


380

The new 380 kV extra-high-voltage infrastructure





In cooperation with Amprion, the German transmission system operator, Creos is planning the construction of a 380 kV extra-high-voltage line from Aach (DE) via Bofferdange to Bertrange and a 380/220/110-65 kV transformer substation in Bofferdange. The existing infrastructure dates back to the 1960s and will no longer be able to reliably meet in future

the constantly growing electricity needs. As part of this new construction project, the network is also to be modernised, guaranteeing national supply reliability while at the same time improving quality of life for the population as a whole. The continuous rise in demand for electricity is largely attributable to the strong economic and demographic development of the country.

BACKGROUND

Since the end of the 1960s, the demand for electrical energy has increased steadily in Luxembourg. While initially this was due to rising numbers of applications both in private households and in industry, today it is more a function of the digitalisation of our world and the above-average demographic and economic development in our country.

In the 2018 coalition agreement, the government established that the energy of tomorrow will be renewable and primarily electric in order to cope with the rapid development of electro-mobility and the digital revolution in our world, without additional CO₂ emissions. At the same time, it sets ambitious energy-saving targets and will also promote the development of decentralised energy production, which will enable everyone

to participate in energy supply. While these new measures will in the future reduce the need for new infrastructure to transport electrical energy, high-voltage equipment needs to be modernised and further integrated into the European electricity transmission network. Efficient, flexible and reliable transport networks are essential for a successful energy transition.

While the existing Creos high-voltage transport network has successfully and reliably provided top quality electrical energy to the country, it will reach its limits in the near future. In order to counteract this and continue to guarantee a reliable supply of power for our customers, Creos is planning to build new, more performant infrastructures and dismantle existing facilities which are no longer required.

The following measures are planned within the scope of this project:

- Construction of a replacement extra-high-voltage line on the section from Bofferdange to Aach.
- Construction of a replacement extra-high-voltage line on the section from Bofferdange to Bertrange.
- Construction of a new substation in the Bofferdange area. This will involve a massive dismantling of the existing facilities in the heart of the village of Heisdorf in order to construct a modern, compact indoor substation.
- Underground cabling, including dismantling of two 65 kV overhead lines near the Bofferdange-Aach high-voltage line.
- Dismantling of multiple existing high-voltage lines in the Alzette valley.

The project is based on the following premises:

- The new infrastructure should be, as much as possible, integrated into the landscape and the new extra-high-voltage lines should be renewed along existing routes where possible.
- The current and future construction perimeters are to be avoided.
- The nature conservation law is generally respected.
- The aim is to reroute old lines which are particularly close to residential areas.
- The aim is both, to guarantee the security of supply for citizens while improving their quality of life.
- Dialogue with the population is very important to us: the inhabitants of the concerned municipalities will be informed in detail and involved during the environmental impact assessment.
- The impact of the environment will be minimised.

BOFFERDANGE-AACH

The existing 220 kV line from Heisdorf to Trier/Quint is currently a major constituent part of the electricity network between Luxembourg and Germany. Given the steady increase in electricity demand in Luxembourg, modernisation of this link is crucial. In this respect, Creos is planning to replace this existing 220 kV line between the substations in Heisdorf and Trier/Quint with a more

efficient, low-loss 380 kV line between Bofferdange and Aach near Trier.

This future-oriented replacement construction will pave the way for an increase in the international interconnector capacity between Luxembourg and Germany, thus preventing future energy supply restrictions in Luxembourg.

Key figures



± **€62 million**
Investment
in the project



±**60 m**
Average
tower height



±**30 km**
±**100 towers**
Line section
on Luxembourg soil



2026
Planned commissioning
of the line section

BOFFERDANGE-BERTRANGE

The existing 220 kV line from Heisdorf to Bertrange is to be replaced with a 380 kV line on the same basis as the replacement of the 220 kV line from Heisdorf to Trier/Quint. On this new section, the line will curve around the villages in the municipalities of Lorentzweiler and Steinsel. In order to protect the landscape, the new 380 kV line will revert to the route of the existing 220 kV line after the village of Bridel. Respect for people and nature are guidelines for this project as well.

This replacement project will allow Creos to remove the Heisdorf substation from the village centre by connecting this line to the new Bofferdange substation outside the residential area. This means the existing high-voltage overhead lines will be completely removed from the Alzette valley in the municipalities of Walferdange and Steinsel.

Key figures



± **€45 million**
Investment
in the project



±**60 m to ±70 m**
Average
tower height



±**20 km**
±**70 towers**
New
line section



2027
Planned commissioning
of the line section

TOWERS

The two sections of the new extra-high-voltage line are planned as overhead lines. The towers will have an average height of around 60 metres above ground level, making them approx. 15 metres taller than the towers of the existing 220 kV line. Depending on the location, they can be slightly taller or shorter, for example for forest crossings, road crossings or on slopes. Overall, the plans include around 170 towers on the two stretches between the Bofferdange substation and the German-Luxembourg border and between Bofferdange and Bertrange.

At first glance, overhead lines have a greater impact on the landscape, but in general terms their environmental impact is much less than underground cables at this voltage level. For construction work on overhead lines,

the main concerns are over ground obstacles along the route and laying the foundations for the tower sites. However, underground cabling involves more extensive construction work and there is much greater disruption. As the cable routes must be freed of deep-rooted plants, the areas become largely untenable for larger-scale vegetation.

As this is a replacement and not a completely new build project, the planned dismantling measures will remove significantly more towers and kilometres of overhead lines from the landscape compared to the new built infrastructure. In total, nearly 225 towers and 75 km of overhead lines will be dismantled.

BOFFERDANGE SUBSTATION

A substation is part of the supply network which connects different voltage levels.

Currently we do not have any substations in Luxembourg which would be compatible with the new 380 kV line. But instead of upgrading and expanding the open-air substation in Heisdorf, Creos is planning a new substation well outside of residential areas which can transform the voltage down from 380 kV to 220 kV and from 220 kV

to 110/65 kV for further distribution. The new 380 kV substation part will be an open-air switchgear station, which has the benefits of being quick and simple to install, maintain and repair. However, the 220 kV and 110/65 kV sections will be indoor switch gear stations, known as gas-isolated-switchgear station (GIS) inside a building. All transformers are installed outside in order to avoid complicated forced cooling.

Key figures



± €52 million
Investment
in the project



2026
Planned commissioning
of substation

IMPROVEMENT MEASURES

The new construction measures planned will improve the overall appearance of the electricity network in future. Extensive compensation measures will relieve the burden in the centre of the country, especially the Alzette valley, and the north-east of the country.

- Dismantling of the existing high-voltage line on the section from Heisdorf to Trier/Quint (Germany): **85 towers, 29 km overhead lines** (on Luxembourg soil)
- Dismantling of the existing high-voltage line on the section from Heisdorf to Bertrange: **34 towers, 11 km overhead lines**
- Dismantling of the existing high-voltage line Heisdorf-Roost on the section between Heisdorf and Lorentzweiler: **15 towers, 5 km overhead lines**
- Dismantling of the existing high-voltage line on the section from Heisdorf to Dommeldange: **11 towers, 3.4 km overhead lines**
- Dismantling of the two existing high-voltage lines on the section from Heisdorf to Kirchberg: **32 towers, 11 km overhead lines**
- Dismantling of the existing Dommeldange substation
- Dismantling of the existing Heisdorf substation, which will be replaced by a compact, modern indoor substation with a smaller footprint
- Underground cabling of the high-voltage overhead line from Junglinster to Potaschberg, replacing **39 towers and 13 km of overhead lines**
- Underground cabling of the existing high-voltage line on the section from Kirchberg to Findel: **9 towers, 3 km overhead lines**

Key figures



± **€50 million**
Planned investment



2028
Completion of construction work

PRELIMINARY ROUTE



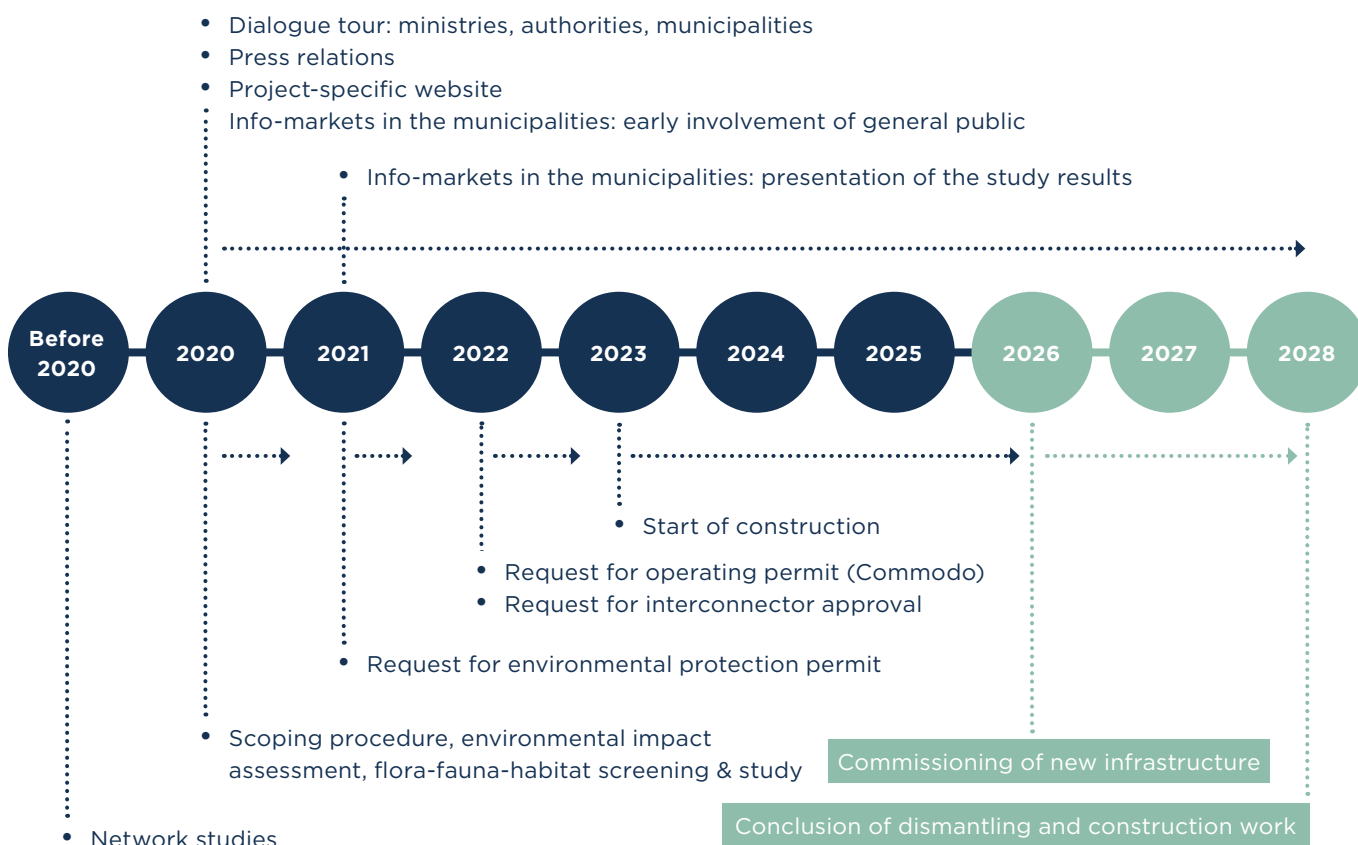
PROJECT COMMUNICATION

Project-related information on the different parts of the project will be published on a regular basis on our dedicated website: www.creos.net/380. We invite you to consult it regularly to keep yourself informed about the project.

Transparency and dialogue at eye level from the beginning

Through an open and transparent project communication, Creos aims to involve all stakeholders in the process, including owners, residents, municipalities, institutions as well as the people living in the region, and keep them informed about the individual phases of the project.

PLANNED SCHEDULE OF ACTIVITIES AND APPROVAL PROCESS





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