Managing the Threat of Water Shortages in France
Gestión de la amenaza de la escasez de agua en Francia

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Abstract
France, in common with other countries, faces the growing threat of water shortages as climate change intensifies. While the resources deployed to tackle this risk are many and varied, there is still room for improvement. This scenario points to a gap in the practical execution of climate adaptation, which is now more vital than ever.

Keywords
Drought, Scarcity, Quantitative Management, Water.

Resumen
Francia, al igual que otros países, enfrenta la creciente amenaza de escasez del agua mientras el cambio climático se intensifica. Aunque los recursos desplegados para hacer frente a este riesgo son muchos y variados, aún hay lugar para mejorar. Este escenario pone de manifiesto la brecha entre la ejecución práctica de la adaptación del clima, que ahora es más vital que nunca.

Palabras clave
Sequía, Escasez, Gestión cuantitativa, Agua.

1. Introduction

Water scarcity has become a fact of life. Shortages are more frequent, more severe and longer-lasting than in the past. They go hand-in-hand with climate change, and are forcing communities to navigate increasingly uncharted situations. This inevitably raises questions of various kinds — scientific, economic, sociological and legal — and for good reason: the lack of water presents obstacles to fulfilling human (Soubeyroux, 2023) and environmental needs. In other words, the ecosystem services provided by water, and its ecological functions, are undermined. France, in common with other nations, is deeply affected by water scarcity, leaving the country little choice but to become more actively engaged with this increasingly urgent issue.

The Pyrénées Orientales administrative department in the south of France serves as a striking illustration of this phenomenon. The region is today recognized as the country's driest area: between 2022 and 2024 it experienced a record drought with a water deficit of approximately 60% from April 2023 to March 2024 compared to the usual conditions. As a result, the authorities committed to implementing a Drought Emergency and Accountability Plan (*Plan d'Urgence et de Responsabilité face à la Sécheresse*) in April 2023 designed to: (i) handle the crisis and take measures to tackle the effects of the drought; (ii) significantly and swiftly reduce water consumption; and (iii) put forward medium-term solutions. Although not a universal remedy, a Water Resource Management Action Plan (*Plan d'Action pour la Gestion de la Ressource en*

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Eau) has been rolled out since 2024 "to safeguard universal access to water and develop new resources"(Prefect of Pyrénées-Orientales, 2025). Other French counties, such as the nearby county of Hérault, have followed suit.[1] Nevertheless, problems remain, especially in France's Overseas Territories (Cour des comptes, 2025), where the landscape is shaped by various plans[2], special laws (Law No. 2021-513) and judicial decisions (Conseil d'État, 2023) with mixed results. The issue is treated as a top priority at national level, where it has been the focus of a dedicated ecological planning roadmap since March 30, 2023: the Action Plan for Resilient and Coordinated Water Management (*Plan d'Action pour une Gestion Résiliente et Concertée de l'Eau*; also called the "Water Plan") is built on three pillars: (i) organizing water-conservation measures for all stakeholders; (ii) optimizing resource availability; and (iii) safeguarding water quality (French Government, 2023). Although certain problems persist, the plan seems to be taking shape at this stage (French Government, 2025) It is evident that this situation raises concerns about France's ability to tackle climate change and roll out the necessary adaptation policies.

This scenario presents a valuable opportunity to show that water management is a sensitive and, above all, extremely complex subject that requires not just broad measures concerning the resource as a whole but also scarcity-specific initiatives.

2. General water management measures

French water law is based on three core instruments that in their own way incorporate the threat of water shortage without being specifically aimed at it. The law relates to principles, planning and regulatory oversight.

2.1. Principles

In France, water is regarded as the "common heritage of the nation". Accordingly, "protecting, improving and developing the usable resource in accordance with natural balances" is a matter of public interest (Environmental Code, Art. L. 210-1). In order to implement these objectives — setting aside the major core principles of French environmental law (set out in Art. L. 110-1 of the Environmental Code and which also apply here: *inter alia* prevention, precaution, "the polluter pays", participation and information, and non-regression) — water management is built entirely around one standout principle that is dedicated specifically to the resource: the principle of balanced and sustainable water management which implements Article 6 of the Constitutional Charter for the Environment, relating to sustainable development, and which requires reconciliation between the various imperatives related to water (ecological, economic, and social). This framework, which is laid out in Art. L. 211-1 of the Environmental Code, i.e. at the head of the section on water-related provisions, "incorporates the adaptations necessary for climate change". It pursues a number of objectives, including "the development, mobilization, creation and protection of water resources"; "the promotion of an active water storage policy for shared water usage, aimed at guaranteeing irrigation, which is crucial for the security of agricultural production, maintaining river flow levels and meeting the needs of local populations"; and "the promotion of an efficient, economical and sustainable use of water resources, particularly through the development of treated wastewater reuse and the use of rainwater as a substitute for drinking water". Water management must also "give priority" to "fulfilling "the requirements of public health, hygiene and security and supplying drinking water to the population", while ensuring there is a balance between the different uses of the resource. This principle is of great

[1] See the Drought Emergency and Accountability Action Plan.
[2] See the Plan Eau DOM: pour une gestion durable de l'eau potable et de l'assainissement dans les outre-mer, 2016.

interest in the context of the threat of water shortages: as well as enforcing "sound" qualitative and quantitative management (both of which are absolutely essential), it is intended to inform all actions in this area. Furthermore, it imposes a legal obligation on public authorities when enacting water-related policies. Accordingly, the magistrate known in France as a "*juge administratif*" does not flinch from compelling prefects to take all necessary steps to prevent watercourses from drying up (Administrative Court of Orléans, 1995), as he does not hesitate to overturn any administrative decision that does not comply with this principle.

2.2. Planning

In common with all European Union member states, France has an obligation to implement planning instruments for water management in order to ensure that it is governed at an appropriate regional level. The goals of the EU Water Framework Directive are to promote "sustainable water use based on a long-term protection of available water resources" (Directive 2000/60/EC of the European Parliament and Council of October 23, 2000); to mitigate the impact of "droughts"; and to ensure a "sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use" (Art. 1). The Directive requires Member States to identify "river basin districts" (Art. 3) for which they must adopt "river basin management plans" (Art. 13) through a combination of qualitative and quantitative approaches.

France has pinpointed 14 river basin districts within its territory, which are areas forming a certain unity from the point of view of water networks and marked, as a result, by solidarity: nine located in mainland France that are organized into six major watershed regions, and five for its Overseas Territories. These 12 major watersheds serve as the administrative reference area for water governance. They are regulated by a planning framework in the form of a Master Plan for Water Development and Management (SDAGE: see the Environmental Code, Art. L. 212-2), which may be detailed through water development and management plans for sub-basins (SAGE: Art. L. 212-3). Over a six-year span, these documents must include, *inter alia*, specific goals for water quality and quality, as well as specifying the measures and provisions required to meet and uphold these targets. Consequently, these plans put the principle of the balanced, sustainable management of water resources into action at local level. The latest generation of these plans — the fourth — dates from 2022 and applies to the period 2022-2027.

The plans are of no small importance since they lay down the framework for local water management within a multi-year structure, thereby also shaping the range of actions available to public authorities when they intervene. And rightly so: these plans are binding on administrative decisions and programs in the water sector, which must therefore adhere to them or risk being annulled (Environmental Code, Art. L. 212-1).

2.3. Regulatory oversight

The third broad instrument used by French water law to ensure proper water management is administrative oversight, which is designed to regulate activities that may have an impact on water resources or aquatic environments. This control mechanism, also known as IOTA oversight (*police des IOTA*), has a wide scope: it targets "facilities, structures, projects and activities undertaken for non-domestic purposes by any natural or legal person, public or private, *that may involve withdrawals from surface or groundwater*, whether returned or not, changes in the level or method of water flow, the destruction of spawning beds, growth or feeding areas for fish fauna or direct or indirect, chronic or episodic, deposits or spills, flows or discharges even if they are non-polluting" (Environmental Code, Art. L. 214-1; author's italics). The activities covered by this procedure are identified by a nomenclature. Furthermore, depending on their impact on the water and aquatic

environments — particularly in quantitative terms — they are subject either to an authorization system or a reporting system[3], with low-level withdrawals being treated as domestic use exempt from any formal requirements (Environmental Code, Art. L. 214-2 and R. 214-5; see the nomenclature in Art. R. 214-1). Accordingly, the following require authorization according to the nomenclature: facilities, structures, works and activities that "may pose risks to public health and safety, obstruct the free flow of water, diminish water resources, significantly heighten the danger of flooding or cause serious damage to the quality or diversity of aquatic environments, especially fish populations". A wide range of water abstraction activities are affected and subject to regulation. In the course of this process, they are sometimes governed by an authorization regime, and sometimes a reporting regime. In fact, this form of administrative oversight is an excellent tool for ensuring that water usage is compatible with the state of the resource.

These general mechanisms hold out encouraging prospects for protecting the resource. They work in tandem with much more specific measures to ensure sound management and avoid shortages.

3. Special water management measures

In response to the threat of water scarcity, there are two possible strategic levers in addition to the general measures: taking action on the supply side and ensuring that the resource is available; or acting on the demand side and reducing the anthropogenic stressors on water.

3.1. Supply-side management

A number of solutions are in place in France to address supply-side issues both nationally and locally.

On the countrywide scale, efforts are increasingly focused on developing and maintaining substitute water reserves, especially in support of agriculture — although it must be said that this type of initiative does not enjoy universal agreement. This strategy entails creating "retention basins" of varying sizes to build up the stock of water, thereby guaranteeing a relatively stable water supply. More often than not, these basins would be filled by drawing from the groundwater tables. The French government adopted Decree No. 2024-423 of May 10, 2024 on adjusting the litigation procedure for agricultural hydraulic structures, environmentally-classified livestock farming facilities and environmental authorizations to bolster the legal security of these projects and make it more difficult to challenge them. In addition to concerns about the right to appeal and democratic oversight raised by the text (Peyen, L. 2024), it is also possible to consider the Law No. 2025-794 of August 11, 2025, aimed at removing constraints on farming, which established presumptions of public interest for water storage facilities and associated surface water or groundwater withdrawals that are primarily used for agricultural purposes (Art. 5), a measure that was validated by the French Constitutional Council (Decision No. 2025-891 of August 7, 2025). This approach, which focuses largely on developing "mega-retention basins", may appear problematic since it fails to tackle the root causes of water scarcity, focusing instead on its consequences. Indeed, one might argue that, rather than encouraging a shift in uses, it entrenches existing practices as though everything were normal (National Assembly, 2023). All things considered, from a purely legal perspective, these structures generate administrative litigation. Administrative case law confirms that, while there is no legal opposition in principle to these projects (Administrative Court of Poitiers, 2023), the authorizations allowing them to proceed are contingent on a number of requirements: compliance with the planning documents in the water sector (Administrative

[3] Under the authorization procedure, the activity cannot take place unless it is authorized by the administration: prohibition is the rule, permission is the exception. Under the declaration procedure, the opposite is true, as the activity can take place unless the administration objects: permission is the rule, prohibition is the exception.

Court of Poitiers, 2024), especially regarding the abstraction limits they set (Administrative Court of Appeal of Bordeaux, 2023); adherence to the principle of balanced, sustainable water management — in particular by avoiding oversizing in relation to local needs; reliance on credible impact studies (Administrative Court of Appeal of Bordeaux, 2022); and respect for the rights of endangered species (Administrative Court of Appeal of Bordeaux, 2024). Additionally, a complementary strategy — backed by EU legislation — is gaining traction (European Parliament & Council, 2020) at national level: the re-use of so-called "non-conventional water" (France, *Environmental Code*, Arts. R. 211-123 et seq.; *Public Health Code*, Arts. R. 1322-76 et seq. & R. 1322-87 et seq.), partly within the context of a circular economy.

At local level, several projects that are fairly diverse in nature can be highlighted. The first is the Aqua Domitia project in the south of France that transports water from the best-supplied areas to the most water-stressed regions. This initiative, which is backed by the local authorities, conveys water from the Rhône from east to west to more exposed areas. The initiative, which came online in 2017, is made up of pumping stations and pipes with an average diameter of one meter deployed over a total distance of 140 km. Thanks to the 8 million km3 of water transported by Aqua Domitia, it is possible to avoid extracting this volume from already-stressed water tables in the target zones, thereby helping to "rebalance" the regions. These solutions, however, are far from perfect, and may provoke disputes, especially since they are sometimes blamed for weakening some areas to benefit others (as is the case on Réunion with the "water shift" from east to west, which was completed in 2014). First and foremost, based on forecasts, these projects are only stopgap solutions: without significant water savings, Aqua Domitia will reach capacity in a few years and will fall short of covering all requirements.

The second noteworthy example is backed by the Haute-Garonne department, where the R'Garonne project draws partly on nature-based solutions, which are gaining momentum. This initiative aims to help recharge the groundwater table — a natural phenomenon — by encouraging water to infiltrate the soil during periods of high-water levels (covering approximately 100 km2).

There are other, more targeted solutions at local level, even though they are not uniformly supported across France. A notable example is the rehabilitation of drinking water pipelines: one fifth of drinking water is lost nationwide due to the aging state of the network. This situation is likely to aggravate the risk of water shortages, as exemplified by the case of Martinique.

While there is no doubt that these solutions are useful and welcome, they do not obscure the need also to address water demand management.

3.2 Managing demand

Managing demand is clearly linked to climate change adaptation, which is widely under-exploited in France (Cour des comptes, 2024)). The Water Plan adopted by the government aims for a 10% cut in water withdrawals by 2030 compared to the present day. However, it does not set a defined pathway or intermediate milestones. Here, once again, the tools are relatively varied, and several levers are being activated by the government.

In the first instance, public education initiatives about the state of water resources should be considered in order to encourage everyone to adjust their use or, at the very least, so that they are aware of the impact of their use on water resources. Against this background, it is vital to keep the public informed, and a range of communication tools is being rolled out to pass on information about the state of the resource or the relevant measures being implemented in response (such as the VigieEau website).

Secondly, several standards can be introduced to regulate or prohibit certain uses of water depending on the severity of the threat of shortage. Accordingly, the regulatory oversight

authorities may "take measures to limit or temporarily suspend water use in order to address a threat or the consequences of accidents, drought, floods or risk of shortage" (Environmental Code, Art. L. 211-3) – the state of the resource being particularly decisive. The "temporary orders restricting water use", which are necessary and time-limited according to the prevailing conditions, may require communicating information about withdrawals, enforce water storage or destocking operations, and prescribe the suspension — possibly total — of withdrawals based on the uses or types of activities. The measures are scaled according to four levels of severity: vigilance, alert, heightened alert and crisis (Peyen, 2023, ref. Environmental Code, Art. R. 211-66 *et seq*.). On a longer-term basis, when certain areas have "a non-exceptional shortfall of resources in relation to needs", they may be designated "water distribution zones" and thereby be subject to more stringent rules regarding usage (Environmental Code, Art. R. 211-71 *et seq*.).

Thirdly, and in a more novel approach, certain branches of law that were not originally intended for this purpose are also being drawn on to address the problem. Such is the case, for example, with urban planning law: while municipalities with the relevant jurisdiction have the authority to regulate urban development based on the state of the network[4], they have also recently leveraged other provisions so they can respond in a more robust manner to the condition of the aquifer. Some municipalities have been able to refuse building permits to avoid putting further strain on the resource when it is deemed to be in a precarious state, especially from a public health standpoint. They have acted under Art. R. 111-2 of the Urban Planning Code, which grants municipal authorities enhanced powers in situations posing a risk to public order (Administrative Court of Toulon, 2024). In keeping with the neutral stance of French public law, citizens do not have a "right to build", especially when it could be detrimental to the general interest. A further illustrative example lies in the adjustment of drinking water tariffs based on resource availability. In some cities, such as Toulouse, these are revised upwards in the summer when demand is high and water is less abundant as part of a disincentive/incentive approach.

4. Conclusion

Although this framework — presented here in outline form — works in many cases, it has a number of shortcomings. To take one example: in the agricultural sector, it is now recognized that practices must evolve: farmers must sow earlier in the year, and new varieties must be selected that are more resilient to water stress. In addition, soil tillage needs to be reduced and soil humus maintained, and hedges and wetlands need to be preserved. Above all, crop diversification should be prioritized by using legumes, for instance, instead of corn, which requires large volumes of water at the least favorable time of year. However, the most recent report from the French General Accounting Office (*Cour des Comptes*) in 2024, which takes the example of cereal crops, shows that the cost of these adaptations is prohibitive: the highly-resilient pea-wheat mix also proves to be expensive. Moreover, we also learn from the report that consumer expectations may also be an obstacle since supply may not be calibrated to demand; this acts as a deterrent for farmers who would then be threatened with financial hardship. By the same token, several other assessments have underscored the shortcomings of French law in addressing the risk of water shortages. In March 2023, a report released by the General Inspectorate of the Environment and Sustainable Development highlighted the need to improve the governance framework for water management in response to droughts (Bertrand N. *et al.,* 2023). It also stressed the importance of more effective risk anticipation, in particular by implementing water conservation plans, together with the need for communications on the matter. In July 2023, the General Accounting

[4] See for example Arts. L. 111-11 and R. 111-9 of the Urban Code.

Office issued a specialized report on quantitative water management in the context of climate change. The report highlighted a number of problems: a highly complicated system of water governance; an under-performing, poorly-implemented ecological planning mechanism; a common agricultural policy that encourages water-intensive farming and discourages restraint and conservation (Maublanc, 2024); water abstraction charges that are too low to be an incentive or even a deterrent; a lack of eco-conditionality regarding the funding of irrigation projects; an absence of long-term actions to encourage conservation and changes in usage; and, lastly, little coherence between water policies and economic and tourism development.

Ultimately, there is still considerable ground to cover before we effectively address the threat of water scarcity. First and foremost, it is crucial to acknowledge that government policies are not watertight: they intersect and influence each other.

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