Coexistence with Water scarcity in Murcia Region

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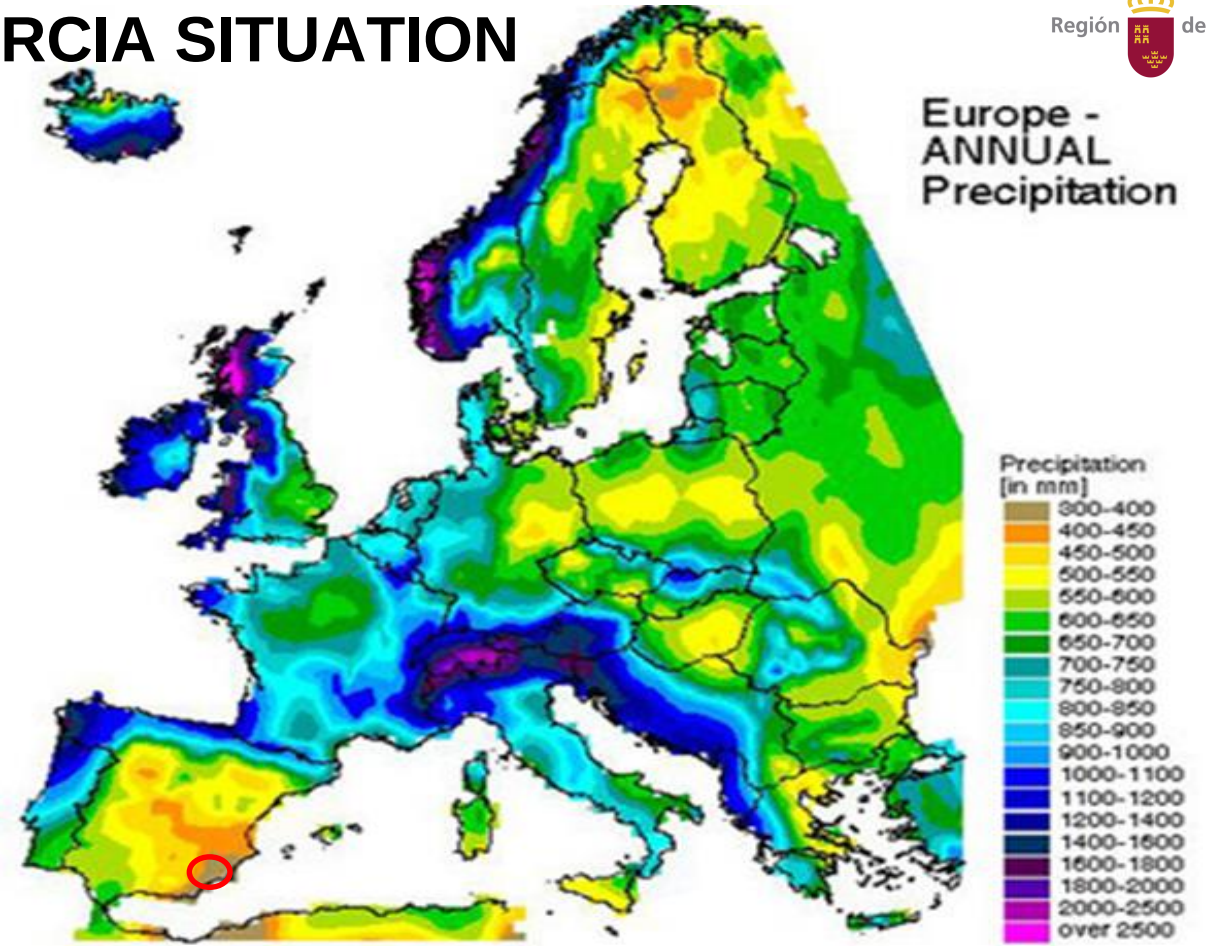
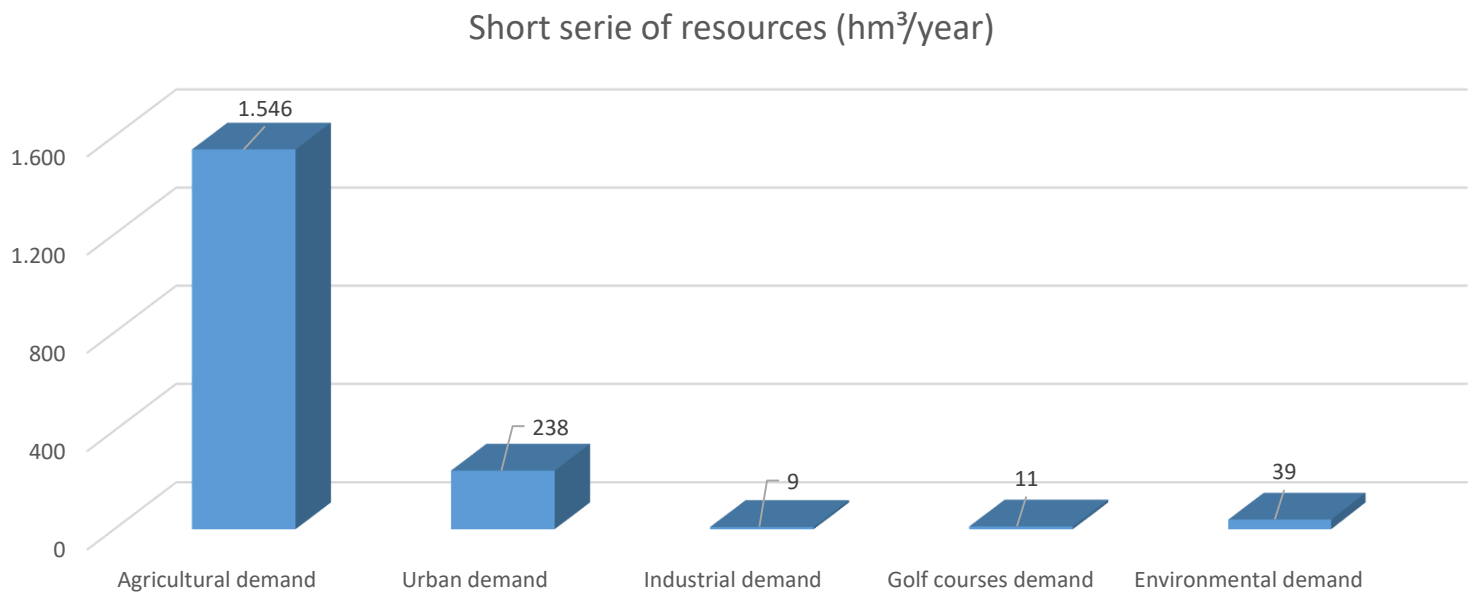
Región de Murcia

REGION OF MURCIA SITUATION



Sources: https://www.reddit.com/r/europe/comments/6op42a/average_annual_precipitation_in_europe/ and UNET/MAP Riverine Transport of Water, Sediments and Pollutants to the Mediterranean Sea, 2003.

WATER NEEDS



TOTAL NEEDS ≈1800 hm³/year

Source: Watershed Authority of River Segura- Horizon 2021, Model SIMPA updated

AVAILABLE WATER RESOURCES

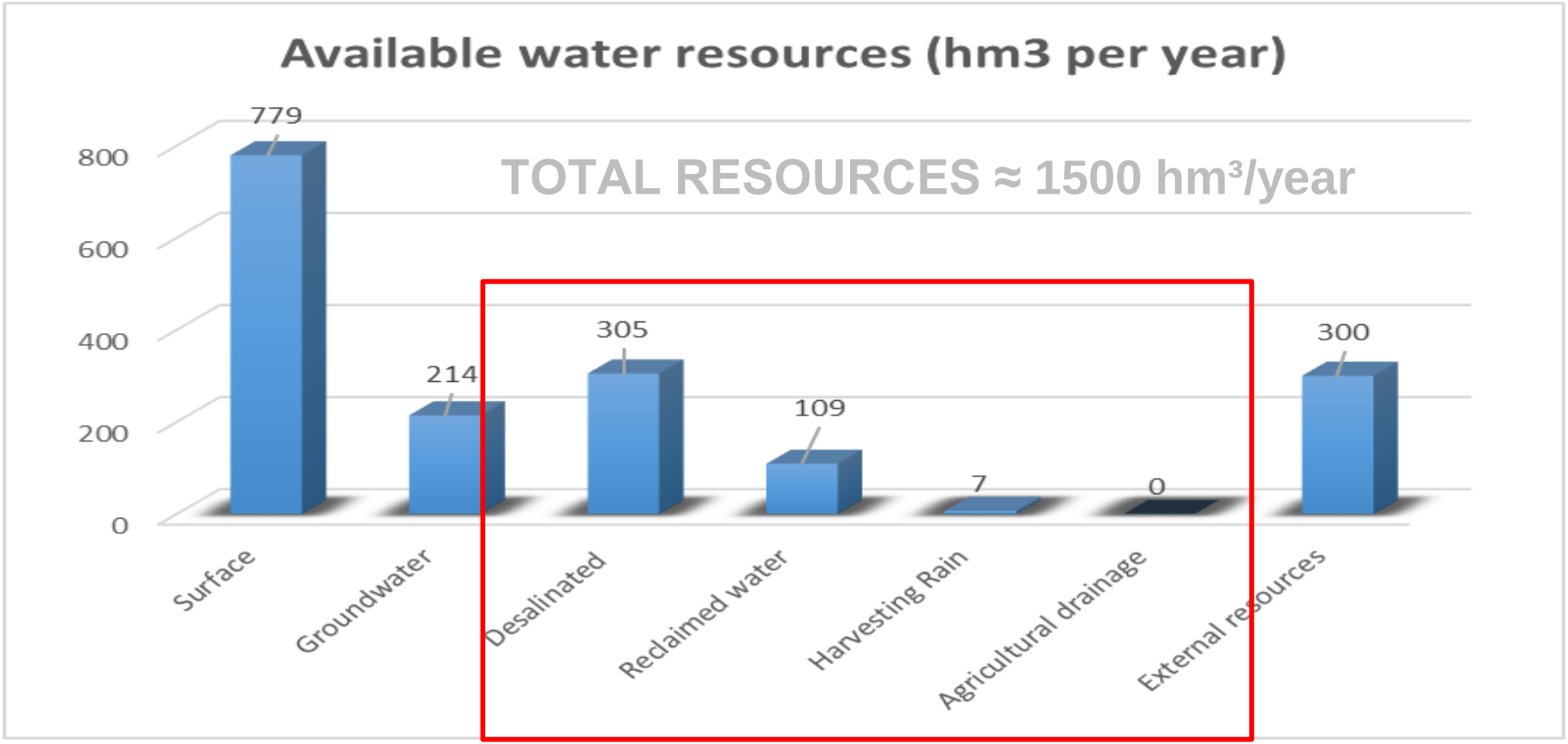
Conventional water resources

- Surface water
- Groundwater

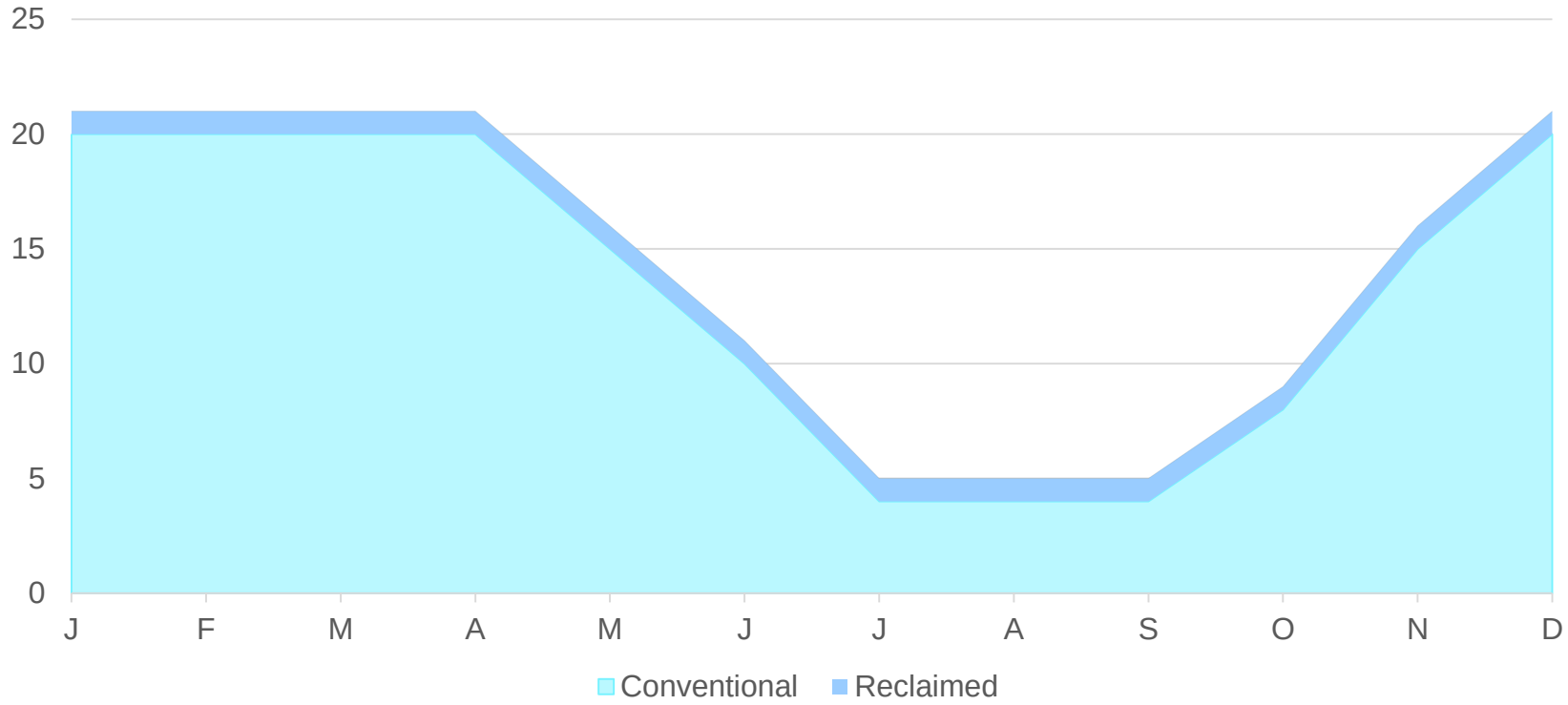
Alternative water resources

- Desalinated water
- Reused water
- Rainwater harvesting
- Agricultural drainage

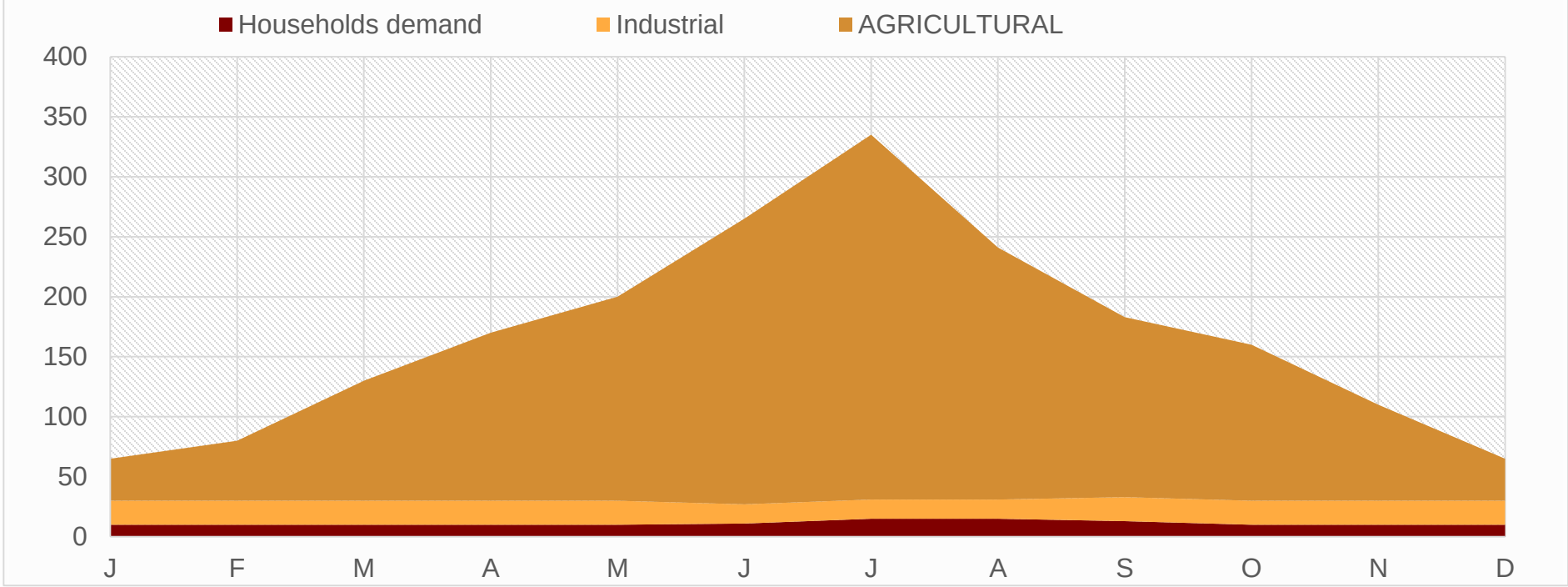
WATER RESOURCES OF MURCIA REGION



AVAILABLE WATER RESOURCES OVER THE YEAR



WATER NEEDS


Households demand
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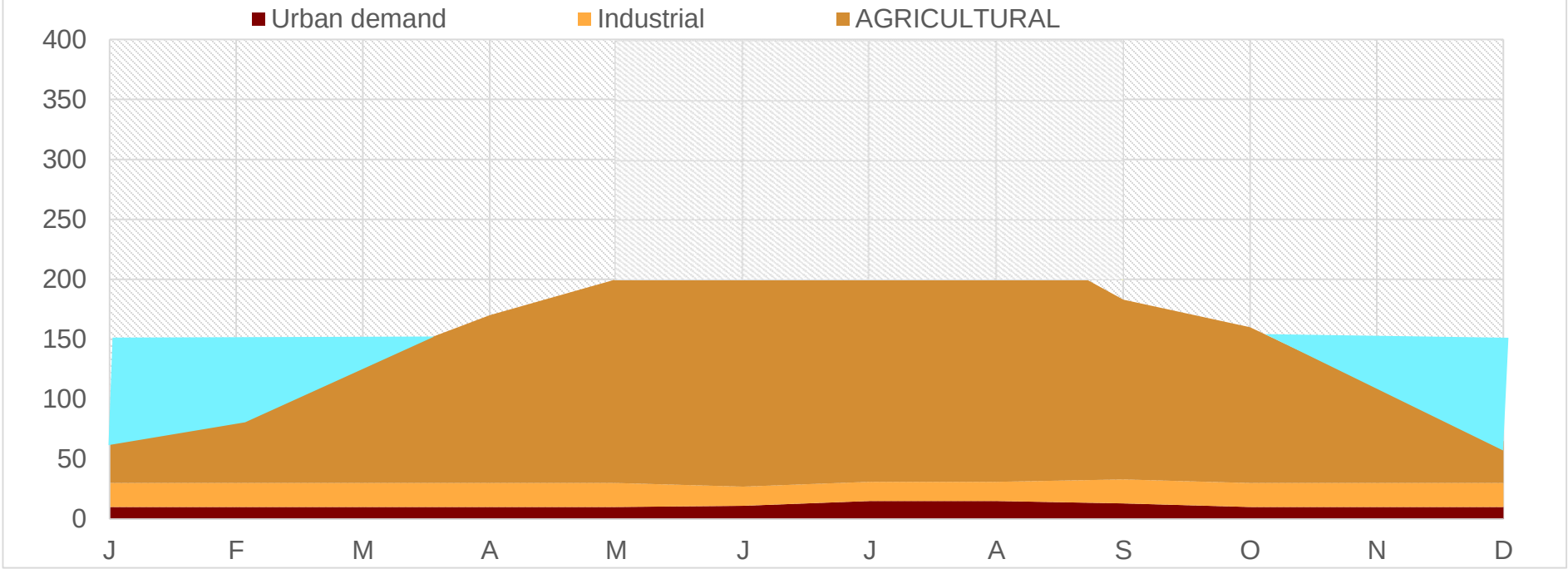
WATER NEEDS


Urban demand
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PRACTICAL RULES IN OUR WATER - ENERGY MANAGEMENT

↑ **WATER CONSUMPTION**	→	↑ **ENERGY CONSUMPTION**
↓ REDUCE WATER CONSUMPTION THROUGH SMART IRRIGATION	→	↑ **ENERGY CONSUMPTION**
USE MORE DISTANT WATER RESOURCES	→	↑ **ENERGY CONSUMPTION**

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Good energy management to ensure the water supply

CONVENTIONAL RESOURCES

- Insufficient to cover the needs
- Very high degree of resources regulation with reservoirs
- Pumping to a great depth to extract the groundwater is making unfeasible our water-energy management.

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DESALINATION WATER RESOURCES

- Very available because of nearness to the sea
- Data to be taken into consideration:
  - The process itself, already consumes 4 Kw/m^3
  - Every water m^3 consumes 0,76 kg of CO_2
- Murcia relief requires huge energy pumping it
- Measures must be applied to keep it affordable prices for users.

RECLAIMED WATER

- **Social rejection**
- **Our data:** 7 % of our water resources, 98 % of treated water, 65 % of direct reused.
- Steady availability → **Supply guarantee.**
- The direct reused requires additional treatments.
- It requires traceability system to guarantee to be free of microorganism.
- How to improve the energy efficiency → Reducing the energy in the treatments:
  - Renewables, production of biogas, or prioritizing anaerobic treatments
  - Modulation of the WWTPs when it’s possible.

UNBLOCK THE SOCIAL REJECTION

MURCIA 90ST → Rate of Reusing ≈ **0 %** **2020 → 98 %** of our treated water

KEY POINTS OF THIS SUCCESS

1. **A high agricultural demand**
2. A clear and **transparent governance system**
3. Efficient **financing** system
4. A sustainable **planning**
5. **Promotion** through **grants** for connect WWTPs to Users Communities facilities.

GOVERNANCE SYSTEM

Who makes the works? → **ESAMUR** Public Entity → Its only funtion is to treat the water

How? → Sanitation Levy → Tax payed by the users for treating the water

↕

Key point to guarantee the complaiment of the environmental principles like **“Poluter should pay”** and **control the “wasters”** throught the tariff

PLANNING THE RESOURCES

PLANNING TOOLS

SANITATION PLANS → Evaluate the facilities

Carry out investments to improve the system

RIVER BASIN PLAN → set the available water resources and their purposes for the users

Inventory of water treated in hydro-graphic basin

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GRANTS FOR CONNECTING THE WWTPs TO THE IRRIGATORS COMMUNITIES FACILITIES

STARTING POINT

- Irrigation lands endangered due to an insufficient dotation cover with:
  - Desalinated water (obtain at sea level and taken higher)
  - Groundwater (obtain below 100 meters)

- High cost of the investment for the regulation and transportation because the water comes from urban areas and it’s used in Rural.

FINANCING

EARDF that sets the conditions for the access to the grant

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ISSUES FOR THE PROMOTION OF WATER REUSED

1) Focus on a viable purpose in which we can apply the water reused.

2) Revise the necessary policies and the rules of governance to offer a friendly and transparent system for the investors.

3) Design a cost recovery system that guarantees its survival over time.

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HARVESTING RAIN RESOURCES

- **Complementary water resource** due to the highly **unstable** supply
  - **Advantage**: Avoid dirty water reaches vulnerable water bodies during rainfall peaks.
  - **Disadvantage**: It is required an authorization for it.
- Convenient to count on facilities like Storm-Tanks and SUDs
- **Successful case:** Irrigator Community of “Campo de Cartagena”:
  - Irrigation surface: 40.000 Has
  - Collection: 5 hm^3/year ≈ 4 % of its water resources
- Challenges:
  - Storm-water management.
  - Facilities aren’t always sized for phenomenon that happens so rare

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AGRICULTURAL DRAINAGE WATER

- **Complementary water resource**
- A buried **drainage network** that conducts the waters to a pond to be treated.
  - **Advantage**: Avoid dirty water reaches vulnerable water bodies during rainfall peaks.
  - **Disadvantage**: Need authorization complicated to obtain since the drainage is **considered a discharge** and the authorization process is complicated and with a lot of restrictions.
- **Case:** Irrigator Community placed on the coastal area of Cartagena:
  - Irrigation surface: 10.000 Has
  - Collection: 0,5 hm^3/year ≈ 2,5 % of its water resources

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RESULTING MIX

CHALLENGE → WATER RESOURCES MIXING

EXAMPLES OF MANAGEMENT:

- ✓ Groundwater → Too salty → Necessary to add water less salty
- ✓ Reclaimed water:
  - → Aditional ,microbiological traceability system
  - → Restriction of use for some purposes
- ✓ Disalinated wáter → ↑ Borum → For some crops → Mix with other resources

ADAPTATION TO THE CLIMATE CHANGE

1) Save water → Reservoirs limited by EIAs

2) Water-Meters everywhere → account for every drop of water

3) Use the water price as a tool for controlling the wasters.

"Murcia Region can be your doorway for the future"

ADAPTATION TO THE CLIMATE CHANGE

“Murcia Region can be your doorway for the future”

THANK YOU!!
Questions are welcome

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