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**POCTEFA**  
**ECTAdapt**



# ECTAdapt Project

*Contribution to the adaptation of the Catalan Cross-Border Area to the expected effects of climate change*

*Project co-financed by the European Regional Development Fund (FEDER)  
Ce projet est cofinancé par le Fonds Européen de Développement Régional (FEDER)*

## **1. GLOBAL SCALE OF CLIMATE CHANGE**

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# 1. GLOBAL SCALE OF CLIMATE CHANGE

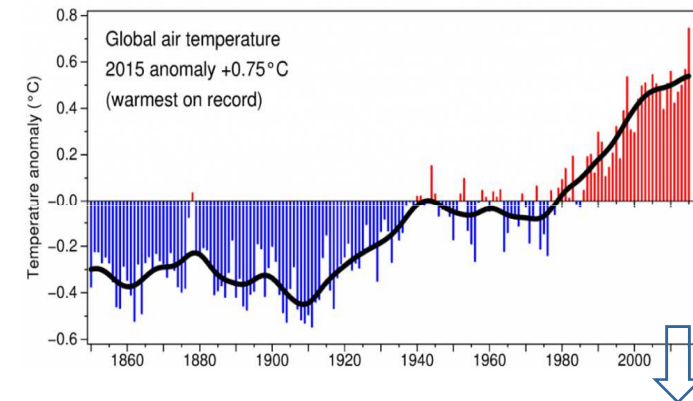
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# INTRODUCTION (PROBLEMS AND EVIDENCES)

## GLOBAL CLIMATE CHANGE IS EVIDENCE

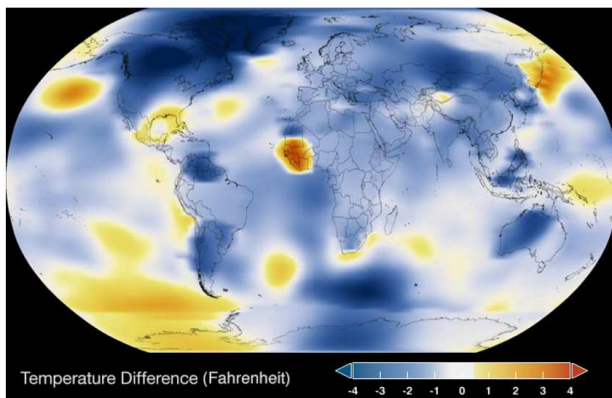
- Earth's climate has always been changing throughout its history (as the last major glaciation about 20,000 years ago).
- But in the recent decades the planet is having a **CLIMATE CHANGE** and an **ACCELERATED GLOBAL WARMING** due to **HUMAN ACTIVITY**.
- For the first time **SOCIETY** is the main cause of this change, altering their speed and intensity!!!



TIME SERIES: 1884 TO 2016

Data source: NASA/GISS  
Credit: NASA Scientific Visualization Studio

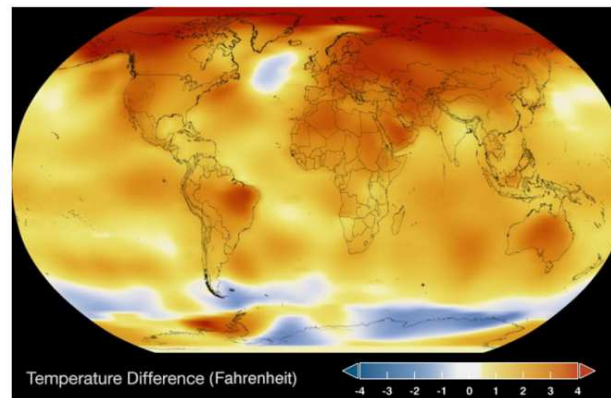
1884



TIME SERIES: 1884 TO 2016

Data source: NASA/GISS  
Credit: NASA Scientific Visualization Studio

2016



Evolution of the average temperature on Earth, expressed as anomaly compared to the reference period 1961-1990.

“Weather” is not the same as “climate”!!  
The **Mediterranean climate** is recognized as one of the most sensitive to climate disorders!!

# WHY IS THIS HAPPENING? (MAIN CAUSES OF CC)

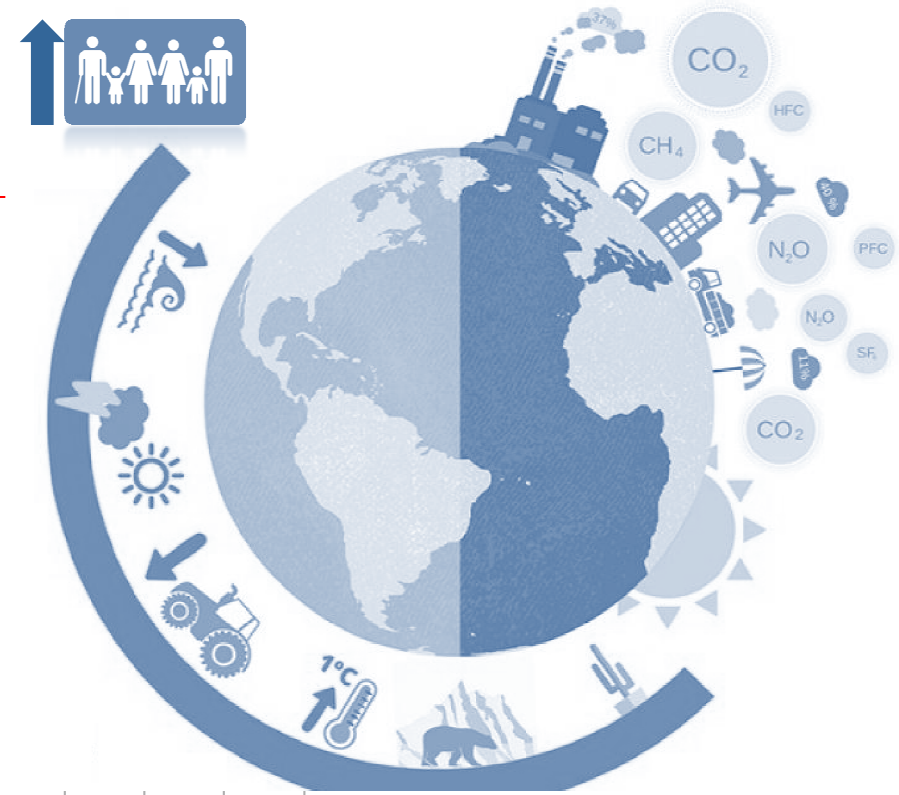
## In the last 30 years

- Increase of world population: **68%**
- Increase of energy consumption: **30%**
- Increase of greenhouse gases (GHG): **70%**

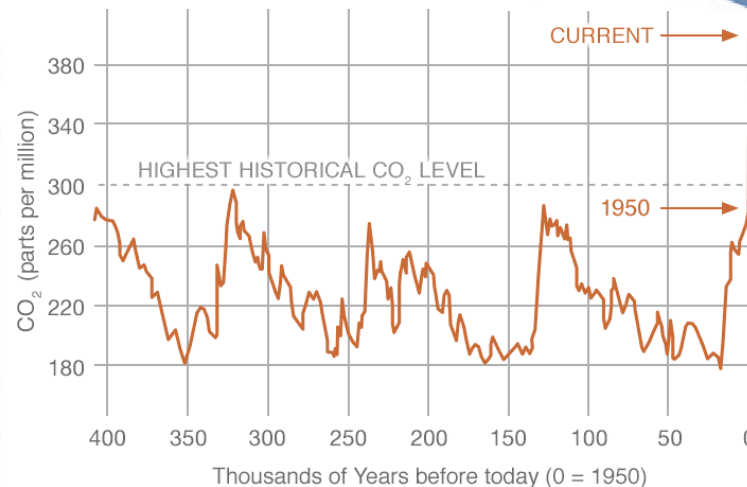
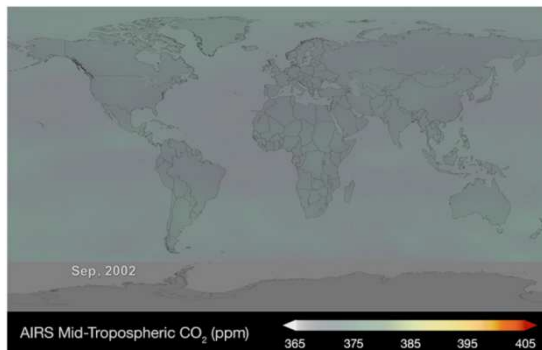


Increase of CO<sub>2</sub> equivalent concentration into the atmosphere around a **40%** since 1750 (the beginning of the industrial revolution)

In January 2017 the concentration is **405.92 ppm**

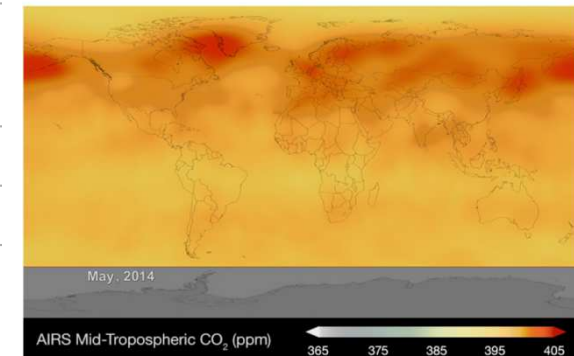


2002



Data source: Atmospheric Infrared Sounder (AIRS).  
Credit: NASA

2014



## 2. CLIMATE CHANGE IN CATALUNYA

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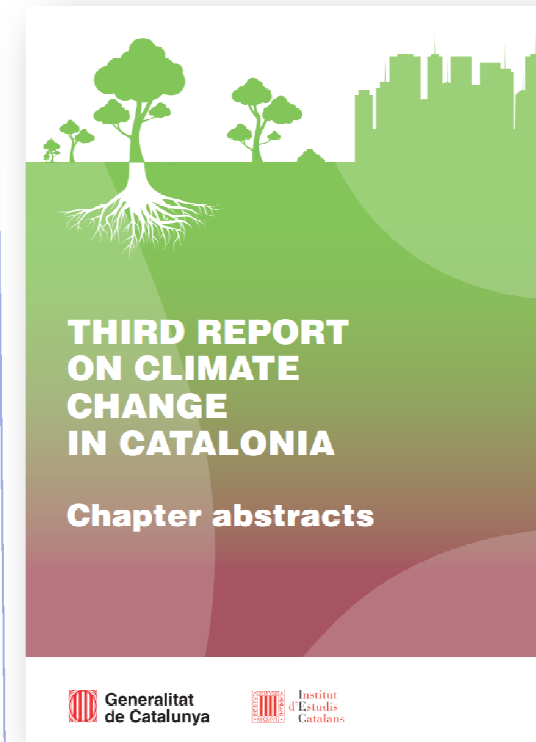


## LOCAL CLIMATE CHANGE IS EVIDENCE

- In Catalunya we have a technical document of reference that identifies and quantifies the impacts of climate change using the same projections and scenarios established by IPPC (Intergovernmental Panel on Climate Change - United Nations) with the collaboration of several experts:

### THIRD REPORT ON CLIMATE CHANGE IN CATALONIA

- This document is divided into four parts:
  1. **Scientific basis of climate change**
  2. **Natural systems**
  3. **Human systems**
  4. **Governance and management of climate change**



For your interest, it exists an abstract in English online:

[http://cads.gencat.cat/web/.content/Documents/Publicacions/tercer-informe-sobre-canvi-climatic-catalunya/Sintesis/CC\\_Sintesi\\_ANGLES\\_web.pdf](http://cads.gencat.cat/web/.content/Documents/Publicacions/tercer-informe-sobre-canvi-climatic-catalunya/Sintesis/CC_Sintesi_ANGLES_web.pdf)

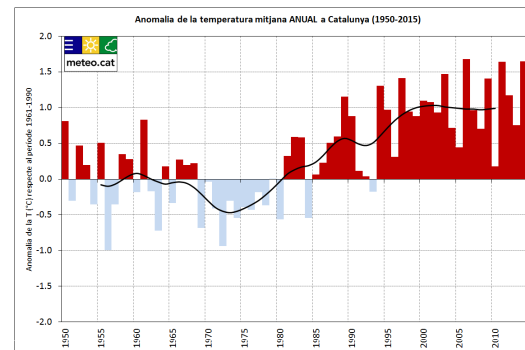
This Report has been promoted by:

- **CADS** (Consell assessor per al desenvolupament sostenible)
- **OCCC** (Oficina Catalana del Canvi Climàtic)
- **SMC** (Servei Meteorològic de Catalunya)
- **IEC** (Institut d'Estudis Catalans)

# THIRD REPORT ON CLIMATE CHANGE IN CATALONIA (SOME CONCLUSIONS)

## HEAT WAVES

9 of the 10 hottest years in history have occurred since 2000. In Catalunya the average annual temperature has increased by almost **1,5 °C** in the last 65 years.



Evolution of the average temperature in Catalunya since 1950, expressed as an anomaly compared to the period 1961-1990

## Predictions for 2050

- Catalonia will have the same  $T^a$  that has currently **Seville** (an increase of 1,4°C in the average  $T^a$  is expected)
- The maximum variation of  $T^a$  will take place in **summer** and in the **Pyrenees**.
- An increase of 20 - 30 **tropical nights** ( $T_n \geq 20^\circ \text{C}$ ) per year are expected, especially in the littoral and the pre-littoral.
- A decrease of 30 - 40 **frozen nights** ( $T_n \leq 0^\circ \text{C}$ ) per year are expected, especially in the Pyrenees.
- Increased of **extreme temperatures**, heat waves, tropical nights, and nights and days warmer.
- Increased in frequency and duration of **droughts**, especially in spring and summer.
- Greater frequency of **large forest fires**, as well as fires out summer or in areas where now are rare.
- Increase in **human mortality** (300 deaths per year at the present to 2.500). Mortality related to cardiovascular diseases, respiratory, mental and nervous system, diabetes, and renal and urinary system diseases.
- **Disease transmission extinct** (dengue, chikungunya and malaria).

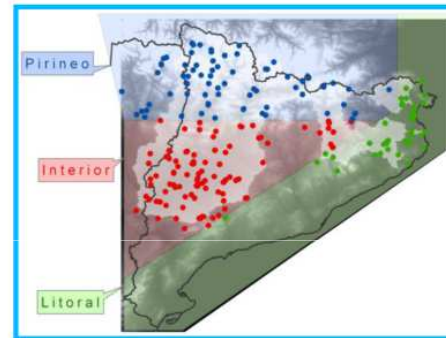
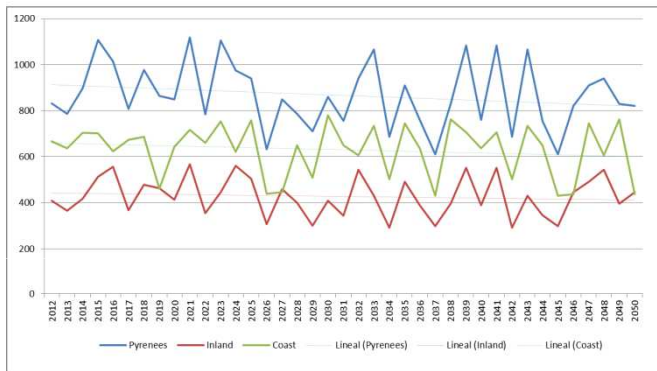


# THIRD REPORT ON CLIMATE CHANGE IN CATALONIA (SOME CONCLUSIONS)

## DROUGHTS AND TORRENTIAL RAINFALLS

A **reduction in precipitation** around **-8%** in all Catalunya and around the **-13%** in the Pyrenees (period 1959-2010) has been recorder.

Although these data are not statistically significant, **the trend is clear.**



	Pirineus	Interior	Litoral
Anual	-9.9	-7.7	-8.9
Hivern	-8.6	-5.3	-9.4
Primavera	-11.1	-2.2	-6.7
Estiu	-5.8	-9.2	-3.3
Tardor	-15.1	-14.3	-11.6

Reductions expected in precipitation

### Predictions for 2050

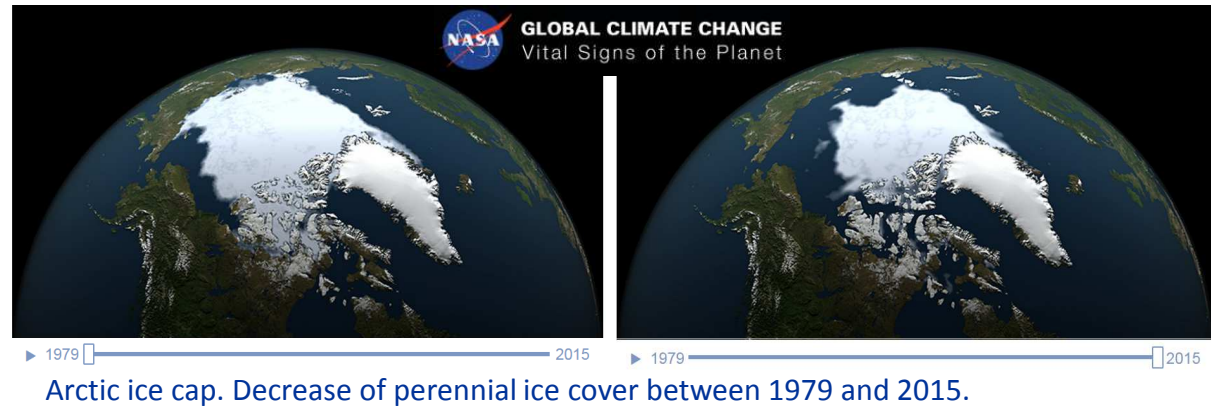
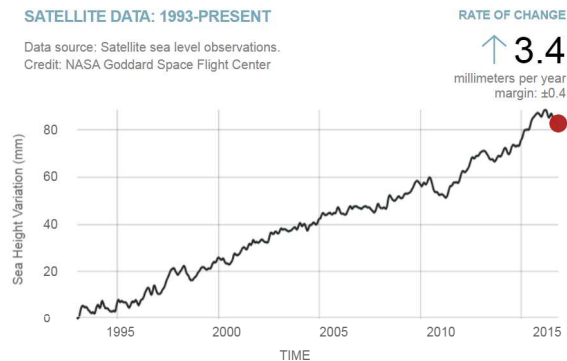
- Periods of drought more frequent and longer are expected, especially in summer, just as the torrential rainfalls (**abnormal distribution of rainfall**).
- Decrease in precipitation around **-10%** in spring, summer and autumn.
- Future scenario of **WATER SCARCITY**:
  - 9,4% in the Pyrenees
  - 18,2 % in the flat area interior
  - 22% in the littoral
- Increase in **evapotranspiration** around 13%.
- Significant increase of **flooding risk**.



# THIRD REPORT ON CLIMATE CHANGE IN CATALONIA (SOME CONCLUSIONS)

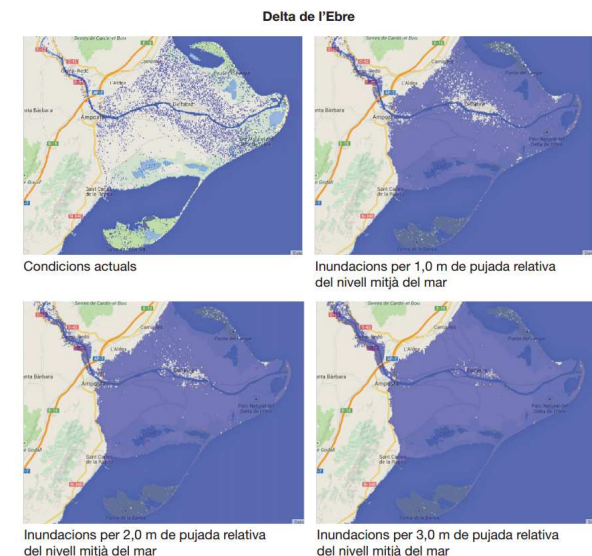
## SEA LEVEL RISE

Rising sea level is mainly due to two factors: 1) water melts at the poles and 2) the expansion of seawater as it warms (warming oceans and ocean acidification)



## Predictions for 2050

- A sea level rise between **1 and 3 m** are expected in Catalunya.  
Some consequences:
  - Significant losses in low-lying coastal areas (deltas, wetlands, lagoons, urban beaches, touristic areas, etc.)
  - Beach erosion and pests (jellyfish)
  - Flooding of coastal areas and sea storms (where are the most important density of population)
  - Loss of infrastructures (such as ports, roads, trains, urban areas, etc.)
  - Loss of biodiversity and resources (such as fishing, agriculture and tourism).
- Girona has around **59 km of beaches**, most with urban areas, seafront or port.



## DECREASED SNOW COVER AND CHANGES IN SNOWING PATTERNS

Every 10 years there is a decrease of **5 cm on accumulated snow**, and snow is melting earlier.

**There is no longer any visible glacier in Catalunya.**



Picture of the glacier Aneto (comparison 2009-2012)

### Predictions for 2050

- The projections point to a reduction in rainfall and snow for 2050, although trend is uncertain. Studies predict a scenario of **water scarcity** that will require measures to adapt to the new reality.
- Winter and **ski tourism** has an important vulnerability due to the **latitudinal position** of almost all **resorts** (no longer viable).

**THEN... WHAT COULD (SHOULD) WE DO?**

# 3. EUROPEAN FRAMEWORK ON MITIGATION AND ADAPTATION

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**Covenant of Mayors**  
for Climate & Energy

# THEN... WHAT COULD (SHOULD) WE DO?

## ACT = MITIGATION + ADAPTATION

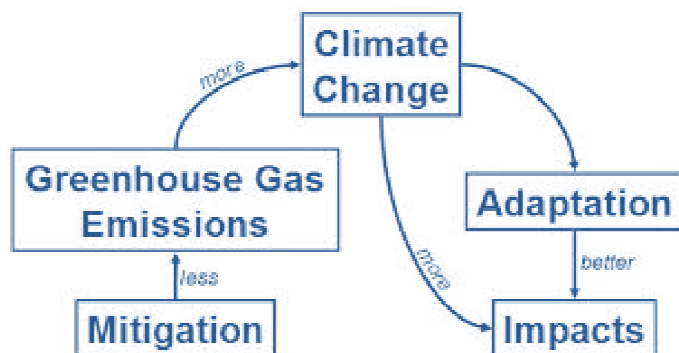


Climate change mitigation means:  
**reducing emissions of GREENHOUSE GASES (GHG)**, acting on the origin of the problem.



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Climate change adaptation means:  
**prevent, fight and be prepared for climate impacts** (droughts, torrential rainfalls, lack of snow, sea levels rise, heat waves...) **and its consequences** (forest fires, flood, water scarcity, salinity intrusion, allergies, epidemics...).  
How? Making the territory less vulnerable and **MORE RESILIENT**.



# COVENANT OF MAYORS FOR CLIMATE & ENERGY

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UNION EUROPEA  
UNION EUROPEENNE

City councils voluntary agreements for:



+



=



Covenant of Mayors  
for Climate & Energy



## SUSTAINABLE ENERGY (20/20/20)

commitment to:

- 20% reduce **CO<sub>2</sub> emissions** by 2020
- 20% increase in **energy efficiency**
- 20% increase of **renewable energy** sources in the energy mix



**PAES**

Action Plans for Sustainable Energy



Diputació de Girona



CILMA  
Consell d'iniciatives locals per al Medi Ambient  
de les comarques de Girona



## SUSTAINABLE ENERGY (40/30) & ADAPTATION

commitment to:

- 40% reduce **CO<sub>2</sub> emissions** by 2030 through energy efficiency and greater use of renewable sources
- **Adaptation** to climate change impacts



**PAESC**

Action Plans for Sustainable Energy and Climate

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POCTEFA  
ECTAdapt



UNION EUROPEA  
UNION EUROPEENNE

# COVENANT OF MAYORS FOR CLIMATE & ENERGY



The methodology established by the *Covenant of Mayors Office* for drafting **Action Plans for Sustainable Energy and Climate** is based in:

CLIMATE IMPACTS AND RISKS	SECTORS
<p><i>Vulnerability analysis</i></p> <ul style="list-style-type: none"> <li>Heat waves (extreme heat)</li> <li>Cold waves (extreme cold)</li> <li>Extreme precipitation</li> <li>Flooding</li> <li>Sea level rise</li> <li>Droughts and water scarcity</li> <li>Storms</li> <li>Landslides</li> <li>Forest fires</li> <li>[Others: Lack of snow]</li> </ul>	<p><i>Action planning</i></p> <ul style="list-style-type: none"> <li>Buildings</li> <li>Transport</li> <li>Energy</li> <li>Water</li> <li>Waste</li> <li>Urban planning</li> <li>Agriculture and forestry</li> <li>Environment and biodiversity</li> <li>Health</li> <li>Civil defense and emergency</li> <li>Tourism</li> <li>[Others: Coast and littoral systems]</li> </ul>



# 4. ECTADAPT PROJECT

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Diputació de Girona



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ECTAdapt is a **POCTEFA project** (NTERREG – European Program for **cooperation** between Espanya-França-Andorra )

## ECTAdapt

### CONTRIBUTION TO THE ADAPTATION OF THE CATALAN CROSS-BORDER AREA TO THE EXPECTED EFFECTS OF CLIMATE CHANGE

#### TARGETS

Develop a joint policy on adaptation to climate change in the whole Catalan Cross-Border Area (Catalunya and France sides) through 3 working lines:



Diputació de Girona

1. Analyze the vulnerability of the territory.



2. Sensibilisation of the population and public - private stakeholders involved.



3. Planning and implementation of local Action Plans for Sustainable Energy and Climate.

## TERRITORY

The Catalan Cross-Border Area (ECT) is the territory integrated by the province of Girona (**Catalunya**) and the Département des Pyrénées-Orientales (**France**), representing an area about 1.3 million inhabitants, with a **similar climate and socioeconomic conditions** (economy based in agriculture and tourism)

## CALENDAR

3 years, from 01/05/2016 to 30/04/2019

## BUDGET

ECTAdapt project has a total cost of 1.031.678,00 €, 65% of which is funded by FEDER (European Regional Development Fund)



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**THANK YOU VERY MUCH!**  
**MOLTES GRÀCIES!**  
**MERCI BEAUCOUP!**

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*Projecte cofinançat pel Fons Europeu de Desenvolupament Regional (FEDER)  
Ce projet est cofinancé par le Fonds Européen de Développement Régional (FEDER)*

*Foto: Maria Geli Planagumà. Arxiu d'imatges PTCBG*

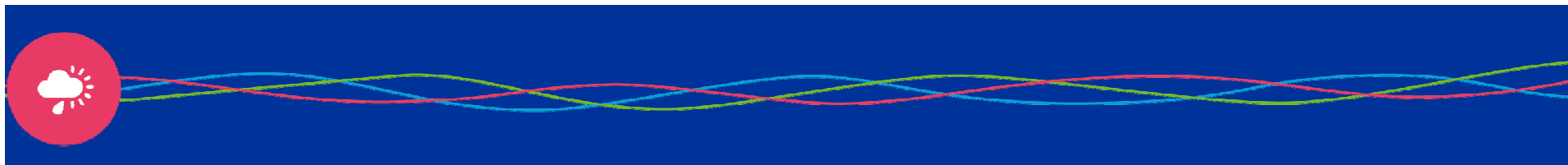


**Diputació de Girona**



**CILMA**

Conseil d'Initiatives Locales per al Medi Ambient  
de les comarques de Girona



El projecte està cofinançat al 65% pel Fons Europeu de Desenvolupament Regional (FEDER) a través del Programa Interreg V-A España-Francia-Andorra (**POCTEFA 2014-2020**). L'objectiu del POCTEFA és reforçar la integració econòmica i social de la zona transfronterera Espanya-França-Andorra. La seva ajuda es centra en el desenvolupament d'activitats econòmiques, socials i ambientals transfrontereres mitjançant estratègies conjuntes a favor del desenvolupament territorial sostenible.

*Le projet a été cofinancé à hauteur de 65% par le Fonds Européen de Développement Régional (FEDER) dans le cadre du Programme Interreg V-A Espagne-France-Andorre (**POCTEFA 2014-2020**). L'objectif du POCTEFA est de renforcer l'intégration économique et sociale de l'espace frontalier Espagne-France-Andorre. Son aide est concentrée sur le développement d'activités économiques, sociales et environnementales transfrontalières par le biais de stratégies conjointes qui favorisent le développement durable du territoire.*

