Project 1002 - iLand

iLand consists in building a innovative hydro-pumped storage facility on an artificial island off the coast of Belgium (approximately 5 km offshore with an imprint of 4 x 2,5 km). iLand should provide a total hydraulic storage capacity of ca. 2,2 GWh, i.e., a total net storage capacity of 2,0 GWh, assuming a 90% efficiency in turbine-mode, and a net annual electricity generation of approximately 750 GWh.

Flexible access is being considered due to the specific nature of iLand and its complementarity with offshore wind. iLand would be able to store energy during peak wind periods and inject energy into the grid when there is little wind.

iLand is thus not dependent on specific grid enhancements, which could suffer delays. Flexible access also enables TSOs to better maintain security of supply and allows for more efficient grid management.

iLand will enable a significant increase in the regional balancing capabilities of the Belgian grid and the grids of the Netherlands and France. Even the UK will benefit from iLand's balancing properties if it is connected to the pending "NEMO" interconnector between Belgium and the UK.

Boundary	Belgium
Promoted by	THV iLand

Project Details

Commisioning Date	2021
Type of Storage	Pumped Hydro - Offshore
Max Active Power (MW)	550
Storage Capacity (GWh)	2

Storage Analysis

iLand is the industrial result of a process initiated by the Belgian Government to cope with the needs of market integration, flexibility, sustainability and secure system operation of both the European and national electricity systems. The project is especially necessary in light of the growing impact of RES integration to meet the European goal of 27% RES by 2030. Despite initially focusing on Belgium, iLand's developers see potential in, and are committed to, developing iLand as a project of European significance: iLand is essential to achieving the European Energy Union objectives and its crossborder significance will continue to grow as other TSOs are involved.

iLand will significantly contribute, and is necessary, to the investment needs in the NSOG priority corridor as identified in the EIR. The projected installed capacity (250-1.000 MW) and net annual electricity generation (750 GWh/year) of iLand largely exceed the thresholds imposed by the EIR to confer upon a project a "significant cross-border impact", even when located in a single Member State (like iLand).

iLand contributes to all three of the EU energy policy pillars. Indeed, iLand will enhance market integration by improving balancing capabilities both within the Belgian network and also, through indirect interconnections, within the overall NSOG area. iLand will also contribute to sustainability by allowing for increased integration of RES into the grid because its flexibility will help alleviate offshore wind intermittency issues. iLand will also contribute to security of supply by providing service for flexibility and black start capacity.

Cost [Meuros]	1327

Scenario specific CBA

EP2020 Vision 1	Vision 2	Vision 3	Vision 4 indicators		
B2 SEW (MEuros/yr)	<10	<10	<10	10 +/- 10	<10
B3 RES integration (GWh/yr)	<10	<10	<10	70 +/- 70	60 +/- 40
B4 Losses (GWh/yr)	<10	<10	<10	<10	<10
B4 Losses (Meuros/yr)	<10	<10	<10	<10	<10
B5 CO2 Emissions (kT/year)	-100 +/- 200	200 +/- 200	300 +/- 100	+/-100	+/-100 +/- 100

Capability for ancillary services

As the need for flexibility will grow fast with increasing RES penetration in the power system, and as ancillary services offer an important market channel for the supply of flexibility to the grid, the iLand infrastructure is designed for maximum capability for the supply of ancillary services, as was indicated in the flexibility indicator.
As the project is based on the storage technology, it can also contribute to the power and frequency control and earn revenues that are not valued in this assessment This storage project of Belgium enables saving in generation capacity of 18 - 23 Meuro/year

Complementary Information

This additional information has been provided based on a preliminary version of the CBA 2.0, in coordination with the European Association or Storage of Energy (EASE). Each of the four below KPIs are scored from 0 to ++ based on the technical characteristics provided by each project promoter.

Response time to activate Frequency Containment Reserves	++
Response time to reach the available power	++
Total time during which available power can be sustained	++
Power that is continuously available within the activation time	++