

Developing a climate change vulnerability assessment for the major water supply utility in Portugal

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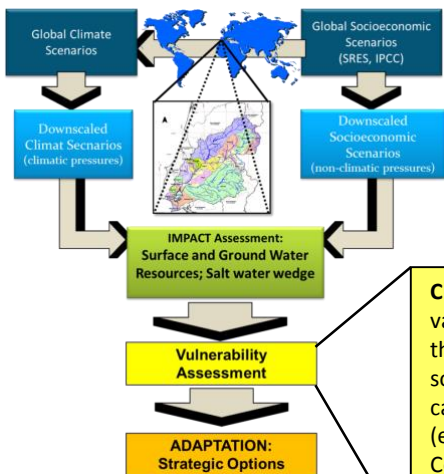
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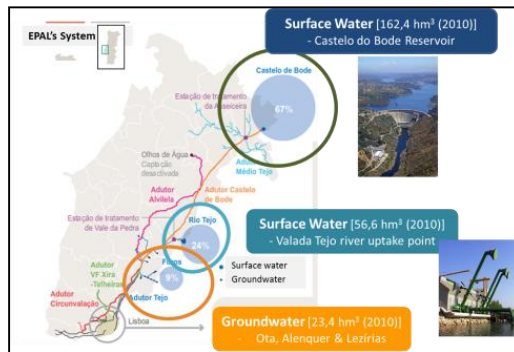
Introduction

EPAL supplies ca 3M people from surface and underground water sources within the Tagus basin. Climate scenarios indicate increased droughts frequency and intensity for Portugal, representing a threat to the water supply guarantee. The Adaptaclima project aimed at providing EPAL with a strategy to adapt to climate change in the medium and long term.

Methods



Climate vulnerability matrixes for present variability and future scenarios - combining the severity of an impact to the water source, it's probability and the adaptive capacity of EPAL's system to such an impact (evaluated through expert judgement). Confidence was established as the combination of level of evidence and level of agreement.



Results

EPAL's present climatic vulnerability is LOW. Main vulnerabilities identified were: i) water quality and quantity in the groundwater uptake points during the dry summer periods; ii) water quality at the Valada-Tejo uptake point during drought periods; and iii) water quality during flood events in some groundwater uptake points.

Future vulnerability will increase and include: iv) water quantity in Castelo do Bode during drought periods and v) water quantity at Valada-Tejo during drought periods.

Castelo do Bode (2070-2099):

- Lower annual inflows; consumptions > inflows;
- Water deficit for 10 months/yr
- 2005 flows (most severe drought observed) become average
- Increased drought duration and magnitude

	Vulnerability	Confidence
Current	Low	Robust
Future	High	Robust

Valada-Tejo (2070-2099):

- Lower annual inflows; consumptions < inflows
- Lower confidence in results because hydrometric level (main limitation for supply) cannot be simulated

	Vulnerability	Confidence
Current	Low	Robust
Future	High	Average

Conclusions

Considering that Castelo do Bode and Valada-Tejo represent about 90% of EPAL's total water uptakes, our results clearly indicate the need for a suitable management of water supplies. Specific measures include for example creating a protocol to guarantee consumptive uptakes prioritization over hydropower generation in Castelo do Bode. This and other adaptation options identified during the project are already being implemented by EPAL in order to reduce it's vulnerability to climate change.