot project (called Iniciativa ADAPTA⁵⁴) has been developed by the OECC in collaboration with five main national companies that are pioneers in climate adaptation in key sectors of the Spanish economy: tourism, energy, transport, construction and food industry. Its main aim is to explore tools to incorporate consideration of risk, vulnerability and adaptation options into different business strategies. A second phase of this pilot project (ADAPTA-2⁵⁵) recently concluded, which used a variety of methods to undertake cost-benefit analyses of adaptation measures in two main energy and infrastructure companies.

The study on "Sections of the state network of land transport infrastructures to give priority attention to because of climate change" (2018) uses a method to identify priority sections including: current vulnerability to climate, future vulnerability (considering climate projections) and use made of the section.⁵⁶

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 institutional frameworks and procedures in place for the coordination of disaster risk management and climate adaptation.

There is a National Committee on disaster risk reduction that includes institutions with complementary competences related to disasters. The OECC is a member of this Committee. Further planned coordination activities include: consideration of climate change risks in relation to strategic infrastructures (nuclear, waste treatment, energy); assessment of the

⁵³ UPA, URL: <https://www.upa.es/camposeguro/servicios-camposeguro/cambio-climatico/>, Date accessed: 15/05/2018

⁵⁴ MAPAMA, 2014, Integración de la adaptación al cambio climático en la estrategia Empresarial, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/Adapta_Impresa_20141003_ivi_tcm30-179515.pdf, Date accessed: 07-05-2018; IAGUA, Iniciativa Adapta: Integrando la adaptación al cambio climático en las estrategias empresariales, URL: <https://www.iagua.es/noticias/espana/magrama/15/06/19/iniciativa-adapta-integrando-adaptacion-al-cambio-climatico>, Date accessed: 07/05/2018

⁵⁵ [Guía metodológica para el análisis y priorización de medidas de adaptación al cambio climático, http://www.adaptecca.es/sites/default/files/documentos/integracion_de_adaptacion_cc_estrategia_empresarial_guia_vol_ii_analisis_priorizacion_de_medidas.pdf](http://www.adaptecca.es/sites/default/files/documentos/integracion_de_adaptacion_cc_estrategia_empresarial_guia_vol_ii_analisis_priorizacion_de_medidas.pdf), Date accessed: 07/05/2018

⁵⁶ Secciones de la red estatal de infraestructuras de transporte terrestre a las que prestar atención con prioridad por razón de la variabilidad y cambio climáticos, URL: http://www.adaptecca.es/sites/default/files/documentos/secciones-red-estatal-transporte-prioritarias-junio_2018.pdf, Date accessed: 07/05/2018

lessons learnt after extreme events; assessment of climate impacts on forest fires; and assessment of climate impacts on the Insurance Compensation Consortium's Extraordinary Risks Cover. In addition, the Spanish Climate Change Office belongs and actively participates in the Spanish Committee of the International Strategy on Disaster Risk Reduction, coordinated by the Civil Protection Authority.

As yet, disaster risk reduction planning is yet to give sufficient consideration to climate impacts and projections, and the PNACC's WPs do not include sufficient disaster risk reduction measures. Recent consideration has been given to disaster risk reduction in climate adaptation planning at the national level. WP3 considers disaster risk reduction as a crosscutting issue across all sectors and territories and recognises the importance of enhancing coordination with the Civil Protection Authorities (Ministry of Internal Affairs).

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

Since 2015, the framework of the PNACC provides a dedicated budget for adaptation projects. The PIMA Adapta ("Plan to Support the Environment for Adapting to Climate Change in Spain" in English) includes an investment of EUR 12.1 million for more than 46 actions in a few sectors, i.e. the coast, the public water domain and the National Parks.⁵⁷ In 2016-2017, PIMA-Adapta also invested EUR 2,490,000 in 68 small projects on adaptation.

The OECC mobilises funds from its partners (Fundación Biodiversidad, AEMET, CENEAM, regional authorities, etc.) to ensure the funding of cross-cutting and coordinated actions, such as the maintenance of the AdapteCCa website, the national programme for regionalisation of climate scenarios, the coordination of the PNACC, capacity building, science-policy forums, and the involvement of stakeholders.

While adaptation is financed in a few sectors and there is some funding for cross-cutting adaptation action, the relevant priority sectors do not receive consistent funding for implementation. Sectoral ministries or departments have financed one-off assessments of climate impacts and adaptation options, as well as other activities on an *ad hoc* basis (e.g. in relation to health, tourism, water, coasts). The implementation of actions in WP3 is explicitly conditional on the availability of funding, including from public, private, national and EU sources. WP3 contains extensive reference to EU funds as a potential source, and the timing of WP3 is aligned with the EU MFF 2014-2020.

⁵⁷ Adaptaclima II, URL: <http://www.adaptaclima.eu/>, Date accessed: 07/05/2018
de 40 actuaciones para impulsar la adaptación al cambio climático en España, URL: http://www.mapama.gob.es/es/red-parques-nacionales/red-seguimiento/pima-adapta/garciatejerinapresentaplanpimaadapta_tcm7-364855_noticia_tcm30-61778.pdf, Date accessed: 07/05/2018; MAPAMA, Plan PIMA Adapta AGUA, URL: <http://www.mapama.gob.es/es/agua/planes-y-estrategias/plan-pima-adapta-agua.aspx>; MAPAMA, Plan de Impulso al Medio Ambiente para la Adaptación al Cambio Climático en la Red de Parques Nacionales, URL : <http://www.mapama.gob.es/es/red-parques-nacionales/red-seguimiento/pima-adapta/PIMA.aspx>, Date accessed: 07/05/2018

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

The Strategic Environmental Assessment (SEA) Directive 2001/42/EC and the Environmental Impact Assessment (EIA) Directive 2014/52/UE) have been transposed into Spanish law by the Act 21/2013⁵⁸ on environmental evaluation. Climate adaptation is considered in relation to both SEA for plans and programmes and to EIA for projects.

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

Yes / **No**

The Government's civil protection mechanism does not address future climate extremes in its plans. However, WP3 introduced assessment of lessons learnt after extreme events.⁵⁹ The OECC mainstreaming adaptation into some key policies and planning documents related to disaster risk management, such as Regulation 903/2010 for the evaluation and management of flood risk or drought plans. The OECC also actively participates in the Spanish Committee of the International Strategy on Disaster Risk Reduction, which is coordinated by the Civil Protection Authority.⁶⁰

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

Yes / **No**

The national administration, and particularly the OECC, has made significant effort to integrate climate adaptation into land use and resource planning policies, where it has competence to act or where it has a coordination role. Integration of climate adaptation has been proposed in strategic national planning documents, including: the National Rural Development Programme for Spain⁶¹ 2010-2014; the National Strategy for the Sustainable Modernization of Irrigation; the Strategic Plan on Natural Heritage and Biodiversity; the

⁵⁸ BOE, 2013, Ley 21/2013, de 9 de diciembre, de evaluación ambiental, URL: <https://www.boe.es/buscar/pdf/2013/BOE-A-2013-12913-consolidado.pdf>, Date accessed: 07/05/2018

⁵⁹ Climate-ADAPT, Home / Countries, regions and cities / Country Information / Spain, Sectors & Actions, URL: <https://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 15/05/2018

⁶⁰ Climate-ADAPT, Home / Countries, regions and cities / Country Information / Spain, Sectors & Actions, URL: <https://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 15/05/2018

⁶¹ EC, Factsheet on 2014-2020 National Rural Development Programme for Spain, URL: https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/es/factsheet_en.pdf, Date accessed: 07/05/2018

National for Renewable Energy Action 2011-2020⁶²; and the Adaptation Strategy for Coastal Areas⁶³. Additionally, climate adaptation has been integrated into plans and programmes of smaller geographic scope linked to land use or management, including plans for airports and ports, forestry plans, protected area management plans, urban land use and management plans, hydrologic plans of Spanish river basins, drought plans, and the National Action Programme to fight Desertification (PAND).

In practice, there is no evidence that land use and spatial and urban policies explicitly addressing climate impacts are followed at regional or local levels. Most land use and resources management planning policies are the responsibility of the regional administrations in Spain. There is no comprehensive overview of progress with integration of climate change considerations at this level, where most decisions are made.

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

WP3 addresses adaptation actions during the period 2014-2020 in the following sectors: biodiversity, forestry, water, soils, agriculture, fishing, aquaculture, tourism, health, finances/ insurance, energy, industry, transport, urbanism and building, hunting and inland fishing. Under the PNACC, an evaluation of entry points for climate adaptation in key environmental regulations was carried out. A similar exercise was undertaken for health regulations and policies. Some significant progress has been made with integration of climate adaptation into national sectoral policy instruments. Progress is opportunistic, except in environment-related policies, where a more systematic approach has been adopted. Significant cases where mainstreaming has taken place are in Law 2/2013 for the protection and sustainable use of Coasts, Law 41/2010 for the protection of the marine environment, the Royal Decree 903/2010 on assessment and management of flood risks, and Law 33/2011 on public health.⁶⁴ For other sectoral policies see Indicator 8c.

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

Yes / **No**

Adaptation is not mainstreamed in insurance or alternative policy instruments except for some risk signalling capacity of insurance in the agricultural sector. A framework agreement exists with the agriculture authorities and universities, which includes a plan to mainstream

⁶² MAPAMA . Estrategia Nacional para la Modernización Sostenible de los Regadíos, Horizonte 2015, URL: http://www.mapama.gob.es/es/calidad-y-evaluacion-ambiental/participacion-publica/pp_2009_p_019.aspx, Date accessed: 07/05/2018

⁶³ BOE, 2013, Ley 2/2013, de 29 de mayo, de protección y uso sostenible del litoral y de modificación de la Ley 22/1988, de 28 de julio, de Costas, URL: <https://www.boe.es/buscar/doc.php?id=BOE-A-2013-5670>, Date accessed: 07/05/2018

⁶⁴ MAPAMA, Integración en la normativa de la adaptación al cambio climático, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/int_nor_adap_cc.aspx, Date accessed: 07/05/2017

climate change in the Spanish Agricultural Insurance System. WP3 also includes five activities for the insurance sector during the period 2014-2020 that provide a foundation for full integration of adaptation within the sector. In terms of private property, so far the only effective action in place is close collaboration with the Compensation Consortium's Extraordinary Risks Cover, in order to assess climate impacts on the insurance of extreme events.

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

National adaptation activities in Spain have focused on the development of reports assessing impacts and vulnerability, capacity building actions and mainstreaming. All but two regions have adaptation plans and for more than a decade in some cases; most adaptation plans were approved in the period 2007-2013 (see Sections A2 and B2).⁶⁵ Implementation is supported by EU LIFE, as part of the EU Adaptation Strategy (2013-2020), and through national funding, as part of the PIMA-Adapta⁶⁶ initiative, which has financed adaptation projects in relation to water resources, coastal areas and biodiversity in National Parks since 2015. There are no other specific national projects or programmes systematically focused on implementing adaptation measures, despite the fact that many activities to manage natural resources may contribute to adaptation. Adaptation options are usually listed but not evaluated in relation to their costs, time or other criteria.

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

Yes / No

Spain has strong coordination and cooperation mechanisms, with regions, local authorities and other stakeholders, for fostering and supporting adaptation (see Indicator 1c). A significant amount of the work carried out under the framework of the PNACC aims to further develop cooperation mechanisms with administrations, sectoral ministries, private entities and other stakeholders.⁶⁷

⁶⁵ AdapteCCa, URL: <http://www.adaptecca.es/administracion-autonomica-local/comunidades-autonomas>, Date accessed: 07/05/2018; Committee of the Regions, 2016, Regional and Local Adaptation in the EU since the Adoption of the EU Adaptation Strategy in 2013, URL: <http://cor.europa.eu/en/documentation/studies/Documents/Local%20and%20regional%20adaptation.pdf>, Date accessed: 07/05/2018

⁶⁶ MAPAMA, Plan PIMA Adapta en la Red de Parques Nacionales, URL: <http://www.mapama.gob.es/es/red-parques-nacionales/red-seguimiento/pima-adapta/PIMA-red-parques-nacionales.aspx>, Date accessed: 07/05/2018

⁶⁷ MAPAMA, 2014, Plan Nacional de Adaptación al Cambio climático - Tercer Informe de Seguimiento, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/planificacion_seguimiento.aspx, Date accessed: 07/05/2018

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

The integration of climate change into EIA and SEA legislation has been supported by the publication of procedures or guidelines⁶⁸ to assess the effects of climate change on major projects or programmes and facilitate the choice of alternatives.

The Spanish Association of Environmental Impact Assessment has created a website on “Resources to integrate climate change in environmental assessments”⁶⁹. This website compiles 50 existing tools and conceptual frameworks from different countries, including Spain, categorised by sector. The project has been funded by the OECC and Fundación Biodiversidad. A study was also produced for the Government in 2013 to analyse “Biodiversity in environmental assessments of transport infrastructure in the context of climate change”.⁷⁰

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

Yes / **No**

The PNACC defines a strong collaborative framework for adaptation at various levels (see Indicator 1c) but the status of the adaptation cycle is not yet sufficiently advanced, so there is a lack of evidence of cooperative implementation of adaptation policies and measures. The OECC is responsible for implementation of the PNACC and performs its tasks together with other Units from several Ministries. Additionally, the OECC works in close collaboration with the Autonomous Communities, local administrations, research centres and other stakeholders to implement the WPs.⁷¹ In this regard, GTIA was created in 2007, with representatives from the Central Administration and the Autonomous Communities, to coordinate adaptation strategies, plans and actions developed at national and regional level. The CNC, among others, drafts proposals and recommendations on climate policies in the areas of climate science, impacts and adaptation strategies, as well as strategies to limit GHG emissions. There have been some collaborative efforts in projects carried out at local level

⁶⁸ Climate-ADAPT, Home / Countries, regions and cities / Country Information / Spain, Assessments, URL: <https://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 07/05/2018

⁶⁹ EIA, URL: <http://cambioclimatico.eia.es>, Date accessed: 07/05/2018

⁷⁰ El Ministerio de Agricultura, Alimentación y Medio Ambiente – CEDEX, 2013, La biodiversidad en la evaluación ambiental de infraestructuras de transporte en el contexto del cambio climático, URL: http://www.mapama.gob.es/es/cambio-climatico/publicaciones/documentos-de-interes/51-309-5-001%20A4-T117%20Febrero%202013_tcm30-178334.pdf, Date accessed: 15/05/2018

⁷¹ Climate-Adapt, Countries, regions and cities / Country Information / Spain, Engaging Stakeholders, URL: <https://climate-adapt.eea.europa.eu/countries-regions/countries/spain>, Date accessed: 08/05/2018

(e.g. LIFE-Act project⁷²) or by NGOs (e.g. WWF), which could be the seeds for enhanced cooperation and stakeholder involvement in the future.

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

A report implementation of the PNACC is published by the OECC every 3 years, the latest being the third assessment report from January 2014⁷³ (previous reports were published in 2011 and 2008). Progress with WP actions, results achieved, and an overall assessment of the WP are reported. Progress is presented per sector in a qualitative manner (e.g. activity in progress vs. finalised). Budget and actual expenditure are not reported.

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

Yes / No

Monitoring of adaptation across sectors is achieved through the PNACC progress reports mentioned in relation to Indicator 10a. The progress reports provide a descriptive account of implementation of the priorities defined in the WPs and in relation to a set of qualitative process indicators.

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

Yes / No

The PNACC progress reports provide an overview of implementation by the Spanish regions. Factsheets on the actions carried out at the regional level are included as Annexes. The reports are elaborated by the OECC, coordinated with the GTIA, adopted by the CCPCC and the CNC, and made publicly available on the OECC website.

The regional administrations provide their own regular reports on climate change activities, following a template, but there is no real integration of these reports into the PNACC

⁷² ACT, URL: <http://www.actlife.eu/EN/index.xhtml>, Date accessed: 07/05/2018; ACT, URL: <http://www.actlife.eu/EN/index.xhtml>, Date accessed: 07/05/2018; ACT, URL: <http://www.actlife.eu/EN/index.xhtml>, Date accessed: 07/05/2018

⁷³ MAPAMA, 2014, Plan Nacional de Adaptación al Cambio climático - Tercer Informe de Seguimiento, URL: http://www.mapama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/planificacion_seguimiento.aspx, Date accessed: 07/05/2018

progress reports. The adaptation platform AdapteCCa also has a specific section for regional information⁷⁴.

11. Evaluation

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

Yes / No

The PNACC progress reports are published every three years, most recently in 2014 (see indicator 10a). They have been used as an evaluation tool to review the WPs. Successive WPs with revised objectives have built upon these reports, the experience gathered and the growing engagement of specific stakeholders (e.g. the private sector). The OECC plans to review the PNACC in 2019-2020, after completing the current in-depth evaluation of the plan (2018-2019); reviews take place at the WP level.

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

Yes / No

The monitoring and review process described above involves stakeholders at two stages: in the progress reports, which are the basis for the review, and in consideration of the draft WPs. This monitoring and review process is complemented by feedback from, and agreement with, the PNACC coordination bodies (see Indicators 1a and 1b). The review of WPs also seeks convergence and alignment with the EU's adaptation initiatives.

⁷⁴ AdapteCCa, Visor de Escenarios de Cambio Climático, URL: <http://escenarios.adaptecca.es>, Date accessed : 07/05/2018

SUMMARY TABLE

Adaptation Preparedness Scoreboard		
No.	Indicator	Met?
Step A: Preparing the ground for adaptation		
1 <i>Coordination structure</i>		
1a	A central administration body officially in charge of adaptation policy making	<u>Yes</u> / No
1b	Horizontal (i.e. sectoral) coordination mechanisms exist within the governance system, with division of responsibilities	<u>Yes</u> / 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.	<u>Yes</u> / In progress / No
2 <i>Stakeholders' involvement in policy development</i>		
2a	A dedicated process is in place to facilitate stakeholders' involvement in the preparation of adaptation policies	<u>Yes</u> / No
2b	Transboundary cooperation is planned to address common challenges with relevant countries	<u>Yes</u> / No
Step B: Assessing risks and vulnerabilities to climate change		
3 <i>Current and projected climate change</i>		
3a	Observation systems are in place to monitor climate change, extreme climate events and their impacts	<u>Yes</u> / 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)	<u>Yes</u> / In progress / No
3c	Sound climate risks/vulnerability assessments for priority vulnerable sectors are undertaken to support adaptation decision making.	<u>Yes</u> / In progress / No
3d	Climate risks/vulnerability assessments take transboundary risks into account, when relevant	Yes / <u>In progress</u> / No
4 <i>Knowledge gaps</i>		
4a	Work is being carried out to identify, prioritise and address the knowledge gaps	<u>Yes</u> / In progress / No

Adaptation Preparedness Scoreboard		
No.	Indicator	Met?
5 <i>Knowledge transfer</i>		
5a	Adaptation relevant data and information is available to all stakeholders, including policy makers (e.g. through a dedicated website or other comparable means).	<u>Yes</u> / In progress / No
5b	Capacity building activities take place; education and training materials on climate change adaptation concepts and practices are available and disseminated	<u>Yes</u> / In progress / No
Step C: Identifying adaptation options		
6 <i>Identification of adaptation options</i>		
6a	Adaptation options address the sectoral risks identified in 3c, the geographical specificities identified in 3b and follow best practices in similar contexts	<u>Yes</u> / 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	<u>Yes</u> / No
6c	Mechanisms are in place to coordinate disaster risk management and climate change adaptation and to ensure coherence between the two policies	Yes / <u>In progress</u> / No
7 <i>Funding resources identified and allocated</i>		
7a	Funding is available to increase climate resilience in vulnerable sectors and for cross-cutting adaptation action	<u>Yes</u> / In Progress / No
Step D: Implementing adaptation action		
8 <i>Mainstreaming adaptation in planning processes</i>		
8a	Consideration of climate change adaptation has been included in the national frameworks for environmental impact assessments	<u>Yes</u> / No
8b	Prevention/preparedness strategies in place under national disaster risk management plans take into account climate change impacts and projections	Yes / <u>No</u>
8c	Key land use, spatial planning, urban planning and maritime spatial planning policies take into account the impacts of climate change	Yes / <u>No</u>
8d	National policy instruments promote adaptation at sectoral level, in line with national priorities and in areas	Yes / <u>In progress</u> / No

Adaptation Preparedness Scoreboard		
No.	Indicator	Met?
	where adaptation is mainstreamed in EU policies	
8e	Adaptation is mainstreamed in insurance or alternative policy instruments, where relevant, to provide incentives for investments in risk prevention	Yes / <u>No</u>
9 <i>Implementing adaptation</i>		
9a	Adaptation policies and measures are implemented, e.g. as defined in action plans or sectoral policy documents	Yes / <u>In progress</u> / No
9b	Cooperation mechanisms in place to foster and support adaptation at relevant scales (e.g. local, subnational)	<u>Yes</u> / 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	<u>Yes</u> / No
9d	There are processes for stakeholders' involvement in the implementation of adaptation policies and measures.	Yes / <u>No</u>
Step E: Monitoring and evaluation of adaptation activities		
10 <i>Monitoring and reporting</i>		
10a	NAS/NAP implementation is monitored and the results of the monitoring are disseminated	<u>Yes</u> / No
10b	The integration of climate change adaptation in sectoral policies is monitored and the results of the monitoring are disseminated	<u>Yes</u> / No
10c	Regional-, sub-national or local action is monitored and the results of the monitoring are disseminated	<u>Yes</u> / No
11 <i>Evaluation</i>		
11a	A periodic review of the national adaptation strategy and action plans is planned	<u>Yes</u> / No
11b	Stakeholders are involved in the assessment, evaluation and review of national adaptation policy	<u>Yes</u> / No