



# Expansion of the electricity grid progressing well

(Last revised March 2020)

## I. Overview

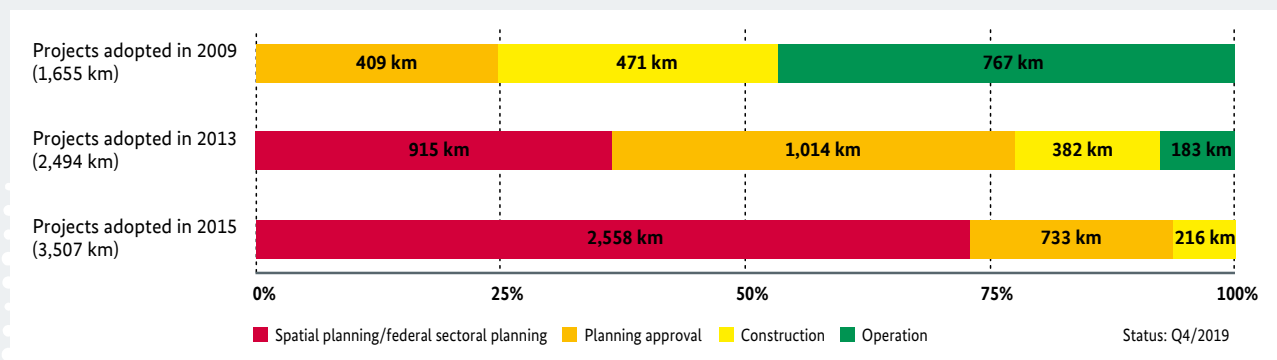
Grid expansion is the backbone of the energy transition. This is because electricity is increasingly being generated in different places than in the past. In particular, renewable energy has to be transported from the sea and the windy coasts to the main centres of consumption located inland. To handle this growing need to transport electricity, the grid needs to be optimised, upgraded and expanded.

In three phases (2009<sup>1</sup>, 2013<sup>2</sup> und 2015<sup>3</sup>), the German Bundestag approved a total of over 65 grid expansion projects for a total of 7,656 kilometres of gridline. The projects have made significant progress over the past year. Figure 1 shows an overview of project planning up to the end of 2019. Some 950 kilometres have already entered into operation, whilst a further 328 kilometres have been completed.

Every grid expansion project passes through four phases, as shown below:

- RED** Projects undergo the spatial planning procedure/federal sectoral planning (including preparation of the application, application phase and decision).
- ORANGE** Projects undergo the planning approval procedure (including preparation of the application, application phase and the decision).
- YELLOW** Projects undergo construction (including preparation for construction).
- GREEN** Projects are in operation.

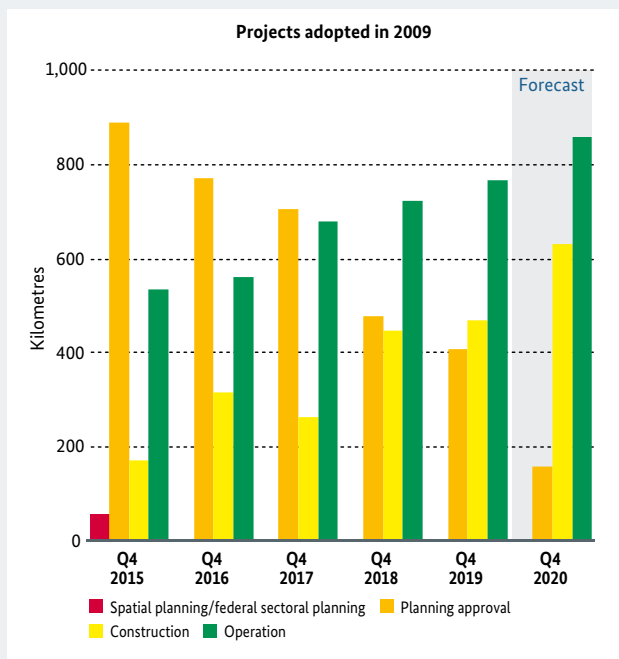
Figure 1: Overview of project planning



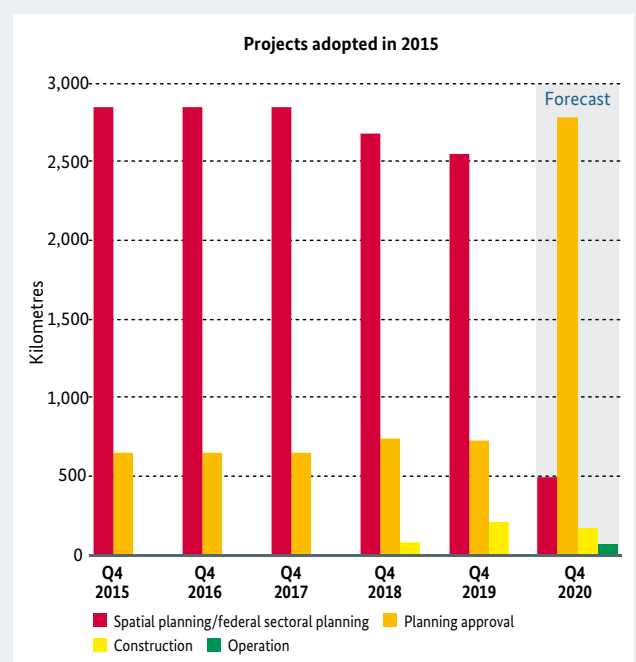
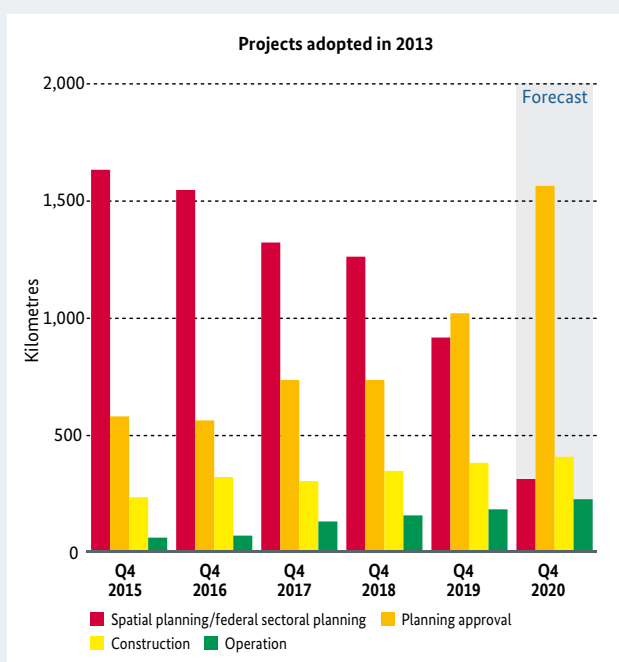
- 1 Projects in 2009: Power Grid Expansion Act projects Nos. 1, 2, 3, 4, 5, 6 (excluding section from Wahle to Lamspringe), 7, 8, 9, 10, 11, 13, 14 (excluding section from Wesel to Utfoot), 15, 17, 18, 19, 20, 21, 23.
- 2 Projects in 2013: Federal Requirements Plan Act projects Nos. 2, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 32, 33, 35, 36.
- 3 Projects in 2015: Federal Requirements Plan Act projects Nos. 1, 3, 4, 5, 6, 7, 31, 34, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47 and Power Grid Expansion Act procedures No. 6 (section from Wahle to Lamspringe only), No. 14 (section from Wesel to Utfoot only), No. 16.

## II. Retrospective and outlook

Compared with the preceding year, in 2019, the projects from across all three phases have progressed well. Of the projects adopted in 2009, 767 kilometres (46 per cent) have entered into operation and a further 471 kilometres (28 per cent) are under construction (in 2018: 722 kilometres/44 per cent in operation, 448 kilometres/27 per cent under construction). Of the projects adopted in 2013, 1,579 kilometres (63 per cent) are at the planning approval stage or are further advanced (2018: 1,232 kilometres/49 per cent). This increased rate of progress can largely be attributed to provisions made in the Grid Expansion Acceleration Act 2.0, which entered into force in 2019. Most of the projects adopted in 2015 are still passing through the spatial planning procedure/federal sectoral planning (2,558 kilometres/73 per cent). In the meantime, however, 949 kilometres (27 per cent) have entered the planning approval procedure or are at a more advanced stage (2018: 821 kilometres/23 per cent).



In 2020, significant progress is expected to be made in projects from across all three phases. By the end of 2020, 3,016 kilometres (86 per cent) of the projects from the 2015 phase should be at the planning approval stage or at a more advanced stage (2019: 949 kilometres/27 per cent). As for the projects adopted in 2013, 223 km of are expected to be completed by the end of this year (2019: 183 km). Concerning the projects adopted in 2009, over 1,487 km, i.e. over 90 per cent, is to be under construction or in operation (currently 1,238 kilometres/75 per cent).



### III. Areas of progress in 2019



#### **Faster completion**

The 380 kV line from Emden East to Conneforde is expected to be completed in 2022, one year earlier than originally planned. This particular line is important for transporting wind power generated at the coast. Planning approval was issued by the competent state authority of Lower Saxony in August 2019, bringing to an end a long-running dispute.



#### **Line over the Elbe River**

The reinforced line over the Elbe River, the *Elbekreuzung 2*, entered into operation in October 2019. The 45-kilometre long gridline is considered the main artery between the windy federal states of Lower Saxony and Schleswig-Holstein. The reinforcement of this line quadruples its transmission capacity to 9,600 megawatts. This is equivalent to the output of ten large conventional power plants or around 3,000 wind turbines.



#### **HVDC transmission lines coming along**

Progress is being made on the important HVDC (high-voltage direct current) power highways. The lines are to become the backbone of a modern power supply in Germany. In recent months, the authorities have taken important interim decisions: the rough route for 650 kilometres (of a total of 2,400 kilometres) has now been set, and permits have already been granted for the construction of the southern converters of the SuedLink and

Ultranet projects in Baden-Württemberg. Further decisions are expected to be made in 2020.



### **Start of construction**

Construction work has begun on important national and international projects. These include the important north-south project from Wahle in Lower Saxony to Mecklar in Hesse (Power Grid Expansion Act No. 6), the fourth section of the west coast line (Federal Requirements Plan Act No. 8) and also the new interconnector with Denmark (Power Grid Expansion Act No. 1). The start of this work follows extensive planning approval procedures by the federal and state authorities.



### **Use made of provisions to speed up processes**

In May 2019, an amendment of the Grid Expansion Acceleration Act (*NABEG 2.0*) came into force. The revised act has reduced unnecessary bureaucracy and streamlined procedures for grid expansion, especially when it comes to optimising and reinforcing existing lines. The act has directly helped with several grid expansion projects and shortened the official procedures by several years. Empty conduits are to be built within the HVDC SuedOstLink project, which will significantly reduce both the

space required and the project's construction costs. Due to the fact that only minor changes were made to the routes planned within Federal Requirements Plan Act projects No. 10 and No. 20, it was decided that federal sectoral planning could be skipped – a move which has saved up to two years. The use of a notification procedure instead of an extensive planning approval procedure for the replacement of conductors in Federal Requirements Plan Act project No. 13 has also shorted the approval time for the project by several years.

## IV. Outlook for progress in 2020

- **Federal sectoral planning for HVDC power highways**

Germany's Federal Network Agency (*Bundesnetzagentur*) will complete federal planning for the HVDC lines SuedLink, SuedOstLink and Ultranet before the end of 2020. This involves determining the rough routes that the powerlines will follow in these important projects. Decisions on the final routes will then be made in the planning approval procedure.

- **Construction work to commence**

Construction work will begin on several projects over the coming months. These include the Uckermark line, the line from Parchim to Stendal (construction work to start in early 2021), the grid reinforcement between Bavaria and Thuringia (construction to start in Q1/2021) and the new interconnector with Austria (construction to start in Q4/2020).

- **A strong connection to Belgium**

Germany's first interconnector with Belgium should be operational at the end of 2020. The resulting electricity trade will strengthen security of supply on both sides of the border. In the medium term, the line can also help replace the electricity procured from the nuclear power units in Tihange.

- **Wind power from Germany meets hydropower from Norway**

The Norwegian grid operator Statnett and the grid operator TenneT plan to put the NordLink interconnector into operation by the end of 2020. The 570-kilometre-long line is being laid as underwater cables. It will connect the windy north of Germany with the south of Norway. At times when there is a lot of wind, the electricity can be stored in Norwegian reservoirs, and whenever there is little wind, Norway will deliver hydroelectric power to Germany.

- **New power line for electricity from wind**

The new power line between Wilhelmshaven and Conneforde is scheduled to go online before the end of 2020. The line will help to ensure that the wind power produced in Lower Saxony reaches the consumers. Several sections of it will be laid as underground cables.



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