

WWF

BRIEFING

JULY 2019

GOOD WATER MANAGEMENT: THE HEART OF EUROPE'S DROUGHT RESPONSE

Droughts are a natural and recurring phenomenon. They are characterised by a shortfall in rain over a prolonged period of time, leading to a shortage of water. However, droughts often become substantially worse not due to low rainfall, but as a result of the overexploitation and poor management of freshwater ecosystems, such as rivers, lakes, wetlands, streams and groundwater.

Despite being a temperate region, Europe has a long history of dry periods, and there are specific hotspots where droughts have been seen to intensify, especially in the last decade - for instance, the Iberian Peninsula, south-eastern France, Greece, and the lower Danube region.

But droughts are becoming increasingly common and severe across the entire continent. This summer has seen France and Germany take emergency measures to tackle drought. Indeed, the most recent data from the European Drought Observatory indicates that even our northernmost countries, like the Baltic region and Sweden, are experiencing the first warning signs of drought, such as deficits in rainfall and soil moisture (see **Figure 1**).[1]

[1] European Drought Observatory, 2019. (EC-JRC)

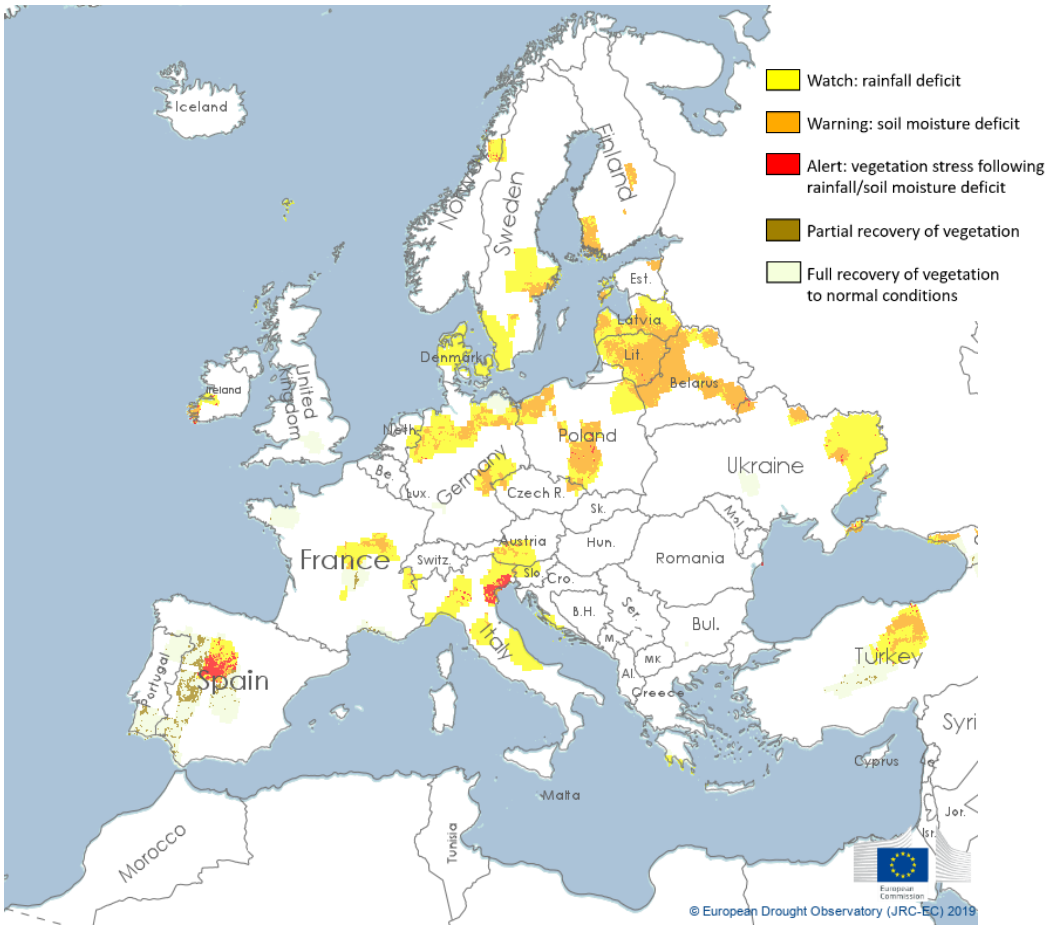


Figure 1: Drought Indicator visualisation showing current rainfall deficit, soil moisture deficit and current vegetation stress in June 2019.
© European Drought Observatory (EC-JRC)

WHAT ARE EU MEMBER STATES DOING TO TACKLE DROUGHT?

The measures taken by EU Member States to date have largely been reactive, rather than preventative. On the whole, water authorities have attempted to deal with droughts once the negative effects are occurring or have already occurred. **But droughts and water scarcity must be addressed when it is still possible to "save" the water provided by our freshwater ecosystems in anticipation of the next drought.**

Europe's water resources and soils have been and continue to be stretched worryingly thin. 60% currently fail to meet the "good status" requirement of the EU's water legislation[2], the EU Water Framework Directive (WFD), despite evidence showing that freshwater ecosystems which are not healthy - for instance, through pollution, changes to shape or flow, or the pressures of over-abstraction (excessive use of water, such as for the purposes of irrigation) - are those hardest hit by drought, heat and floods.

Virtually all of Europe's rivers have had their flows regulated by dams or reservoirs in order to increase their capacity to provide water to users, and agriculture remains a major pressure and accounts for the largest water use in Europe (around 40% of the total water used per year.) **Figure 2** captures the disastrous impact this kind of pressure can have.

[2] EEA. 2018. European waters – assessment of status and pressures 2018.

Although some progress has been made over the 19 years that the WFD has been in effect, Member States have not dedicated enough funding to ensure their water resources are resilient enough to cope with drought, heat and floods. It is critical that they now put adequate measures in place to ensure that Europe's rivers, lakes, wetlands, streams, groundwater, transitional and coastal waters are able to remain or become healthy by the WFD's final 2027 deadline, to enable them to better face the pressures ahead. In addition to ramping up their water management efforts, is also critical that Member States drastically reduce emissions to lower the number of droughts occurring in the first place. They must commit to the climate neutral goal as soon as possible, as reaching net zero emissions by 2040 in the EU is essential if we are to uphold the Paris Agreement and limit devastating climate change – which includes more frequent and intense droughts.

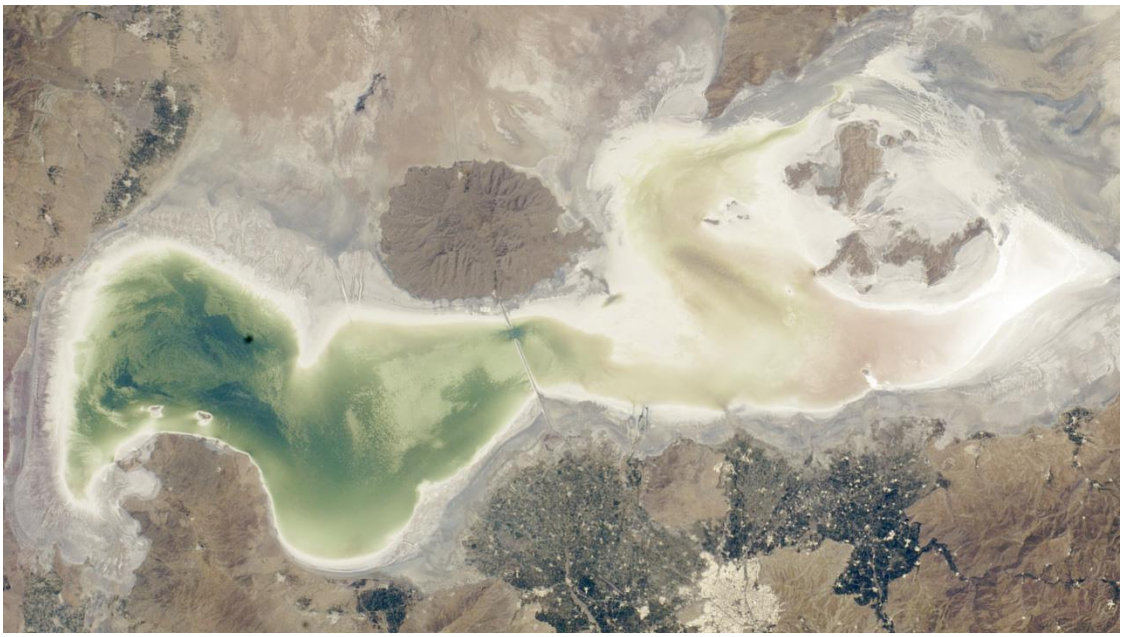


Figure 2: The area of Lake Urmia in Iran has decreased by 90% since the 1970s - and not because of drought. The lake is vanishing because of the region's increasing agriculture and development, such as through damming and over-abstraction. © NASA/JSC/Gateway to Astronaut Photography of Earth.

WHAT DO WE MEAN BY 'POOR' WATER MANAGEMENT AND HOW DOES IT AFFECT DROUGHT?

Once a drought occurs, it is already too late to resolve it. All that can be put in place are emergency measures to deal with the consequences, such as drastically restricting household water use. Far more needs to be done by governments to ensure they are using their water resources sustainably, and doing as little as possible to weaken these ecosystems' resilience and ability to cope with higher temperatures and shortfalls in precipitation in the first place.

In a nutshell, poor water management is demonstrated through:

1. Using too much water.

2. Damaging freshwater ecosystems to the extent that they are less able to cope with drought, heat, and floods (e.g. diffuse pollution from agriculture, damming for the purposes of hydropower, over-abstraction)
3. Putting too much focus on emergency measures, and too little on preventative measures and sustainable solutions which will improve the situation in the long-term (for example restoring wetlands and riverbeds).

The over-allocation of water resources is another aspect of poor water management and is evident from the very start of the hydrological calendar, which in the EU begins in October. This is when some public administrations allocate their country's available water to meet the various demands, such as to sustain agriculture, industry, and households. But they are also at risk of allocating water which may not be available the following year due to a potential imbalance between supply and demand if rainfall is lower than anticipated - this means that, in times of drought, administrations have already distributed their "water allowance" without knowing the full picture.

The supply of water to consumers in Europe is currently greater than what the system can generate when the next drought arrives. Over-abstraction is a major pressure in this sense. 7% of surface waters (rivers, streams, lakes, wetlands) are affected by over-abstraction, and 17% when it comes to groundwater aquifers. However, this number doesn't accurately represent the real problem - in the most water-scarce countries especially, which have little capacity to handle droughts when water resources have already been over-allocated, groundwater is being over-abstracted.

It is important to remember that rainfall cannot "recharge" the system, so activities which use a lot of water need to be carefully considered. For example, areas of Spain have opted for a model of water use that prioritises high consumption of water and soil resources, like the expansion of irrigated crops, despite the fact that, due to its geographical location, it is prone to extended periods of drought.

Additionally, groundwater is being used to supplement the availability of water to meet all demands. However, this overexploitation of water channels and aquifers is putting reserves that are needed in times of drought at risk. According to the European Environment Agency (EEA), Europe's groundwater bodies are generally in good quantitative status[3], but the status is highly variable across the EU - southern Member States in particular are experiencing groundwater shortages. It is worth noting that the EEA's data does not include water that is consumed illegally and therefore not documented - for example, the 1,000+ water wells which are bleeding the aquifer feeding the Doñana wetlands dry.[4]

WHAT ABOUT RESERVOIRS?

Whilst it might seem logical to build reservoirs to secure the water supply for certain areas, reservoirs still only provide a finite supply of water and disrupt the natural balance of freshwater ecosystems. This makes them more vulnerable to drought and less capable of replenishing water when needed. In fact, some research indicates that water shortages are worsened by reservoir effects[5].

[3] EEA. 2018. European waters – assessment of status and pressures 2018.
[4] Revolve, 20 February 2019. 'Doñana: A Story of Destruction and Hope',
' https://revolve.media/donana-a-story-of-destruction-and-hope/
[5] Giuliano Di Baldassarre, Niko Wanders, Amir AghaKouchak, Linda Kuil, Sally Rangecroft, Ted I. E. Veldkamp, Margaret Garcia, Pieter R. van Oel, Korbinian Breinl & Anne F. Van Loon (2018) 'Water shortages worsened by reservoir effects' Nature Sustainability volume 1, pages 617–622

The danger of relying heavily on reservoirs is perfectly illustrated by the threat of Day Zero in Cape Town in 2017 – reservoirs around the city went largely unreplenished for more than three years in the absence of significant rainfall, contributing to the city almost running completely out of water[6].

HOW WILL CLIMATE CHANGE IMPACT ON THE FUTURE OF WATER?

In the face of climate change, lower rainfall, higher temperatures and dry periods will become longer, more frequent, and more intense. As such, droughts will become far more frequent across the globe. Projections from the Intergovernmental Panel on Climate Change (IPCC) indicate that, in the coming decades, soil moisture will decrease, doubling the surface affected by severe situations, and **long term droughts will become three times more common[7]. Europe is no exception. In the EU, drought events are becoming longer, more frequent, and intensified by the continuous warming in southern Europe (Figures 3 and 4)**. Places already experiencing the greatest scarcity challenges, like the Mediterranean, are likely to come under even greater strain in the years to come.

Despite the fact that EU water policy - the cornerstone of which is the WFD - recognises the critical role healthy freshwater ecosystems play in battling the effects of droughts and mitigating the impact of climate change (such as by absorbing and storing carbon), Member States have so far failed to make the law work in practice. They are falling desperately short of their commitments and not implementing the required measures to ensure that these ecosystems are healthy, resilient and, as a result, able to keep supplying enough good quality water during dry periods.

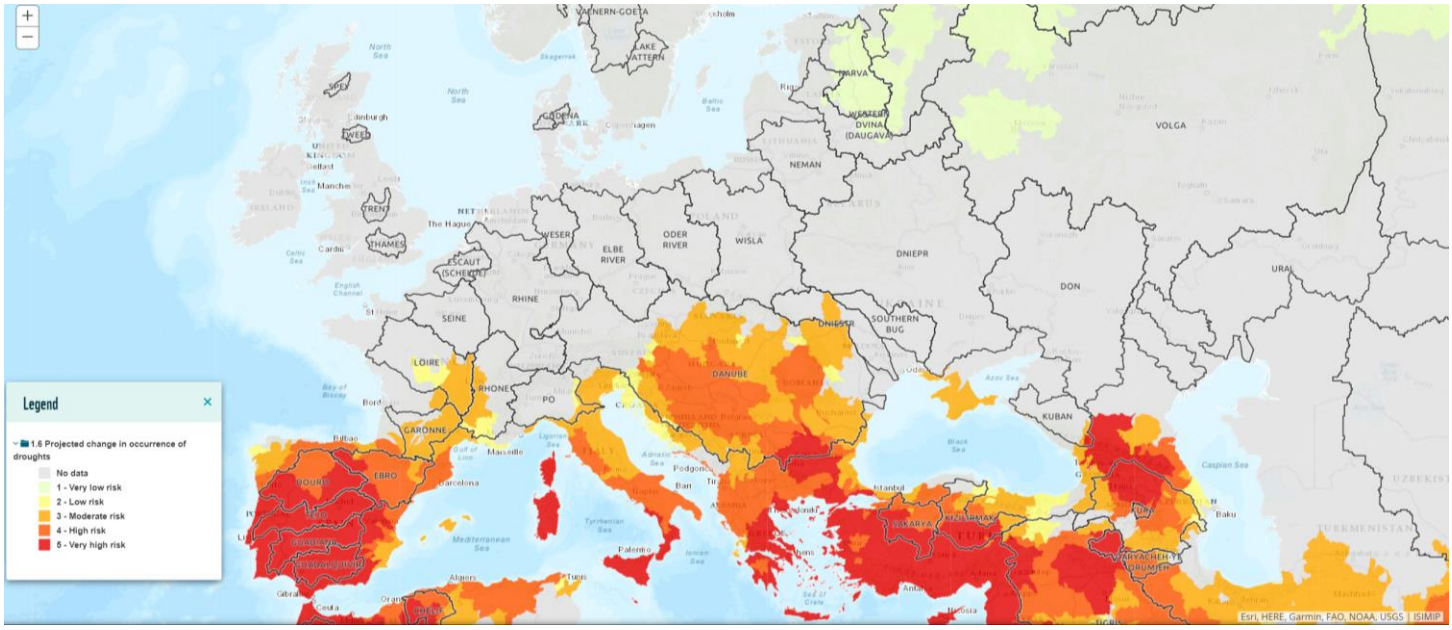


Figure 3: Projected change in droughts in Europe.
© WWF Water Risk Filter, 2019.

[6] The Guardian, 24 January 2018. 'Cape Town told to cut water use or face losing supply by 12 April', https://www.theguardian.com/world/2018/jan/24/cape-town-to-run-out-of-water-by-12-april-amid-worst-drought-in-a-century
[7] Justin Sheffield Æ Eric F. Wood. Clim Dyn (2008) Projected changes in drought occurrence under future global warming from multi-model, multi-scenario, IPCC AR4 simulations http://ruby.fgcu.edu/courses/twimberley/envirophilo/Drought.pdf

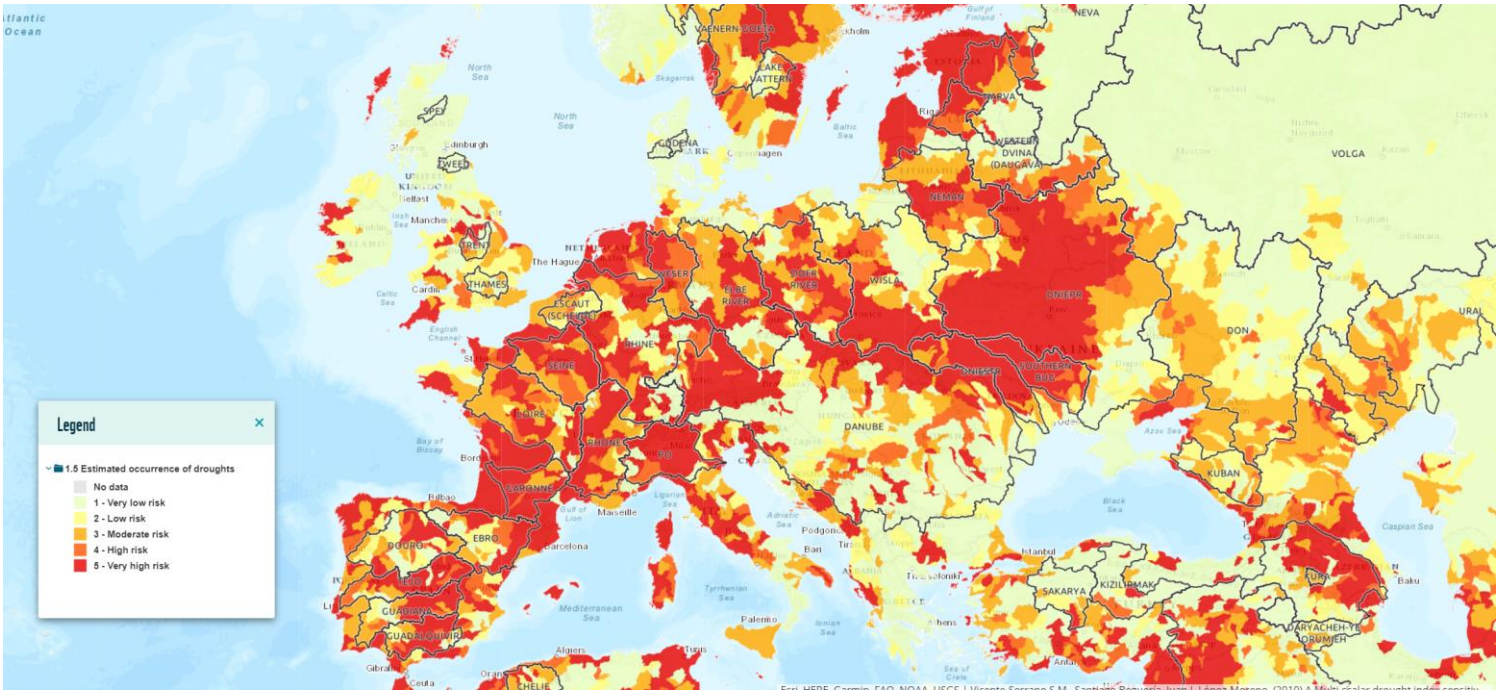


Figure 4: Estimated occurrence of droughts in Europe (2014-2017).
© WWF Water Risk Filter, 2019.

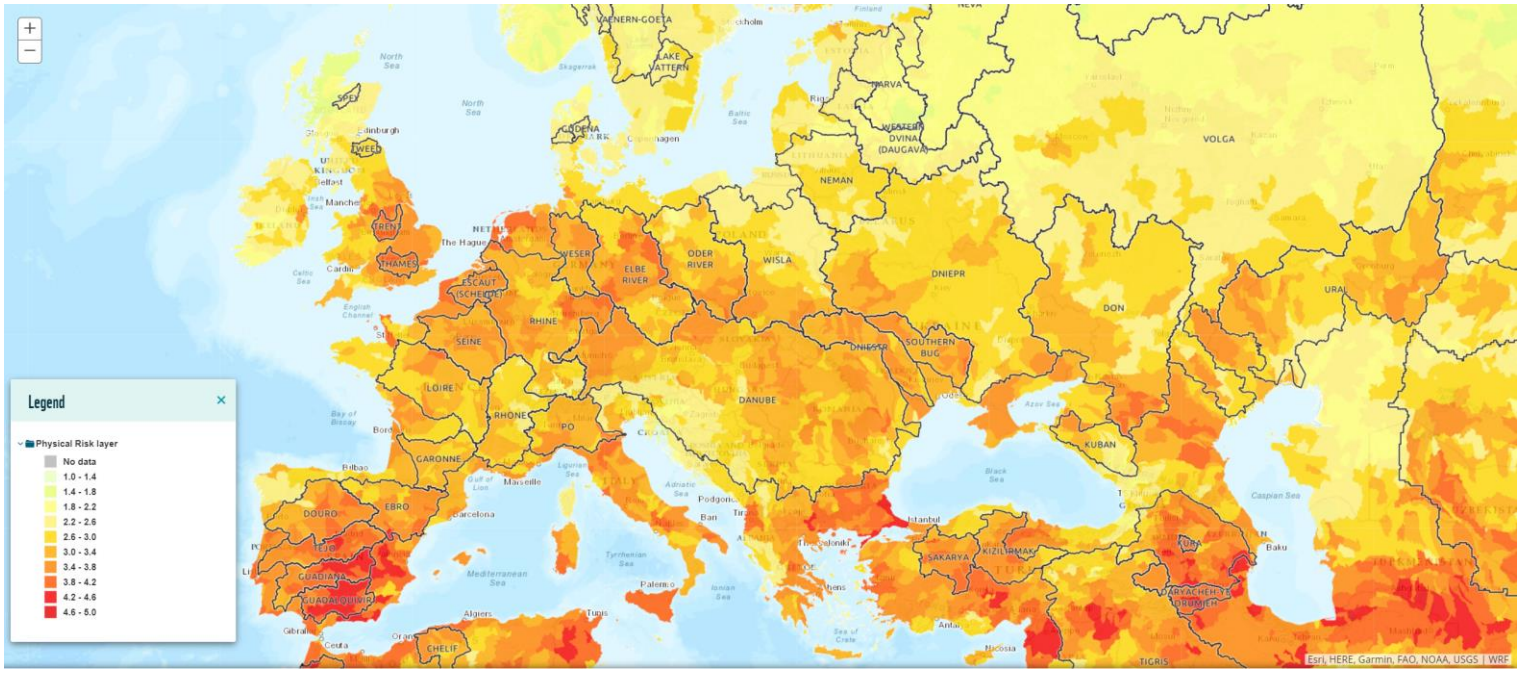


Figure 5: Overall physical water risk in Europe. Physical risk is directly related to too little water (scarcity), too much water (flooding) or water that is unfit for use (e.g. due to pollution), each of which is associated with the management of a water resource.
© WWF Water Risk Filter, 2019.

WHAT'S THE SOLUTION?

In the face of climate change regular droughts are becoming an uncomfortable reality. However, in addition to reducing emissions to reduce the frequency and intensity of droughts, there is lots of room for improvement in water management to mitigate the impacts.

One of the key purposes of the WFD is to mitigate the impacts of droughts through the establishment of so-called River Basin Management Plans (RBMPs) outlining how freshwater ecosystems can be restored to good status or how good status can be maintained. Nature-based solutions for protecting and restoring wetlands and rivers to ensure they are healthy and functioning, as well as to improve the quality of the soils, are key to mitigating the impacts of climate change. They can help store water and increase infiltration to the soil and aquifers, and also buffer temperature changes, modulating associated water stress.

Successful mitigation of the impacts of drought does not only depend on effective national water regulations and plans, but also on a strong European framework, as provided by the WFD. Water concerns also need to be integrated into other national and European sectoral policies such as agriculture, climate and energy, cohesion and health.

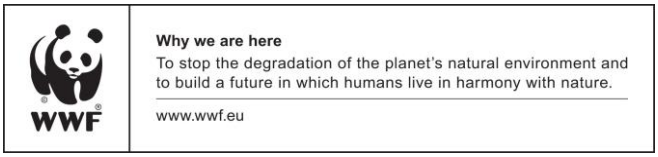
Recommendations:

It is critical that Member States now take steps to ensure no further deterioration occurs and that the majority of water bodies in the EU achieve "good status" by 2027. As, such we call on them to do the following:

- **Develop more effective and ambitious third-cycle river basin management plans** (2021-2027) and associated programmes of measures to bring European waters to good status by 2027.
- **Significantly restrict their use of exemptions to the WFD to exceptional cases only.**
- **Strictly apply the WFD's "non-deterioration" obligation and precautionary approach.**
- **Apply in full the "polluter pays" principle in line with the WFD**, ensuring that water pricing reflects the true value of water and that all users, including agriculture, contribute to the full costs of water services in a more equitable way.
- **Increase the uptake of nature-based solutions and dam removal** to ensure that freshwater biodiversity can spread back into degraded areas.

Detailed recommendations to the European Commission and Member States on improving water management in Europe can be found in the publication *Bringing life back to Europe's waters: The EU water law in action*[8]. For our recommendations on climate, please visit http://www.wwf.eu/what_we_do/climate/

[8] WWF, EEB, European Rivers Network, European Anglers Alliance, 2018. http://www.wwf.eu/?uNewsID=334981



© 1986 Panda Symbol WWF - World Wide Fund For Nature (Formerly World Wildlife Fund)
® "WWF" is a WWF Registered Trademark.
Header image: © Juan Carlos DEL OLMO / WW0F Spain

For further information:

Claire Baffert
Senior Policy Officer, Water
cbaffert@wwf.eu

Carla Freund
Policy Assistant, Water
cfreund@wwf.eu

WWF European Policy Office
Rue du Commerce 123
1000
Brussels
Belgium