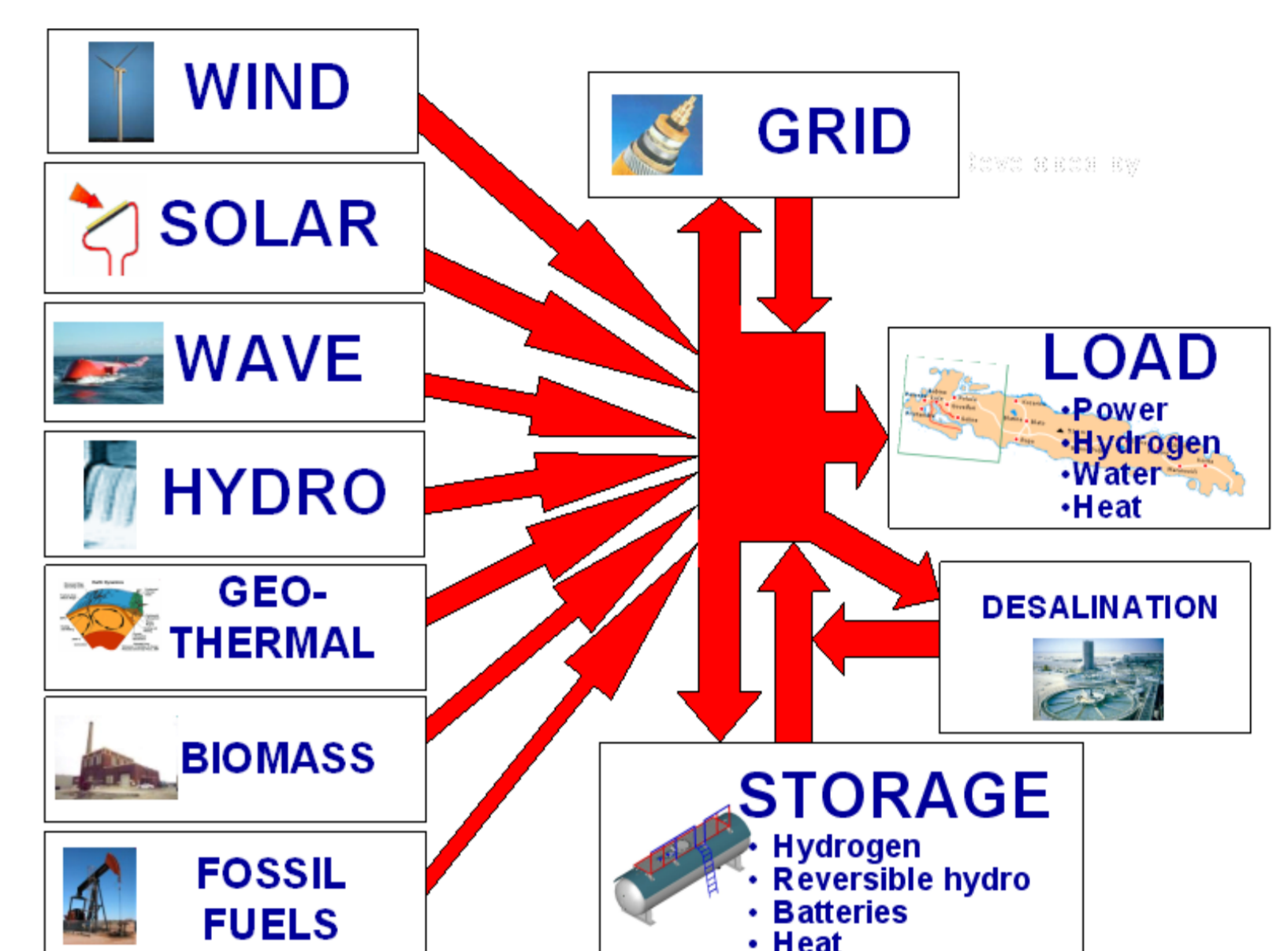


Increasing the penetration of Renewable Energy Sources in S. Vicente, Cape Verde

Raquel Segurado
 raquelsegurado@ist.utl.pt

Objective

The main objective of this work is to analyse different scenarios for increasing of penetration of renewable energy sources in the electricity system of S. Vicente Island, in Cape Verde, using the H₂RES model, a tool developed to simulate the integration of renewable energy sources and hydrogen in the energy system of islands and isolated locations.

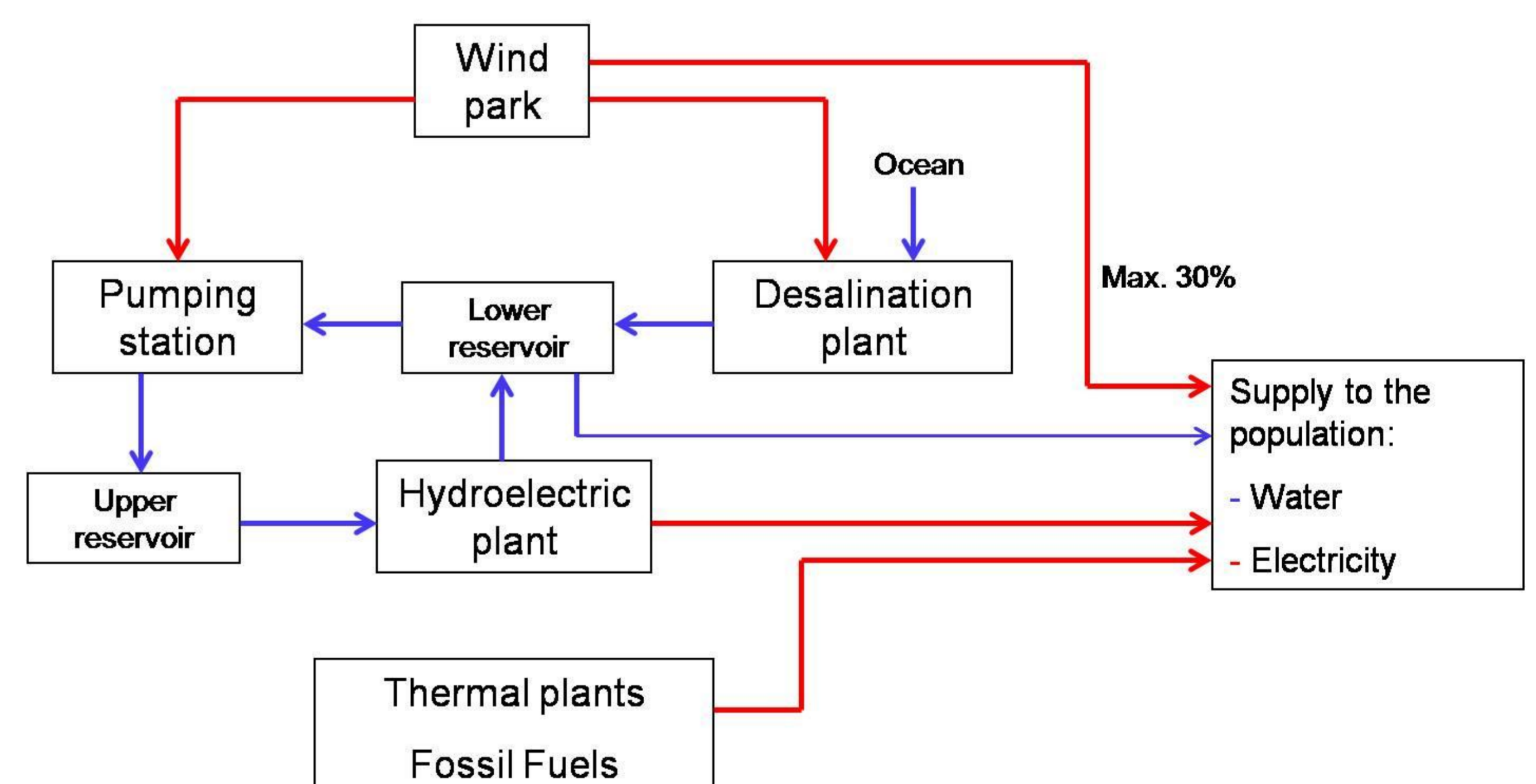


S. Vicente Island

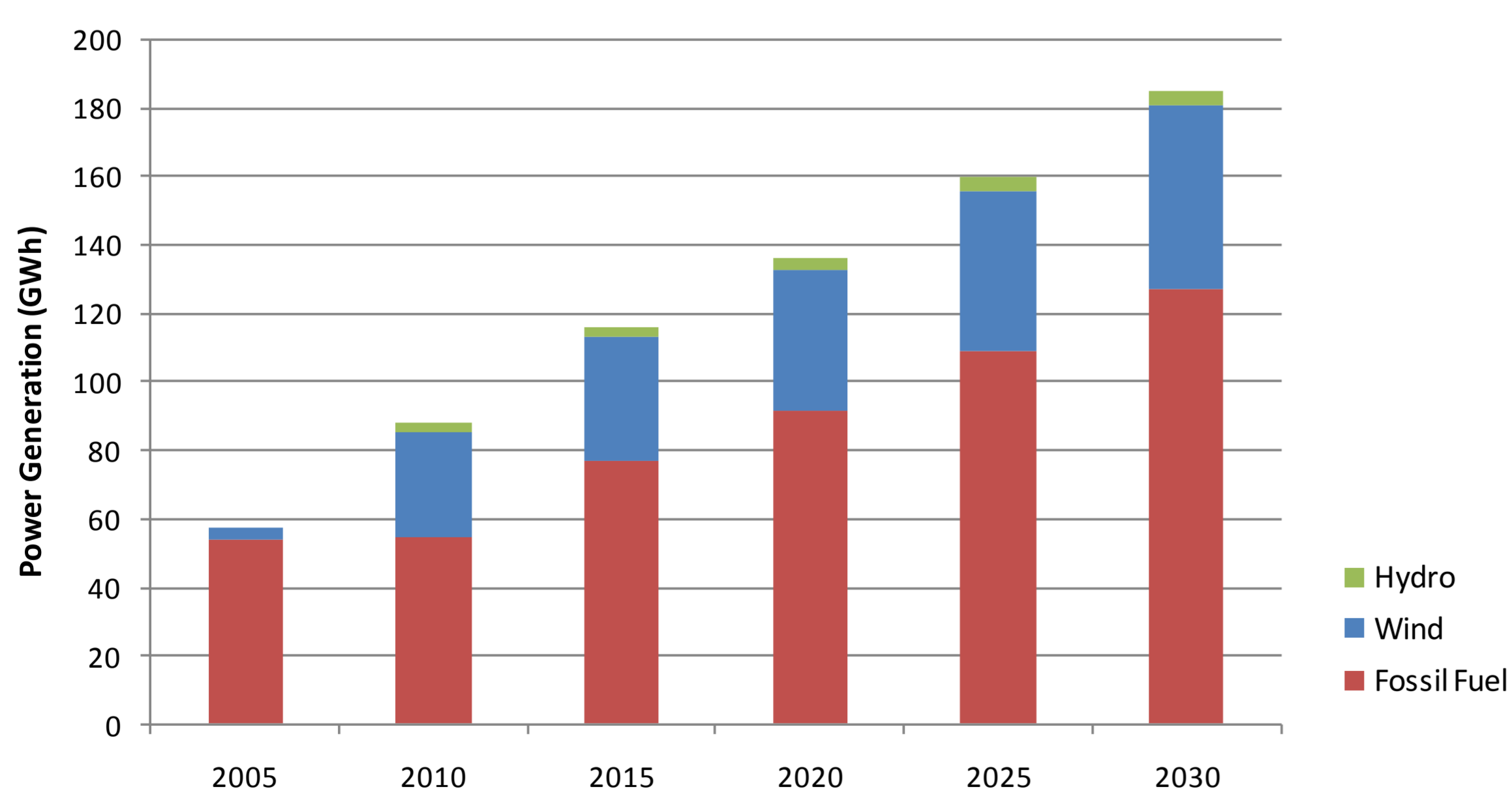


This island is extremely dry, and fresh water is provided to the population by sea water desalination, a very high energy intensive process. The electricity supply system is based on diesel and wind (still low penetration). S. Vicente has important wind resources that are not fully used because of its intermittent nature.

The present study incorporates the possibility of using reversible hydro as a storage technique to increase the penetration of renewable energy sources, using desalinated sea water.



Results



In the maximization of RES penetration scenario, for 2020, 30% of all the electricity produced in the island will be from the wind park and 3% from the hydroelectric power station, resulting in 33% of RES electricity. In this scenario, the amount of desalinated water produced from wind electricity reaches 56%.

Future developments

Next stages of this work:

- Financial and environmental analysis of the modelled scenarios;
- Fog collection in Monte Verde for the upper reservoir.

