



Le réseau
de transport
d'électricité

BIODHYL – Inputs for RTE

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June 2026



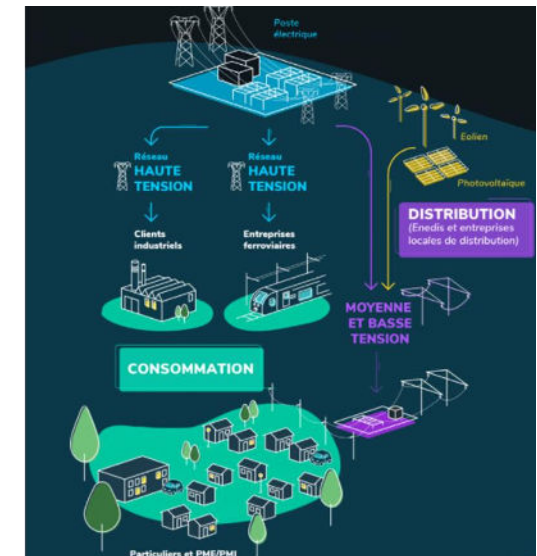
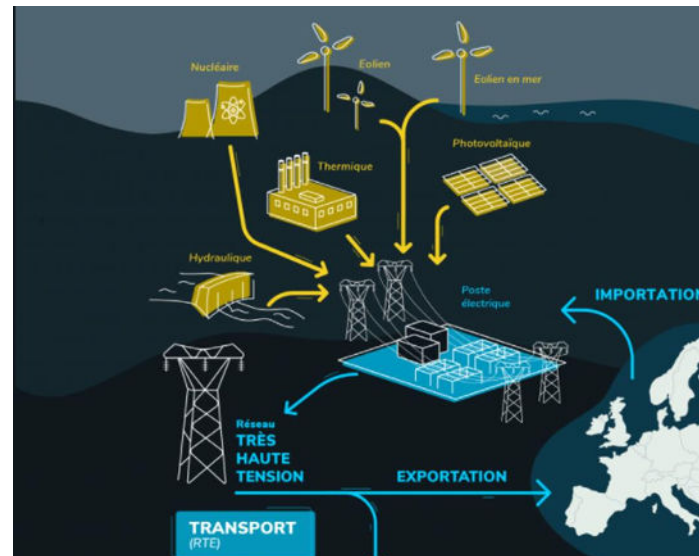
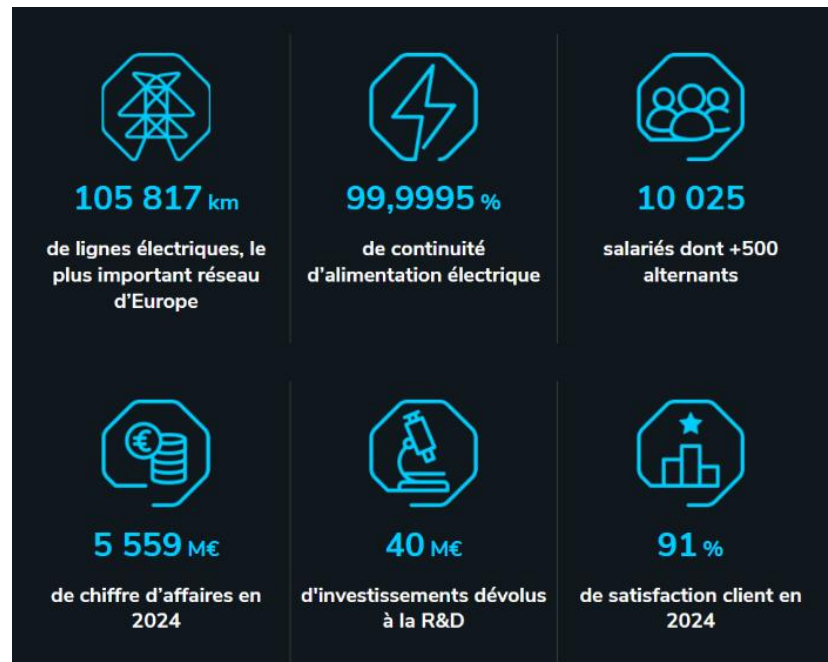
RTE and the energy transition in marine environment

RTE is the operator of France's public electricity transmission network

Entrusted with a public service mission that is essential to the life of our country, RTE works every second to guarantee long-term access for all French people to decarbonized electricity through its network.

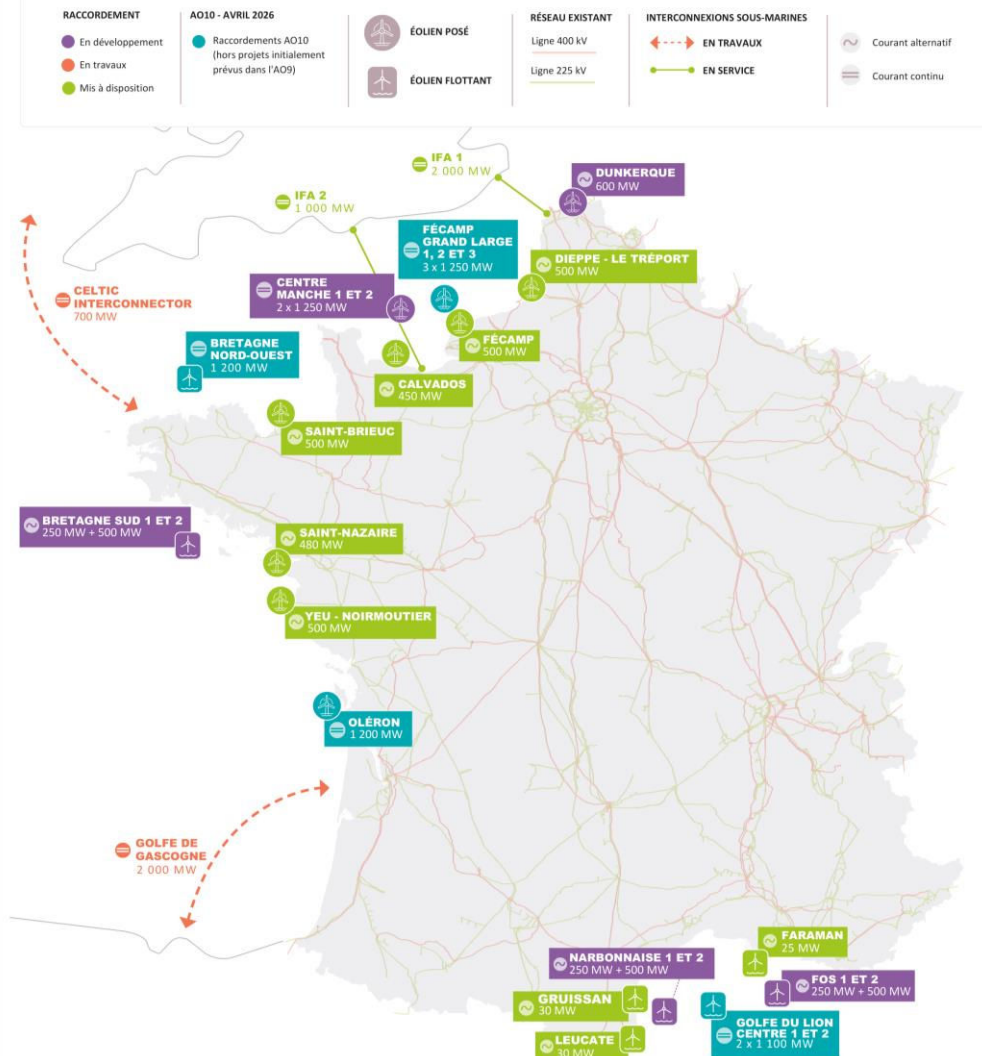
RTE :

- Optimizes the French electricity system by combining efficiency, solidarity and environmental considerations
- Drives the energy transition through innovation and the transformation of the grid
- Uses its expertise to inform decision-making by public authorities, as well as the choices made by local authorities and citizens on energy issues

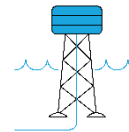


RTE, an industrial operator driving the offshore energy transition

Cartographie des ouvrages de transport d'électricité en mer



9 CONNECTIONS AVAILABLE
INCLUDING 3 CONNECTIONS FOR PILOT FLOATING FARMS



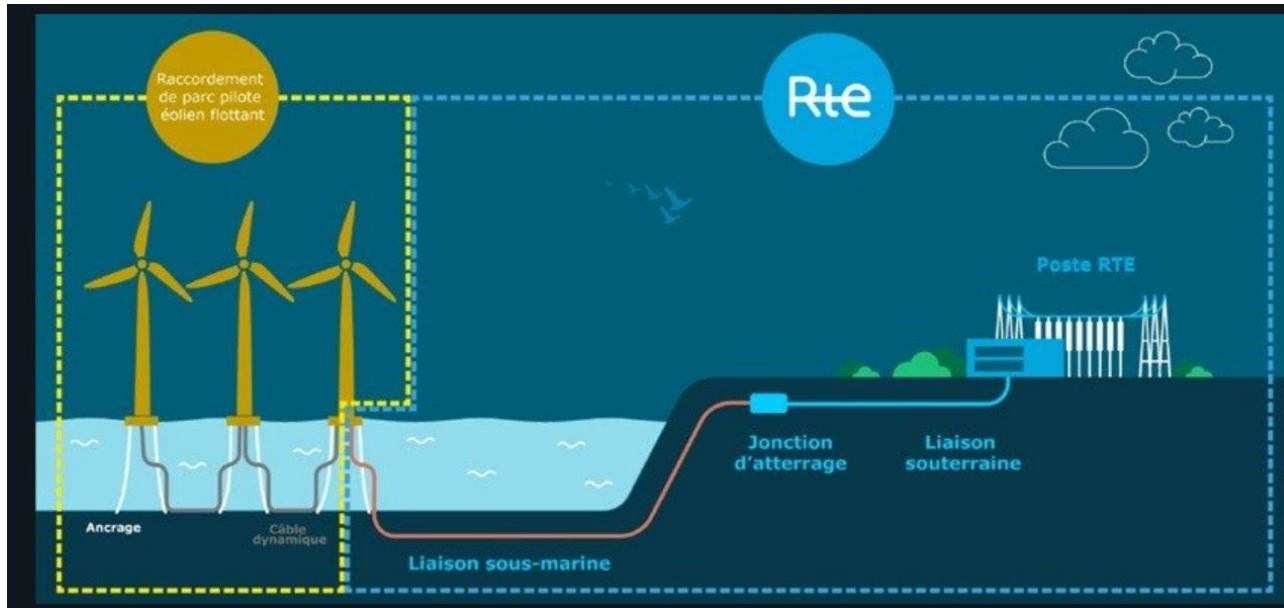
SINCE 2016, RTE HAS BEEN THE PROJECT OWNER FOR THE ENTIRE CONNECTION
FROM THE OFFSHORE SUBSTATION TO THE ONSHORE CONNECTION POINT



3 GW OF CAPACITY ACROSS 9 OFFSHORE WIND FARMS
TO BE OPERATIONAL BY 2027

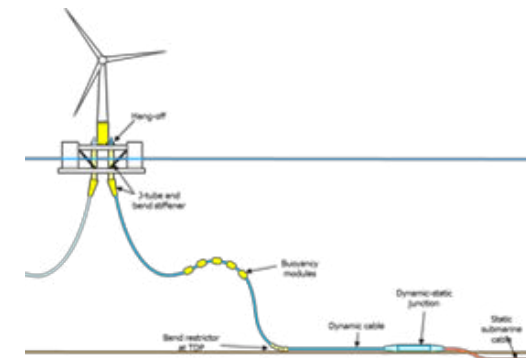
THE ONLY ACTOR INVOLVED IN PROJECTS FROM THE BEGINNING TO THE END
COVERING MARITIME, COASTAL AND LAND AREAS AT THE SAME TIME

Focus on floating wind turbines



The floating wind turbines in the Gulf of Lion connection:

- 18 km of submarine power cable
- 3.5 km of underground power cable
- 3 floating wind turbines, each with a capacity of 10 MW
- 16 km off the coast of Leucate and Le Barcarès
- 1 innovative dynamic cable to follow the movements of the float



The offshore connection, in practice



The submarine cable is a **three-core (tripolar) cable with copper or aluminum conductors**, surrounded by multiple layers of insulation and protection. It is installed on the seabed by a **cable-laying vessel and protected** (burial or alternative protection methods)



Biofouling challenges for RTE

FOR FUTURE FLOATING SUBSTATIONS

- RTE faces **significant challenges** related to biofouling in both the engineering and long-term maintenance of its submarine dynamic cable systems.



- However,
 - There is a **lack of knowledge** regarding biofouling growth patterns along different French coastlines, with the absence of depth-dependent in-situ data.
 - The **design of a dynamic cable for a 20-year service life is particularly challenging** in 60 m water depth, due to harsh offshore environmental conditions and biofouling-related constraints.

2

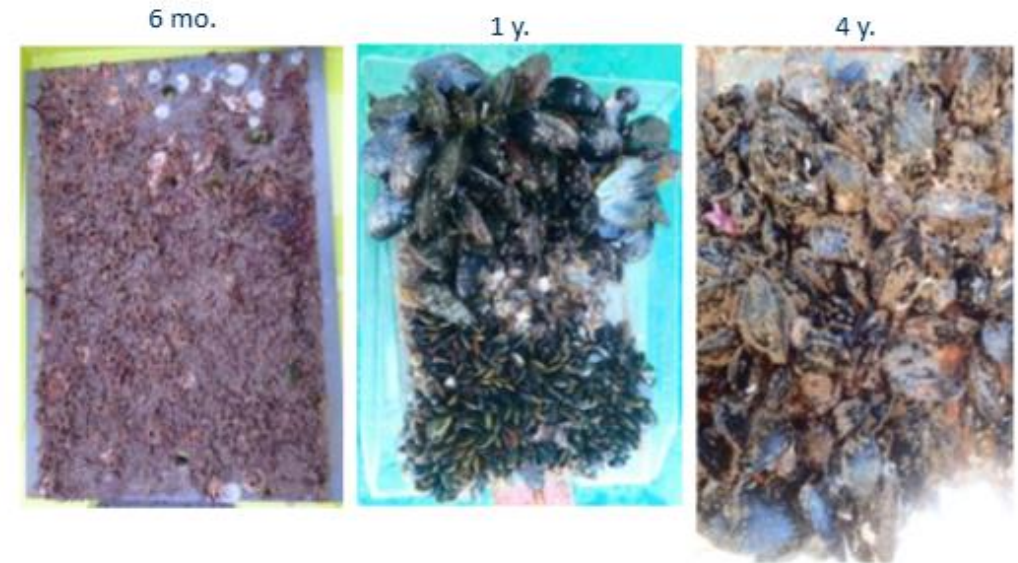
BIODHYL's contributions for RTE

Technical contributions

TOWARD MORE PRECISION

The BIODHYL project results have confirmed current practices and strengthened several key insights:

- **lower biofouling density than NORSOK assumptions** → NORSOK is conservative on mass (x1.5-2) but may underestimate thickness in some cases
- Need for **more accurate, site-specific and depth-dependent data** for engineering design
- Biofouling thickness can be measured, but existing methods (gauges, acoustic cameras) used by RTE **remain limited and do not capture roughness accurately**
- Measurements on BOB buoy deployed in Mediterranean sea also revealed that data were conservative so it reinforces our conviction regarding the need to deploy a **dedicated instrumented buoy** at least 24 months before a project begins



Environmental learnings

IS THERE A STEPPING STONE EFFECT ?

- Biofouling strongly depends **on depth, exposure time, location and environment**, with highly coupled effects limiting simple engineering laws
- Our main objective is to **detect the presence and conditions of invasive alien species establishment**
- DNA extracted from biofouling can be used to detect fish species
→ **an innovative method for studying the reef effect**



Thank you!

CONTACTS

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