



SUWANU
EUROPE



ALENTEJO REGION
PORTUGAL

Alentejo Region

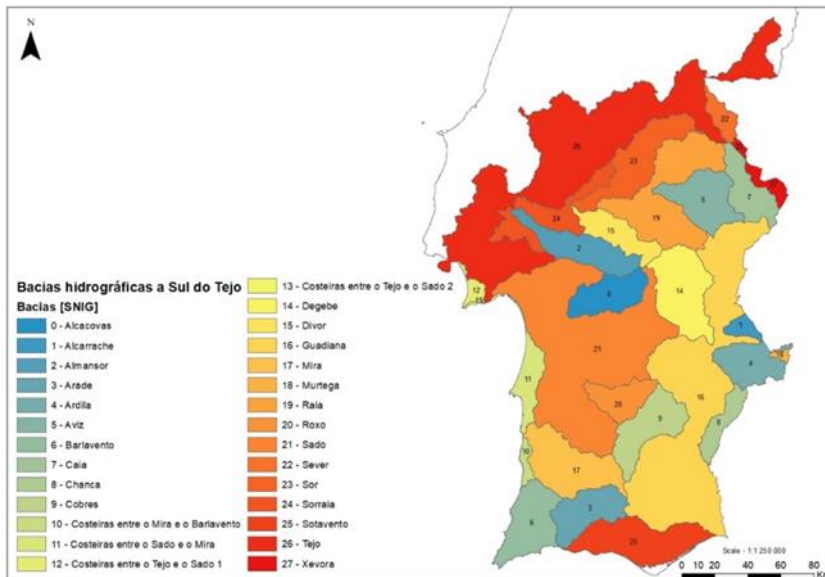
STATE OF PLAY

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- **Average precipitation 400 mm/year, much lower than the rest of the country.**
- **Average temperature of 16°C**, which is 4°C more than the average temperature in northern Portugal. The months with the highest average temperature are July and August
- **Dry soils in the region indicates the need for longer irrigation periods to reach the required moisture levels for crop production**
- Average population density of around 18 inhabitants per km² in 2017, well below the country's average density of 112 inhabitants/km²

STATE OF PLAY



- Tejo, Sado and Guadiana are the 3 major water basins in Alentejo Region
- In 2018, the dam **water storage** in some cases, reached values **below 20%**
- **The main water resource is surface water**, followed by groundwater.
- Total dam storage capacity of the 3 basins of the main rivers: Tejo, Sado, Guadiana and Mira is approximately **8250 hm³**

Limited legal framework regarding the use of wastewater in agriculture



- Joint Order N°. 626/2000 of 19th May
- Ordinance N°. 512/92 of 22nd June
- Ordinance N°. 809/90 of 10th September
- Decree-Law N°. 236/98 of August 1st
- Law No. 58/2005 of 29th December
- Decree-Law No. 235/97 of 3rd September

Decree-Law No. 119/19 of August 21

- Production of water for reuse for non-potable uses

Ordinance No. 266/2019, August 26

- Water signs for reuse

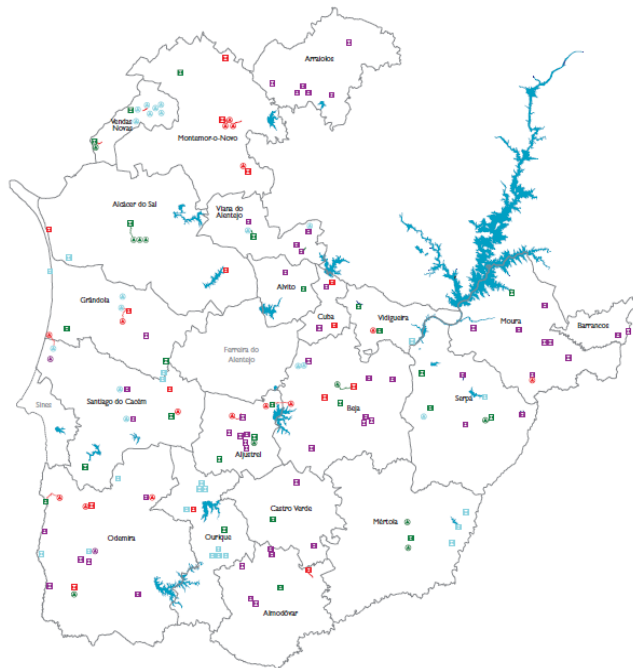
Decree-Law No. 16/2021

COMING SOON

- Attributes the reuse of water as one of the main activities of multi-municipal systems



WWTPs in this region

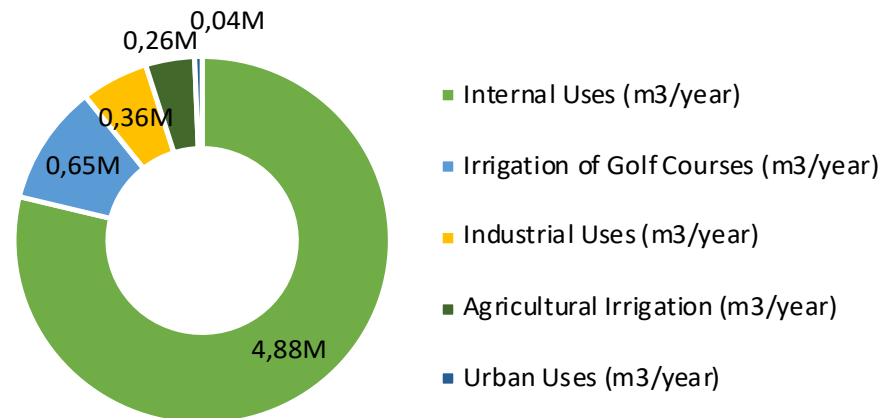


SANEAMENTO	REABILITAR	INTEGRADO	CONSTRUIR	CONSTRUIR/REABILITAR
Condição Excelente	Condição Excelente	Condição Excelente	Condição Excelente	Condição Excelente
Condição Regular	Condição Regular	Condição Regular	Condição Regular	Condição Regular
Condição Ruim	Condição Ruim	Condição Ruim	Condição Ruim	Condição Ruim
Condição Muito Ruim	Condição Muito Ruim	Condição Muito Ruim	Condição Muito Ruim	Condição Muito Ruim

Portugal aims to use at least **20% of wastewater** (for all uses) by **2030**

- In 2017, most treated water (86%) was reused by management entities for their own use, and **only 14%** was supplied to other entities to be reused.
- Water reuse: mostly in **green spaces** of the own treatment plant. Also in **golf courses**, **industrial** and **urban** uses and some **crop irrigation**.

Types of Reuse



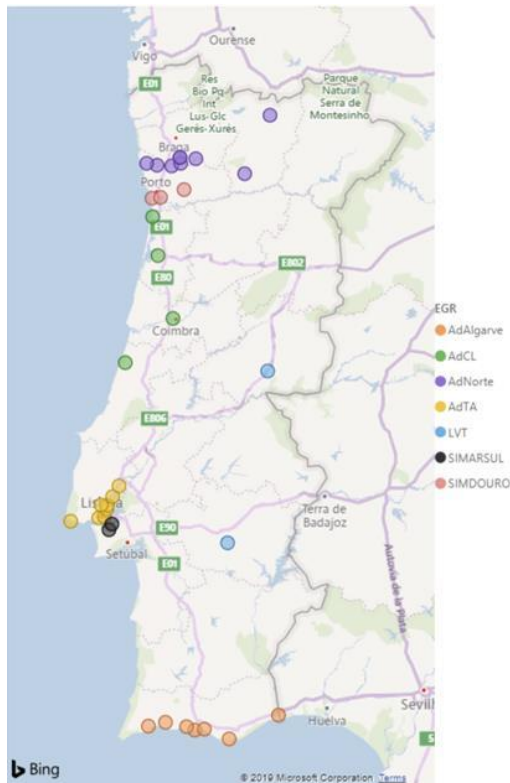
STATE OF PLAY

Objective of Águas de Portugal Group (AdP):

REUSE of **10%-20%** of the volume treated in the **fifty largest** treatment plants
(35-70 hm³/year of volume to be reused)

The 50 largest treatment plants of the AdP Group

(Font: Águas de Portugal, 2018)



Types of Water Reuse in Portugal

(Font: Águas de Portugal, 2018)



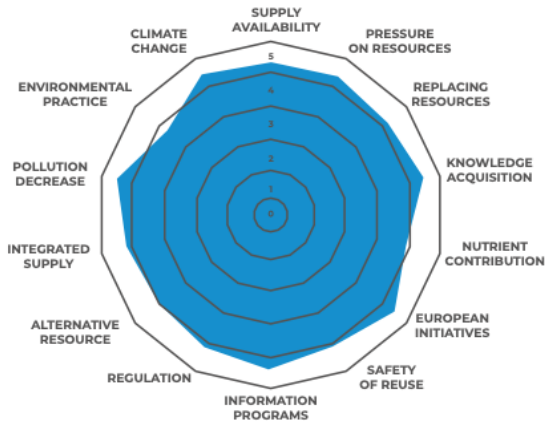
Types of Reuse

- Agricultural Irrigation (m³/year)
- Irrigation of Golf Courses (m³/year)
- Industrial Uses (m³/year)
- Internal Uses (m³/year)
- Urban Uses (m³/year)

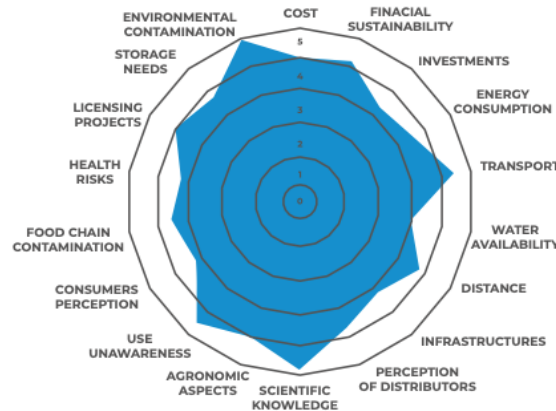
SWOT AND PEST

SWOT AND PEST

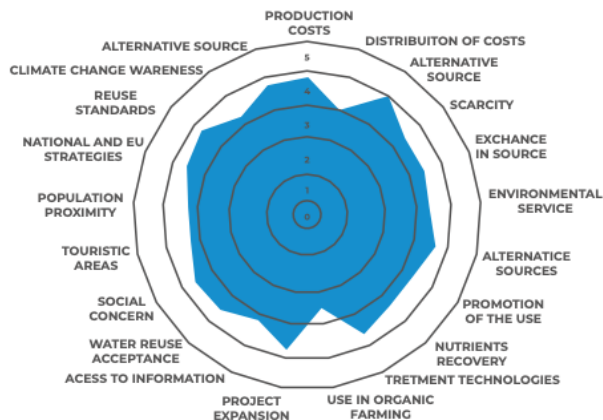
Strengths



Weaknesses



Opportunities



Threats



The most relevant aspects

- **Guarantee of water supply availability**
- **Reduction of pressure on surface and groundwater resources**
- **Need of new knowledge**
- **Improve public perception**
- **More support from public health authorities**
- **Non-competitive price compared to current water tariffs for irrigation**
- **The cost of water treatment for crop production**
- **Lack of transport and storage infrastructures.**

BARRIERS



- Facility of access to water
- Quantities of water for reuse **vs** agricultural needs



Distance between
WWTP and farms



Implementation
cost/investment
required



Licensing and
entity consents



Legislation and
paperwork



Distribution
infrastructures/
irrigation system
equipment

(adjustments, durability, costs,
maintenance)



Transport and storage
(risk of quality change/ technical
and financial viability)



Acceptance by
farmers, distribution
chains and
consumers

OPPORTUNITIES

High utilization potential

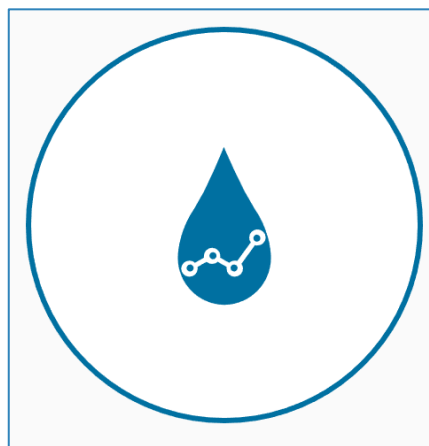
(agriculture and green spaces)

Nutrient recovery

Reduce pressure on water resources

(Surface and underground)

Ensure supplies in
times of drought and
in areas of greatest
scarcity



Climate change
awareness

Greater acceptance

**Social concern
about** water

scarcity and the
search for
alternatives

**Expansion of
projects** heavily
dependent on water
availability



Implementation of
**new treatment
technologies**

REGIONAL ACTION PLAN

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Strategic Objectives to be achieved



EO1

Incentives from the national and European legal **framework**



EO2

Adequate **administrative procedures**



EO3

Existence of **support incentives** through public and private policy measures



EO4

Existence of a **European network for the dissemination** of results and the exchange of good practices



EO5

Investment by stakeholders, public and private, in **research and technology** to improve and expand water reuse in agriculture



EO6

Civil society acceptance of agricultural products



1

Harmonize the national and European legal framework

2

Develop a regional water infrastructure sustainability policy

-

Through organized participatory entities



1

Make the **bureaucracy** to acquire the license for the production and use of water for reuse in agriculture **more clearer, faster and affordable**

2

Harmonize the rules of administrative requirements for producing and using water for reuse at the national level

EO3 | Incentives through public and private policy measures



Investments

- Bank financing for the implementation of the use of water for reuse
- Improve WWTP with 2 and 3 treatment
- Adduction infrastructures from the WWTP to the irrigated areas



Campaigns

- Regional and local promotion of agricultural products watered with water for reuse

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Circular economy aligned with the European “Farm to Fork” strategy



Pilot Cases

- Demonstration and dissemination of knowledge

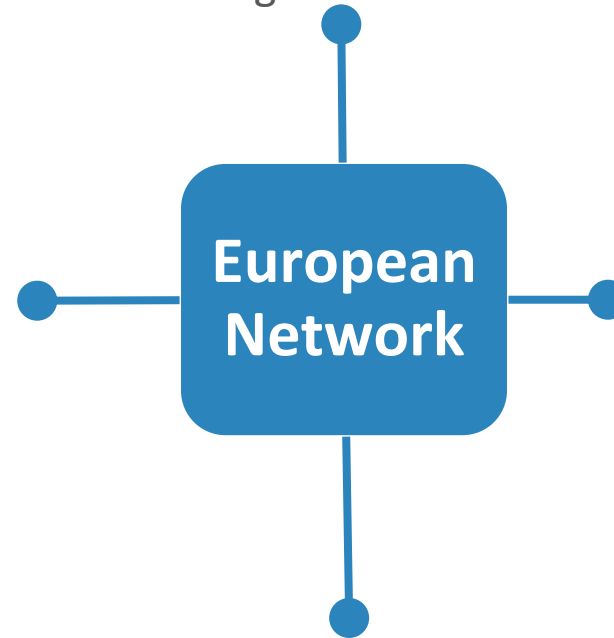
EO4 | Existence of a European network for the dissemination and exchange of results and good practices



Farmers' organizations across Europe must:

Communicate and compare your **experience** with the use of water for reuse in agriculture

Continue and improve the **network** of European scientists and private entities to **share** and **exchange results** and **good practices**



European countries should:

Promote international exchange and dialogue to **expand** the use of water for reuse

European network active participation in **EIP AGRI**

EO5 | Public and private investment in research and technology

to improve and expand the use of water for reuse in agriculture



To create

Specialized Commission

With representatives of interested parties, to boost the use for reuse

Cooperation Networks

Between the public and private sectors for investment in research to increase the integrated use of water for

Data base

Specific technology and water quality criteria for reuse

To encourage

Long-term pilot projects to demonstrate the use of water for reuse

Inform and advise

Farmers on new water treatment technologies and their application in agriculture

Empower

Farmers to use water for reuse



Communication Campaigns

Promote the link between water for reuse and water scarcity

Publicize successful pilot projects with the use of water for reuse in agriculture

Present the treatment processes

Promote studies with academic and research institutions, disseminate the results on the quality and safety of water for reuse and its use in agricultural irrigation



Educational campaigns in schools and universities



Create **circular economy stamps**



Create a **participatory committee** of the key actors involved in the use of water for reuse in agriculture



Organize **tourist visits for the community** to the WWTP and water-irrigated crops for reuse

Points to boost water reuse in Portugal



Integration of water for reuse in the Water management models



Existence and disclosure of **incentives**



Implement **risk analysis** for WWTP according to non-potable uses in the surroundings of treatment plants



Accessible information on the safe use of **water for reuse in food production**

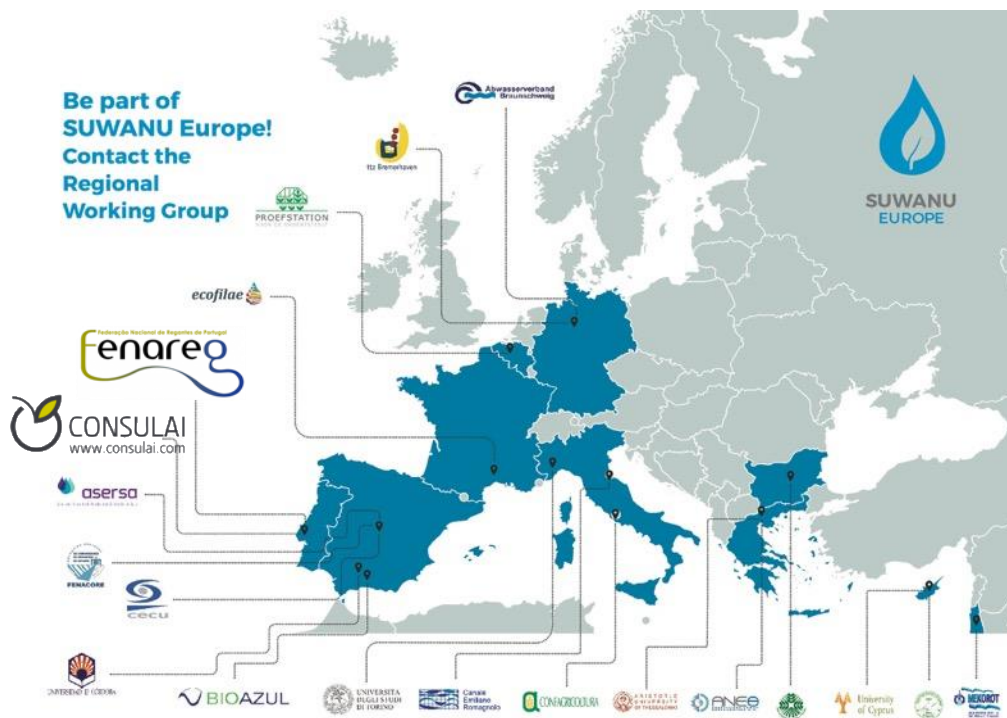


More **information** and **awareness** of the population for greater social acceptance



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Thank you for your attention!



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