

## Soria-Chira pumped-storage hydropower plant



The Soria-Chira pumped-storage hydropower plant is an essential infrastructure in the push for sustainability of the new energy model in the Canary Islands, based on renewable energies.

This energy storage installation is an effective operation tool of the electrical system for improving supply guarantee, system security and renewable energy integration on the island of Gran Canaria.

### Benefits of the Canary Island electrical system

#### 1 IMPROVED GUARANTEE of supply

The power plant will have a turbination power of 200 MW (approximately 36 % of the island's current maximum peak demand) and will therefore improve the electricity supply guarantee in Gran Canaria.

#### 2 GREATER SECURITY of the system

The wide variability that will be seen with wind power production in Gran Canaria means that, without this project, there will be substantial oscillations in the system frequency in light of the significant and rapid variations of such production. Therefore, the regulation capacity provided by this power plant will make it possible to compensate for the variability of wind power production and maintain stable frequency values, thus guaranteeing system security.

#### 3 GREATER INTEGRATION of renewable energies

Thanks to this power plant, the Canary Island electrical system will have an essential installation for taking advantage of the renewable energy surpluses and integrating greater amounts of native, CO<sub>2</sub>-free energies to the detriment of more expensive and polluting fossil fuel-based energies.

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### Soria-Chira pumped-storage hydropower plant in Gran Canaria



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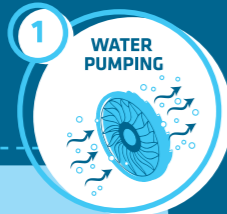


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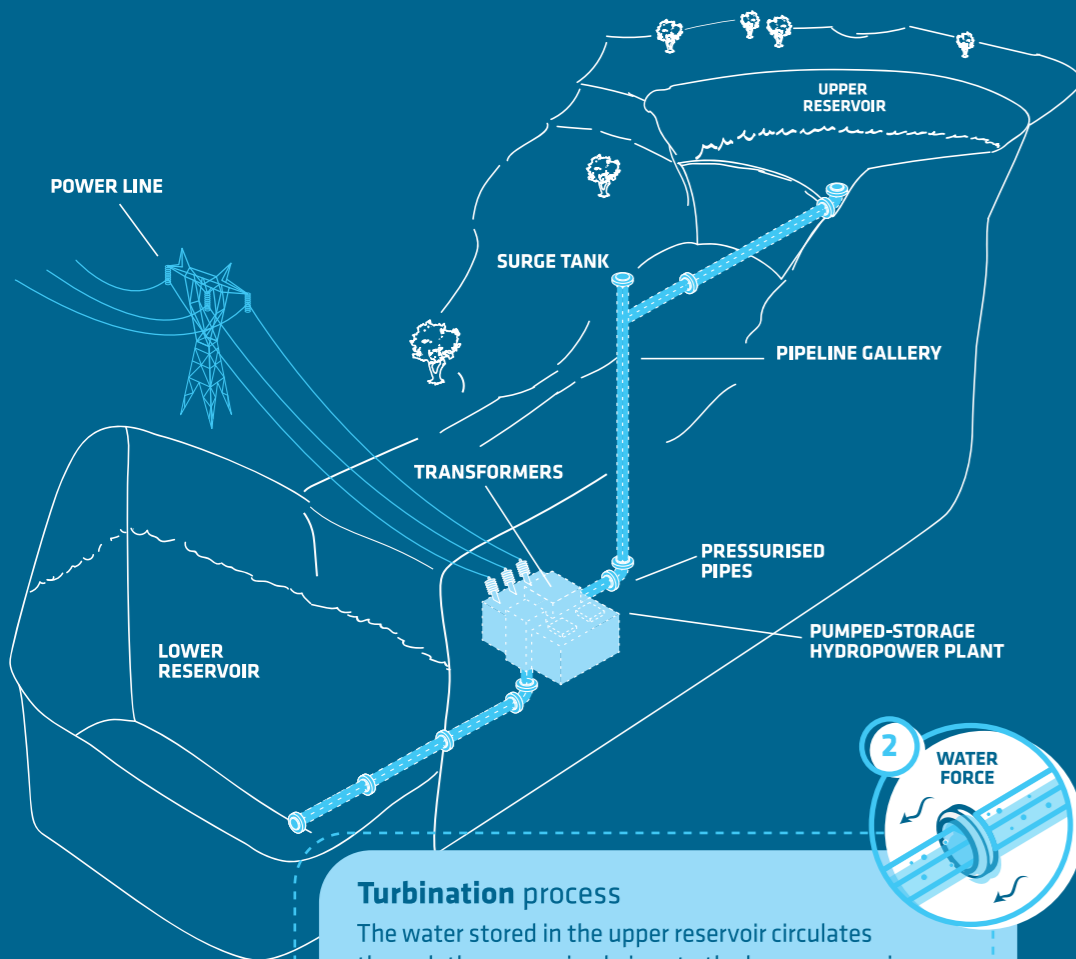
## What is a pumped-storage hydropower plant?

A pumped-storage hydropower plant is an energy storage installation that has two reservoirs situated at different levels. During hours with lower electricity consumption, water is pumped from the lower reservoir to the upper reservoir where it is stored (figure 1) and made available for subsequent turbination in periods when energy demand is higher (figure 2).



### Pumping process

In the off-peak energy consumption periods, generally in the early hours of the morning, the surplus renewable energy is used to pump water to the upper reservoir where it is stored as potential energy, to be used in the turbination process.

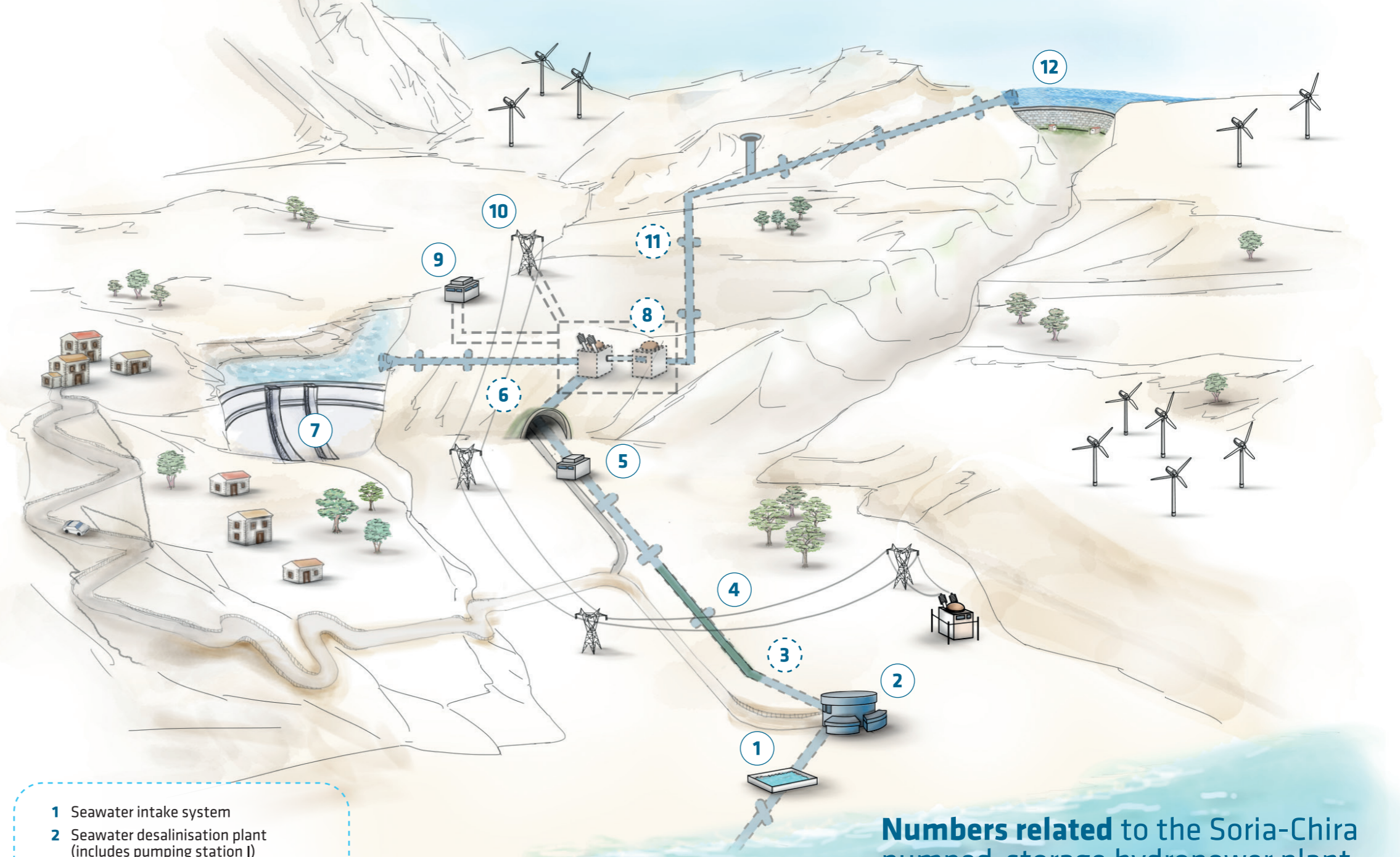


### Turbination process

The water stored in the upper reservoir circulates through the pressurised pipes to the lower reservoir, actuating the turbines of the power plant and integrating with the previously accumulated renewable energy system. The water is stored in the lower reservoir, where it remains available to repeat the cycle.



## Main elements of the Soria-Chira pumped-storage hydropower plant



- 1 Seawater intake system
- 2 Seawater desalination plant (includes pumping station I)
- 3 20 km desalinated water channels
- 4 Tourist trail over the water channels
- 5 Pumping station II
- 6 2 km plant access tunnel
- 7 Soria Reservoir
- 8 Plant cavern and transformers cavern (includes 220 kV substation)
- 9 Auxiliary service and control building
- 10 220 kV power line
- 11 Hydraulic circuit
- 12 Chira Reservoir

- Surface elements
- ⋯ Underground elements

## Numbers related to the Soria-Chira pumped-storage hydropower plant

200 MW  
POWER



€320 MILLION  
IN INVESTMENT

1,500  
INDIRECT JOBS



500  
JOBS ON SITE