WATER USE IN PORTUGAL

LOOKING AT, UNDERSTANDING AND ENGAGING WITH KEY PLAYERS

FUNDAÇÃO CALOUSTE GULBENKIAN

10 KEY TAKEAWAYS
ROADMAP FOR CHANGE

A study conducted under the Gulbenkian Sustainable Development Programme
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About the study

The Calouste Gulbenkian Foundation challenged C-Lab - The Consumer Intelligence Lab to conduct a study on water stewardship in Portugal, at a time when the country is facing water scarcity within the next twenty years.

Based on deeper insight into how large users use, recycle and manage water, and theirwater stress projections, the study aims to empower the Gulbenkian Sustainable Development Programme in its mission to put 'water sustainability' on the public agenda.

The goal is for this study to be a starting point for encouraging a strategic and collective multidisciplinary effort in Portugal towards the more efficient and sustainable use of water.

Based on its findings, the aim is to raise awareness and mobilise a network of different entities - from sectoral organisations to agri-businesses and retailers – as to their role in designing new models for water use and water recycling in their activities and, naturally, changes in the behaviour of the Portuguese people when it comes to their daily routines and purchasing decisions.

The study conducted was based on the assumption that a significant portion of the effort to optimise water use needs to, necessarily, stem from the largest water users in Portugal: agriculture and livestock.

At the same time, the methodology followed was based on an important working hypothesis: the increased awareness of Portuguese society regarding sustainability can and must be harnessed to make efficient water use a new choice factor (in the same way as "being local" already is).

This shaped a methodology that, more than just informing a sound diagnosis, expresses a reflection that supports and illustrates pathways for action and identifies accelerators for the creation of a culture with greater respect for and more efficient use of water in Portugal.

In particular, and for a better understanding of the agricultural sector, Luis Mira Silva, Associate Professor at the University of Lisbon's School of Agriculture (ISA - Instituto Superior de Agronomy), was instrumental in the discussion of hypotheses and the analysis of the study's findings.

It was against this backdrop that we took a deep dive into the reality of water use in Portugal to create the 'farmer's perspective' and the 'citizen's perspective', interviewing farmers at their farms and interviewing citizens at their homes, observing their daily routines. The resulting testimonials supported the basis of the working hypotheses tested and validated through two national quantitative surveys (one targeting farmers and another targeting citizens).

Various experts were consulted on topics such as water, animal husbandry, the environment and energy to get a full picture of the challenge Portugal faces. These conversations were also essential for understanding the status quo of water stewardship in other countries.

Between experts and field work, 52 interviews were conducted. Over 100 hours of conversation that were key to understanding the issue and shaping the study.

Our sincere thanks to all institutions and people involved for their availability and expertise, which were pivotal to the study.

This report summarises an intense year of work. From facts to ideas, it is hoped that the views shared will stimulate a broader discussion and create a culture with greater respect for water and increased awareness of water use.

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ANP | WWF – Associação Natureza Portugal/Portuguese Nature Association | World Wide Fund for Nature · APA – Agência Portuguesa para o Ambiente/Portuguese Environment Agency · CAP – Confederação dos Agricultores de Portugal/Portuguese Farmers Union · DGADR – Direcção Geral de Agricultura e Desenvolvimento Rural/Directorate-General for Agriculture and Rural Development · EDIA – Empresa de Desenvolvimento e Infraestruturas do Alqueva (company promoting the Alqueva region) · FNOP – Federação Nacional das Organizações de Produtores de Frutas e Hortícolas/National Federation of Fruit and Vegetable Producers Organisations · Global GAP – Global Good Agricultural Practice · IPMA – Instituto Português do Mar e da Atmosfera/Portuguese Institute for the Sea and Atmosphere

About the Calouste Gulbenkian Foundation

Established in 1956, the Calouste Gulbenkian Foundation is a Portuguese perpetual institution dedicated to charity, the arts, education and science. It is committed to help build a society that provides equal opportunities, actively promoting the well-being and quality of life of vulnerable groups in the population, while maintaining a balance between protecting the environment and economic prosperity.

It is against this background that the Gulbenkian Sustainable Development Programme challenged C-Lab to conduct a study on water stewardship in Portugal, which now provides the information and knowledge needed for more deliberate and sustained action. This is one of several initiatives that the Calouste Gulbenkian Foundation has promoted and supported in recent years with a view to building a more sustainable society committed to future generations.

10 KEY TAKEWAYS

10
Key takeaways

1. We must prepare for water scarcity scenarios in the next twenty years

The Mediterranean climate has dry seasons, but the fact is that in recent years droughts have been more frequent, longer and extensive.

In its projection for 2040, the World Resources Institute ranks Portugal as having a high risk of water stress. In other words, there is a high risk of having to manage shortages of quality water to meet the country's needs. A scenario that is not consistent across Portugal, where the south is most vulnerable to scarcity.

This means we need to think long-term. It is not about reversing the trend of future climate scenarios, but rather, on the demand side, discussing how to mitigate waste and questioning the different ways we use water, a limited natural resource.

Agriculture, the largest user of water

2. Quantify: a critical challenge for water efficiency

With water being essential for agriculture in a country where the warm season is also the driest, irrigation becomes vital for sector productivity and competitiveness.

Progress is being made towards efficient irrigation systems - 65% of farmers surveyed already use localised irrigation systems (drip irrigation), but a large majority (71%) still do not have a water meter. How can we monitor and manage water that is not measured accurately?

Since this shortcoming needs to be urgently addressed, the value of strict management becomes all the more relevant with the use of precision equipment for optimised irrigation (sensors, for example). As this requires a technological leap, only a small number of farmers have implemented such equipment, even though it could help achieve water savings of more than 20%. The delay in adopting more advanced technologies is due to the fact that water is a low cost in overall expenditure, with the majority of farmers (61%) stating that they do not pay for the water they use. But that's not all. Innovation that is above all technological requires training and, given the need for investment, there is an underlying benefit that needs to be explained and recognised.

3. Different farmer profiles require different approaches for mobilisation

Portuguese agriculture is very diverse and farmers themselves are agents of diversity. Despite the significance of a new generation of farmers, the agricultural sector is still deeply rooted in

tradition and established practices - 93% of farmers have been growing the same crops year after year. Since tradition is not synonymous with resistance to change, four profiles were identified that require different approaches to encourage efficient water use.

At one end are the farmers who manage their activities on a year-by-year basis, highly dependent on their yield. They represent the largest segment (38%) and need support and close monitoring in the transition. At the other end are the farmers who consider long-term scenarios and sustainability as mandatory when planning their activities. These are the 'Mentors', a very small minority (3%) that lead innovation and could be harnessed to leverage the 'power of the few': the example they set could encourage the switch to technology that offers more efficient irrigation management.

The right interlocutors and persuasive arguments for increasingly efficient and precise irrigation must be used for each profile to effect real change.

4. Adopting new technologies requires training and sharing experiences

In the agritech age, technology is designed for precision agriculture that requires training. It's not so much about age, but about knowledge: understanding and knowing how to exploit an activity that increasingly benefits from technology and demands that things be done differently.

Technical consultants, producer organisations and 'mentor' farmers play a key role in empowering others, which requires training and demonstration – a kind of "proof is in the pudding" approach to change.

To mobilise farmers, the financial benefits of the change must be explained as an extended equation of advantages – besides water (irrelevant cost-wise), there are a number of positive externalities that come with more precise water use (optimised use of energy and fertilizers, remote management, and other benefits).

5. Retailers and the agri-food industry: creating standards to drive change

With a view to the sustainability of agriculture, the efficient use of water must be set as a new standard in irrigation practices; an effort made not only by farmers, but throughout the value chain. Downstream, retailers and the agri-food industry play a vital role in accelerating the transformation to efficient water use - 98% of farmers operate in the domestic market.

Introducing water as a requirement for suppliers is a necessary challenge. Take fruit, for example: 78% of that consumed in Portugal is locally produced, so improving water management is also a means to manage the risk of a supply shortage. However, creating a standard for the efficient use of water in the production of national food products requires time and investment in the change process. Assessing the current situation of farmers and defining the stages and targets for transformation are a necessary step to establishing water efficiency in agricultural products in the short to medium term. Initiatives in other countries are already laying the path for this transformation.

Since creating new standards requires scale to be consistent, unified action within the sector is needed for effective change.

Citizens as direct and indirect agents of change

6. Most Portuguese people remain ill-informed and do not make careful use of water

For the vast majority of Portuguese citizens, water is available at the turn of a tap and they have never experienced scarcity.

Since water is of unquestionable value, the Portuguese, generally speaking, are not very consistent in their efforts to reduce and monitor the water they use. Water is a resource that does not weigh heavily on the family budget and, although aware of the impact of droughts, for most citizens it is still someone else's problem, not theirs - 71% of citizens have not experienced water shortages in their region.

Looking at water issues from everyone's perspective and discussing efficient water use as a strategic sustainability goal (vs reaction) is a challenge. While an informative and incentive strategy for energy efficiency has been consistently implemented, influencing the daily lives of the Portuguese population and having an impact on their purchasing decisions, the same cannot be said for efficient water use. We have to make up for lost time.

7. Leading by example and sharing responsible consumer habits: a wake-up call to change behaviour

The Portuguese believe that waste is highest in urban water use. A reality they are more familiar with and in which they bear witness to the bad practices implemented in public spaces – 59% agree that the management of public spaces does not set a good example when it comes to responsible water use.

A clear concern about water use is precisely why the Portuguese need to be made more aware of the issue. Good examples must be set, but guidance must also be given as to what reasonable water use is. There is a void in this area that needs to be filled, although there are some signs that the first steps are being taken.

Water use is clearly a concern for the government (as a role model and policymaker) and for water suppliers. However, it is also an opportunity for brands and business to inform and mobilise: from sharing metrics to promoting water efficient equipment and products, there is a wide range of daily routines and uses still to explore.

8. Water use is not yet a criterion in food choices

While citizens show concern about water, they are not very consistent in their behaviour and when it comes to making food choices water use is a 'non-issue'. Unaware of how much agriculture accounts for water use in Portugal (75%), the use of water in agriculture is, above all, seen as useful as it is linked to food production. It is, therefore, important to explain the whole story, from the beginning, so that one understands, first and foremost, why efficient use of water is important in Portuguese agriculture, bearing in mind the value that is placed on locally produced food – after price, national production is the second most important criterion when buying fruits and vegetables.

Two main challenges were identified with regard to Portuguese citizens: raising awareness for more conscious and responsible use of water in their daily lives, because it is a finite resource,

and raising awareness of the value of sustainable water use in agriculture, to avoid running the risk of jeopardising Portuguese agriculture and access to local products.

Empathy with local agriculture, within a water valuation framework, is a good enabler for change, provided there is an awareness of water issues.

9. Placing water at the heart of the commitment to sustainable food choices

Food choices are driven by health ('what is good and what is healthy') and depend a lot on price. Environmental awareness, which is now starting to be a consideration in consumer behaviour, although desired is in its embryonic stages. The 'Aware' citizens, who are more cognizant of sustainability issues, are a minority who point the way forward in sustainable choices.

More than just talking about the environment, it is important to include a sustainability proposition in the narrative about what is good and healthy. Water is important for sustainable agriculture, right after non-chemical production - 47% of Portuguese citizens associate the responsible use of water with sustainable agricultural production.

As such, stressing water efficiency to promote 'eco-friendly' local agriculture seems to be the best way to achieve positive differentiation with regard to responsible water use.

10. The media play a key role in raising awareness: we need new stories

Do we talk enough about water? On average, the Portuguese don't think so. Scale is needed, given the clear challenge of raising awareness and mobilisation. This is where the media come in. The effort is two-fold: give continuous coverage to sustainability, and, by doing so, make water part of the discussion.

Initiatives such as 'Covering Climate Now', a global journalism initiative committed to bringing more and better coverage of the climate crisis, show that the media are mobilising. But champions are also essential.

Given the influence public figures have in the matter of sustainability, creating proximity is also crucial for raising awareness and transitioning to more efficient water use: showing the way, leading by example and creating role models, peer-to-peer. Giving a voice to 'Aware' citizens and 'Mentor' farmers, to their stories, is key to bringing the water issue to the fore and emphasising the value of efficient water use in national agriculture.

DIFFERENT PERSPECTIVES:

THE ROADMAP FOR CHANGE

Raising awareness and changing direct and indirect water use

There is a gap between 'the value attributed to water' and 'awareness of the cost of scarcity', which the study sought to discern and which must be narrowed. Doing so, anticipating the risk of scarcity in the future, implies looking at those who most rely on water for their activities - farmers - and looking at society as a whole, which also competes for the country's water resources.

The diagram below summarises the major milestones towards sustainable water use,with regard to these two users - farmers and citizens. As a naturally flawed or incomplete process, the essence is not in the utopia of 'becoming fully sustainable' but rather in what is gained as progress is made.

Since the process has 'virtuous flaws', the starting point involves 'creating a water culture' [see diagram]. Although farmers are closer to and more aware of the risk of water scarcity, awareness is still very regional. As such, this first milestone is transversal to society and all sectors of activity.

From raising awareness to 'driving action', the process is, chiefly, ecosystemic and multisectoral, in which the pace of change depends on joint efforts - accelerator organisations and agents. Between the regulatory power of the government, the expected purpose of those who supply water, the scale of the impact of relevant companies in the water value chain and the influence of role models in the agricultural sector, this change lacks a long-term strategic framework and combined effort. Repeated practices and consistency in measures will be vital to designing new standards for the conscious use of water. Responsible water use that, as depicted in the diagram, evolves from direct (i.e. individual management, monitoring) to indirect use (i.e. perceived, responsible choices).

With regard to food choices, the focus of this study, retailers and the agri-food industry are the major enablers for making 'indirect water use' part of purchase decisions. As these sectors directly impact local producers and the end consumer, they are essential to promoting change. In this impetus to act, sustainability becomes the major unifying driver of communication in which water becomes the 'prominent' resource, supporting the efficient and sustainable use thereof.

It is, however, important to distinguish between two behaviours in relation to food that define two different stages of the process: the choice between similar products (e.g. between two varieties of oranges) and changes in eating patterns (e.g. eating less meat and more vegetables or substituting one type of vegetable with another).

Choosing between similar products provides a clear opportunity to emphasise local and sustainable production: understanding the water issue as a whole, awareness of the efficient use

of water in local agriculture, which is valued, becomes important in consumer choices. Changing eating patterns, however, is far more complex (and slow). Although aware of the importance of following a balanced diet, Portuguese citizens have been slow to change their habits. With most of Portuguese society still in the transition phase (towards a healthier diet), avoiding water-intensive foods does not seem actionable for them. In this respect, in the process described in this report, health appears as the main driver for change and the environment as an associated driver that must be reinforced. In short, the 'healthy and climate friendly' narrative should be at the heart of the positioning and communication of retailers, the agri-food industry and also the catering industry.

Can water, per se, become a dominant force in the food choices of Portuguese citizens? Recognising that this is the ultimate and intended goal of the process, the study suggests that such a role seems unlikely in such a complex scheme of factors that the consumer is asked to consider (health, source, use of chemicals, carbon footprint and other factors). Citizens will inch closer to the goal with a wider 'climate friendly' choice (of which water is an integral part). In agriculture, however, the amount of water available tends to play an increasingly central role when deciding what to produce, since crop yield and profitability depends on the resource.

Finally, and once again touching on the long-term framework underlying the process, while there is an urgent need to create a water culture, it is just as important to continuously implement such a culture amidst increasingly more conscious and responsible water use and increasingly more precise and sustainable agriculture. The media, the education system (compulsory, university and technical education) and culture are the driving forces of consistency that complement the required national strategy, in accordance with the broad lines of European policy.

Indicative of the regional nature of water challenges, it is important to mention the European Green Deal, introduced at the end of 2019. In this new EU growth strategy, which is based on sustainable development, water is mentioned several times in combating pollution, but only as regards to quality.

Denoting a diverse Europe, this serves to reinforce the importance of national policies, private local initiatives and of Portuguese civil society in general in tackling a problem which, not being dominant in Europe, calls for regional measures to be implemented now for consistency in the near future. A future that calls for a more resilient country with a more controlled use of water since water management will become increasingly more demanding in the decades ahead.

DIFFERENT PERSPECTIVES: THE ROADMAP FOR CHANGE

	RAISING AWARENESS OF THE NEED FOR A WATER CULTURE	DRIVING ACTION: MORE EFFICIENT 'DIRECT USES'
CITIZENS	Raise awareness of water scarcity and 'water efficiency' in daily activities	Provide specific metrics/examples to drive actionin daily 'direct use' by citizens
Driving forces*	Water Suppliers + + Businesses & Brands	Water suppliers + + Businesses & Brands + Government + Media
FARMERS	Agri-food Industry & Retailers Set efficient water use as a goal in agriculture	Agri-food Industry & Retailers + Government + Agriculture Industry Provide specific metrics/examples to encourage greater control and precision in irrigation

* Illustrative and non-exhaustive list – the entities listed as driving forces for each 'milestone' are those that play (a more) decisive role, but does not mean that they do not play a secondary role in the stages in which they are not named. For example, the role of the government, media and schools in raising awareness must be continuous.

DRIVING ACTION: 'INDIRECT USES' AS A CRITERION IN FOOD CHOICES

LOCAL & SUSTAINABLE as a driver	**HEALTHY SUSTAINABLE** as a driver
Position national production as having 'sustainable quality' in the retail industry	Encourage and empower consumers to have 'Healthy and Climate-Friendly Eating Patterns"
Agri-food Industry & Retailers	Agri-food Industry & Retailers Catering, Government schools, media...
Water efficiency requirement in 'procurement' specifications	Adjust the assortment based on changes in eating patterns

— The Consumer Intelligence Lab —

Creating knowledge for a genuine and deeper
understanding of issues and
of human behaviour – consumers and citizens.