



**RED**  
**ELÉCTRICA**  
DE ESPAÑA

# Spain-France electrical interconnection

through the Biscay Gulf

January 2018



**Co-financed by the Connecting Europe  
Facility of the European Union**

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# A project of European interest to build together

## **Greater interconnection capacity...**

The link under the Biscay Gulf will make it possible to achieve an interconnection capacity of **5,000 MW**, versus 2,800 MW today.

## **...to take advantage of complementary aspects**

The energy mix and maximum consumption peaks are different and complementary in the two countries.

## **...and contribute to energy efficiency.**

The increase in interconnections reduces generation costs and optimizes the energy system.  
(\* )

\* According to the ENTSOe study 'Ten Years Network Development Plan 2016'.

*This project represents a challenge for Spain, France, and Europe to achieve their energy transition goals.*

*For this reason, on 14 October 2013, this project was designated by the Commission and the European Parliament as a 'Project of Common Interest' (PCI) within the framework of the European regulations on energy infrastructure (347/2013).*

# Reinforcement of the interconnection between Spain and France

## **Principal lines of the European Union's energy policy**

**To develop a fully-functioning Energy Union** that is completely interconnected, that allows energy diversification, and guarantees secure energy supply.

### **Promote the integration of renewable energies**

**27 %** of the total energy consumption from renewable energy sources, reducing energy dependence.

### **Reduce greenhouse gas emissions**

**-40 %** with respect to 1990.

**An interconnected European energy network** is vital for Europe's energy security and competitiveness, and also to achieve its carbon reduction goals and the fight against climate change to which the EU is committed. An interconnected network will help to achieve the goal of the Energy Union: guaranteeing affordable, safe, and sustainable energy that is compatible with growth and employment throughout the European Union.

To achieve the objectives, the European institutions are politically promoting and supporting the interconnections between the Iberian peninsula and the rest of the EU. In March 2002 in Barcelona, the European Council approved for the first time the goal of having member states achieve a level of electrical interconnection of at least 10% of the installed production capacity by 2020. Later, the France-Portugal-Spain summit that was held on 4 March 2015 reaffirmed, through signing of the Declaration of Madrid, the importance of mobilizing all necessary efforts to achieve the minimum goal of 10% of electrical interconnection by no later than 2020, and increasing that number in the following years.

# Advantages

## **Better supply guarantee**

*Electrical systems are more stable the more interconnected and intermeshed they are. Interconnections are the main vector for security of supply.*

## **Increases efficiency of the interconnected systems**

*Less need for generation plants to supply peak demand (at 19.00 in France and 21.00 in Spain) and lower generation costs.*

## **Economic benefits for the electric system**

*With the capacity left vacant on lines and that is not intended for supply security, daily commercial electricity exchanges are set up, making more efficient use of the differences in electricity production in each country.*

## **Increases integration of renewable energies**

*As the interconnection capacity increases, the volume of renewable production that the system is able to integrate safely is maximized, because the renewable energy that cannot be absorbed by the system itself can be sent to other neighbouring systems, instead of being wasted.*

# New electrical link under the Biscay Gulf

## Key figures

*The interconnection consists of four cables, two per link. This double submarine and underground direct-current link will be 370 km long between the Cubnezais substation (near Bordeaux) and the Gatika substation (near Bilbao).*

*A converter station will be located at each end of the interconnection link to transform the direct current into alternating current for connection to each country's transmission grid.*



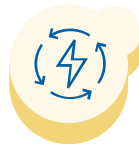
Increased capacity of interchange up to **5,000 MW**



**4** Cables (2 per link)

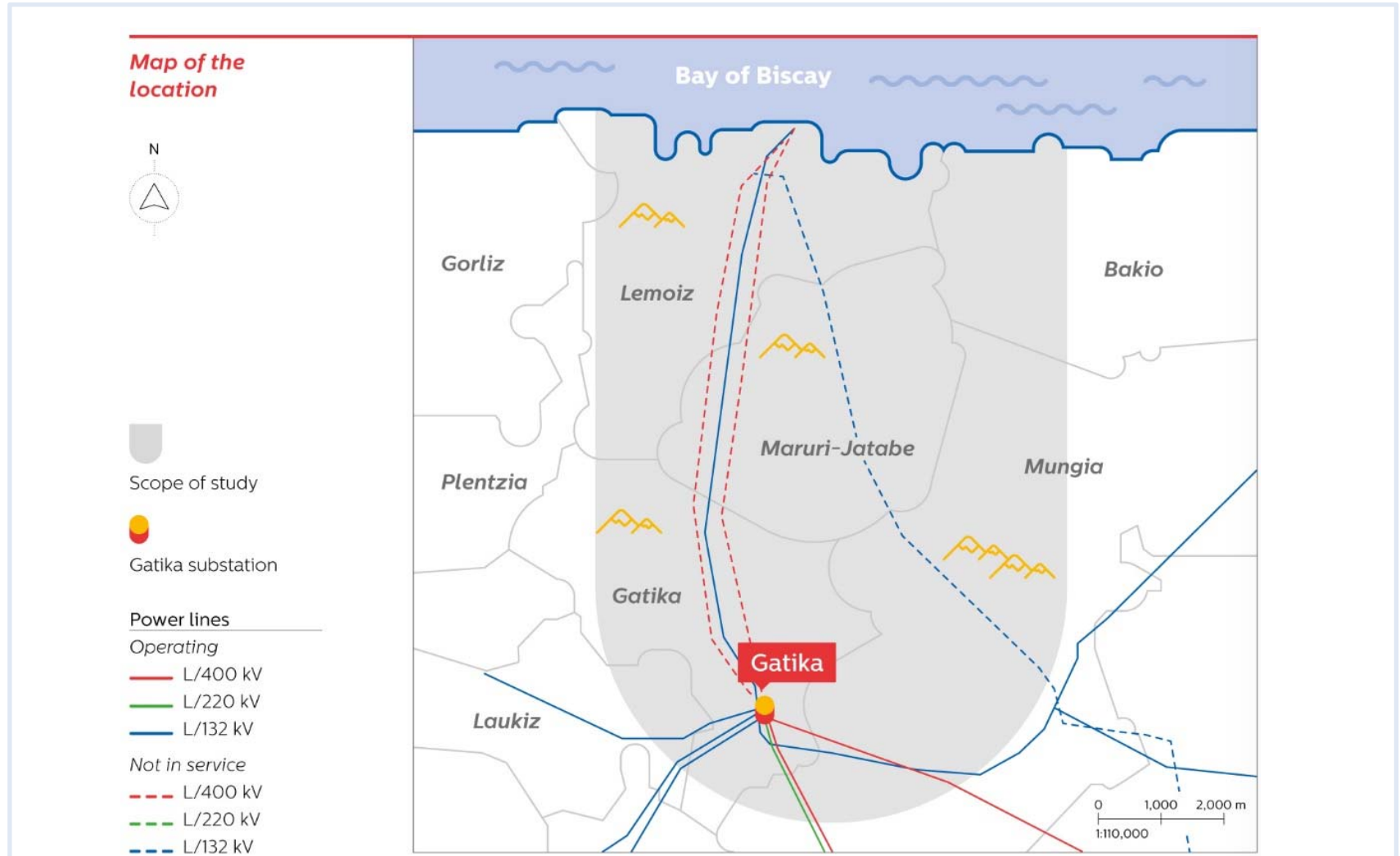


**370 km** Length of the interconnection

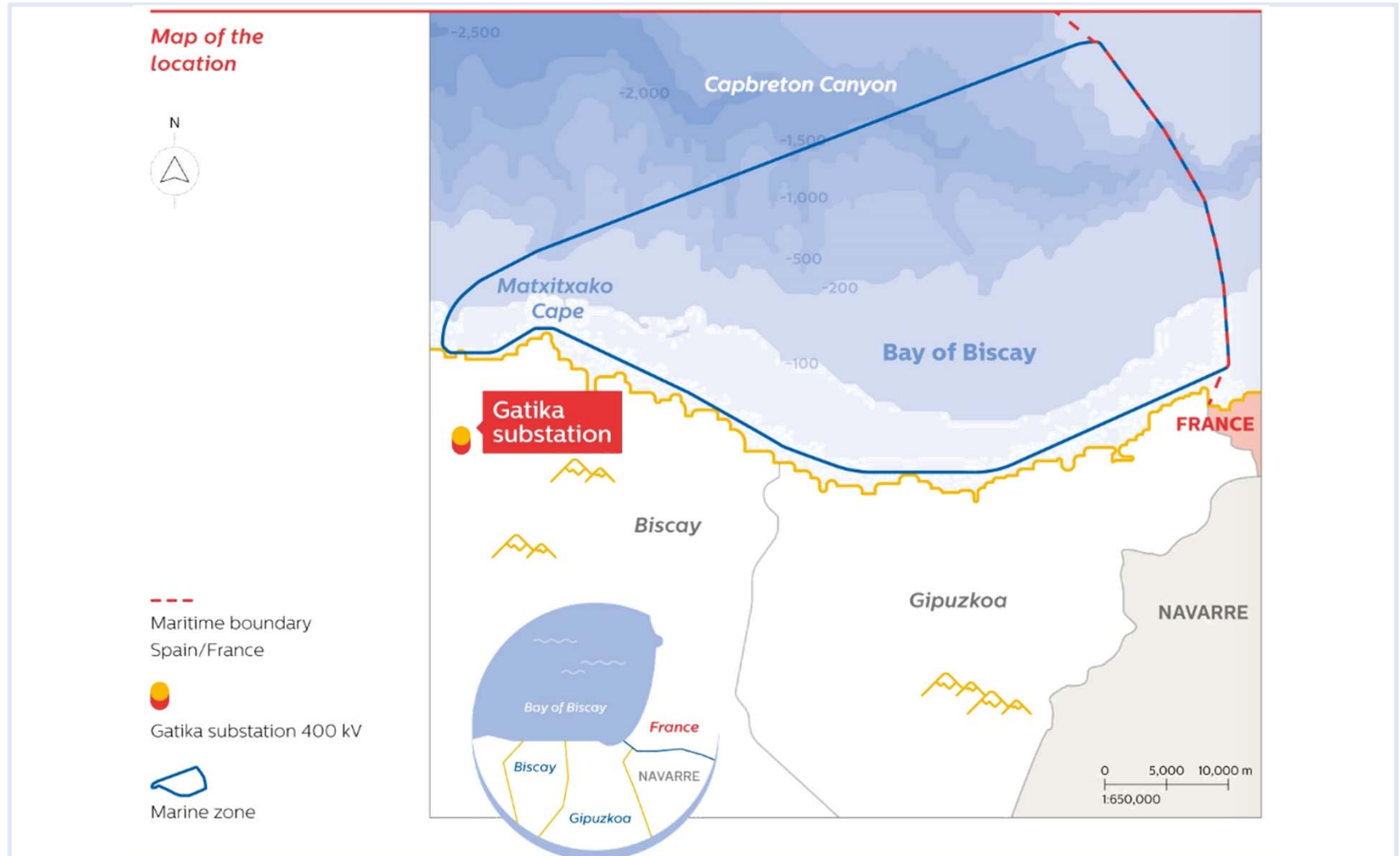


Transmission capacity **2 x 1,000 MW**

# Scope of the land study

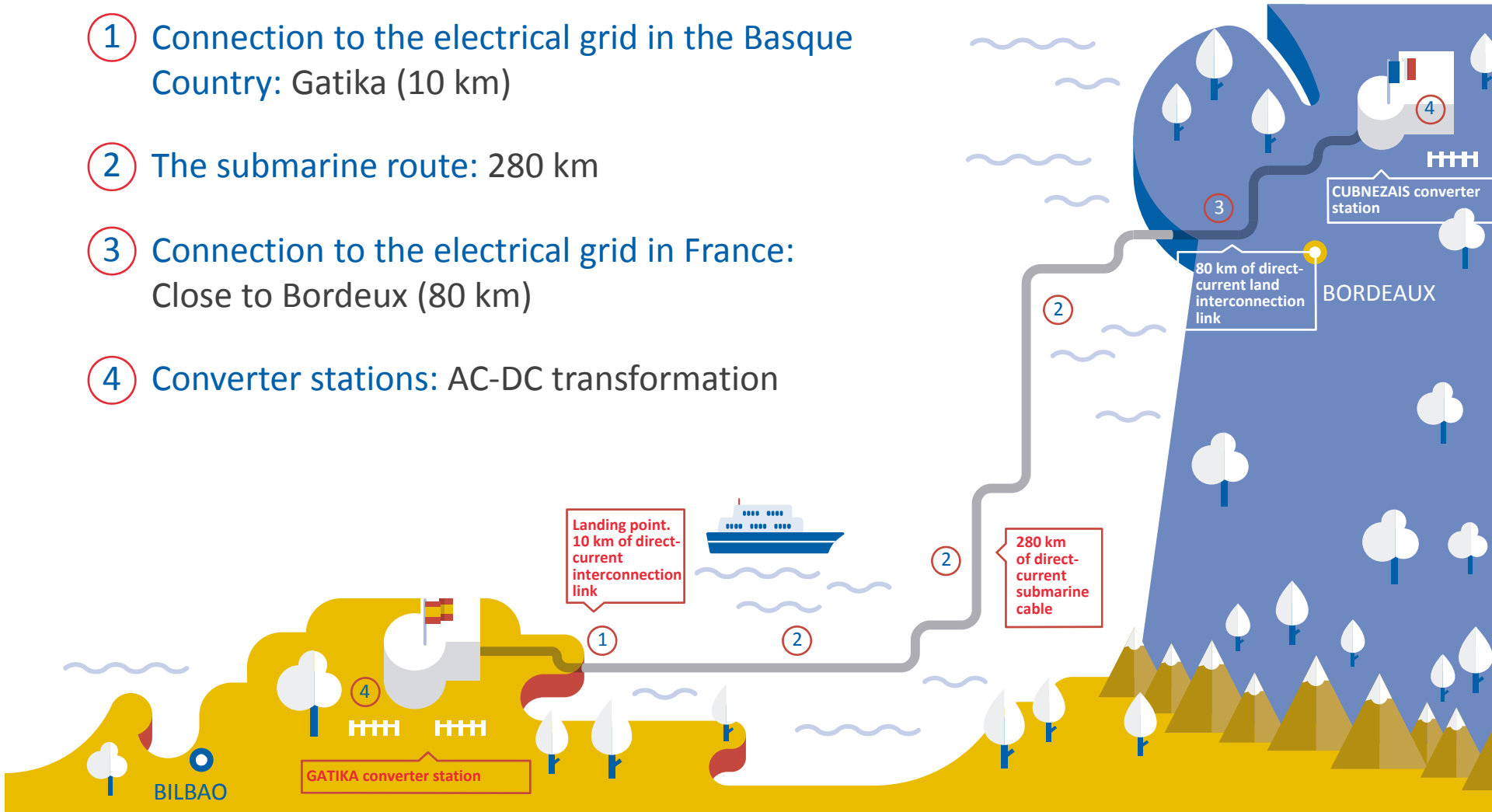


# Scope of the marine study



# A double submarine link

- 1 Connection to the electrical grid in the Basque Country: Gatika (10 km)
- 2 The submarine route: 280 km
- 3 Connection to the electrical grid in France: Close to Bordeaux (80 km)
- 4 Converter stations: AC-DC transformation



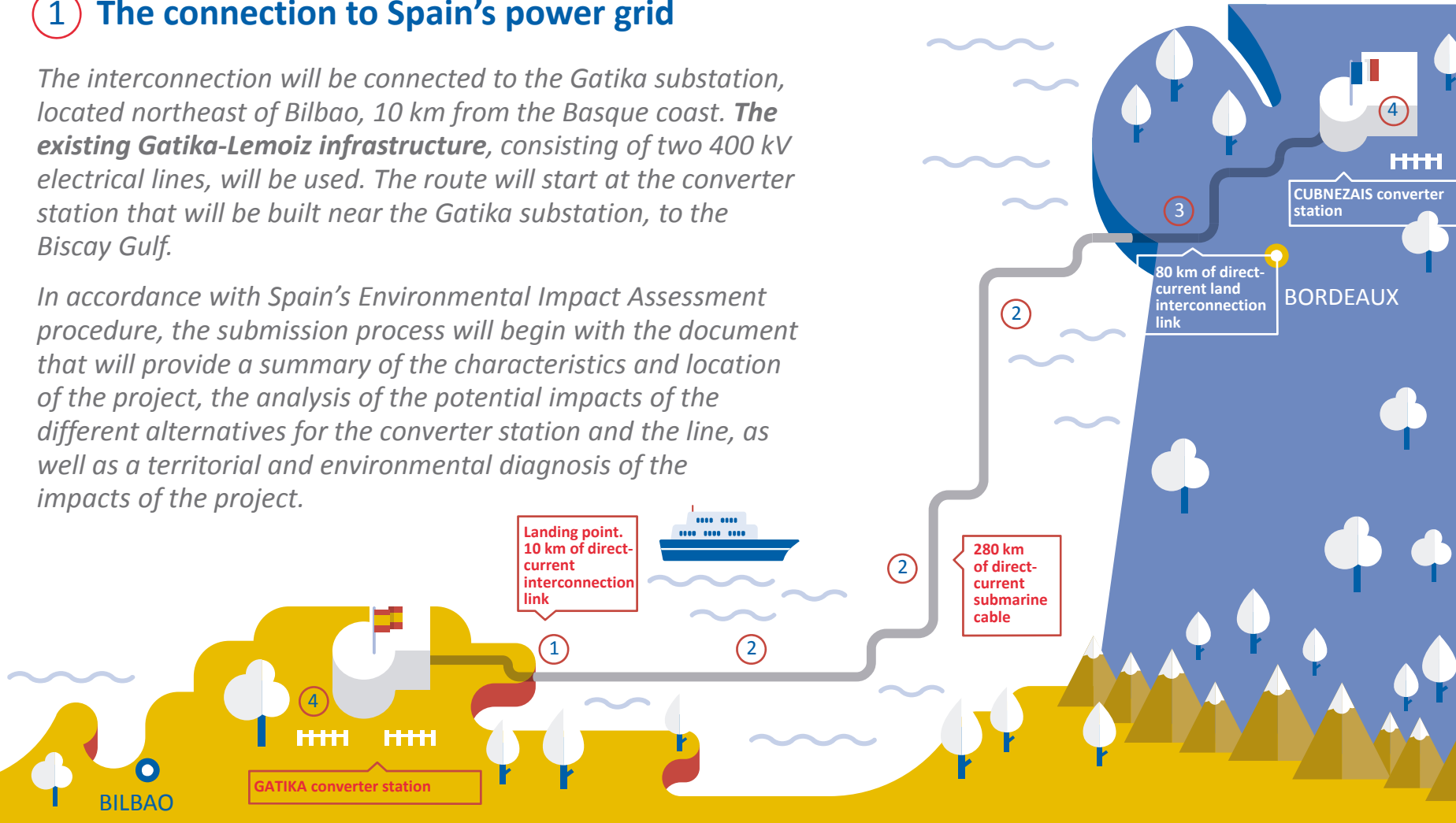


# A double submarine link

## ① The connection to Spain's power grid

The interconnection will be connected to the Gatika substation, located northeast of Bilbao, 10 km from the Basque coast. **The existing Gatika-Lemoiz infrastructure**, consisting of two 400 kV electrical lines, will be used. The route will start at the converter station that will be built near the Gatika substation, to the Biscay Gulf.

In accordance with Spain's Environmental Impact Assessment procedure, the submission process will begin with the document that will provide a summary of the characteristics and location of the project, the analysis of the potential impacts of the different alternatives for the converter station and the line, as well as a territorial and environmental diagnosis of the impacts of the project.



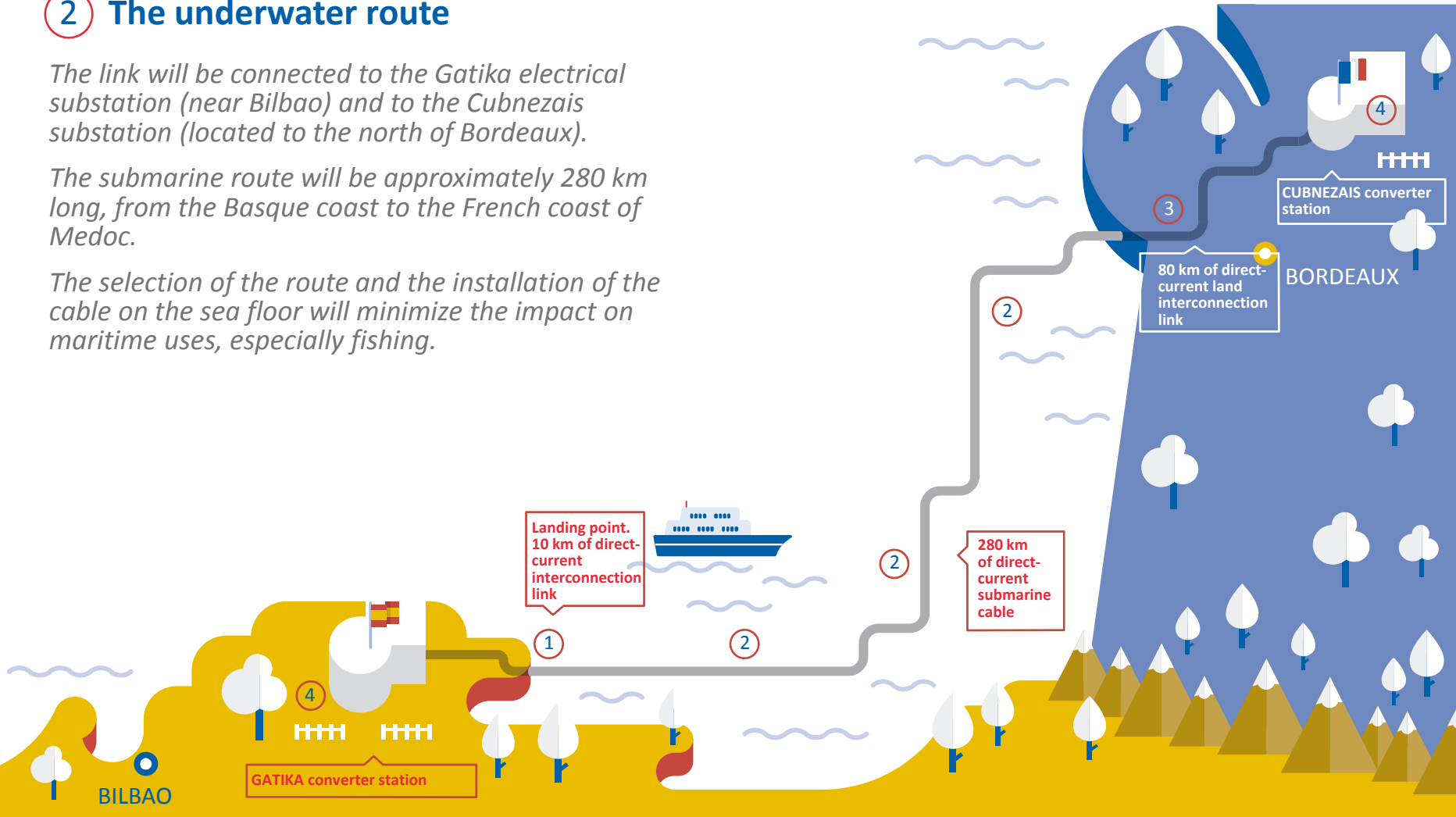
# A double submarine link

## 2 The underwater route

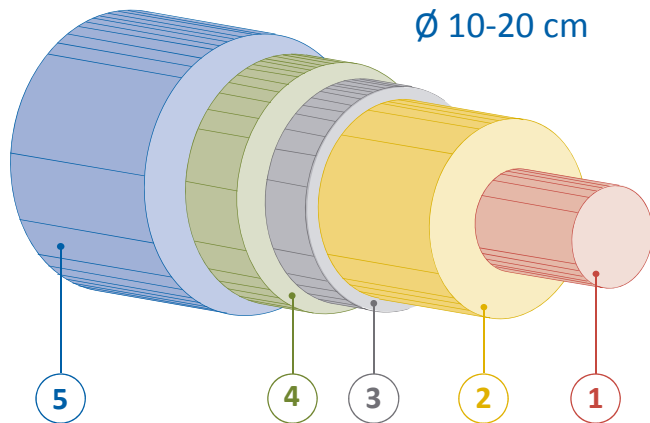
The link will be connected to the Gatika electrical substation (near Bilbao) and to the Cubnezais substation (located to the north of Bordeaux).

The submarine route will be approximately 280 km long, from the Basque coast to the French coast of Medoc.

The selection of the route and the installation of the cable on the sea floor will minimize the impact on maritime uses, especially fishing.



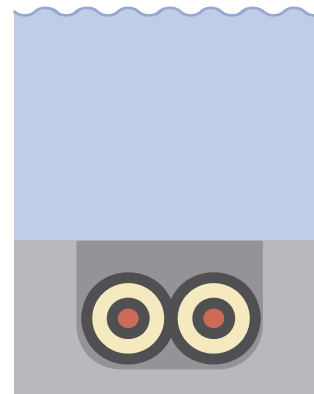
# The submarine cable



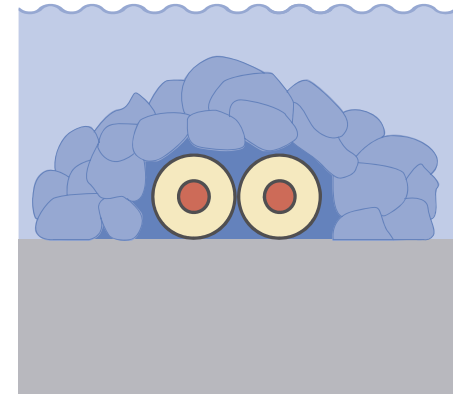
- 1 Copper or aluminium conductor.
- 2 Insulation.
- 3 Metal screen.
- 4 Reinforcement.
- 5 Protective outer sheath.

## Laying the submarine cable

Each cable will be laid on the sea floor with the help of a cable laying vessel. As a general rule, cables will be buried to protect them, unless the floor is too hard, in which case they will be covered.



Buried



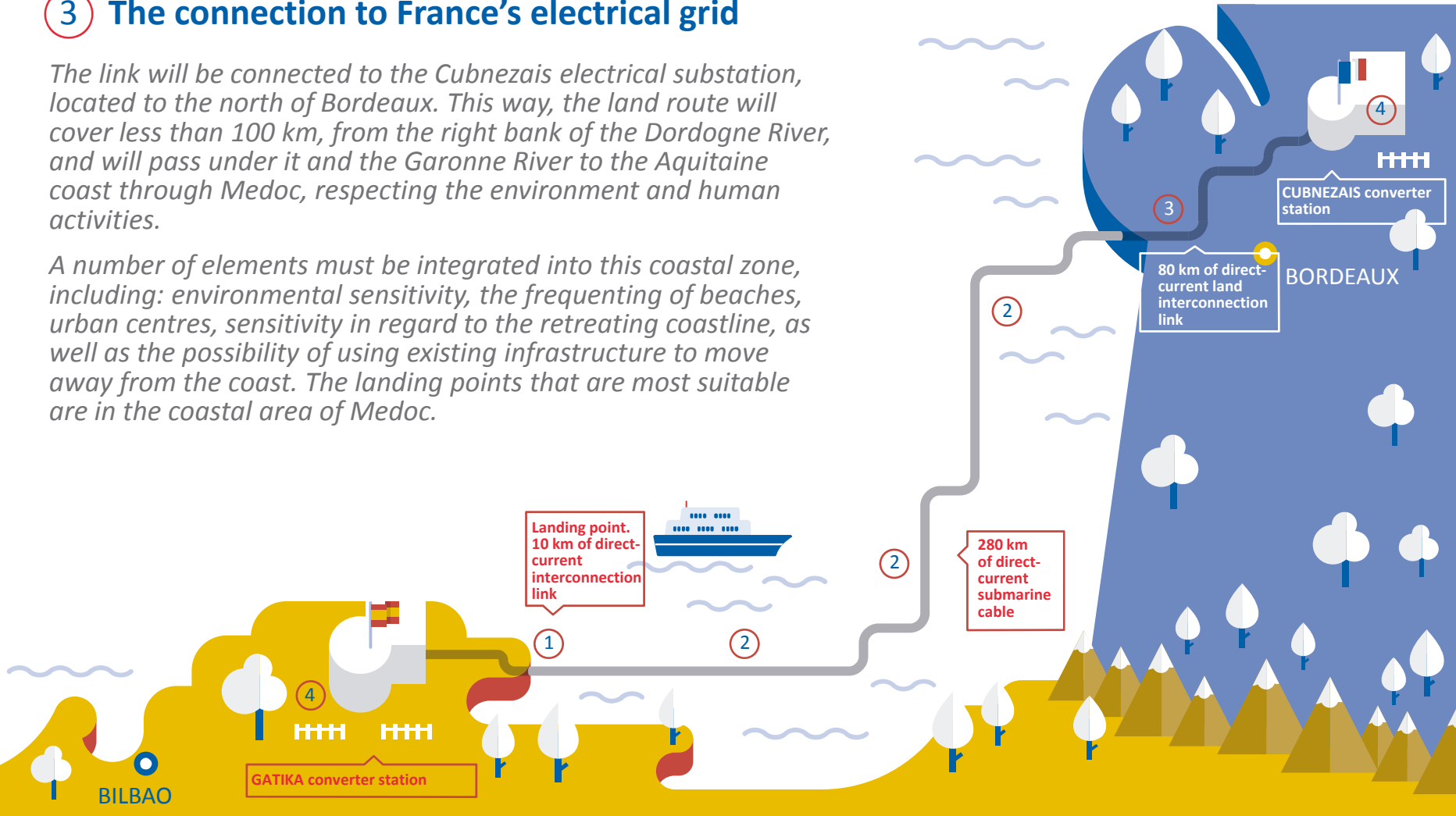
Covered

# A double submarine link

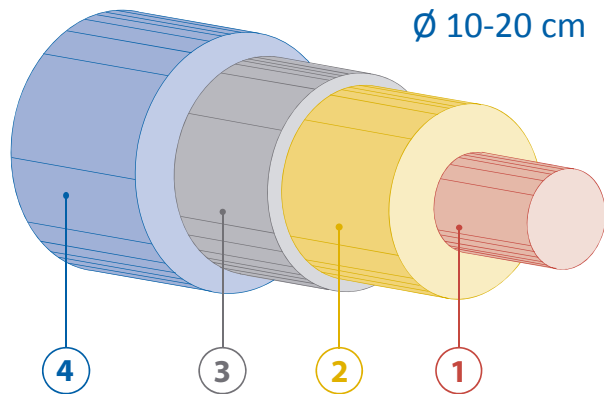
## 3 The connection to France's electrical grid

The link will be connected to the Cubnezais electrical substation, located to the north of Bordeaux. This way, the land route will cover less than 100 km, from the right bank of the Dordogne River, and will pass under it and the Garonne River to the Aquitaine coast through Medoc, respecting the environment and human activities.

A number of elements must be integrated into this coastal zone, including: environmental sensitivity, the frequenting of beaches, urban centres, sensitivity in regard to the retreating coastline, as well as the possibility of using existing infrastructure to move away from the coast. The landing points that are most suitable are in the coastal area of Medoc.



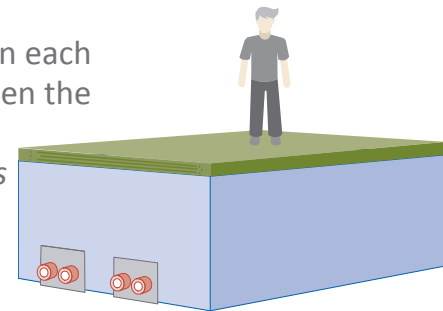
# The underground cable



- 1 Copper or aluminium conductor.
- 2 Insulation.
- 3 Metal screen.
- 4 Protective outer sheath.

## Trench

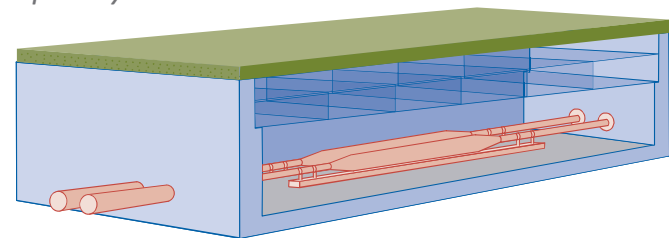
One pair of cables will be laid in each trench, with at least 1m between the two trenches. *When the work has been completed, the cables will be covered to hide them.*



## Joints

*The underground cables will be installed in sections approximately 1 km long, and connected in joint pits.*

*A similar but slightly larger device will be used to connect the submarine and the underground cables. These devices will be located far from shore and will ultimately be covered since permanent access is not required, leaving them completely hidden.*

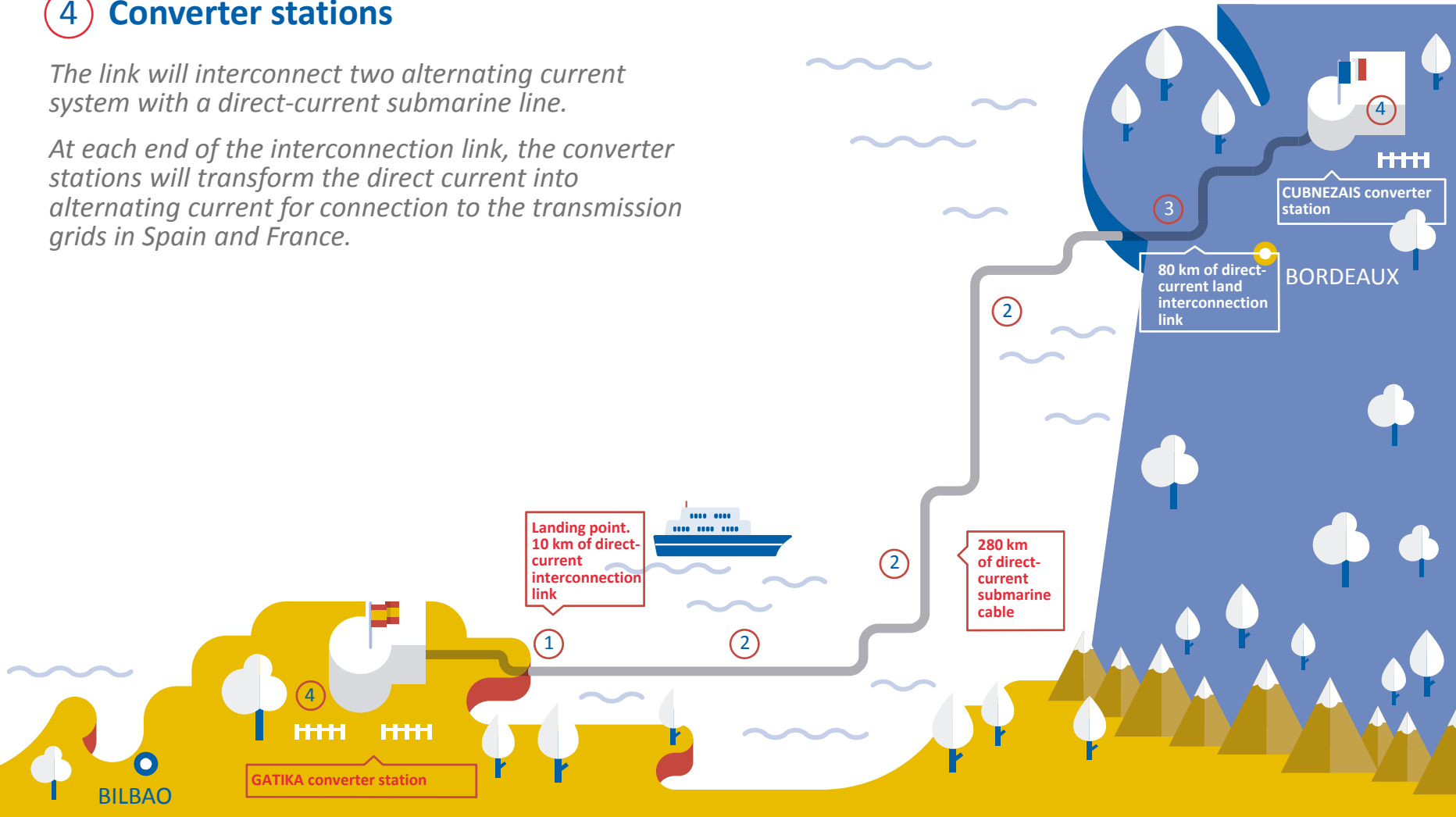


# A double submarine link

## 4 Converter stations

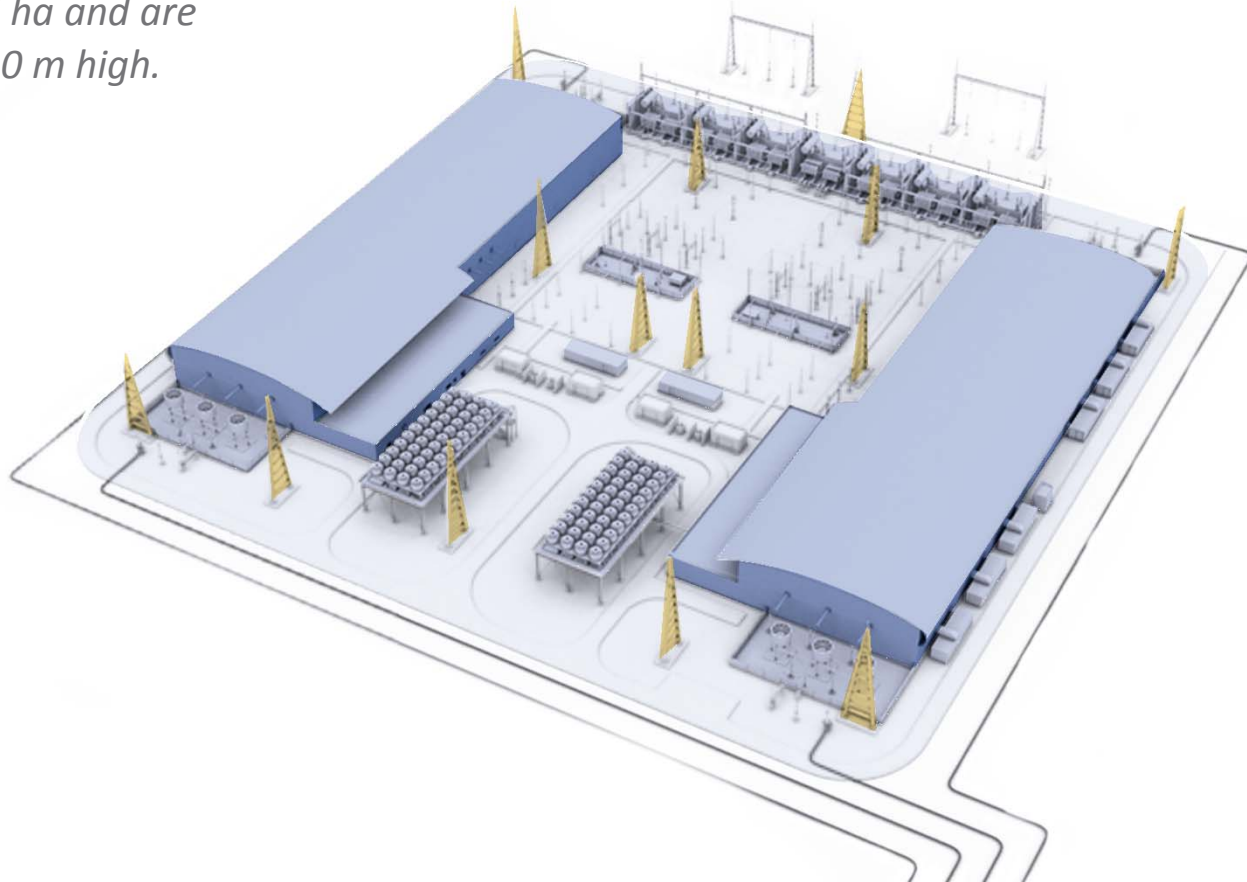
The link will interconnect two alternating current system with a direct-current submarine line.

At each end of the interconnection link, the converter stations will transform the direct current into alternating current for connection to the transmission grids in Spain and France.



# Converter stations

*The converter stations occupy approximately 5 ha and are approximately 20 m high.*



# New electrical link under the Biscay Gulf

**Project cost: 1750 M€**

In September 2017, the Spanish and French regulators reached an agreement for the development and supervision of the project.



In January 2018, the European Commission confirmed a subsidy of **578 M€ for the project**



# Public participation

- *Process commencement announcements*
- *Project website*
- *Other conferences/seminars*
- *Mass-mailing brochures and calendar of public conferences*



## Citizen information points



### ¿Cuándo?

De 10 h a 14 h  
y  
de 16 h a 20 h



### ¿Dónde?

Consulte  
en su  
ayuntamiento

#### Octubre 2017

L	M	X	J	V	S	D
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Laukiz

Gatika

#### Noviembre 2017

L	M	X	J	V	S	D
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

Maruri-Jatabe

Mungia

Lemoiz

Bakio

### Más información

sobre el proyecto y  
el proceso de  
participación pública



[golfodebizkaia@inelfe.eu](mailto:golfodebizkaia@inelfe.eu)

[www.inelfe.eu](http://www.inelfe.eu)

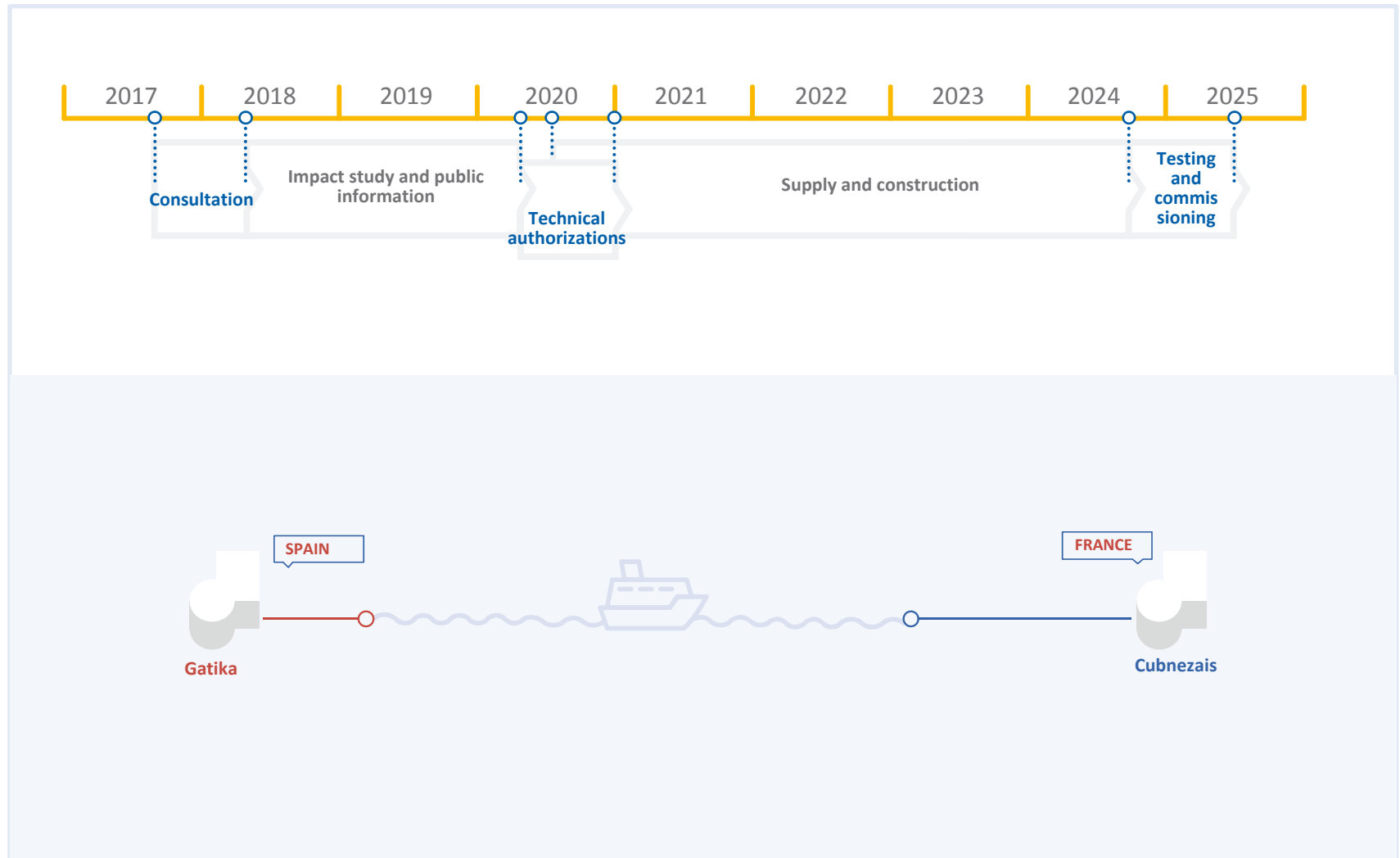
[www.minetur.gob.es/energia/es-ES/Participacion/Paginas/Index.aspx](http://www.minetur.gob.es/energia/es-ES/Participacion/Paginas/Index.aspx)

### Buzón de sugerencias



Se pone a disposición de los vecinos un buzón situado en su ayuntamiento, donde quien lo desee podrá hacer llegar cualquier consulta o sugerencia.

# Project schedule





**INELFE** is a mixed company with equal stakes held by Red Eléctrica de España, the operator responsible for the management and operation of the transmission network in Spain, and its French counterpart, Réseau de Transport d'Électricité.



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*Its purpose is to build and put the interconnections between the two countries into operation, with the goal of increasing the volume of electrical energy exchange between the Iberian peninsula and the rest of Europe.*

<https://www.inelfe.eu/en/projects/bay-biscay>



Thank you for your attention