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**Elia System Operator S.A.**

Boulevard de l'Empereur 20  
1000 Brussels  
Belgium



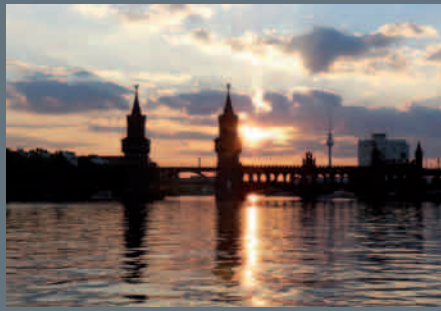
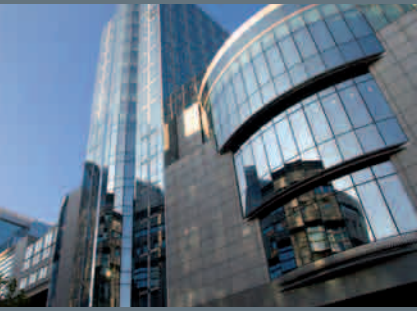
**50Hertz Transmission GmbH**

Eichenstraße 3A  
12435 Berlin  
Deutschland



Two system operators  
**One group**



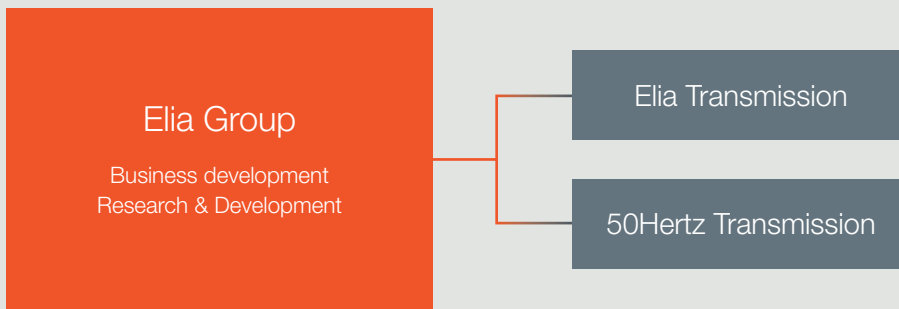


Following the liberalisation of the electricity market, the role played by transmission system operators has become crucial as well as narrowly linked with the development of the economy and the prosperity of the community in Europe.

In 1996, the first EU directive set out the principles for organising competition between generators and suppliers of electricity in a bid to boost the development of the internal market and benefit consumers.

Such competition was only possible by separating (or ‘unbundling’) the transmission of electricity and other activities (generation, supply, etc.) which had previously been integrated within the major power companies. As a result, system operators have become independent, neutral entities serving all market actors and assigned to ensure the security of supply of all consumers, companies: public services and citizens.

In 2009, the third EU directive established system operators’ neutrality and independence, to which the European Commission added a fresh dimension, namely the contribution towards attaining European objectives as part of attempts to stem climate change and global warming by ensuring the integration into transmission systems of the growing proportion of energy from renewable sources, primarily wind power.



## Know-how that benefits companies and community, in both Belgium and Germany

With its two transmission system operators, **Elia Transmission**<sup>1</sup> in Belgium and **50Hertz Transmission**<sup>2</sup>, one of four German transmission system operators active in the northern and eastern part of the country, the **Elia group** is exemplary among European system operators in terms of its independence, its dynamic contribution to the development of the European market, its commitment to securing the supply of electricity and its efforts to integrate more renewable energy into its systems.

In addition to serving as a system operator in Belgium and Germany, the Elia group also offers an extensive range of services, ranging from consultancy to engineering services for companies.

The group operates under the name of its legal entity, Elia System Operator, a listed company whose main reference shareholder is Publi-T, a holding company owned by the municipalities. The group employs more than 1,700 people and contributes to the reliable power supply to nearly 40 million citizens in Belgium and Germany.

<sup>1</sup> The official licences are owned by Elia System Operator.

<sup>2</sup> 50Hertz Transmission GmbH; Elia owns 60% of the shares through the holding company Eurogrid International, whose partner Industry Funds Management owns the remaining 40%.

## Transmission system operator a key role in our everyday activities

The role of transmission system operator (TSO) entails activities in three principal domains.

### Infrastructure management and system development

The TSO sees on a permanent basis to maintenance and development of the system, thus keeping up with market requirements and users' needs, so that electricity can always be transmitted from where it is generated to the main centres where it is consumed. In this respect, the integration of a higher proportion of power from renewable energy sources and the development of decentralised generation constitute major challenges, as does the strengthening of interconnections at European level.

### Operation of the electrical system

Since electricity cannot be stored on a large scale, it has to be generated whenever demand arises. In this respect, the system operator is responsible for maintaining a constant match between generation and consumption and thus ensuring the security of supply. As the proportion of renewable energy, such as intrinsically variable wind power, keeps growing and the cross-border flows due to energy traded on the international market continuously increase, innovative new methods for operating the system are required, along with enhanced monitoring and better coordination.

### The role of market facilitator

Working closely with the various energy exchanges, system operators are also responsible for establishing transparent solutions for access to the system and for developing coordinated mechanisms harmonised on European scale, so that all actors in the community benefit from the existing free competition.



The wind farms in 50Hertz's control area already have an installed capacity of roughly 11,000 MW.

## Strategy for ensuring a sustainable future in Europe

The Elia group is firmly anchored in the heart of Europe.

**Elia Transmission**<sup>1</sup>, the Belgian transmission system operator, manages a grid comprising some 8,400 km of high-voltage connections (ranging from 380,000 to 30,000 volts), composed of overhead lines and underground connections. The Belgian grid is interconnected with France, the Netherlands and the Grand Duchy of Luxembourg (projects are also under way on direct interconnections with Great Britain and Germany).

**50Hertz Transmission**<sup>2</sup> is one of the four system operators in Germany, active in the states of Thuringia, Saxony, Saxony Anhalt, Brandenburg, Berlin, Mecklenburg-West Pomerania and Hamburg. The grid, which comprises around 9,750 km of mainly overhead 380,000- and 220,000-volt lines, is directly interconnected with Denmark, Poland and the Czech Republic; it is the link between Scandinavia and continental Europe.

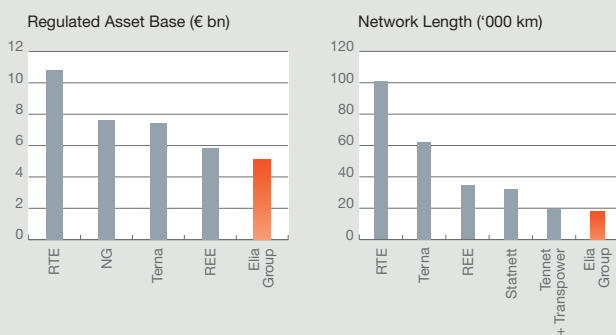
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Key facts about the Elia group	Total	50Hertz Transmission	Elia Transmission
110-380 kV lines and cables (km)		9,809	3,612
30-70 kV lines and cables (km)	4,800	0	4,800
Number of substations	862	62	800
Direct clients	148	18*	130
Operational area (km <sup>2</sup> )	142,990	109,000	33,990
Net total national market share (%)		31	100
Inhabitants (in millions)	39	>18	11
Staff (full-time equivalents, FTE)	1,776	631	1,145
Regulated asset base RAB (in € millions)	5,154	1,390	3,764
Book value (in € millions)	2,303	955	1,348

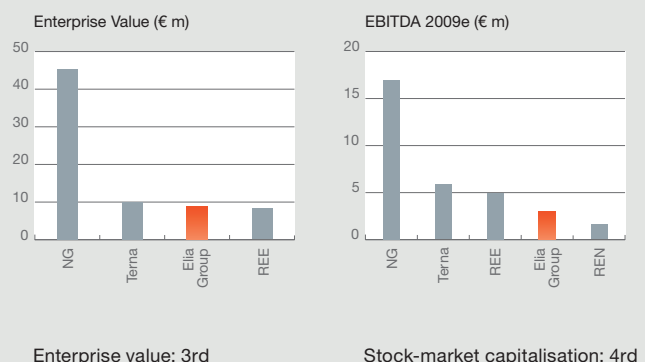
\* Grid connection, grid use

### Among the top 5 European TSOs

#### Infrastructure



#### Finance





Elia is developing its grid at the coast with a view to integrating new wind farms.

Renewables  
Grid Initiative



Since the acquisition of 50Hertz in co-operation with its financial partner Industry Funds Management (IFM), the Elia group has two areas of activity in transmission system operation, with an ideal geographical location in Belgium and Germany. Accordingly, the group can deploy a truly European strategy, supporting the energy and climate objectives on European and national levels. It is now better equipped to make its voice heard in the concert of European TSOs and thus to defend the interests of the market and the community in general.

#### Supporting market and European system integration

For many years, Elia and 50Hertz have been among the most 'European' of system operators and have been taking a very large number of initiatives to facilitate the construction of a European market and a safe, reliable grid that ensures security of supply to meet the power needs of the companies and the community.

Elia played a pioneering role in the launch of the trilateral market coupling between France, Belgium and the Netherlands. Moreover, this world first served as a model for its extension to include the market in Central Western Europe. 50Hertz is one of the main players on the markets in Northwestern and Central Eastern Europe. Initiatives such as the Coordination of Electricity System Operators (Coreso), the first regional technical centre shared by several TSOs, are also proof of the group's endeavour to ensure a safe, reliable system that enables security of supply to the companies and the community in Europe.

#### Leading the way in integrating renewable energy and wind power

Thanks to the key position 50Hertz Transmission occupies on the Baltic coast and in Northeastern Germany, it is leading the way in the integration of onshore and offshore wind energy. At the same time, Elia is busy extending its grid towards the coast, mainly with an eye to accommodating the need to integrate energy generated by the extensive wind farms planned off the North Sea coast. Accordingly, both TSOs are ideally positioned to play a strong role in the construction of a future offshore system.

#### The Renewables Grid Initiative

supports the expansion of capacity of both decentralised and large-scale generation as well as transmission of renewable energy in Europe. It brings together all the stakeholders involved in attaining this objective, especially system operators and environmental organisations.

#### Friends of the Supergrid

is a consortium of economic actors sharing a mutual interest in promoting the European policy in favour of developing a large offshore grid.

They mainly work together with NGOs such as the World Wildlife Fund within the Renewables Grid Initiative or in consortiums like Friends of the Supergrid. This is a major challenge given the extent of current climate-related issues.

The European Union's '20-20-20' objectives aim at generating 20% of energy from renewable sources, cutting energy consumption by 20% and reducing greenhouse gas emissions by 20%, all by 2020.

This entails substantial consequences for transmission systems, both from the viewpoint of investing in infrastructure and from the integration of such a large share of variable energy into the respective systems' operation.

#### Boosting operational excellence

Since their activities in Belgium and Germany are very similar, the two TSOs create unique opportunities for the group, both for synergies and for sharing best practices. The main beneficiaries of this enhanced operational excellence will be the market actors and players in the community at large, and the fruits of these efforts will include the development of group-wide standards, the sharing of know-how and resources, the quest for synergies in procurement, the development of market mechanisms and the exploitation of networks.

**Fresh prospects for existing staff and a more attractive employer for talented new recruits**

With both TSOs joining forces within the Elia group, the companies can now offer staff broader perspectives and more easily attract talented newcomers to careers in what is a key area of activity in “a world in progress”. The company can create specialised competency clusters and offer fascinating jobs in Belgium and Germany, contributing to the development of the market and European grids.

**An independent group meeting the criteria of the EU’s third package of energy measures**

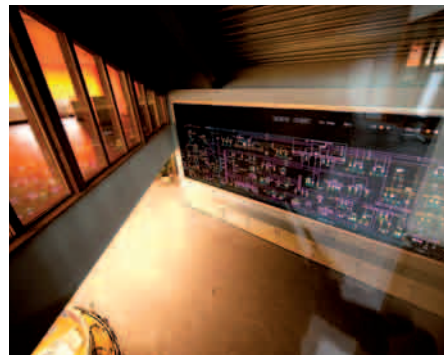
Since the first steps to liberalise the energy market back in 1996 following the publication of the first EU directive on the organisation of the internal energy market, the requirements for system operators’ transparency and neutrality, especially vis-à-vis generators have gradually become more stringent. The Elia group is exemplary in its compliance with these requirements and already meets the conditions set out in the EU’s third package of energy measures.

**A research and development centre serving the group**

With an R&D and knowledge management centre operating at group level, Elia and 50Hertz intend to continue playing a leading role in building the grid and the European market as well as to demonstrate its capacity for innovation in a bid to rise to the challenges facing the sector.

**A business development centre for new activities on group level**

The Elia group has also set up a business development centre focused on market evolution and with a view to creating adequate consultancy and engineering services tailored to the needs of its international customers.



1. National Control Centre in Brussels.  
 2. Developing the network in the port of Antwerp.  
 3. A new tool for monitoring the network in situ.



This cable ship is taking the undersea cable from the port of Rostock to its anchorage area at sea.

## A few examples of grid development projects

The major projects conducted in recent years or currently under way, in both Germany and Belgium, are aimed at attaining the following objectives:

- contributing to construct a competitive European and regional market, in particular by developing interconnections with neighbouring countries;
- offering the companies and the community at large access to an as broad and diverse as possible energy mix by developing new power links;
- actively contributing towards the implementation of European and national policies for the integration of renewable energy into the transmission systems;
- enhancing systems' security of supply in a context characterised by increasing and more international flows of electricity and by the integration of intermittently generated energy.

### In Belgium

- doubling the capacity of the 380,000 V Avelgem -Avelin interconnection between Belgium and France;
- doubling the capacity of the 220,000 V Aubange-Moulaine interconnection between Belgium and France, using high-performance conductors;
- reinforcing the high-voltage and very-high-voltage networks in and around the port of Antwerp to bolster the region's economic expansion;
- installing phase-shifter transformers on the border between Belgium and the Netherlands to improve the real-time management of internationally exchanged flows of energy;
- extending the 380,000-V network to the coast (the Stevin project) with a view to connecting future offshore wind farms;
- working on projects to establish interconnections with Great Britain and Germany.

### In Germany

- constructing the 'northern link' between Schwerin in Mecklenburg-West Pomerania and Krümmel, near Hamburg;
- constructing the 'Uckermark link' in the federal state of Brandenburg from Bertikow to Neuenhagen near Berlin;
- constructing the 'southwest connection' from Bad Lauchstädt in Saxony-Anhalt to Redwitz in Bavaria;
- linking Baltic 1, the first wind farm in the Baltic Sea, 70 km offshore;
- 'northern ring' project near Berlin in the federal state of Brandenburg;
- construction project for a third interconnector between Germany and Poland.