

In marking World Water Day in 2021, with the theme of valuing water, WBCSD is showcasing examples from a cross-section of its membership on how they have value water. This case study series aims to highlight the various dimensions of valuing water and how business integrates into their strategy, operations and decision-making.



CASE STUDY 3

Water Valuation to balance the water needs of the stakeholders and the environment



EDF Group is a world leader in electricity production, with a historical background of public services, providing energy and innovative service to more than 38 million customers worldwide. EDF is a major player in the French electricity market and has a significant presence worldwide.

As part of its commitment to sustainability, EDF aims to build a net-zero energy future with electricity and innovative services to help save the planet and drive wellbeing and economic development.

Key driver for valuing water

EDF operates a cascade of 32 hydropower plants (2000MW) on the Serre-Poncon dam along the Durance-Verdon river system (250km) in South-East France. Water resources in the region are under a high level of pressure due to significant abstraction for various water uses (irrigation, hydropower, drinking water, industrial use and recreational activities) and the need to maintain ecological services.

The key driver for water valuation by EDF was to optimize the water use for its operations thus resulting in improved net financial returns. Water valuation was used to manage the allocation of regional water resources in this case and address inefficient water use in irrigation. It helped the decision-making process for optimal water management with respect to competing multipurpose uses of water.

The approach

EDF signed the Water Saving Convention with two large irrigators in the Serre-Poncon catchment for a six-year period. The agreement was based around the irrigators using less water to meet their needs i.e. using water more efficiently and in turn receiving remuneration from EDF. The agreement included

an arrangement to adjust the agreed remuneration if it achieved better results than expected. A water valuation methodology was used to calculate the amount of remuneration for the irrigators.

EDF performed the water valuation itself, using its own software tool called PARSIFAL, specifically developed for the optimization of water management at EDF's facilities. The value used for water was effectively the financial cost of energy (€/KWh) based on current and future prices in France and linked to the energy productivity (m³/KWh) and the volume of water used (m³) by the hydropower plant.

Results and Outcomes

The results of the valuation are confidential, but in general terms revealed how much additional value in terms of energy prices could be generated through the water saving initiatives. The study also showed that within the range of 32-100 Mm³ per year of water saved, the economic gain is linear and proportional to the

volume of water saved. This was important in determining what level of remuneration should be paid to the irrigators for their reduced water consumption.

The Water Saving Convention was so effective that an additional agreement was signed in 2003 and another in 2006 to increase the water savings target from 44 to 65 and further to 90 million cubic metres. This led to a reduction in agricultural consumption of water by about 30% (from 323 to 223 million cubic meters per year) over 6 years. This approach was further extended to a larger perimeter with the engagement of the local water agency.



In addition to simply the volume of water saved, a key benefit was the timing of the water savings. The water saved could be used to generate more electricity during peak periods of electricity demand when electricity prices are higher.

Further, in 2014, a new "Canal contract" was signed between EDF and the Canal of Vaucluse for nine years thus expanding the initially proven concept with the irrigators to include the Water agency. Under this contract, the Water agency co-financed modernization projects, and 50% of the water savings generated from these projects were intended for natural environments (in time and space: local environments, valley environments, or in environments with proven deficit) and the remaining 50% for multi-use by the stakeholders. In effect, this contract encouraged investments for water saving while directing part of the water savings for natural environments.

In addition, a protocol has been signed between EDF, the Water Agency and the State for allocation of volumes of water saved for the benefit of communities. This involves the creation of a Volume Savings Account

to record the savings of water a priori intended for the environment, to keep a memory with a view to an allocation transferred in time and space (in the event of restitution outside local natural environments).



Next steps and lessons learnt

The Water Saving Convention benefitted the irrigators on the one hand from being remunerated by EDF based on the water savings they make, and on the other from there being more water stored in the reservoir thereby being able to cope better at times of drought. EDF benefits from having more water available throughout the year, thereby being able to benefit from more hydropower generation and from the added flexibility of being able to generate electricity at peak periods

of the day throughout the year when energy prices are higher.

The Canal contract further promoted investments into water savings and a clear allocation of the saved water for the environment. The interventions therefore led to win-win-win for the irrigators, EDF and the environment.

Key takeaways:

- Dialogue is essential to understand the benefit for both the parties and create a win-win situation.

- It is important to use robust and relevant data and tools to bring objective information to the negotiation table.
- A key success factor is to start initially with a moderate ambition, i.e. a limited number of stakeholders and a reasonable target for water savings. Once positive results are achieved the approach can be expanded to a larger number of stakeholders for committed water savings for a longer term.

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