



WATER SCARCITY AND DROUGHTS IN THE IBERIAN PENINSULA

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Climate change estimations show a challenging future for European water management systems¹ and water policy. Extreme phenomena such as flood episodes or droughts spells are estimated to be more intense and frequent, as a result of changes in precipitation regimes and higher temperatures across Europe. However, southern regions such as the Iberian Peninsula, which traditionally have lived with scarce and highly variable water resources, will probably have to face increasingly severe extremes in the near future. In the coming decades, healthy aquatic ecosystems are no longer just one of the priority actions to mitigate and to adapt to climate change impacts, but rather our best allies for facing the challenges of a hotter and drier future.

What do we mean by drought, and why should we not confuse it with water scarcity?

Many policy makers and media messages talk confusingly about droughts and water scarcity. A drought episode takes place when there is a significant decrease of precipitation during a given period, in comparison with the long-term average, over a defined area characterized by a specific type of climate. Thus, droughts are natural phenomena, especially recurrent in the Iberian Peninsula due to its predominant Mediterranean climate, with a highly variable rainfall regime.

On the other hand, water scarcity issues arise once water demand and supply are out of balance. They are only related with the capacity of anthropic water systems to store and distribute water for the demanding users, and the decisions taken by water managers on how resources are allocated to cover demand.

If these water scarcity issues coincide with a drought episode, anthropic water systems (such as channels, reservoirs or boreholes) might be under further stress, and human water demand and aquatic ecosystems might suffer more severe consequences. Therefore, it is key to distinguish between water scarcity caused by human decisions on water use, and droughts, which are natural and recurrent phenomena, especially in the southern parts of Europe².

Nevertheless Europeans are already struggling with the consequences of climate change today. Temperatures have been breaking records during the last decades all across Europe, and since the 1970's many parts of Europe have recorded significant decreases in precipitation in comparison with their long-term averages.

¹ More information on the report from WWF "[Drought Crisis: The Global Thirst for Water in the Era of Climate Change](#)".

² The challenge of water scarcity and droughts was recognized formally by the European Commission back in 2007, in the Communication "[Addressing the challenge of water scarcity and droughts - \[COM\(2007\)414\]](#)". Nevertheless, each year the Commission carries out an assessment on the improvements that have taken place at the EU level, and compile all the results in their [annual reports](#).

In the South, droughts episodes have increase their duration and severity, and the uncertainties for preventing them seem higher than ever.

What makes the Iberian Peninsula water resources so vulnerable to climate change?

In the Iberian Peninsula the water regime is quite variable, due to a dominantly Mediterranean climate with a marked dry season, and to the high variability of annual rainfall. Because of these base conditions, most of our rivers are temporary, and wetlands are fully adapted to suffer low levels of water and even become completely dry during many months as part of its ecological requirements.

In addition, they are highly dependent on their interactions with aquifers whenever connected. This is part of the natural response to the annual dry season and to eventual droughts, which ensures healthy aquatic ecosystems in the Iberian Peninsula (both rivers, wetlands and aquifers) and is the basis of its conservation status.

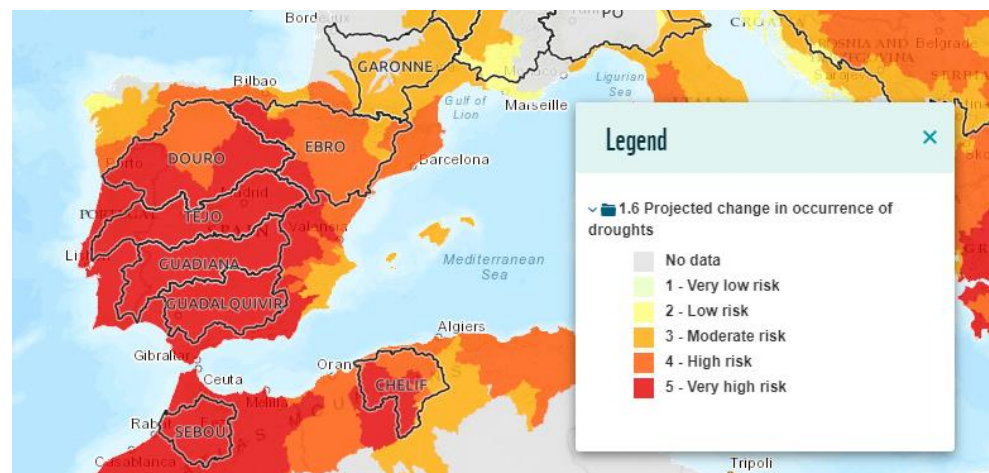


Figure 1 – According to the indicators used in the Water Risk Filter assessment from WWF³, the projected occurrence of droughts in the coming years, both in the Iberian Peninsula and in other parts of southern Europe, is expected to bring very high risk to many areas.

However, both Portugal and Spain have very high water demand for different uses, especially linked to an unsustainable increase of intensive agriculture. This overgrown water demand has led to the modification and regulation (with big dams) of almost all free flowing rivers of the Iberian Peninsula, in order to supply water to irrigation farmers. It also led to the desiccation of many of the wetlands in both countries, in order to reclaim fertile lands for agriculture⁴.

In addition to this, the changes in land use and vegetation, due to urbanization but especially the expansion of intensive agriculture⁵ in the Iberian Peninsula, has significantly increased the risk of desertification and

³ More information on the [WWF Water Risk Filter](https://waterriskfilter.panda.org/en/Explore/Map) assessment and indicators can be found in the following link <https://waterriskfilter.panda.org/en/Explore/Map>

⁴ More information on the traditional approaches to face droughts and water scarcity in the Mediterranean basin can be found on the WWF report from 2008 [“Droughts in the Mediterranean. Recent Developments”](#)

⁵ As reflected by United Nations as causes of desertification as part of the documents associated to the [World Day to Combat Desertification and Drought](#) in 2018.

increased the aridity of many areas that are characterized by high temperatures and low rainfall.

As such, in many parts of Spain and Portugal, we have destroyed the natural and adapted characteristics of our aquatic ecosystems to face dry seasons and drought spells. In addition, many of our aquifers suffer one of the highest rates of exploitation of all Europe⁶, posing an additional threat to these “natural reserves” for aquatic ecosystems during such dry periods.

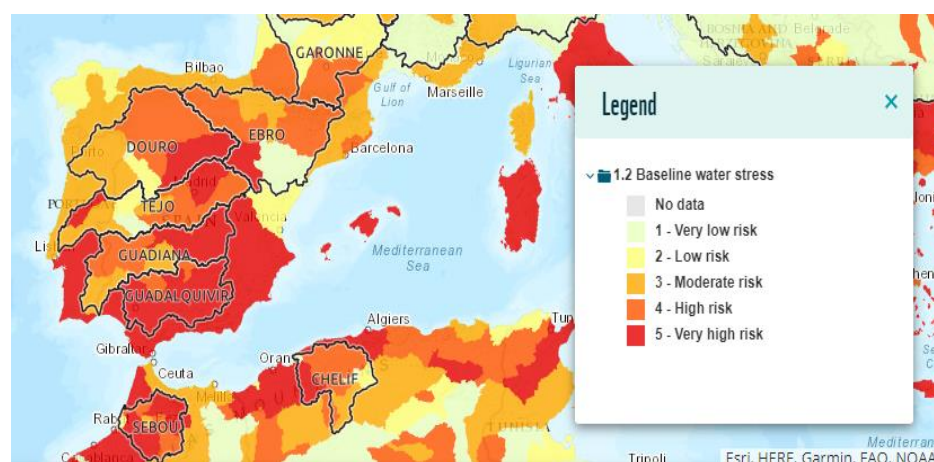


Figure 2 – According to the indicators used in the Water Risk Filter assessment from WWF⁷, the baseline water stress is related with the use of resources; both in the Iberian Peninsula and in other parts of southern Europe it is considered of high or very high risk in many areas.

What can policy makers, companies and citizens do to minimize the negative impacts of droughts?

Indeed, there is much left that we can do to be better prepared for a hotter and drier future. Water managers and authorities in Spain and Portugal must put in place all the resources and measures needed to ensure compliance with the Water Framework Directive requirements⁸ - meaning that all surface and groundwater bodies of both Member states are healthy and reach their good status as defined by the WFD principles.

For Portugal and Spain this also means that their bilateral Albufeira Convention⁹ is fully working, ensuring that an integrated and coordinated management of the Iberian basins and water resources is in place. To this matter, assuring the good quality of shared rivers, wetlands and aquifers means that an adequate ecological flow regime is fully implemented, as a tool to preserve aquatic ecosystems’ healthy functioning, which allows the provision of all services we benefit from and are the habitat of a rich biodiversity, sadly highly threatened (e.g. freshwater fish).

In addition, water authorities must keep improving water monitoring, to allow better prevention of drought impacts based on informed decision-

⁶ As shown in the results from the [assessment of the EEA on the second River Basin Management Plans from 2018](#)

⁷ More information on the [WWF Water Risk Filter](#) assessment and indicators can be found in the following link <https://waterriskfilter.panda.org/en/Explore/Map>

⁸ The conclusions of the report from WWF Spain “[Agua para hoy, sed para mañana](#)” show the need to fully comply with the [Water Framework Directive](#) requirements to improve resilience to climate change negative impacts in Spain, which can be very similar for the case of Portugal and other places in the Mediterranean region.

⁹ The [Albufeira Convention](#) is the cooperation framework agreed between Portugal and Spain as Member states of Europe to develop an integrated water management of shared river basins, and comply all the requirements of the European water policy.

making, which often occurs at the same time in both countries. Improved indicators will help water managers to take better decisions before the worst part of the drought spell strikes, and thus have the allocation systems better prepared for low rainfall periods¹⁰. To this regard, it is key that water authorities adjust water demand to the available resources in the basins, both from rivers, reservoirs and aquifers, according to the assumption of a given water/drought level of risk, in order to be prepared before the drought comes.

Water scarcity issues cannot be solved via emergency measures taken during a drought event. They have to be addressed before, when there are still sufficient resources, adjusting the demand to a realistic level of security to allocate the resources in the coming years¹¹.

Today we have alternative/complementary water sources, such as desalination plants or reuse of wastewater flows, which can help us to support our water allocating systems in times of need. However, they cannot be seen as new resources in any case, and should be combined with adjustments in the demand, to effectively serve as tools for reducing the negative impacts of droughts.

For companies that produce needed goods for society, such as energy or food, there are now available sound technologies to reduce water use in the productive process, and to improve the quality of effluents that are returned to the environment. In addition, companies should take part in water stewardship initiatives¹² that not only improve the use of water along the production chain of these companies, but also look beyond their fence and make them key stakeholders in the decisions taken in the river basin where they are placed.

Companies looking beyond their monetary profits, at their positive impact for society and environment, will be better prepared for the challenges that the climate change crisis is currently posing, including higher water related risks such as more intense and frequent droughts episodes.

Finally, as citizens, we are responsible for our own individual water use. We need to be cautious about the amount of water that we use in our homes, in our daily lives, but also on other things that we buy, such as clothes and food, minimizing our water footprint. We are responsible for supporting production chains that have less impact on the environment, including the use of water resources.

In addition, as a society, we need to advance to better governance structures around water. To this regard, despite of the requirements of the Water Framework Directive for an active public participation on water related decisions¹³, we as citizens have a clear responsibility to be active and require good governance practices and better decisions from water authorities, taking all stakeholders into account.

¹⁰ The conclusions of the report from ANP-WWF “[Viver além da água que temos. Posição da ANP|WWF sobre a Seca em Portugal](#)” show the need, among other things, to improve the data and indicators for better prevention of drought episodes.

¹¹ The conclusions of the report from WWF Spain “[Crónica de una sequía anunciada](#)” show the need, among other aspects, to adjust the demand from water users to the available resources before a drought strikes, as a measure to prevent water scarcity issues and negative impacts on aquatic ecosystems.

¹² More detailed information on [WWF Corporate Water Stewardship initiative](#)

¹³ More information on this matter can be found in the [#ProtectWater campaign](#) website, in relation with the Fitness Check of the Water Framework Directive process launched by the European Commission back in 2018

For a preventive drought risk management

We cannot keep looking at the sky hoping for the rain to come when we are in the middle of a drought period. We are currently suffering the negative impacts of climate change, and today more than ever, it is key to take a preventive and proactive approach to make better use of our water resources, if we want to avoid water scarcity issues and minimize the impact of droughts. The solutions created to face past problems will not serve solely to solve the challenges of the future.

We need to ensure that our aquatic ecosystems are healthy and in good shape, for them to be our tools to adapt to climate change. For this, it is mandatory to comply with the environmental objectives, for all rivers, wetlands and aquifers, as required by the Water Framework Directive. This is the very first step to change our relation with water and with aquatic ecosystems, towards the adaptation to climate change and to a sustainable future for both people and nature.

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