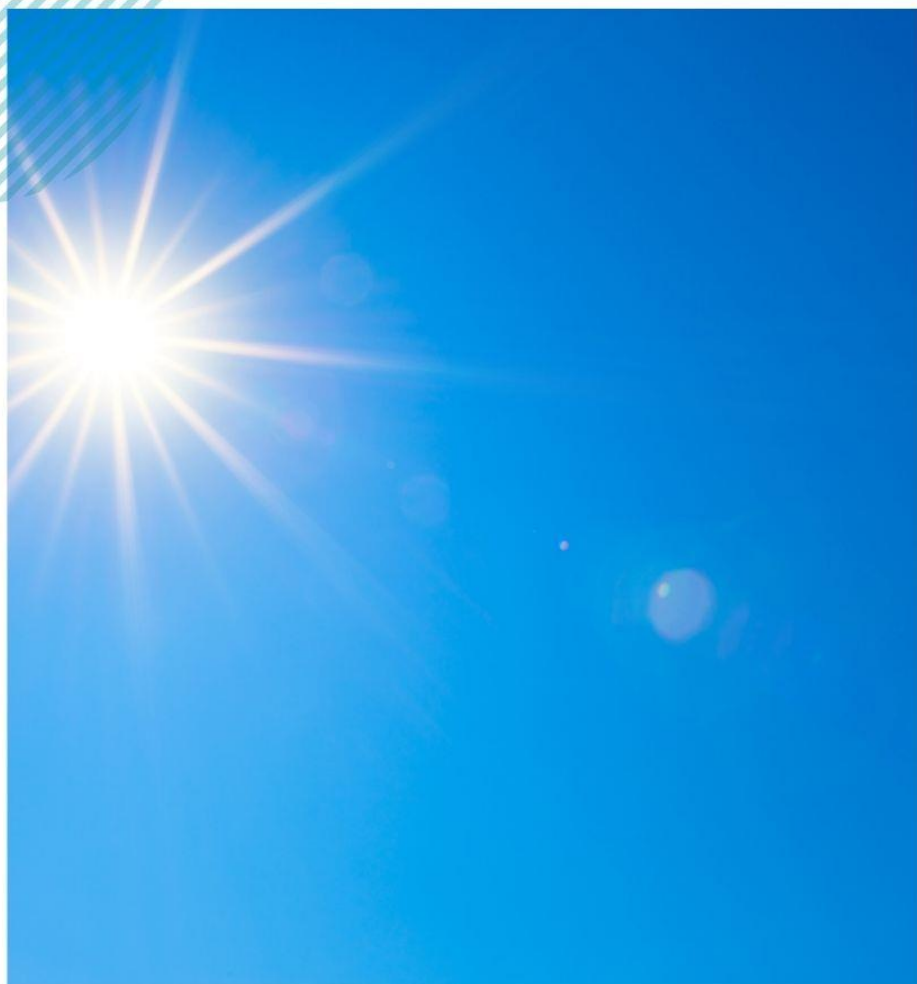




# The impact of drought on drinking water

The availability of sufficient and uncontaminated ground- and/or surface water for the production of drinking water is essential to everyone.



The dry summer of 2018 (and for some countries, 2017 too) was a wake-up call for many parts of Europe. EurEau's Committee on Drinking Water participated in a detailed questionnaire on this topic.

This briefing paper reflects on the general results. The questionnaire had two separate sections:

- a. 12 general drought questions
- b. 4 questions specific to the 2018 drought and recommendations for future actions.



## 1. Drought: a European challenge

Drought is an annual challenge faced by many European countries. However, until summer 2018, it was mostly geographically concentrated in Southern and parts of Central Europe. 2018 was a turning point; several countries that traditionally did not face severe droughts had to cope with one. Even though the drinking water supply was never seriously threatened, increased scarcity of resources forced providers to take measures to use the available resources most efficiently. In this paper, EurEau addresses this Europe-wide challenge.

**Drought is defined as a prolonged period of abnormally low precipitation, leading to an unusual and temporary deficit in water availability.**

## 2. Governance

Actors at all governance levels have many essential functions in the provision of sufficient and safe drinking water to consumers. A variety of very high standards to address drought issues are used across Europe and amongst EurEau members. While this ensures a tailored approach for each country, some measures could benefit all countries. Because the practices differ, EurEau members should explore the desirability of and possibilities for a more uniform approach as follows:

1. In times of water shortages and allocation conflicts, drinking water provision should be prioritised in a European or national legal framework (legal priority for drinking water). This is fundamental to realise the UN's Sustainable Development Goal 6 (the human right to water and sanitation).
2. The drinking water network should be defined as 'critical infrastructure' by national law in all countries and its operators as providers of critical services.
3. All Member States should be required to set up a Drought Management Plan (DMP) complementary to the River Basin Management Plan (RBMP) under the Water Framework Directive (WFD).
4. We should look at the water quantity aspects within the current WFD to tackle water conservation holistically.

## 3. Water resources

To ensure a stable supply of drinking water during droughts, it is essential for service providers to have priority access to sufficient resources. For this reason, it is important to relieve pressure on the most valuable water sources (groundwater intakes) by looking for alternative sources for other sectors. Water reuse for farming is such an alternative.

National water resource planning and investment plans ensure the continuous improvement of our services. However, climate change brings with it the risk of increased incidents linked to extreme weather events, including drought.

It is considered essential in times of drought to provide for the use of short-term



emergency water abstraction permits. This would be a logical support mechanism when Member States define drinking water supply as critical infrastructure and its operators are providers of critical services

Managing and reducing leakage is a day-to-day challenge for all water service providers and requires significant capital investment and know-how. However, this capital investment requirement competes with other priorities (e.g. compliance, population growth) and so the EU should consider a specific programme to support leakage reduction. This work is labour intensive and generally can be realised very quickly, supporting the technology sector and innovation.

Furthermore, drinking water companies are investing in innovative ways of abstracting and retaining water and managing network operations. Authorities need to take all adequate measures to protect drinking water resources from new challenges, such as salination and increased pollution of groundwater and of surface water e.g. in times of low water levels in rivers.

## 4. Raising awareness of water consumption

Adequate drinking water delivery depends on both supply and demand side management. Water uses have an important place in this equation. Suppliers regularly use awareness-raising campaigns to encourage efficient use and conservation amongst service users. Authorities sometimes use water restrictions and impose sanctions for wasting water. Currently, such measures are insufficiently enforced among households, limiting their possible effectiveness.

There are additional ways to make water users more aware of and responsible for their consumption such as the use of water metres, flexible tariffs during peak hours and/or seasons or priority schemes. By legally clarifying 'who gets what', in times of drought, the overall water demand decreases.

## 5. Operational measures

Various operational measures in different EU Member States (preventive, administrative, on-demand, on infrastructure, regulatory) were taken to react/deal with the impacts of droughts. These include:

- ~ in-depth understanding of water resources availability and their sustainable management
- ~ up-to-date data sets on the drinking water supply infrastructure
- ~ optimising the use of different water resources
- ~ using water reserves (previously abandoned catchments) and lowering water resources quality at dry periods means changes in water treatment technological processes
- ~ delivering water from neighbouring connected water suppliers
- ~ obligation to irrigate agriculture during cooler hours and at night
- ~ advising consumers to save water (communication)
- ~ banning the use of drinking or surface water to irrigate for non-professional



- agriculture, public gardens
- ~ lowering the pressure on the water delivery system
- ~ continuously reducing water leakage
- ~ encouraging industry to increase their water efficiency (i.e. closed circuits).

## 6. Operations

The organisation of the drinking water supply network should be viewed from an overarching national perspective. By coordinating the policies between the local and regional governments and by interlinking the supply networks, a more efficient and resilient distribution of drinking water can be achieved. In this regard, solidarity between drinking water companies is essential.

17 EurEau members from 16 countries responded to the questionnaire: Austria, Belgium (Flanders and Wallonia), Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Poland, Spain, Switzerland, The Netherlands and the United Kingdom. The detailed responses are set out in Annex 1 of this document.

## 7. Drought Management Plans established by public competent authorities

The majority of countries have Drought Management Plans (DMPs) in place either as part of the RBMPs or as part of national strategies or as part of regional strategies.

Only four Countries reported that no DMPs were adopted but each had local response plans in place.

While DMPs are prepared at national or regional level by the competent authorities, water companies or utilities in some countries set up specific drought plans or have taken the security of supply into account in their risk assessment, management and Water Safety Planning or contingency planning activity.

## 8. Drought plans at utility level

In over half the countries that responded to our survey, there is no specific legal obligation to have a drought plan at utility level, but it is recognised as best practice. Notwithstanding this, legal instruments often arise in the context of general legal obligations/EU directives or from a significant historical drought.

## 9. The governance of drought management

Concerning which authorities are in charge, all levels of governance are involved, although the decisions are mainly taken at local or regional level, with support from central government ministries as required.



## 10. Responses to drought

Water operators and governance authorities can work together on measures that will prevent or mitigate the effects of drought. *Short term*, in this instance, refers to that period where water operators and governance authorities identify an emerging concern on service delivery (0-2 months). *Medium term* refers to when the drought is established and is affecting customer experience (2-4 months). The *long term* is the post-drought period, when we need to look at resilience and investment in the network (4 months – 2 years).

These are presented in this table.

<b>Body</b>	<b>Term</b>	<b>Measures</b>
Water operators	Short	<ul style="list-style-type: none"> <li>~ use reserve water sources</li> <li>~ propose that an authority restricts water abstraction for other purposes</li> <li>~ use artificially recharged groundwater to increase the volume of recharged water if possible</li> <li>~ deliver (buy) water from other water suppliers if network connections exist</li> <li>~ advise and encourage consumers to use water efficiently or at certain times of the day, saving it where possible (not legally binding advice)</li> <li>~ decrease the volume of leaking water by reducing the network pressure (not used in all countries)</li> <li>~ operators can enhance leakage-repair activity, defer maintenance of key assets and transfer water from other areas where the infrastructure exists</li> <li>~ set limits on consumption, determine the conditions for supply, determine the purpose of the supply, or include a restriction on the use (eg. for filling swimming pools, watering green areas, etc.), while providing supply to vulnerable families</li> </ul>
Governance authorities	Short	<ul style="list-style-type: none"> <li>~ provide advice and guidance to consumers on efficient water use</li> <li>~ provide for the use of short-term emergency water abstraction permits</li> </ul>
Water operators	Medium	<ul style="list-style-type: none"> <li>~ verification that the system reserves and required redundancies are available</li> </ul>



		<ul style="list-style-type: none"> <li>~ adapt water abstraction (such as favouring abstraction from specific resources over others, if there is the possibility to do so) recognising that reduced surface water levels have an impact on raw water quality, which places increased demands on production in the drinking water treatment plant</li> <li>~ adapt resource management as a basis for high availability of resources in extreme situations (use of groundwater/surface water; development of additional resources, usage of water from other resources, e.g. transfer from other rivers; own/foreign procurement; water rights)</li> <li>~ transfer water from other areas where the possibility exists</li> <li>~ use of (contractually agreed) external procurement options for raw/drinking water</li> <li>~ exemptions from water-right restrictions on water abstraction quantities and underwater discharges from dams</li> <li>~ apply technical safety and risk management tools for identifying and weighting hazards</li> <li>~ verification of resilience under high capacity utilisation when dealing with additional disruptive factors (e.g. temporary restrictions of certain capacities due to construction measures)</li> <li>~ reduce water losses; e.g. by returning the first discharge from the water treatment to the treatment process with appropriate risk controls</li> <li>~ take seasonal focuses of extreme weather events into account when planning maintenance and refurbishment projects and shifting maintenance work to the winter</li> <li>~ capture peak loads by means of 'smart metering' and using regulation and control devices at delivery points for quantity regulation and fair load distribution</li> <li>~ agree in good time with the authorities on exemptions from water right requirements (water withdrawal quantities, underwater discharges) in order to be able to act quickly in a specific case</li> </ul>
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		<ul style="list-style-type: none"> <li>~ limit and, if necessary, reject external measures that have an impact on the water infrastructure (e.g. construction work on roads) in the event of extreme weather events</li> <li>~ facility management</li> <li>~ limit non-essential water use such as tank cleaning, fire hydrant tests</li> <li>~ defer maintenance of key assets or postpone important maintenance which could reduce the production capacity</li> <li>~ reduce the pressure in the distribution network (local network) for volume throttling purposes</li> <li>~ increase leakage-repairs</li> <li>~ work with consumers to prevent 'street pooling'</li> </ul>
Governance authorities	Medium	<ul style="list-style-type: none"> <li>~ work with consumers and provide them with advice on how best to conserve water supplies through for example, restricting non-essential use such as gardening or recreation, promote efficiency</li> <li>~ based on advice from the water operator, the appropriate governance authorities can introduce restrictions on non-essential use such as gardening, washing cars with hoses, power-washing, etc... with appropriate penalties</li> </ul>
Water operators	Long	<ul style="list-style-type: none"> <li>~ water companies working together with stakeholders on a strategy to find long term solutions to ensure drinking water delivery</li> <li>~ better cooperation between water companies and authorities regarding communication and education</li> <li>~ climate-robust water systems focused on storing water during winter</li> <li>~ set up redundant facilities within the scope of rational operations management and expanding own-system capacities (processing, storage, networks)</li> <li>~ build and strengthen interconnected systems</li> <li>~ adapt supply and purchase agreements</li> </ul>



Governance authorities in conjunction with water operators	Long	~ prepare databases and establish monitoring and decision support tools as a basis for the sustainable management of drinking water resources and set up resilient drinking water supply systems (e.g. quantity, quality, abstractions, recharge)
Governance authorities	Long	~ support drinking water suppliers and allocate additional financial resources ~ transfer water to areas at risk ~ use communication/information campaigns to educate consumers on how to conserve water

## 11. Water saving schemes

Some kind of water saving schemes (flexible tariff systems etc.) - according to various scenarios - are in place in the majority of countries. There is scope for developing a standardised approach with a supporting public awareness campaign.

## 12. Priority schemes

There are very interesting differences in approach between different countries. It is recommended that Member States define water systems as critical infrastructure in legislation and consider defining priorities under drought conditions.

There is no nationwide priority scheme for water use in **Austria**, but legislation gives priority to water supply and the drinking water network is considered critical infrastructure by national law.

A 2019 change in **Belgian** national legislation defines water systems as critical infrastructure. There is actually no priority scheme, but local authorities will prepare one for 2020.

In **Cyprus**, drinking water is considered as a priority.

In the **Czech Republic**, legislation is under preparation with a 5-point prioritisation of drinking water use:

1. providing critical infrastructure functions
2. drinking water supply
3. livestock production and the ecological role of water
4. economic utilisation not under the above points
5. other uses





In **Denmark** the option of defining water supply as critical infrastructure is being discussed.

Water supply is considered critical infrastructure in **Finland** and may be prioritised in case of drought, but there is no obligation in national law.

In **France**, drinking water supply always gets priority over any other use and drinking water networks supplying areas of more than 200,000 inhabitants are officially considered by the state as vital services.

Under national legislation, the **German** drinking water supply is considered as critical infrastructure. However, the priority of the drinking water supply in competitive demand situations is not consistently established throughout the country.

**Greek** water supply infrastructure is indirectly considered critical since part of the national emergency planning.

In **Ireland**, there is no legal prioritisation for drinking water supply and there is no specific national legislation for priority use under drought conditions. Co-ordination is managed through a National emergency management structure.

**Italian** rules give clear priority to drinking use, even over agricultural uses. In addition, cyber security rules also apply to water infrastructure. The state can exercise their 'golden' power on these infrastructures and on the companies that manage them.

Under the **Spanish** national Water Act, Article 60 establishes the order of priority of uses, not only in scarcity but also in drought situations (which can be modified in RBMPs, but always keeping population supply as the overriding priority):

1. population supply, including industries connected to the municipal network
2. irrigation and agricultural uses
3. industrial uses for the production of electricity
4. other industrial uses not included in the previous sections
5. aquaculture
6. recreational uses
7. navigation and water transport
8. other uses.

**Dutch** law sets "displacement series" (verdringingsreeks): since drinking water supply is a fundamental service, it ranks second on the list, just after the use of water for safety and the prevention of irreversible damage. Priority number 3 includes the use of water for industrial processes and temporary watering of capital-intensive crops and priority 4 is for other interests, amongst other industry and agriculture.

For the **UK**, water supply is defined as critical infrastructure in national law, but there is no priority scheme as such. The prioritisation of drinking water supply depends on the severity of the drought.



## 13. The effects of prioritisation measures

The effect of the prioritisation measures on water uses varies, depending on the circumstances, severity and re-occurrence of droughts.

General good practise is to apply restrictions first to domestic garden/hosepipe use followed by non-essential and non-domestic uses, while critical customers/users, for example, hospitals, are prioritised.

## 14. Long-term versus short-term measures

The menu of measures described in this paper focuses very much on short term emergency type measures to ensure continuity of limited supply to customers. In the longer term the key measures to address drought conditions can be summarised as follows:

- **Water resources planning** - to identify supplies which are not sustainable under drought conditions and to propose solutions often creating linkages between different supply zones.
- **Water conservation** – to ensure customers are aware of the value of drinking water and avoid waste.
- **Creation of strategic headroom in water systems** – drought is an extreme condition however, climate change means an increased probability of such extreme conditions. It is recommended that all supply zones should have a minimum headroom for water production to meet extreme conditions.
- **Leakage reduction** – this is a capital investment challenge and often competes with other investment priorities. The EU should consider a specific programme with funding to reduce leakage. In view of the potential for innovation and job creation, this measure would greatly increase the resilience of water networks.

## 15. Communication of the prioritisation measures

Water operators often communicate the prioritisation measures with the support of public authorities and media.

In **Austria** and in **Greece** it is mainly up to the water supplier to communicate these measures, while in **Finland**, authorities communicate the restrictions. The non-binding advice to save water is communicated by both utilities and authorities.

In **Belgium, Denmark, Germany, the Netherlands** and in the **UK**, the measures are communicated jointly by utilities and authorities.

All the related authorities in **Cyprus** participate in communicating the measures.

In the **Czech Republic**, the information is given by the water operators via the intersucho.cz website.

Regional state authorities in **France** (prefects) publish decrees that are displayed in town halls and sent to the media to be shared with the public through newspapers,



radios, TV, etc. Major water users are directly informed (professional associations, meeting with major stakeholders).

In **Ireland**, Irish Water is part of a National Emergency Committee and the national authorities and the water operator deliver key messages.

Both the public authorities and operators communicate measures in **Italy**. In particular, the sectoral regulation requires operators to report interruptions to the water supply to users well in advance, even if caused by water rationing in case of scarcity.

In **Spain**, depending on the level of the measures, it may be the responsibility of the river basin authorities (basin level) or of both public authorities and operators (at local level).

## 16. Imposing sanctions or fines

Fines and sanctions are rare and are rarely used. The accepted approach is to build public support for measures during drought conditions and peer pressure usually provides compliance with restrictions.

## 17. Cross-border drinking water supply

Cross-border drinking water supply is very rare, apart from very large cross border regions with shared river basins and river basin management plans.

The supply of drinking water takes place across-borders in Upper **Austria**, (Burgenland), and in **Belgium** where some drinking water supply goes to northern France. During the 2018 drought, complementary supply came from **Germany** to compensate for the low production in eastern **Wallonia**. A similar situation is experienced in **Ireland**, where there are some minor cross-border supplies with Northern Ireland. In **Switzerland** there are few cross border supply schemes. However, one issue is the difference in the quality of water provided. One **Polish** town receives drinking water from the Czech Republic.



## Annex 1

### Key outcomes from the questionnaire on the 2018 droughts.

***a) Please describe the impacts of the drought in 2018 and how the water utilities in your country/area were affected.***

It was noticeable that many countries in the south of Europe did not experience the 2018 drought but referenced the 2017 drought as having a greater impact.

Generally, there was no water network distribution interruption at the regional scale.

Restrictions applied in both water catchment and drinking water consumption due to the extreme superficial drought of the soil (with large impact on agriculture).

**Impacts of the drought in 2018 are summarised as follows:**

- ~ low groundwater levels
- ~ low river levels
- ~ abstractions beyond their permit of groundwater abstraction to provide essential supplies to vulnerable customers
- ~ higher levels of salinisation at a few water abstraction points
- ~ higher (and peak) demand
- ~ higher temperature of surface waters
- ~ higher temperature in the water pipes
- ~ some waste water treatment plants required intervention measures to prevent environmental pollution of depleted receiving waters
- ~ some countries imposed national hosepipe bans.

***b) Please describe operational measures you took to react/deal with the impacts of the drought in 2018.***

**Every country highlighted the need for a quantum increase in the financial resources required to address leakage.**

The following options were used to varying degrees depending on the severity of the impacts:

- ~ optimise the use of different water sources
- ~ use of reserve water sources
- ~ deliver water from the neighbouring connected water suppliers
- ~ transfer by tank-trucks from catchment to storage units
- ~ reopen previously abandoned catchments
- ~ optimise volume abstracted in surface waters where possible (in order to save water in deep aquifers)
- ~ restriction measures in water abstraction and catchments
- ~ obligation to irrigate agricultural areas during cooler hours of the day and at night.



- ~ ban on the use of drinking or surface water to irrigate for non-professional agriculture, public gardens, etc...
- ~ lower the pressure on the water delivery system
- ~ communicate to consumers to lower water consumption
- ~ water companies sharing their water supplies
- ~ regular meeting with local state authorities
- ~ activate incident management procedures
- ~ establish crisis management and support teams
- ~ monitor and track water supply and demand and the performance of water and waste water treatment plants
- ~ open up communications channels with stakeholders and customers
- ~ implement water conservation orders
- ~ rezone networks to get best use of more resilient sources
- ~ reduce pressure in the network
- ~ night-time network restrictions / rationing
- ~ tankering of water to small, isolated reservoirs
- ~ provision of stand-pipes in some rural areas
- ~ delivering bottled water to vulnerable customers
- ~ in-flight project adjustment – suspension of reservoir cleaning and network flushing activities
- ~ three-fold increase in network and domestic leakage find-and-fix resources and activities
- ~ pro-active campaign on non-domestic private-side leakage find-and-fix, on the basis of fix first and seek to recover costs later
- ~ low-flow watercourse interventions in consultation with fisheries and environmental agencies to protect water intakes
- ~ lifting, cleaning and re-setting of borehole pumps
- ~ improve existing springs and well-fields and drill new bore-holes
- ~ optimise waste water treatment processes by increased retention, aeration and desludging
- ~ tankering of waste water effluent away from depleted receiving waters to other treatment plants
- ~ preventative maintenance of waste water inlet screens and pumping stations to minimise risk of blockages and pollution events
- ~ exemptions from water right restrictions on water abstraction quantities and underwater discharges from dams.



***c) Please describe which operational measures you are planning to improve resilience of your water supply bearing in mind that dry seasons may occur in mid future time.***

**The operational measures in planning to improve the resilience of the water sector can be summarised as follows:**

- ~ improve the security of supply by increasing water abstraction capacity and building connections between water operators
- ~ optimise the pressure levels to decrease leakage
- ~ network renewal to decrease leakage
- ~ Long-term investments for interlinking the supply network
- ~ a multi-million euro plan investment plan particularly to support leakage reduction
- ~ identifying complementary wells with a lower level of protection. These wells would be re-opened in case of severe drought
- ~ mathematical modelling of aquifers in order to better foresee the piezometric level
- ~ research on aquifer storage and e.g. intelligent rain water use
- ~ water companies and other stakeholders to work on (long-term) additional strategic supplies where water may be abstracted in times of need
- ~ use, where appropriate, of pilots that focus on the desalination of brackish water using membrane technologies
- ~ increasing operational capacity
- ~ additional and flexible water abstraction permits
- ~ search for new abstractions sources
- ~ interconnect different water works in order to support each other
- ~ communication on and incentives to reduce water consumption
- ~ develop Automatic Meter Reading systems to better manage water consumption (better management by consumers and alerts in case of leaks)
- ~ incorporate source capacity limitations which were identified in 2018 into National Water Resources Plans and Capital Investment Programmes
- ~ continue with progressive roll-out of National Leakage Management Programmes
- ~ continue with roll-out of National Telemetry Project and 24-hour National monitoring
- ~ operational alarms and events management
- ~ upgrade and reinforce operators incident management procedures and capacity.



***d) From your point of view, which additional/supporting measures have to be provided from persons responsible outside your water utility (e.g. health and water authorities) to improve water supply integrity and resilience to tackle droughts like the one in 2018?***

**Key recommendations to improve water supply integrity and resilience to tackle droughts:**

- ~ increased investment in water conservation
- ~ permissions during drought for short term emergency water abstraction should be supported
- ~ a clear priority should be given to water supply and a law must be adopted for this
- ~ discuss reducing demand for water, addressing issues such as water labelling of domestic products, ability to meter all households and change in attitude of consumers: water is scarce resource
- ~ provide additional EU investment in leakage reduction to complement existing investment plans in Member States
- ~ impose drought master plans
- ~ implement specific water tariffs for some periods of the year with the help of Automatic Meter Reading systems (in particular in touristic areas such as coasts)
- ~ better control of private abstractions (agriculture, industries, private boreholes...)
- ~ implement regulations to favour water reuse projects
- ~ prioritise water resources for supply abstraction above other uses
- ~ improve enforcement and intervention powers and support for local authorities to deal with excessive use
- ~ discuss reducing demand for water, addressing issues such as water labelling of domestic products, ability to meter all customers and educating consumers about water scarcity
- ~ increase the use of metering as it reduces use
- ~ logical coupling between contingency and operations and the priority listing should also be official
- ~ municipal and city councils, mayors, district administrators and associations must recognise the need for appropriate investments in water supply resilience. Too often, water utilities are forced into a tight financial corset that no longer permits investments in system reserves
- ~ furthermore, the legislator must ensure legal security with regard to the necessary investments for measures to maintain the integrity of water supply and an increased resilience to threatening scenarios (drought, IT security, state of defence, flooding, etc.). Requirements on the integrity of supply/resilience must therefore be defined on the basis of criteria
- ~ supervisory and regulatory authorities must recognise investments in the resilience of water supply as legitimate costs within the framework of rational operational management and their incorporation into water charges. So far, this is often not the case or the subject of lengthy review and justification procedures
- ~ government and the states must provide funding for necessary technical and



- infrastructural adjustments so that the integrity of water supply can be maintained even under changing general conditions (climate change)
- ~ consistent implementation of water protection measures in all areas of water management and land use to avoid quality problems in extreme situations (e.g. erosion control, retention capacities for waste water, forest restructuring).





## Annex 2

### Detailed responses to questionnaires

Q1	Have Drought Management Plans (DMPs) been adopted by your national authorities?
Austria	No
Belgium	Depends on regional level: Walloon region: No, not yet Flanders: Yes, the authority VMM set up a DMP for drinking water distribution
Cyprus	Yes
Czech Republic	Yes - An Inter-ministerial Commission for Water Drought, the National Drought Coalition exists. Under the amendment to the Water Act of the Czech Republic, the so-called Drought and Water Deficiency Management Plan will be addressed.
Denmark	Yes – To some extent there is a scheme to ensure faster abstraction permits for irrigation (farmers) in case of drought.
Finland	No
France	Yes at Regional level
Germany	No- Neither federal nor state level authorities have adopted specific DMPs yet. But at federal and at State level overall sector specific climate change adaptation strategies/plans are in place, which address drought effects
Greece	Yes- In RBMPs there is a chapter dedicated to droughts based on past experience and there are deliverables and general proposals for measures
Ireland	Yes -Irish Water, the National utility responsible for water services, has a Drought Management Plan. It forms a Chapter in the Water Resources Strategy currently being prepared.
Italy	No. Not required at national level, only a few required at regional level. Some basin authorities formally adopted a DMP. In other cases, River Basin Management Plans contain measures to face water scarcity.
Poland	No.
Spain	Drought is a normal and recurrent phenomenon in Spanish climate. The Law 10/2001, of the National Hydrological Plan,



	laid the basis for this planned management of droughts. In 2007, the River Basin Authorities adopted their first Special Drought Plans (SDPs).
Switzerland	No, only in some cases at regional/co-national level
The Netherlands	Yes, in the Netherlands there is a national Handbook Water division and Drought.
United Kingdom	Yes



<b>Q2</b>	<b>Have water utilities a drought plan or is drought taken into account in the Water Safety Plan?</b>
Austria	Drinking Water suppliers have installed Drinking Water Supply Concepts which consider whatsoever incident of reduced availability of water resources (guidelines : OEVGW W88 and OEVGW W 74).
Belgium	<p>Depends on regional level :</p> <p>Walloon region: Discussions are going on and we hope to have a first package of measures in 2020.</p> <p>Flanders: Yes, the DMP under guidance of VMM includes measures and plans for individual water utilities. Also, legislation has been changed in order to oblige water utilities to include drought management.</p>
Cyprus	The Cyprus national "Water Development Department" deals with the drought plan.
Czech Republic	Water operators have an obligation to include in the WSP any restriction or lack of drinking. WSP is included in the legislation as mandatory and it is obliged to process both DW quality and quantity.
Denmark	No
Finland	Water utilities do not have specific drought management plans. Droughts should be covered in the utilities' contingency plans as part of security of supply.
France	<p>Outsourced water services have Drought Management plans Regarding the WSP:</p> <ul style="list-style-type: none"> <li>~ Although they are recommended in France, there are not mandatory yet</li> <li>~ The minimum content of a WSP is currently being discussed in France. It would consider water quality issues but not drought management since ISO22000 does not take it into account</li> </ul>
Germany	No, water utilities have no drought plans so far. The aspects of dry periods / droughts are taken into consideration when working/establishing WSPs
Greece	A very small number of water utilities have a drought management plan. The WSP is only recently started to be developed
Ireland	Irish Water, the National utility responsible for water services, has a Drought Action Plan. It is also incorporated in the Water



	Resources Strategy. It has been designed to guide each Irish Water function as to what actions are required of them during the period of drought. Local Action Plans are produced following the same format.
Italy	Many utilities have set up WSPs – they’re not mandatory yet but “highly recommended” since 2018 – DMPs are less.
Poland	No, a few municipalities have begun to take certain measures.
Spain	With the objective of basing actions towards droughts on planning, through "risk management", and not on emergency measures as "response to crisis", the Law 10/2001, of the National Hydrological Plan, laid the basis for this planned management of droughts, including the obligation of drafting SDPs in each river basin district (responsibility of the river basin authorities) and the elaboration of Emergency Plans (EPs) for water supply systems of more than 20,000 people (competency of the public administrations responsible for urban water supply systems).
Switzerland	It is up to the operator to ensure water safety.
The Netherlands	Yes. In the delivery plans drinking water companies have established scenario’s regarding dry seasons/situations. In their risk analysis for 2020, they included a scenario where there are two consecutive extremely dry summers.
United Kingdom	Yes



Q3	Are there legal obligations to have a drought plan?
Austria	No
Belgium	Depends on regional level : Walloon region: No, it is on a voluntary basis. Flanders : Yes
Cyprus	No. The preparation of the drought plan is considered as a must or outcome of the WFD requirements and as a measure to minimise the negative effect on climate change.
Czech Republic	If the obligation arises from the WSP in terms of lack of water, this must always be solved by the water operator according to local conditions.
Denmark	No –but they must ensure the necessary amount of water is available without compromising the abstraction permit
Finland	No, but they are legally obliged to have contingency plans.
France	Operators are not requested at national level to have drought plans. However, the abstraction licence is granted on the basis of an analysis of withdrawals and impacts on environmental flows. In addition, water suppliers of territories of more than 200,000 inhabitants must have crisis management plans for these territories which require procedures, tools, etc. which would also be useful for drought management.  At the State level, prefects of “départements” are requested to finalise drinking water crisis management plans (ORSEC plans) by 2020. These plans must tackle qualitative and quantitative crises, and droughts are specifically mentioned. Information to consumers, alternative water supply (such as tankering), etc. must be considered.
Germany	No
Greece	No
Ireland	There is no specific legal obligation to have such a Plan in place however there is industry wide recognition that this is best practice. There are National guidelines on Major Emergency Management and any crisis arising from drought would involve activation of the co-ordination mechanisms at National/Regional level.
Italy	No



Poland	No
Spain	Law 10/2001, of the National Hydrological Plan, establishes the obligation of drafting SDPs in each river basin district and the elaboration of EPs for water supply systems of more than 20,000 people.
Switzerland	A revised law will be adopted by end of 2020 to ensure that measures will be taken (VTM).
The Netherlands	Yes, drinking water companies are due to the Drinking Water Law obliged to make periodically delivery plans.
United Kingdom	Yes



<b>Q4</b>	<b>In case of drought, which are the authorities that are in charge of taking the appropriate measures? At which level (national/regional/local)?</b>
Austria	Drinking Water suppliers, together with mayor, local authorities ( municipalities ) and regional Water Supply Associations.
Belgium	<p>The regional legislation gives the possibility to water suppliers to impose water saving measures, with some regional difference</p> <p>Walloon region: the true authority is the Walloon government. In order for the government to be well informed, a special crisis centre meets regularly to assess the situation and propose adequate measures.</p> <p>Flanders: Police measures can be taken at the level of the Flemish government, the governor of the province or the mayor (on a local level) in case of restricted availability of drinking water (depending on the scale where a problem occurs).</p>
Cyprus	<p>At national level the Water Development Department under the Authority of the Cyprus ministry of agriculture natural resources and environment.</p> <p>At regional and local level, the Water Boards of the big cities and the municipalities or communities e.g. to implement measures for intermittent supply.</p>
Czech Republic	<p>At regional level; local water authorities in cooperation with the operators of water supply</p> <p>After the amendment of the Czech legislation is completed, it will be reflected in all levels</p>
Denmark	National – regional – local is the water utilities What measures can authorities take? Changes to abstraction limits, communication and campaigns – the water utilities sets restrictions on use, and the very famous max leakage percentage of 10 % otherwise the water operators are fined.
Finland	Regional authorities responsible for the water abstraction permissions and Ministry of Agriculture and Forestry.
France	Regional State authorities (prefects) decide and publish their decrees specifying thresholds and actions, and activate the different alert level. In addition, prefects organize regular meetings with the different regional stakeholders and users.



Germany	<p>a. Local: municipal and district level authorities can restrict certain water uses, e.g. lawn watering, water abstraction from surface water; health authorities may allow exemptions from obligatory quality standards for drinking water quality</p> <p>b. Regional: water authorities may allow for exemptions from water rights, e.g. management schemes for drinking water reservoirs/dams; groundwater abstraction schemes</p> <p>c. In severe / catastrophic events of droughts leading to the failure / black-out of the public water supply, district level authorities are in charge of safeguarding a minimum supply of drinking water to the public, e.g. through mobile tank vehicles or emergency wells.</p>
Greece	Basically the Regional Authorities
Ireland	<p>Irish Water, the National utility responsible for water services, in partnership with 31 Local Authorities takes the appropriate measures for continuity of public water supplies, provision of alternative temporary supplies (tankering, stand-pipes, bottled water) and communications with customers. Irish Water in consultation with other water management and environmental management bodies (ESB, Waterways Ireland, OPW, EPA, Inland Fisheries Ireland, NPWS) takes the appropriate measures for management and conservation of water sources and abstractions. There are National guidelines on Major Emergency Management and any crisis arising from drought would involve activation of the co-ordination mechanisms at National/Regional level.</p>
Italy	<p>It depends on the seriousness of the situation and the size of the area concerned. Depending on the case, it may be the central government, the regional government or mayors. An important role is also played by the Basin Authorities, who are called to regulate the withdrawals according to the different uses.</p> <p>More generally speaking – i.e. agricultural use – there are no “control rooms” but different stakeholders (irrigation consortia, lake authorities for bathing rivers, energy production companies, etc.) try to find day-to-day compromises.</p>
Poland	<p>At the local level, municipalities can restrict certain water uses, e.g. green areas, garden watering.</p> <p>At regional and national levels, water authorities may change abstraction schemes.</p>





Spain	<p>The SDPs take into account preventive and tactical operational actions, differentiating scenarios for the application of the measures:</p> <ul style="list-style-type: none"> <li>~ Prolonged droughts: measures may include application of a regime of minimal ecological flows less demanding or justified admission, a posteriori, of the temporary deterioration of a water body.</li> <li>~ Temporary scarcity: there is a progressive implementation of measures (normality, pre-alert, alert, emergency) which can be classified according to the problem-solution set they are addressing; to their typology (forecasting, operational, organisational, follow-up and recovery measures)</li> </ul>
Switzerland	Mainly water operators, local and regional authorities (Cantons)
The Netherlands	Measures should be taken by the responsible authorities: water authorities, ministry, provinces and Rijkswaterstaat.
United Kingdom	All



Q5	What measures can authorities take?
Austria	Supporting Drinking Water Suppliers in establishing Drinking Water Supply Concepts and allocating additional resources.
Belgium	<p>Prohibition of recreative activities such as kayaking or fishing (such as in case of presence and development of toxic algae)</p> <ul style="list-style-type: none"> <li>~ Gathering of boats at locks</li> <li>~ Restrictions in the use of drinking water. in Flanders, also other water catchments for non-essential uses are restricted</li> <li>~ Lowering restitution flow downstream at the dams.</li> <li>~ Giving derogations to limitation in water catchment areas.</li> </ul>
Cyprus	<p>Based on the suggestion of an advisory committee for water availability a political decision (ministry of agriculture natural resources and environment) is taken to share available water for drinking, agriculture and environmental needs.</p> <p>Intermittent supply of water may be implemented by water suppliers.</p> <p>Pricing can be used as a tool to minimize consumption of water.</p> <p>Also, the Water Development Department decides about the quantity of drinking water to be produced at desalination plants. The plants operate to cover the needs in drinking water almost every day.</p> <p>The Water development Department may set rules on the quantities of water being abstracted. The supply of satisfactory quantity of drinking water is a priority.</p>
Czech Republic	It will be actually surveyed and measured: local standard flow limits, groundwater level, level of reservoirs filling. Legislation is being amended when at the time of the announcement of the drought will be declared temporary restrictions on the use of drinking water from the tap as measures of a general nature .
Denmark	Changes to abstraction limits, communication and campaigns – the water utilities sets restrictions on use, and the very famous max leakage percentage of 10 % otherwise the water operators are fined.
Finland	Based on a proposal, the regional authorities may restrict water abstraction for other purposes to secure household water supply or water supply for a community. The party which made the proposal may be obliged to cover the



	<p>unreasonable losses for the party suffering from the restriction.</p> <p>In severe emergencies Ministry of Agriculture and Forestry can oblige water suppliers to deliver water to secure the water supply of a neighbouring community.</p>
France	Restriction or ban of certain water usage (See question 1)
Germany	Restrict use of (drinking) water for specific uses. Allow for exemptions from drinking water quality standards. Allow for exemptions from restrictions to water abstraction and reservoir management schemes in order to make additional water resources available for drinking water supply.
Greece	Usually restrictions on water use
Ireland	Water conservation communication campaigns with customers. Collaborative arrangements with other water management and environmental management bodies. Water Resource Planning and Asset Investment. Risk Assessment and Contingency Planning.
Italy	Restrictions in water use, primarily for garden irrigation and other not vital uses such as swimming pools. In the case of supplies for multiple uses, other withdrawals are limited in favour of drinking water supply.
Poland	Restrictions in use, changes in abstraction limits, but they can also organise communication campaigns
Spain	<p>There are different of authorities involved in case of droughts.</p> <p>In this way, the competent ministry (currently, the Ministry of Ecological Transition) will establish the technical guidelines to draft the SDPs, which will be implemented by the River Basin Authorities. At the local level, public Administrations responsible for urban water supply systems that serve a population of at least 20,000 inhabitants, have to ensure having in place an EP.</p>
Switzerland	Supporting Drinking Water Suppliers in establishing regional Drinking Water Supply Concepts, monitoring systems for forecast, providing decision support tools and allocating additional resources (e.g. spare parts, pumps, generators at central points).
The Netherlands	The minister of Infrastructure and Water Management and mayors of municipalities can put restrictions on the water use by consumers. The provinces can put specific restrictions on



	water use by households.
United Kingdom	Restrictions on use, changes to abstraction limits, communication and campaigns



Q6	What measures can water operators take?
Austria	Drinking Water Supply Concepts, additional resources, Water Supply Associations, etc.
Belgium	Restrictions to consumers for non-essential uses of water (gardening, cleaning, recreational uses, storage...)
Cyprus	<p>Some measures:</p> <ul style="list-style-type: none"> <li>~ A scalable water tariff according to consumption may be adopted.</li> <li>~ The watering of grass may be prohibited.</li> <li>~ The pressure of water supply may be lowered.</li> <li>~ The filling of private pools may be prohibited.</li> <li>~ The maximum quantities of water abstracted daily may be lowered.</li> <li>~ The consumers are distributed in zones and intermittent supply applied.</li> <li>~ Some uses of water may be restricted e.g. car washing.</li> </ul>
Czech Republic	<p>Operators resp. the owners of the water supply can set limits on the amount of drinking water consumption, determine the conditions of drinking water supply, determine the purpose of the water supply, respectively restrictions on the use of drinking water may be also included in the drinking water contract (eg. for filling swimming pools, watering green areas, etc.). Reducing surface water levels has an impact on quality water in the source, which places increased demands on water treatment technology.</p>
Denmark	Restrict certain water use and impose penalties, promote water efficiency, enhance leakage activity, defer maintenance of key assets, transfer water from other areas where infra exists
Finland	<ul style="list-style-type: none"> <li>a. use reserve water sources</li> <li>b. deliver (buy) water from other water suppliers if network connections exist</li> <li>c. operators using artificially recharged ground water can increase the volume of recharged water if available</li> <li>d. give advice to water users to save water (not legally binding advice)</li> <li>e. decrease the volume of leaking water by reducing the network pressure (not really used in Finland so far)</li> <li>f. make a proposal for an authority to restrict water abstraction for other purposes (see the previous answer)</li> </ul>



<p>France</p>	<p>Limitation of water discharge (to avoid water losses such as with water tank cleaning, tests of fire hydrants... or to avoid environmental impact)</p> <p>Postpone important maintenance works, which could reduce the production capacities.</p> <p>Prepare actions against 'street pooling' (wild opening of fire hydrants during heat waves).</p> <p>Favour abstraction from some water resources if there are several ones.</p> <p>Communication.</p>
<p>Germany</p>	<p>Operational Measures:</p> <ul style="list-style-type: none"> <li>~ Adaptation of water abstraction and facility management</li> <li>~ Use of (contractually agreed) external procurement options for raw/drinking water</li> <li>~ Reduction of the water pressure in the distribution network (local network) for volume throttling purposes</li> <li>~ Exemptions from water right restrictions on water abstraction quantities and underwater discharges from dams</li> <li>~ Appeals to save water, e.g. by dispensing with garden irrigation</li> <li>~ Additional operational and technical measures:</li> <li>~ Verification whether in all parts of the water supply system, from available resources to network hydraulics, the system reserves and redundancies required in extreme situations are available.</li> <li>~ Application of technical safety and risk management as tools for identifying and weighting hazards.</li> <li>~ Verification of resilience under high capacity utilisation when dealing with additional disruptive factors (e.g. temporary restrictions of certain capacities due to construction measures; creation of an n-1 rule).</li> <li>~ Adapted resource management as basis for a high availability of resources in extreme situations (use of groundwater/surface water; development of additional resources, usage of water from other resources, e.g. transfer from other rivers; own/foreign procurement; water rights).</li> <li>~ Setting up redundant facilities within the scope of "rational operations management" and expanding own system capacities (processing, storage, networks).</li> <li>~ Reduction of own water consumption and water losses;</li> </ul>



	<p>e.g. also by returning the first discharge from the water treatment to the treatment process.</p> <ul style="list-style-type: none"> <li>~ Taking into account seasonal focuses of extreme weather events when planning maintenance and refurbishment projects.</li> <li>~ Shifting maintenance work to the winter half-year.</li> <li>~ Limitation and, if necessary, rejection of external measures that have an impact on the water infrastructure (e.g. construction work on roads) in the event of extreme weather events.</li> <li>~ Building and strengthening interconnected systems.</li> <li>~ Creating the basis for the remuneration of the provision performance.</li> <li>~ Adaptation of supply and purchase agreements.</li> <li>~ Capturing peak loads by means of "smart metering" and the use of regulating and control devices at delivery points for quantity regulation and fair load distribution.</li> <li>~ Ability to agree in good time with the authorities on exemptions from water right requirements (water withdrawal quantities, underwater discharges) in order to be able to act quickly in a specific case.</li> <li>~ Planning and preparing public relations work such as appeals for water saving up to restricting the designated uses of water and preparing for the case of need.</li> </ul>
Greece	Start up reserves (where available) , communication/information campaigns and restrictions on use.
Ireland	Irish Water has 788 Water Treatment Plants, each with different source and supply network arrangements and challenges. A different range of operational measures are practical and available in different Water Supply Schemes. See List at Drought 2018 Question b below.
Italy	Apart from some technical expedients (eg. adaptation of water abstraction and facility management, limitation of the pressure in the distribution network (local network), they can only address local authority in order to set up measures such as those at pint 5. On a more general level, operators can and often promote the sustainable use of water through educational programs and/or advertising.
Poland	Lower the pressure, address local authorities to ban garden watering, educate, refuse new connections.
Spain	Given each supply system serving a population of at least



	<p>20,000 inhabitants must carry out its corresponding EP, the operators will be responsible for the drafting and implementation of these plans, which are aiming at organising decision-making and management measures that allow anticipating to water scarcity, minimizing its possible adverse effects, as well as defining the responsibilities for the different scarcity scenarios (same as mentioned in Q5). The following types of actions can be characterized:</p> <ul style="list-style-type: none"> <li>~ Preventive, identification of initial conditions</li> <li>~ Administration, management and operation of supply systems</li> <li>~ Organic, institutional and, legal and regulatory</li> <li>~ Actions on infrastructure and resources</li> <li>~ Actions on demand and of social impact</li> </ul>
Switzerland	<p>Local and regional water safety plans, providing communication tools for sensitisation campaigns for public, training at utility and authority level, business resilience checks</p>
The Netherlands	<p>Drinking water companies are can ask for restrictions on the use of it by consumers. Furthermore, drinking water companies may ask the consumer to use less water at certain times of the day.</p> <p>Further short term measures:</p> <ul style="list-style-type: none"> <li>~ Pressure reduction during peak hours.</li> <li>~ Long term measures:</li> <li>~ Drinking water companies are working together with stakeholders on a strategy to find long term solutions to ensure drinking water delivery.</li> <li>~ Better cooperation between drinking water companies regarding communication.</li> <li>~ Climate-robust water system focused on holding water during winter time</li> </ul>
United Kingdom	<p>Restrict certain water use and impose penalties, promote water efficiency, enhance leakage activity, defer maintenance of key assets, transfer water from other areas where infra exists</p>





Q7	Are there water savings schemes in place?
Austria	No, not in general.
Belgium	Depends on regional level: Walloon region: Not yet Flanders: Yes
Cyprus	Yes. The target is to minimize water consumption. TV spots are used to sensitize and raise awareness of citizens/consumers. Schemes for modern systems for irrigation and change in plants cultivated. The schemes may be influenced by economic issues. Water suppliers invest in reducing water losses/leakages.
Czech Republic	See Q 5. It is carried out consumer education in dry locations.
Denmark	Yes
Finland	No.
France	Yes, since several regions in France had in the past years, and have also this year, to cope with droughts. The regional State authorities elaborate water management plans for river basins and watersheds after consultation of the different stakeholders (municipalities, main water users, environmental associations). These plans aim to a sustainable management of the water resources. If a watershed is characterized by a constant discrepancy between the needs and the water resources, it can be classified by the State authorities as a "zone de répartition des eaux" in order to conciliate the interests of the different users and to protect the aquatic ecosystems. Water abstractions are strictly monitored in these zones.
Germany	a couple of devices at homes include water saving mechanisms, like shower heads, flushing cistern. Due to intensive water saving campaigns since the 1980ies water use has been reduced since 1990 by about 25 %. Per capita domestic drinking water use has been reduced meanwhile to 120 l per day.
Greece	Yes (Note: in some case based on communication campaigns or on supply pressure reduction or on use restrictions, depending on the location and period of year)
Ireland	Yes (details depending on the location and time of year. See



	List at Drought 2018 Question b below).
Italy	There are no very proper water saving plans, but water saving is promoted in the context of the River Basin District Management Plans and in the regional water protection plans. Even the national regulatory authority has included, in the regulation on technical quality, indicators related to water losses.
Poland	Not at the national level. Some measures are taken at the local level.
Spain	Both in SDPs and EPs, there are different saving schemes applied in each scarcity scenario
Switzerland	No, not in general, as also waste water systems would be affected.
The Netherlands	Strategies are being formulated with all relevant stakeholders for the most efficient long-term use of freshwater.
United Kingdom	Yes but these will be enhanced



Q8	<b>In times of shortage, is there a priority scheme?</b> <b>A. Does legislation give priority to drinking water supply?      B. Is the drinking water network considered "critical infrastructure" by national law?</b>
Austria	Not nationwide and in general. A: Yes B: Yes
Belgium	Before 2019, though water systems are not considered a critical infrastructure, usual practice gives actually the highest priority to water supply when in competition with other activities as it was experienced during the 2018 drought. Since 2019, a recent change in national legislation defines water systems as critical infrastructure. There is actually no priority scheme, but local authorities will prepare one for 2020.
Cyprus	The drinking water is considered as a priority. Then environment and agriculture follow as a priority.
Czech Republic	In the legislation under preparation, there is a 5-degree prioritization of drinking water use: <ol style="list-style-type: none"> <li>1. Providing critical infrastructure functions</li> <li>2. Drinking water supply</li> <li>3. Livestock production and ecological role of water</li> <li>4. Economic utilization of waters not under the above points</li> <li>5. Other uses</li> </ol>
Denmark	Not really – we have a general priority that sets water supply first but it is not systematically used. a: Depends on the severity – see above b: No, but were still discussing it
Finland	As presented in answer 5, water supply for separate households and communities may be prioritised in cases of drought  B: Yes and no. Water supply and sanitation are considered critical infrastructure (or services) in the Government Decision on the Objectives of Security of Supply, but it doesn't include legislative obligations.
France	Yes DW supply always gets priority over any other use (See question 1 about restrictions). Drinking water networks supplying territories of more than 200,000 inhabitants are officially considered by the State as "vital services" (see question 3).



Germany	no priority scheme in times of shortage. Yes, according to the Water Act (= German implementation of the Water Framework Directive) priority is given to drinking water supply but somehow hidden between the lines (needs clarification). The drinking water network is considered as "critical infrastructure" by national law. However, the priority of the drinking water supply in competitive demand situations is not consistently established throughout the country.
Greece	<p>Yes but (note: for a river which is used for irrigation, electrical power production and drinking water supply, there is always a meeting every Spring to deal with the demand. The Electricity Enterprise "holds the key" for managing the river).</p> <p>B: YES (indirectly, since the DW networks are part of national emergency planing).</p>
Ireland	<p>No. Water Supply provision relies on the goodwill and cooperation of other stakeholders, many of whom control the flow and level arrangements on the water-body. There are potentially conflicting thresholds arising from other beneficial water uses/needs: fisheries, environmental and amenity uses, assimilative capacity for wastewater discharges, canal-feed abstractions, private agricultural and commercial abstractions, hydro-electricity generation. In some areas water abstraction thresholds are set by volume or low-level. Where there are a range of documented uses, abstraction for public water supply generally has a lower priority than other uses. Priority is generally given to Hospitals, customers with specific medical needs where possible.</p> <p>B: The water network is generally regarded as a critical infrastructure and Irish Water classifies it's assets based on criticality but there is no specific National Legislation..</p>
Italy	There is not a priority scheme, but the law gives a clear priority to drinking use. The agricultural use and other uses are subordinated to this. Even if they are not considered critical infrastructure, cyber security rules also apply to the water infrastructure. The State can exercise the golden power on these infrastructures and on the companies that manage them.
Poland	No, there is no priority scheme in times of shortage and legislation does not give priority to drinking water supply. Yes, drinking water network are considered "critical



	infrastructure" by national law.
Spain	<p>The Water Act, in its Article 60, establishes, the order of priority of uses to be applied, and not only in scarcity and drought situations:</p> <ol style="list-style-type: none"> <li>1. Population supply, including industries connected to the municipal network.</li> <li>2. Irrigation and agricultural uses.</li> <li>3. Industrial uses for the production of electricity.</li> <li>4. Other industrial uses not included in the previous sections.</li> <li>5. Aquaculture</li> <li>6. Recreational uses.</li> <li>7. Navigation and water transport.</li> <li>8. Other uses.</li> </ol> <p>RBMP can define a different order for the uses, but always keeping supply to populations as the priority use.</p> <p>National legislation defines water supply infrastructure as critical infrastructure.</p>
Switzerland	Based on the new law (VTM), there will be minimum volume threshold defined which needs to be provided for population, special purposes such as hospitals and for commerce including cattle
The Netherlands	In the Netherlands, we use legally arranged the "displacement series "(verdringingsreeks), in which we can provide/decide what measures should be taken and in what order. Drinking water f.i. is an important function in this scheme and it is placed on the second spot. More specifically: priority 1 is for safety and the prevention of irreversible damage, priority 2 is for public utilities (including drinking water), priority 3 mostly includes the use of water for industrial process water and temporary watering of capital intensive crops and finally priority 4 is for other interests, amongst other industry and agriculture
United Kingdom	Not really; A: Depends on the severity; B: Yes



Q9	How do these measures affect different uses ( or users ) of water?
Austria	We have no nationwide experience; no answer possible in general.
Belgium	See previous question
Cyprus	Necessarily the users are affected on their “unlimited” access to water. Mostly the farmers can not produce the products they wish. Citizens are urged not to waste water or overspend.
Czech Republic	<p>In the legislation under preparation, there is a 5-degree prioritization of drinking water use:</p> <ol style="list-style-type: none"> <li>1. Providing critical infrastructure functions</li> <li>2. Drinking water supply</li> <li>3. Livestock production and ecological role of water</li> <li>4. Economic utilization of waters not under the above points</li> <li>5. Other uses</li> </ol>
Denmark	Restrictions applies first to domestic garden / hosepipe use then non-essential non-domestic use – critical costumers as for example hospitals are prioritized
Finland	See previous question
France	Restriction or ban of certain water usage (See question 1). Agriculture and electricity productions are greatly impacted.
Germany	no impacts/repercussions so far.
Greece	-
Ireland	Irish Water relies on the goodwill and cooperation of other stakeholders to ensure that there is enough water available for abstraction.
Italy	There is not a general answer, it depends from case to case
Spain	Apart from the order of priority established by the Water Act, the measures defined for each scenario (Prolonged droughts; Temporary scarcity - normality, pre-alert, alert, emergency) will have an impact on users (see Q5 and Q6)
Switzerland	It is the Drinking Water Supplier/commune.
The Netherlands	Restrictions may cause damages to the agricultural sector due to less irrigation and to industry due to an insufficient amount of industrial process water.



United Kingdom	Restrictions will apply first to domestic garden / hosepipe use then non-essential non-domestic use
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<b>Q10</b>	<b>Are public authorities communicating these measures or is it up to the water operators?</b>
Austria	It is the Drinking Water Supplier.
Belgium	Both are transmitting the same information to consumers.
Cyprus	Yes, all the related authorities participate in communicating the measures. Water scarcity is considered as a national thread.
Czech Republic	Yes, the INTERSUCHO.CZ website is processed. Water sources are primarily monitored by the operators. If water is scarce, site-specific crises plans come into force (which are incorporated into the WSPs).
Denmark	Joint
Finland	Authorities will communicate the restrictions, but (non binding) advice to save water is communicated by both utilities and authorities.
France	Decrees from the Regional State authorities (prefects) are published, displayed in the town halls and sent to the media. The public is mainly informed by newspapers, radios, TV, etc. Major water users are directly informed (professional associations, meeting with major stakeholders...)
Germany	No measures so far.
Greece	Usually up to water operators
Ireland	At National level a National Emergency Committee meets and Irish Water sits on this committee and Irish Water, as the Water Authority and the Operator, in partnership with 31 Local Authorities, communicates with customers.
Italy	Usually authorities and operators work together to communicate the measures taken to users.
Poland	Operators and authorities
Spain	At the basin level, it's responsibility of the river basin authorities, but at the local level, it's both public authorities and operators doing it.
Switzerland	It is the Drinking Water Supplier/commune.
The Netherlands	See previous question
United Kingdom	Joint





<b>Q11</b>	<b>Are there fines if water users do not respect the measures (bans, restriction of use ) imposed by the authorities?</b>
Austria	No. - Yet there is no legal act available especially not respecting measures on drought, which could be the basis for fines. Locally, Water Suppliers can impose higher prices in case of pool fillings.
Belgium	<p>Depends on regional level :</p> <p>Walloon region : It is considered a third class infraction and as such, users may be charge with a fee ranging from 100 to 100.000 €. They can also (theoretically) be imprisoned between 8 days and six months.</p> <p>Flanders : a fine can be applied for spilling water in case restricting measures are of application. First, local police can issue a warning; in case of repetitive infractions, a fine is applied.</p>
Cyprus	Yes, there are fines for overconsumption or for illegal use. For overspending water from government schemes by farmers there is a very higher price as a penalty.
Czech Republic	Yes, fines are imposed in the event of the drinking water abstraction being exceeded or if the limit imposed by the water authority has not been respected. If the customer also takes the drinking water in conflict with the customer contract, the water supply operator may temporarily suspend or limit the water supply (upon prior notice).
Denmark	Yes but these are not often used
Finland	No
France	Possible in theory but rare. The fines are not very high for large users since the amounts are 1500 € for the first offense and 3750 € for the second one.
Germany	in cases measures imposed by authorities sanctions are in place
Greece	In some cases and severe conditions
Ireland	Limited provision for fines. There is provision for restriction of excessive use, although this is only enforceable on non-domestic customers. New charges for wasting water (defined in Law as using more than 1.7 times the average use) implemented in 2021.



Italy	There are some general references in the law but there is no general discipline regarding fines.
Poland	In theory yes but it is difficult to enforce in practice.
Spain	Special Drought Plans (basin level) and Emergency Plans (local level) establish packages of measures to be applied in each scenario of scarcity, establish sanctioning regimes, awareness campaigns, etc.
Switzerland	Abstraction of surface water for irrigation of agriculture land could be fined if not permitted.
The Netherlands	No
United Kingdom	Yes but these are not often used



<b>Q12</b>	<b>Are there cases of cross-border drinking water supply between your country and neighbouring countries ( like in Luxembourg)?</b>
Austria	Yes, there are examples ( eg: Upper Austria, Burgenland).
Belgium	Belgium has marginal cross-border water supplies : There is some drinking water supply to northern of France and during the 2018 drought complementary supply came from Germany in order to compensate for the low production in eastern Wallonia. Most drinking water transfer occur at regional level, from Wallonia to Brussels and a part of Flanders.
Cyprus	No.
Czech Republic	Not really
Denmark	No
Finland	No
France	No (or very exceptional)
Germany	No
Greece	No (Note: Many cross border rivers, none of them used for water supply, only for irrigation purposes)
Ireland	Yes. Some minor cross-border supplies with Northern Ireland.
Italy	No
Poland	Yes. One cross-boarder supply from the Czech Republic to Poland and one from Germany to Poland.
Spain	No
Switzerland	No (or very exceptional)
The Netherlands	No
United Kingdom	No

### About EurEau

EurEau is the voice of Europe’s water sector. We represent drinking water and waste water operators from 29 countries in Europe, from both the private and the public sectors.

Our members are 32 national associations of water services. At EurEau, we bring national water professionals together to agree European water sector positions regarding the management of water quality, resource efficiency and access to water for Europe’s citizens and businesses. The EurEau secretariat is based in Brussels.



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