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Vitor Silva working in EDP Group since 1996, always in the Generation business. First in the Planning and Control unit and after in hydro works and projects. Since 2016 Vitor has been the head of the hydro operation unit which is responsible for the remote operation and surveillance of all hydropower plants of EDP in Portugal.



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THE BENEFITS OF MULTIPURPOSE HYDRO PROJECTS REGARDING CLIMATE RESILIENCE, SOCIAL, ECONOMIC AND ENVIRONMENTAL NEEDS

THE CASE OF PORTUGAL - MONDEGO RIVER

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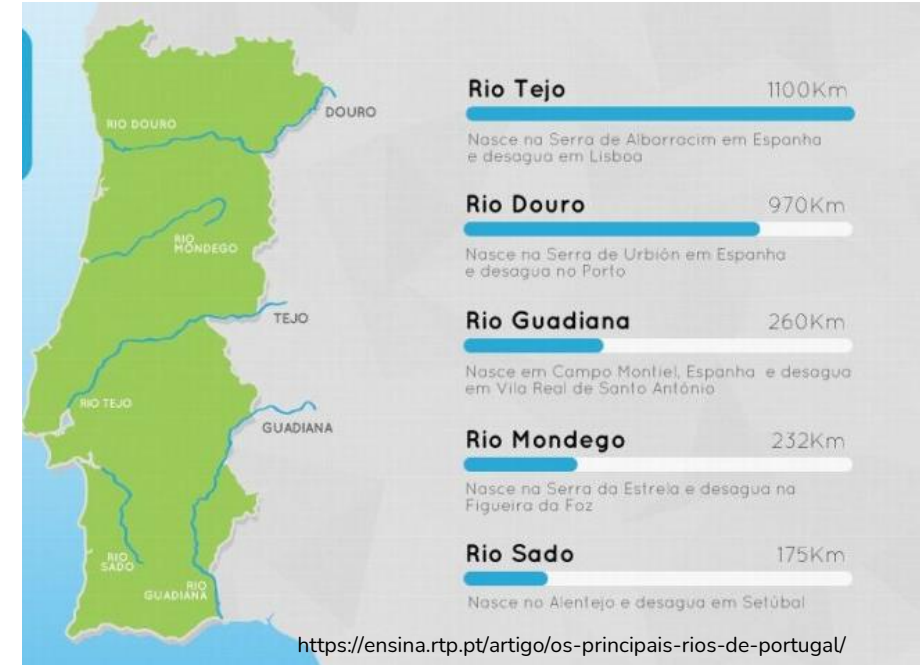


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The Mondego River

The **Mondego River** is the longest river that flows only within Portugal (232 km). Its source is the northern slopes of the Estrela Mountains (Serra da Estrela) at over 1400 meters. It enters the Atlantic Ocean at Figueira da Foz.

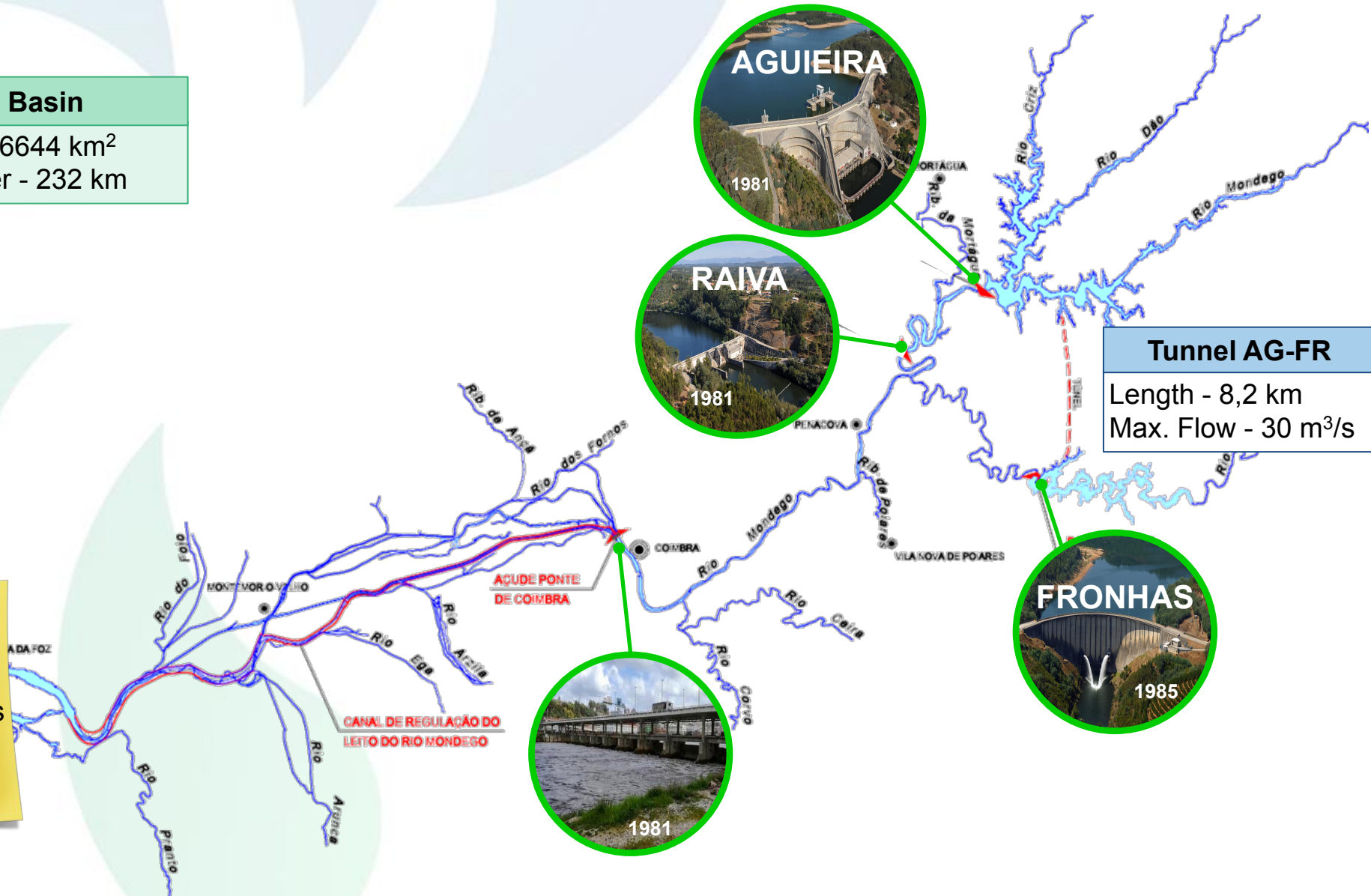


Hydrological regime extremely irregular, with summer flows of $1 \text{ m}^3/\text{s}$ and flood flows exceeding $3\,000 \text{ m}^3/\text{s}$.



Mondego Basin
 Drainage basin - 6644 km²
 Length of the river - 232 km

The Aguieira-Raiva-Fronhas system manages only ~60% of Mondego basin



Main objectives:

- Water storage
- Flood control

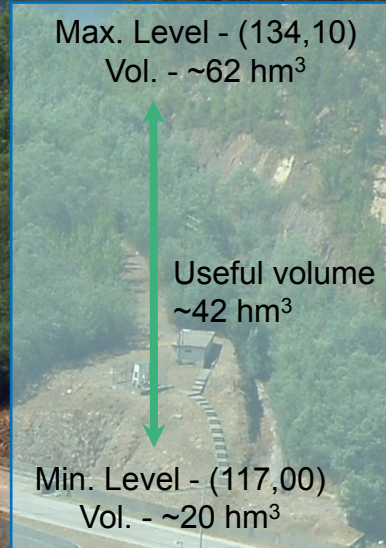
2 spillways
Max. Flow $\sim 2\,080\text{ m}^3/\text{s}$

3 units with total of 336 MW
Max. turbine flow: $3 \times 175\text{ m}^3/\text{s}$

Max. level - (125,00)
Vol. - $\sim 429\text{ hm}^3$

Useful volume
 $\sim 222\text{ hm}^3$

Min. level - (110,00)
Vol. - $\sim 207\text{ hm}^3$



Without generating units

Discharge valves - 2
~ 2 x 125 m³/s

Bottom discharge valves - 2
~ 2 x 125 m³/s

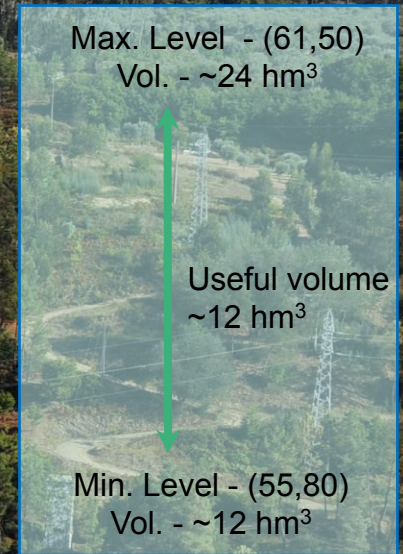
- Main objectives:
- Control of Alva River
 - Deviation of water to Aguieira, allowing the increase of water storage and Energy.
 - Ecological flow

2 spillways
Max. Flow = $\sim 2\,000\text{ m}^3/\text{s}$

2 units with total of 24 MW
Max. turbine flow - $2 \times 80\text{ m}^3/\text{s}$

Main objectives:

- Modulate turbine flows from Agueira
- Allow pumping in Agueira
- Release water for downstream needs
- Ecological flow



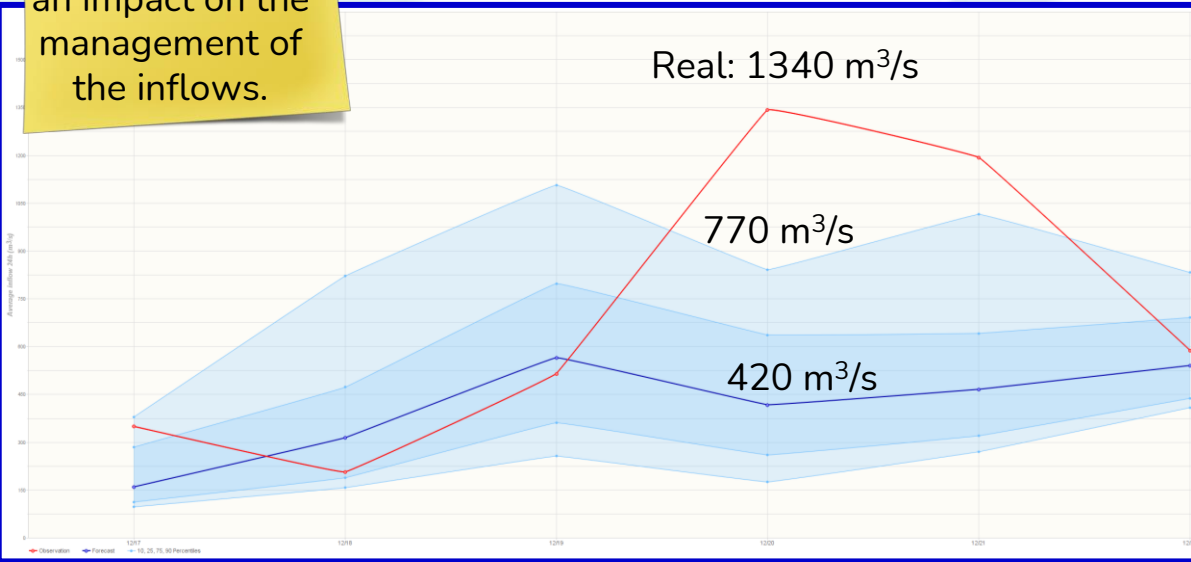
Between October 15th and April 15th, an adaptive management approach is adopted, the target level of Aguieira reservoir varies according to the average inflow in the previous 24 hours.

In the summer, the water leaving the system (through Raiva) is managed by the APA, according to the needs in the Lower Mondego.

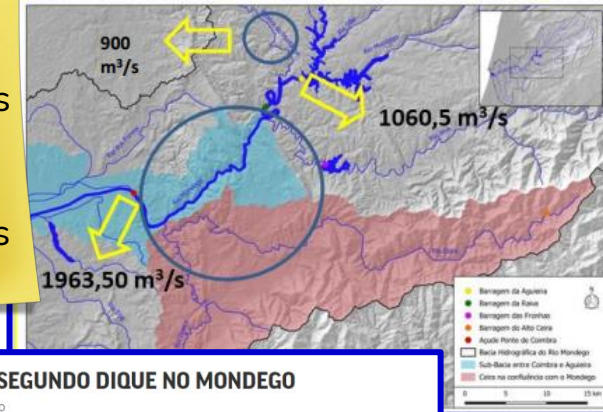
During high inflow periods, the discharges from Aguieira and Fronhas are supervised/controlled by the APA (because APA has the complete information about the Mondego basin downstream of Raiva).



The uncertainty associated with the forecasts has an impact on the management of the inflows.



The need to reduce spillways due to downstream critical situations



The effluent flow of the Aguieira-Raiva-Fronhas system corresponded to 1060,5 m³/s and to the Açude Ponte was 1963,50 m³/s, so the flow of the Ceira river and the intermediate basin were 900 m³/s (45,8%).

CONFIRMADA ROTURA DE SEGUNDO DIQUE NO MONDEGO

Rotura terá cerca de 50 metros de comprimento

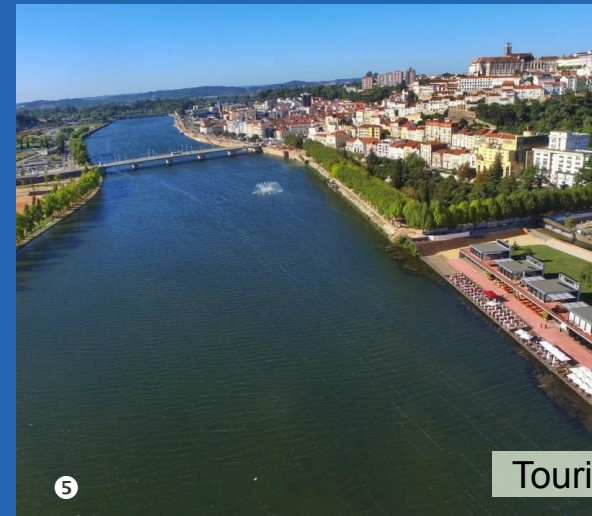
2019-12-22 20:21 Ana Bartolomeu Simões João Bizarro / MM - Atualizada às 00:58 de segunda-feira



Câmara de Coimbra quer mais monitorização no rio Ceira

A Câmara de Coimbra defendeu hoje o ajustamento dos níveis de alerta para situações de cheia nos rios Ceira e Mondego a caudais inferiores aos que estão em vigor e o reforço da monitorização no Ceira.





1 - <https://www.vidarural.pt/agroindustria/cap-felicita-responsaveis-pela-reconstrucao-do-canal-do-mondego/>

2 - <https://www.grupocobra.com/en/proyecto/combined-cycle-power-plan-lares/>

3 - <https://www.bombeiros.pt/o-olhar-do-oscar/3-mosqueteiros-na-aguieira.html/>

4 - <https://lap2go.com/pt/event/torneio-aguas-abertas-do-mondego-2022/>

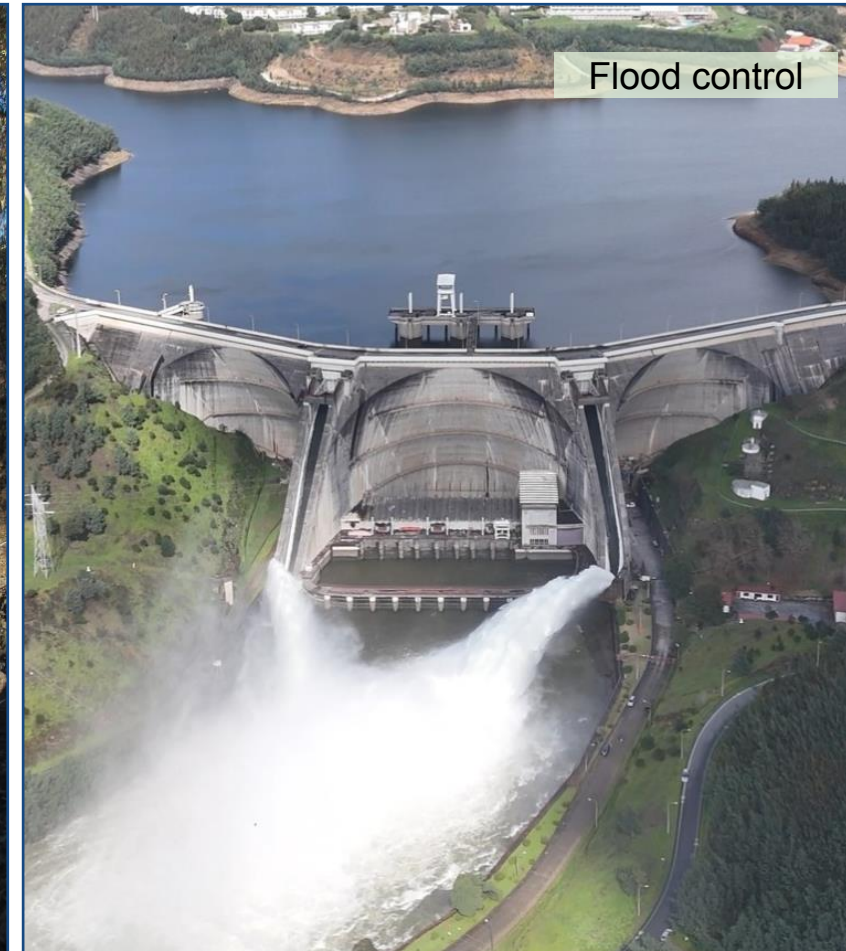
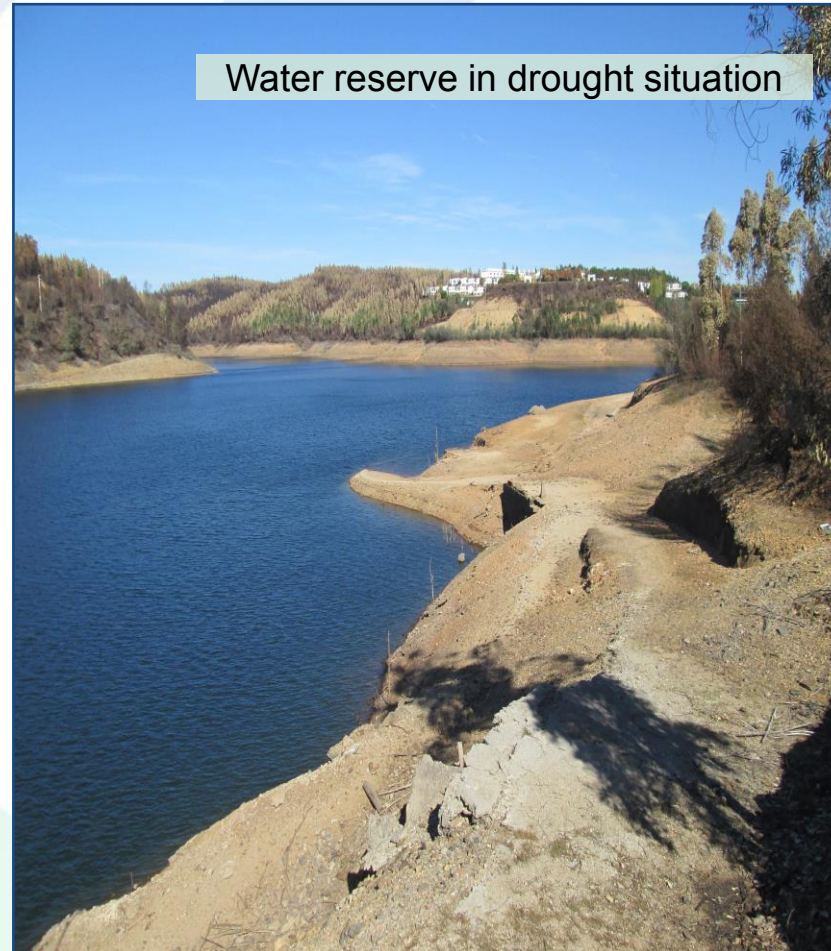
5 - <https://www.noticiasdecoimbra.pt/bacia-do-mondego-com-90-por-cento-de-armazenamento-de-agua/>

6 - <https://pt.astelus.com/cidades-para-visitar-em-portugal/a-beleza-de-coimbra-portugal/>

Ecological flow

Water reserve in drought situation

Flood control



THANK YOU!

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