

*Executive summary*

# CLIMATE CHANGE IN EUROPE

Perception and impacts

# 1950-2050



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# CLIMATE CHANGE IN EUROPE: PERCEPTION AND IMPACTS 1950 - 2050

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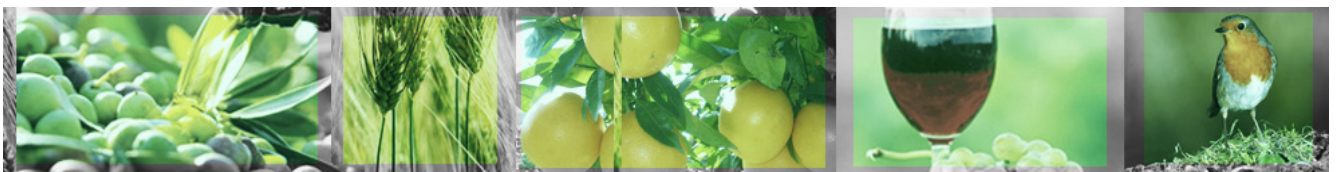
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## PROLOGUE

**In the 1970s, climate change was presented as a threat for future generations. Today, that is no longer the case. We are those future generations and, like us, climate change is real.**

However, the repercussions of climate change often appear distant and unconnected to us just like the polar bears or the drifting icebergs that are disappearing. Distance, both emotional and especially geographical, seems to desensitise us, as individuals and a community, from one of the greatest threats confronting humanity. Slowing down climate change is a challenge that will determine our destiny and favour either a civilised survival or a return to barbarism.

After three decades of all kinds of promises, today we know that a technological miracle cannot save us; we must, in unison, greatly reduce the level of greenhouse gas emissions in order to impede global warming. We therefore need to tackle, without delay, the energy transition of our societies to an energy model based on conservation, efficiency and renewable energies as well as binding commitments from all governments. However, with a fierce battle, on one hand, between countries holding divergent interests and burdens in relation to global warming and, on the other hand, the incredible inertia imposed by fossil fuel oligopolies, we require science, awareness and public pressure united as one force to create this transition.

With this publication, we wish to bring climate change closer to the European public and to contribute in the dissemination of the consequences it has already caused, is causing and will continue causing in our daily lives, environment and weather. Our goal is simple and, at the same time, complicated due to the paucity of available data on our immediate surroundings. Climate change must be brought into our spatial, temporal and emotional proximity in order to change our evasive and distant view, and to facilitate active public involvement in this fight for mitigation and adaptation.

It is hoped that, with this text, anyone could easily and intuitively understand how climate

change is affecting their land, the surroundings in which they dwell, the beaches, agriculture, the economy and, ultimately, their own well-being. Climate change is known to provoke actual and deep transformations in the majority of phenomena on which life depends: temperatures, precipitation, hydrology, amongst others. Phenomena that then radically affect human activities and thus, the economy, which itself depends on ecosystems for its sustainable endurance and maintenance.

What would happen if Andalusia ceased producing olive oil? Can you imagine a Valencia without oranges? Or a wine-less La Rioja? All these crops are today at risk because of global warming, which in a few decades will cause their prime production area to shift to central and northern Europe. What will then happen to culture and employment in these regions?

To find out more on the impacts of climate change, we will progress through two stages. Firstly, we will concentrate on our recent past and introduce the effects of global warming since 1950 until now. We will observe the changes that have already occurred during this period and, in particular, those changes that many of our elders have experienced and felt first-hand. As the author of the study notes, "climate change is not just only scientific fact and mathematical models; it is a process that has left its mark on the lives of many people who have seen how the landscapes of their childhood have been completely transformed." From this personal perspective, climate change is connected emotionally to the experience of our mothers, fathers, grandmothers and grandfathers.

Secondly, we will glance towards the future, with 2050 on the horizon: chosen in international climate change negotiations to be the year for achieving a world without carbon emissions. This projection into the future is an invitation to imagine what awaits us if temperatures rise 2°C or 4°C. Our well-being, independence and opportunities will be increasingly conditional on the changes of the climate because it is obviously not the same to live in a Mediterranean climate as it is in a semi-arid one. Nor is it the same to enjoy life under a stable and predictable climate as it is under one permeated with uncertainty.

In this respect, international scientists have drawn a clear line in the sand. Whereas below an average temperature rise of 2°C still allows us to broadly predict the impacts of climate change, beyond that threshold, we enter unknown and increasingly dangerous territory. Ecosystems do not respond in proportion to the increase in temperatures, and above certain critical limits (2°C, in this case), the changes become abrupt and irreversible. The precipice between order and chaos, a dignified life and an uncertain life, is called 2°C.

Through this double perspective, both retrospective and prospective, this study is an invitation to shorten the emotional distance that we maintain with climate change. It is an invitation to see climate change as it truly is: a palpable reality for those walking, and yet to walk, on Earth. It is also an invitation to not become mired in lamentations: we are fellow participants in this situation, for which we are responsible; however, without any doubt, the most important thing is that we are also part of the solution.

For this reason, this study constitutes part of a much wider campaign by the European Greens as the December 2015 Climate Change Summit, COP21 in Paris, approaches. The campaign is

not only highlighting the principal consequences of global warming, but will also be directed towards:

1. Lobbying and working for a post-Kyoto agreement that is equal to the challenge posed by climate change.
2. Supporting and showcasing the public's and institutions' already working alternatives for a fair, sustainable and democratic energy transition.

Further to raising awareness on the magnitude of the problem, we must be conscious of our ability to take another path on our unique history for the construction of a united and sustainable society. And only well-informed and empowered citizens can achieve this. We hope that this publication becomes another stepping stone down this path.

**Florent Marcellesi, spokesperson for EQUO in the European Parliament.  
Brussels, January 2015**



# 1 EXECUTIVE SUMMARY

Climate change is perhaps the greatest challenge that humanity has ever faced. This phenomenon, as pointed out by the international scientific community, has been caused by human activities. It demonstrates that the current model of production, consumption and transportation, which is based on the large-scale burning of fossil fuels, has precipitated global warming because of the tremendous amount of greenhouse gases (GHG) emitted into the atmosphere.

Society and the environment have been seriously affected by climate change. Continuing the current trend of GHG emissions will mean that temperature rises will be greater with the effects being worse, and increasingly so if we persist in such emissions. The solution is to urgently replace the current energy model with a more sustainable template in line with the limits of our planet. Time is of the essence.

We have prepared this report entitled: “**Climate Change in Europe: Perceptions and Impacts. 1950-2050**” as a summary which gathers the most relevant consequences observed between 1950 and today, along with the foreseeable ramifications for the immediate future.

This report aspires to allow each reader to understand climate change through daily examples expressed in a simple and accessible manner. Those examples will present to our minds the experiences lived through by our grandfathers and grandmothers, or mothers and fathers, and through which our sons and daughters will live. The intention is to make the reader understand what climate change has been like and how the population and its surroundings will be affected.

The document is divided into three parts: the first section explains what is climate change and the scientific basis for understanding this phenomenon; the second part describes the impacts observed in Europe between 1950 and 2015, ending with a look ahead for the 2015-2050 period; the final part is dedicated to the particular case of Spain.

This report, based on a myriad of articles, journals and conference proceedings, attempts to be a practical tool for a public, worried about this topic, as well as policy makers, journalists and teachers.

Today, no doubt remains; climate change has already produced an increase in the average temperature of the planet, at the same rate as

greenhouse gas concentrations accumulate in the atmosphere. Since 1950, Europe has seen hundreds of its repercussions and changes: the temperature rise that has caused the latest decades to be the hottest in history, changes in precipitation, an increased number of natural disasters, effects on the environment and on different sectors of the economy (especially agriculture and tourism, which has a domino effect on the rest of the economy), and changes even in the distribution of mortalities during heat waves.

In a few years, the rise in temperatures will intensify in the higher latitudes. Inner cities will feel hotter and more torrid during the summer months, especially at night, thus causing great problems in sleep, which in turn will have negative effects on the well-being of the population and provoke sensations of fatigue, thereby inducing health problems.

In southern Europe, and in Spain as a particular case, some of the worst consequences of climate change are expected, such as significant changes in the water balance, the disappearance of species or transformations in rural areas. This will entail not only damage to nature but also to diverse economic sectors and their products. Such products that are today the calling cards of various regions (wine, oranges, oil, etc.) could eventually vanish.

The daily lives of European citizens will also change. Just as many people since 1950 have lived through changes in the climate, from 2015 to 2050, these changes will continue happening but more acutely. This will completely transform many areas that we know today and which will disappear in a matter of years under the current rate of emissions.

There will not be sufficient time for animal species to migrate or, along with plant species, to adapt because of the speed of changes

being recorded in the climate; thus, many of them will perish. In addition, such species are being affected by the arrival of new invading species, in many cases from tropical climates, thus reducing the native flora and fauna and impoverishing the biodiversity of the areas.

Continental aquatic ecosystems and coastal areas will suffer the effects more intensely, spelling the end for many such places that are condemned to disappear. Similarly, forests are facing an increasing number of droughts and fires, while high mountain zones in practically all areas of Europe could be clear of snow and glaciers.

Climate change, which affects the whole planet, will become one of the **worst environmental disasters in human history**. Therefore, it is indispensable that we undertake, as soon as possible, the measures and policies that will reduce emissions and abate the accumulation of greenhouse gases in the atmosphere so as to avoid, as far as possible, all these consequences.

**The scientific community fixed the critical threshold as a maximum increase of 2°C but the temperature continues rising every year**

If we do not commence these measures soon, we will arrive at the point of no return, where, even if emissions were decreased to almost nil, the impacts would be irreversible and of an unforeseeable and incalculable magnitude. In reality, the scientific community fixed the critical threshold as a maximum increase of 2°C but the temperature continues rising every year and each one is warmer than the last. In other words, the countdown has already

begun.

Because of its impacts on the daily lives of everyone and on the economy of every region, combating climate change must be the priority of all governments and citizens. It requires the greatest urgency and the utmost commitment from all politicians, businesses, societies and citizens.

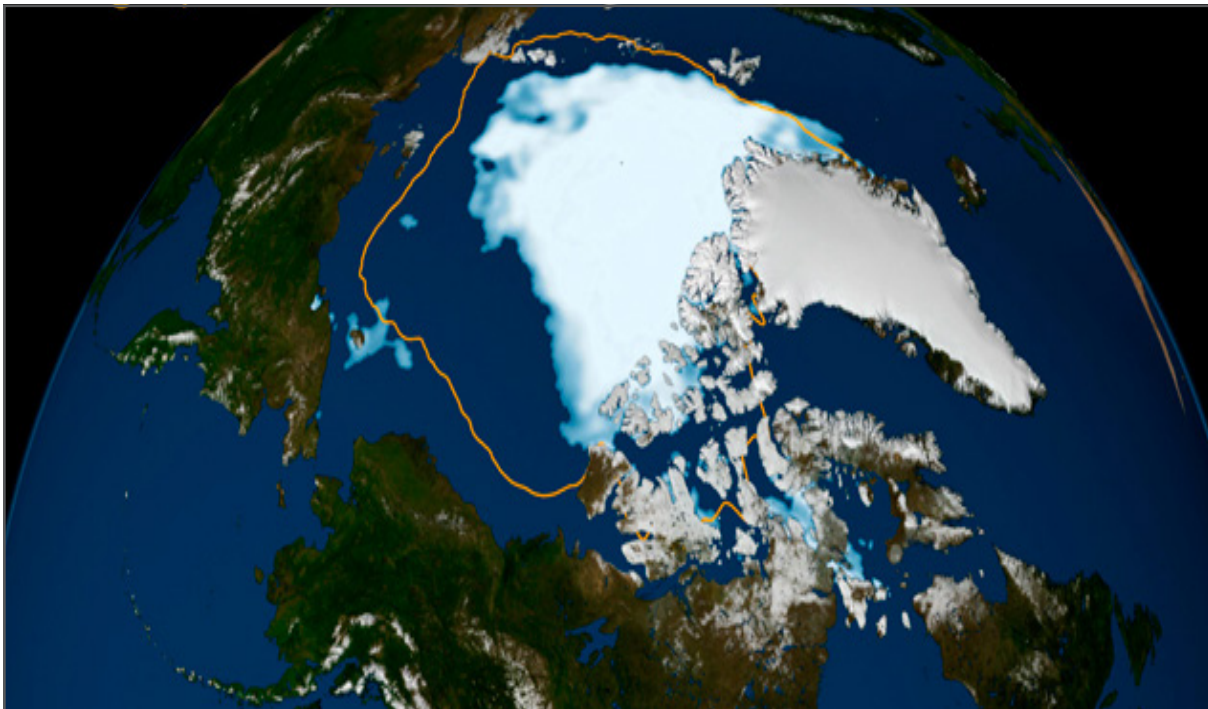
Consequently, changing the current production and consumption model, especially regarding energy and food, is now the gauntlet we must run, yet, it is also the best and only solution to slow down climate change and to safeguard the future for the generations of today and tomorrow as well as for the planet.

On that basis, the present work intends to be of use to public policy makers so that they can see the urgent need to take realistic and brave decisions, both at the 2015 Climate Summit in Paris and at every institutional level where they are positioned. Likewise, this report wishes to open the eyes of European citizens to the problems and effects of climate change and make them aware of its consequences and also that everyone has a part to play in the solution.

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*Photo: Satellite data reveal how the new record low Arctic sea ice extent, from Sept. 16, 2012, compares to the average minimum extent over the past 30 years (in orange). Source: NASA.*



## APPENDIX

### Switching from impotency to collective enthusiasm: how to speak about climate change?

By Alba Martínez del Campo

Desde que hace 30 años empezáramos a oír hablar de cambio climático, la mayor parte de las noticias que hemos escuchado sobre el tema son chungas o directamente deprimentes. Esto ha generado en la mayor parte de la ciudadanía un velo invisible entre la información que recibe, ya de por sí escasa para la gravedad del asunto, y el resto de su vida.

Over the 30 years since we started hearing about climate change, the vast majority of the news that we hear, read or see on this subject has been nonsense or downright depressing. This has brought down, on a large part of people, an invisible veil, separating the information received, which is scarce despite its gravity, from the rest of the person's life.

We live aloof of climate change until it hits us with a cyclone or drought. When we do finally look at it head on, it seems such an enormous challenge that, in comparison, we feel little more than insects. The diminutive individual opposite the colossus; feeling such impotence we resort to our emotional armour.

Emotional resistance to climate change is an understandable and widespread phenomenon. However, those who are responsible for teaching and informing have reflected little on this. This resistance represents one of the main handicaps at a time when the public is looking at itself as a component in the solution and is getting involved in the strategies and policies required to stop climate change.





Can we change this? Is it possible to talk about climate change in such a way that people do not become depressed, but rather join in or lead the necessary changes? Have journalists considered that these questions can convey climate change? What about the organisations trying to raise awareness?

In this brief appendix we propose a practical approach to the topic, borrowing the lessons gleaned from a workshop held in Madrid in December 2014. In attendance were various environmental organisations, journalists, politicians and experts in communication and climate change (Platform for a New Energy Model, Ecologists in Action, Ecoooo, Biodiversity Foundation and ElDiario.es). PHOTO

Before coming to the emotional barriers of the public, it would be appropriate to place ourselves next to the general media because this is the first great battlefield. Information on climate change has to negotiate its first obstacle, which is getting onto the news agenda, where it competes with hundreds of more striking and/or urgent subjects for a finite amount of space. Leaving aside the different editorial perspectives and the dependence of many media outlets on advertisements from fossil fuel energy companies, banks or construction companies, as is the case for Spain, let us focus on the section chief because very often it is up to that person to decide on what is worth divulging.

News on climate change or the eviction of an 87-year-old woman? Climate change or the banking executives' credit card scandal? Or healthcare apartheid? Or the latest political corruption case? *Day after day, the space left for climate change is derisory.*

However, some information does manage to fit into the tight squeeze. The journalist is then faced with the following problem: the international scientific community spent years debating climate change and has, today, reached a united stance thanks to the UN Intergovernmental Panel on Climate Change; nevertheless, the intense denial echoed in so-called scientific studies funded by oil companies has left an imprint on public opinion. Many journalists, holding information clearly linking an event with climate change, are reluctant to state that it has been caused by such a source. And facing this doubt, they do not connect the cause with the effect but



simply speak of the effect, for fear of putting their foot in their mouth. This, let's call it, excess of prudence does not help the public to understand the problem.

We must remember at this point that the scientific community is and has been cautious and they work on the principle of prudence. Based on this wariness, the latest IPCC reports have presented a consensus in the analysis on the consequences of greenhouse gases and the urgency for radically decreasing those emissions.

Climate change is talked about on the publication day of an important report and when there is an explosive cyclogenesis or excessive flooding. We alternate between silence and disaster, reproducing time and time again a communication pattern that is as depressing as it is ineffective.

Journalists need to dispel the fear of criticism from deniers and, in particular, to educate and inform themselves. They need certainty. For this, the numerous organisations working on the coverage of climate change must provide clear, reliable, well-founded information that can be attractively presented.

As we have seen in this report, climate change is not an esoteric-mathematical variable; it is a phenomenon affecting everyone's daily life. If we want to tear down the constructed emotional barriers, we must talk less in numbers and impart the human stories dwelling behind.

Francisco Heras, researcher and coordinator of the Education and Cooperation Department at the Spanish National Centre for Environmental Education, has researched this topic in depth. We recommend reading his research: *La sociedad ante el cambio climático. Conocimientos, valoraciones y comportamientos en la población española (2011)*. [Society facing climate change: knowledge, appreciation and behaviour of the Spanish populace]. Below is a brief summary published in the journal "Razón y Palabra", in which Heras presents a tapestry of climate change iconography. It seems very appropriate because it supports the thesis of informational distancing of the problem which reinforces emotional distance.

Common iconography of climate change: A polar bear on a small ice float, images demonstrating the melting (of ice, of the planet); scenes of fissured and dried lands; diagrams explaining the greenhouse effect, the planet in flames, heated by an enormous match, or cooked in a frying pan; pictures of floods; satellite images of hurricanes; and billowing industrial smokestacks.

They analysed 100 images of climate change and discovered that only two of them had "solutions" as their main purpose. Another two contained express calls for responsible action; the rest were directed towards the negative side of climate change. Obviously, if we seek to involve the population in the solutions, we have to change this iconography.

### **Recommendations proposed by Francisco Heras:**

- 1. Inform on starting points from a social and independent perspective.**
- 2. Avoid encapsulating climate change as a "techno-scientific issue".**

**3. Transmit feelings of relevance and self-efficacy.**

**4. Revisit the images for articles.**

**5. Promote continuous training for journalists.**

**6. Solutions can be and must be news.**

“The expression ‘bad news sells better than good news’ has become a mantra. But, aside from clichés, the media will also report on solutions, provided that the subject matter is interesting and provides originality (Futerra, 2006). Everything seems indicate that, in the coming years, the fight against climate change (in both its mitigation and adaptation aspects) will increasingly move towards tangible measures that will greatly affect our life styles. One of the greatest challenges for media companies and professionals will be to present these measures in an understandable manner, from an independent, critical and responsible viewpoint.... It will be necessary to take into account possible biases in the perception of climate change” (Heras, 2008).

In the following section, we offer some of the recommendations, from the work groups at the mentioned workshop, on ways to communicate about climate change. The following are proposals for improving communication on climate change along with some possible communication activities. We hope they will be of use.

### **GROUP 1**

Draw a map of the impacts that climate change has on health, this will illustrate how climate change will affect the different social classes.

Produce a regional/county map of the alternatives.

Spread information that changing routines and energy habits to more sustainable forms produce fulfilment. Show that being consistent creates happiness.

### **GROUP 2**

Spur social discussion on the relationship between technology and society.

Improve individual actions that are directed towards solutions and give them a collective feeling.

Approach problems through real cases involving people.

Link climate change solutions to economic benefits: savings, employment, etc.

Change technical language into ideas that are easily understood by people, and spread them within ordinary conceptual frameworks.



Rediscover the root causes, rediscover the direct connection to nature.

### GROUP 3

Produce a television series with climate change as the backdrop.

Inform on the real, tangible effects on a personal basis.

Always connect the causes and consequences when informing on catastrophes, etc.

Provide journalists and the media with bite-size pieces of information that is reliable and in an attractive format (infographics, videos, report summaries, etc.).

Talk about local animal species and how they will be affected by climate change (e.g. the midwife toad).

### GROUP 4

Describe the implications climate change has on the economy.

Positive aspect: prioritise the habits and activities of the model change

Create a sustainable narrative.

Personalise the consequences of climate change.

**[Structure of the workshop:** *The first part of the workshop was dedicated to an explanation of its contents. After JV Barcia (Ecoooo) had made the introduction to the workshop, Cristina Rois (Ecologists in Action and Platform for a New Energy Model) began explaining what is climate change, its principal repercussions observed to date and described some of the possible scenarios for the future. Subsequently, Domingo Jiménez Beltrán (Renewable Energies Foundation) provided an overview of the new European Commission, whose stance on the climate challenges is much less committed than previous commissions, as well as the challenges for the upcoming Climate Summit (COP21). Cristina Narbona (Spanish Socialists' Party, PSOE) drew attention to the fact that there is an increasing number of reports on the risks of investing in the obsolete fossil fuel-burning model and the need to transform the energy model. Paco Heras (Spanish National Centre for Environmental Education) focused his speech on a study, from 2013, on Spanish perceptions of climate change. Completing the first part of the workshop the journalist, Andrés Gil (ElDiario.es), explained the difficulties faced by the media in including climate change onto the media's agenda.*



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