



Transportation- Architecture and Urban Planning - Water- Environment- Renewable energy



Climate Change: Actions and Experiences

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1. **The importance of Climate Change**
2. **Consequences in Spain**
3. **Spain and the Kyoto Protocol**
4. **Adopted strategies**
5. **Engineering firms' role**



1. The importance of Climate Change



According to a recent survey carried out by Elcano Institute, Climate Change is the fifth main concern in Spain (July 08):

1. Oil price increase
2. Food price increase
3. World Economic Crisis
4. Terrorism
5. Climate change
6. Immigration



Not everybody shares this concern. Bjorn Lomborg, the “Skeptical Environmentalist” has many supporters, mainly after his latest publication “Cool it”, in which he questions if Kyoto offers “the best value for money”

Source: www.realinstitutoelcano.org



2. Consequences in Spain



Spain is located in an area particularly vulnerable to Climate Change, in which the consequences will be:

- Decrease of water resources
- Coastline regression
- Loss of biodiversity and natural ecosystems
- Increase of soil erosion





3. Spain and the Kyoto Protocol



Spain has ratified the Kyoto Protocol, which implies a commitment to increase GHE emissions “only” by 15% in the period 2008-2015, compared to the levels of 1990.

Actually GHE emissions in 2007 were 52% higher than in 1990, having risen every year since then, except for 2006 where they dropped 1.7%. In 2007 they increased again in 1.8% (bad hydraulic year).



In this situation, the goal of the Spanish government is to:

- Stabilize GHE emissions in 37% (52% → 37%)
- Promote carbon drains to decrease emissions by 2%
- Use flexibility mechanisms to reduce emission by 20%



$$52\% \rightarrow 37 - 2 - 20 = 15\%$$



4. Adopted strategies



The Spanish government has given a firm response to address this situation by creating the Spanish Office of Climate Change, depending from the Ministry of Environment. The main actions have been:

➤ **National Allowance Plan 2008 - 2012**

- Allocation of limits of CO₂ emissions (in TN) to more than 1,000 types of facilities.
- Launching emissions trading.
- Creation and operation of RENADE (National Register of Emission Rights) reflecting the transactions that take place.

➤ **Spanish Climate Change and Clean Energy Strategy 2007-2012-2020**

- Definition of 175 measures and 75 indicators to monitor climate change evolution.
- Transport: preference to railways, introducing a tax for polluting vehicles, etc.
- Energy: ensuring that 20% of the energy production by 2020 comes from renewable sources, creating the energy efficiency label for buildings, etc.





➤ **National Climate Change Adaptation plan**

- It tackles not only “mitigation” but also “adaptation” to Climate Change.
- Analysis by sector (water resources, coastal areas, biodiversity) and by activity (scenario generation, vulnerability analysis, impact evaluation, identification of means of adaptation, communication and information).

➤ **International Development**

- Spain already allocates 0.5% of GDP to International Development and it is expected to reach the 0.7% by 2020.
- Promotion of CDM projects together with Spanish investors.

➤ **R&D&I**

- National Plan for Scientific Research, Development and Technological Innovation. 2008-2012. (This plan is funding the ASDECO project for the management of brine discharge in desalination plants)
- VII European Commission Framework Program (2007-2013). Several ongoing R&D projects.



5. Engineering firms' role



Climate Change has not promoted a great demand for specific engineering services in Spain.

So far it has mobilized management consulting companies to work on: education, communication, scenario generation, strategy formulation, emissions trading, carbon drains, etc.

(i.e: Supra-municipal entities and Climate Change, Tecnomia Project)

Climate Change has been far more relevant in promoting “traditional” consulting engineering services, mainly in the following sectors:

- Water
- Forest fires
- Biodiversity
- Clean energies
- Solid waste management
- Etc.



The legal framework in Europe is the Water Framework Directive (WFD) which has promoted the study of water by introducing concepts that were unusual in this sector before the Directive entered into force, such as:

- The River Basin as an independent authority
- Quality and Quantity
- Water not only as a resource but also as an ecosystem
- Cost recovery
- Public participation

Areas in which Spanish engineering are highly qualified:

- IMPRESS, for the identification of pressures and impacts.
- Water planning
- River Basin Management plans
- Environmental flows studies
- Drought plans
- Public participation process
- Flood prevention plans
- River and riverbank restoration projects



TYPESA Group's experience:

- IMPRESS projects in Jucar River (2001-2005 and 2008)
- Guadalquivir river planning study (2005)
- Jucar river basin management plan (2008)
- Civil society participation in Albufera (2005-2006) and Segura river (2008)
- Environmental flow of the Catalan Water Agency (2005-2006) and of the Jucar River authority (2008)
- Surface water monitoring networks: Tajo and Guadalquivir rivers (since 2001)
- Groundwater monitoring networks: Ebro, Tajo, Guadiana and Guadalquivir rivers (since 2001)
- Duero river Drought Plan (2005-2006)
- Implementation of the restoration strategy in Jucar river (2008)



The Mediterranean region suffers severely from forest fires every summer and Spain is specially vulnerable, although 2008 has been a particularly good year.

It is a bad policy to pay greater attention to EXTINCTION than to PREVENTION.



In Tecnomia we have a highly specialized team of experts in forest fire prevention that have carried out the following projects in the past 5 years:

➤ Madrid Region Forest Fire Prevention Master Plan (2000-2001. Update in 2008)

- Preparation of a comprehensive database of the roads, forest fuels, climate data, existing fire defense infrastructure, water sources, etc. organized by regions
- Proposal for the acquisition of the material and protocols required in case of fire.





- Forest fuels in Tenerife Island (2001-2002).
 - Identification and description of existing forest fuels on the island, developing a specific mapping to identify the fire risk areas.



- WARM project - Wild Land Urban Area Risk Management (2002-2003)
 - Implemented by a JV of firms and high-tech research centers in Spain, France, Italy, Greece and the Czech Republic and managed and coordinated by TYPESA.
 - Research on the best practices for forest fire risk management in the wild land-urban area



- WARM application to Spain (2005-2006).
 - On the mandate of the Ministry of Environment, WARM conclusions were applied to the Spanish case, producing a guide for forest fire prevention in the urban forest interface.



➤ Other broader European R&D initiatives: SCIER, ORCHESTRA

- SCIER - Sensor and Computing Infrastructure for Environmental Risks (2006-2008). FP6
For the design, development and implementation of an integrated sensor, network and IT system for the prediction, detection and management of forest fires.
- ORCHESTRA - Open Architecture and Spatial Data Infrastructure for Risks Management (2001-2007).
15 companies from 8 countries improving disaster risk management: earthquakes, fires, floods...



Conclusion



Consulting Engineers are going through rough times. We are seen by society as environmental harassers, but our services are important, essential, in many countries.

We must put a stronger effort in showing our key role in improving the world we live in.

