Get the grid working - how Europe's climate goals depend on a modern power network

A research tour for journalists

24 November to 26 November 2019

Aachen, Germany – Brussels, Belgium

Overview

The European Union has committed to keep the rise in global average temperature below 1.5° in line with the Paris Agreement. To do so, renewable energy sources, in particular wind and solar, have to be scaled up exponentially. In addition, the electrification of transport and heating, among other sectors, will need to contribute to the decarbonisation process. For an economy based on renewables, electricity grids must be built, upgraded and used in a better way, as they are a key enabler of the energy transition.

Currently Europe has a binding target of at least 32% renewable energy sources by the year 2030. The incoming European Commission under its new President Ursula von der Leyen has made climate protection a top priority for the next five years, which could mean higher renewable targets.

Renewable energy sources are generally widely distributed and usually abundant in remote areas, far from big consumers. Therefore, the electricity they generate must often be transported over long distances. This can be done with electricity grids. The need for grid infrastructure, like power lines, is thus increasing. Current projections foresee investment needs of 114 billion euros in electricity infrastructure by 2030 if Europe is to reach a share of 48 to 58 percent renewables in its power system.

However, grid expansion is stagnating. Today, grid infrastructure projects all over Europe face similar hurdles and challenges. One major challenge is public opposition. Citizens and environmental organisations are concerned about health and environmental risks.

It is therefore necessary to rethink how grids are deployed, to better involve citizens and civil society in a transparent and meaningful way in the decision-making process and to protect nature from the outset. Meaningful participation and environmental protection programmes can help foster support and protect habitats, create better projects and accelerate grid development.

In meetings with leading experts, policymakers, industry and NGO representatives, the tour aims to answer the following questions:

- What role do grids have in the energy transition?
- What challenges arise when integrating high shares of renewables?
- What are citizens' concerns and how can they be addressed in a meaningful way?
- What options are there to protect ecosystems and biodiversity when developing infrastructure?
- How are grids planned on a national and inter-European level? What are the political priorities for the coming years?
- How is grid development regulated?

Programme

Sunday, 24 November 2019

Until 15:30	Arrival at ibis Hotel Aachen Marschiertor, Friedlandstraße 6-8, 25064 Aachen, Germany
15:30 – 16:00	**Welcome, introduction and getting to know each other** Coffee and tea • Carel Carlowitz Mohn, Director Media Programmes, Clean Energy Wire Location: Hotel IBIS Aachen Marschiertor, Aachen
16:00 – 17:00 **A**	**Grid development and the energy transition – current debates** Introduction to the topic by • Andrew Carryer, Manager Environment, Renewables Grid Initiative Location: Hotel IBIS Aachen Marschiertor, Aachen
17:00 – 17:30	Coffee Break
17:30 – 18:45 **B**	**Grid development and system security in the light of the energy transition** Presentation and discussion with • Gerald Kaendler, Director Asset Management at Amprion Location: Hotel IBIS Aachen Marschiertor, Aachen
19:00 **C**	**Public participation: the key to acceptance** Joint dinner at hotel restaurant Presentation and discussion over dinner with • Prof. Dr. Hans J. Lietzmann, Bergische Universität Wuppertal Location: Hotel IBIS Aachen Marschiertor, Aachen
21:00	Overnight stay at Hotel IBIS Aachen Marschiertor

Monday, 25 November 2019

Until 8:00	**Check out** (luggage can be stored in luggage room until we leave)
8:00 – 9:30 **D**	**National infrastructure development – German challenges and solutions** Moderated discussion between • Dr. Martin Schöpe, Head of "Expansion of electricity grids" Unit, Department for Energy Policy – Electricity and Networks at German Federal Ministry for Economic Affairs and Energy (BMWi) • Ayu-Diana Damshäuser, Participation and Legal Affairs Unit, Department for Network Expansion, Bundesnetzagentur (German Federal Network Agency) • Moderation: Gerald Kaendler, Director Asset Management at Amprion Location: Hotel IBIS Aachen Marschiertor, Aachen
9:30 – 10:00	Coffee break
10:00 – 10:30 **E**	**Public participation – reasons for opposition** Presentation by • David Frank, Policy Advisor for Power Grids and Low Carbon Policy at Germanwatch Location: Hotel IBIS Aachen Marschiertor, Aachen
10:30 – 12:00 **F**	**Public participation – the case of "Planning dialogue Borgholzhausen"** Presentation of different viewpoints on the case with • Dr. Stephanie Bock, Deutsches Institut für Urbanistik (scientific monitoring agency) • Hartmut Halden, Citizen Initative "Keine 380kV-Freileitung am Teuto" (No 380kV overhead line at Teuto) • Dirk Speckmann, Mayor Borgholzhausen Moderation: Johanna Meier, Manager Communications, RGI Location: Hotel IBIS Aachen Marschiertor, Aachen

Monday, 25 November 2019

12:00	Bus to ALEGrO construction site
12:30 – 13:30	Lunch
13:30 – 16:00	**Site visit: European interconnection**
	Visit to the construction site of the ALEGrO interconnector, the first direct electricity link between Germany and Belgium
G	• Joelle Bouillon, Corporate Communications Specialist Amprion • Ingo Sander, Project lead at Amprion
	Location: ALEGrO construction office
16:00	Bus to Brussels and check-in at hotel
19:00 – 21:00	**Nature protection in grid projects: The LIFE-Elia project**
H	Joint dinner
	Presentation and discussion over dinner with
	• Igor Lefebvre, Head of Environment and CSR, Elia • Jean-François Godeau, Research and Development Scientist at Ecofirst • Andrew Carryer, RGI
	Location: First Euroflat Hotel, Boulevard Charlemagne 50, Brussels
	Overnight stay at First Euroflat Hotel

Tuesday, 26 November 2019

Until 8:00	Check out (luggage can be stored in luggage room during the day until the end of the programme)
8:00	Transfer to Elia control room
8:30 – 10:00 **I**	**Site visit: Elia control room** Visit of the Elia control room for Belgium. Tour and Q&A with • Filip Carton, Director of the Elia National Control Centre Location: Elia national control room, Avenue de Vilvorde 126, Brussels
10:00 – 10:30	Transfer to ENTSO-E, Coffee upon arrival
10:30 – 11:00 **J**	**System security – simulating the grid** Presentation of TenneT power flow simulator • Timm Krägenow, European Office Public Affairs, TenneT Location: ENTSO-E, Avenue de Cortenbergh 100, Brussels
11:30 – 13:00 **K**	**Planning the European grid – political priorities and implementation** Discussion with • Jane Amilhat, Directorate B1 – Network & Regional Initiatives, DG Energy, European Commission • Claire Camus, Head of Communication ENTSO-E • Wendel Trio, Director of CAN Europe • Susanne Nies, Managing Director Strategy and Communication, ENTSO-E Moderation: Andrew Carryer, RGI Location: ENTSO-E, Avenue de Cortenbergh 100, Brussels

Tuesday, 26 November 2019

13:00 – 14:00	Lunch
14:00 – 15:30 **L**	**Planning the grid – offshore wind and offshore grid development** Presentation by • Saskia Jaarsma, Senior Advisor Offshore, TenneT Location: ENTSO-E, Avenue de Cortenbergh 100, Brussels
15:30 – 16:00	**Feedback and unanswered questions**
16:00	**10 min walk to First Euroflat Hotel, Boulevard Charlemagne 50, Brussels to pick up luggage, end of programme**

From A to K:

Background information on the programme

A

- The Renewables Grid Initiative (RGI) is a unique collaboration of non-governmental organisations (NGOs) and transmission system operators (TSOs) from across Europe. RGI promotes transparent, environmentally sensitive grid development to enable the further steady growth of renewable energy and the energy transition.
- It was established in 2009 together with the EU unbundling reform where electricity generation was separated from its transmission and electricity markets all across Europe were liberalised.
- This session gives an overview of the most pressing issues concerning the role of the grid in the energy system and its transition towards a system based on renewables. We will touch on questions of supply security, European coordination, environmental concerns and public participation processes.
  https://renewables-grid.eu/

B

- Amprion is a German transmission system operator located in the heart of Europe with interconnectors to five European countries and a growing share of renewables connected to its system. The Amprion grid supplies power to over 27 million people, with a total circuit length of 11,000 kilometres from Lower Saxony to the Alps.
- Amprion is committed to the substantial expansion of renewable energy in Germany and is working on how to integrate these sources into the transmission grid. The session will dive deeper into the role of grids in an energy system based on renewables, with a practical view into what it means for a TSO to operate the system. Amprion will also give an outlook of how this system is due to change in the future with stronger decarbonisation and the electrification of other sectors.
  https://www.amprion.net/index-2.html

C

- While there is societal consensus that some grids are needed for the electricity system to incorporate a greater share of renewables, grid development projects often face local opposition, one of the main reasons for delays in infrastructure development. The reasons for this include the effect new grids may have on the environment, landscape, tourism, health (in particular the effects of electric and magnetic fields), or property prices, among others.
- Prof. Dr. Hans J. Lietzmann is a leading academic expert on public participation. He has been a professor for political science at the Bergische Universität Wuppertal since 2002.
  https://www.uni-wuppertal.de/en/
- This session will address the political dynamic of public participation in the context of energy infrastructure and will lay out the conditions for successful participation processes.

D

- Grid expansion is a priority in the German government's efforts to reach its emission reduction targets. The many challenges to developing the grid and to expanding renewables have delayed necessary infrastructure investments. In this session we will examine those challenges and how Germany is trying to overcome them, be it opposition from local civil society groups and environmental NGOs, lengthy litigation or simply resource scarcity when it comes to building the infrastructure.
- The Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie, abbreviated BMWi) is a cabinet-level ministry of the Federal Republic of Germany. Martin Schöpe is the head of the directorate "Expansion of electricity grids" in the ministry.
  https://www.bmwi.de/Navigation/EN/Home/home.html

- The Federal Network Agency (fBundesnetzagentur or BNetzA) is the German regulatory office for electricity, gas, telecommunications, post and railway markets. It is a federal government agency of the German Federal Ministry of Economic Affairs and Energy and is headquartered in Bonn, Germany. In the electricity and gas market, the agency is responsible for ensuring non-discriminatory third-party access to networks and regulating the network fees.
  https://www.bundesnetzagentur.de/EN/Home/home_node.html;jsessionid=AB9B9205219423B2D44D9C3C70084F0C

E

- Germanwatch is a German NGO that has been active since 1991. Following the motto "Observing, Analysing, Acting", Germanwatch is actively promoting North-South equity and the preservation of livelihoods. In doing so, Germanwatch focuses on the politics and economics of the North with their worldwide consequences. Germanwatch advocates for fair trade relations, responsible financial markets, compliance with human rights, and the prevention of dangerous climate change.
  https://germanwatch.org/en
- Germanwatch has been actively engaged with the topic of public opposition to grid development in the project "Shaping the Grid Debate". The project, managed by RGI, was established in Germany to advance the debate between civil society actors and the broader public on further developing the transmission grid to allow for a growing share of renewables.
- As part of this project, Germanwatch has mapped the arguments different grid opponents have in relation to infrastructure development.

F

- "Planungsdialog (English: planning dialogue) Borgholzhausen" is a practical example of public participation. After realising that the planning process was characterised by conflict and mistrust, Amprion decided to redesign and restart it. In this session, we will present the project and hear from all stakeholders on the reasons for failure and success.
  Dr. Stephanie Bock undertook the academic monitoring of the project. She works for the German Institute for Urban Planning (Deutsches Institut für Urbanistik, or Difu). https://difu.de/

- The citizens' initiative "Keine 380kV-Freileitung am Teuto" is the main public opposition group for the grid project.
  https://www.keine380kv.de/
- Dirk Speckmann has been the mayor of Borgholzhausen since 2015. Borgholzhausen is a town in the district of Gütersloh in the state of North Rhine-Westphalia, Germany. It has a population of close to 9,000.
  https://www.borgholzhausen.de/sv_borgholzhausen/

G

- Electricity systems form part of a nation's critical infrastructure. That is why countries' energy systems have traditionally operated in isolation from their neighbours. However, well-interconnected and integrated trans-European grids are indispensable for stabilising the grid and making the energy transition a success. For example, if the sun shines in country A, which then produces a surplus, country B can use this surplus to balance out its own energy deficiency. For this reason, the EU has made interconnection one of its priorities.
- The "Aachen Liège Electricity Grid Overlay" – or ALEGrO for short – is a power link currently under construction between Germany and Belgium. ALEGrO is to be capable of carrying around 1,000 megawatts (MW) of power. The power line, to be commissioned in 2020, will use high-voltage direct-current (HVDC) transmission technology and will be installed as an underground cable.
  https://www.amprion.net/Grid-expansion/Our-Projects/ALEGrO/

H

- If not routed, planned and constructed correctly, grid lines can damage or fragment habitats, kill birds and destroy plants. Proper nature protection is a key part of any well-designed new infrastructure development, with grid lines presenting their own set of nature protection challenges.
- The Renewables Grid Initiative (RGI) has been working on nature protection of grid development projects since its establishment in 2009 in diverse collaborative projects.
  https://renewables-grid.eu/topics/nature-conservation.html
- One of these is the "LIFE-Elia" project. The aim of the project is to create green corridors under overhead electrical lines in wooded areas in Belgium and France. Various innovative actions were undertaken in order to enhance biodiversity and to raise awareness concerning natural habitats and species in the areas the lines run through. For the project, Elia collaborated with the environmental consultancy Ecofirst.
  http://www.life-elia.eu/en/

I

- Renewable energy production fluctuates with the weather. Transmission system operators must constantly balance the system to keep supply and demand equal and the energy flowing. At the Elia control centre, we will see how this is done for the Belgian grid.

- Elia is the Belgian transmission system operator, owning the entire Belgian very-high-voltage grid (150 to 380 kV) and around 94% (ownership and user rights) of the Belgian high-voltage grid (30 to 70 kV). Elia's grid comprises 5,614 kilometres of overhead lines and 2,765 kilometres of underground cables. As a result of recent investment in interconnection capacity with neighbouring countries, Belgium has become one of the most open and interconnected countries in Europe. Elia has recently taken a 60% stake in 50Hertz Transmission, one of the four German regional transmission system operators. Elia's shares are listed on Euronext, the largest share of its assets (44.96 per cent) is owned by Publi-T SCRL, a cooperative company representing Belgian municipalities and inter-municipal companies.
  https://www.elia.be/

J

- To demonstrate how the grid functions, TenneT has developed a sandbox simulation which allows the users to play scenarios of varying complexity and to build their own grids. It makes the complexity of today's energy system easy to grasp.
- TenneT is Europe's first cross-border transmission system operator, responsible for the grid in the Netherlands as well as one of the four TSOs in Germany. TenneT has 1,700 employees and approximately 20,000 kilometres of high-voltage connections.
  https://www.tennet.eu/#&panel1-1

K

- Europe's energy market is becoming ever more interconnected and grid infrastructure planning must reflect that. Today, planning at European and national levels goes hand in hand with needs assessments at both levels, feeding into each other. While national network plans are reflected in the National Energy and Climate Plans (NECPs) that EU member states must submit by the end of 2019, the Ten-Year Network Development Plan (TYNDP) identifies infrastructure needs at a European level and in turn influences national planning.
- The TYNDP is developed by ENTSO-E, the European Network of Transmission System Operators. The association represents 43 electricity transmission system operators (TSOs) from 36 countries across Europe, extending beyond EU borders. ENTSO-E was established and given a legal mandate by the EU's Third Energy Package in 2009, a legislative package aimed at further liberalising EU gas and electricity markets.
  https://www.entsoe.eu/
  The European Commission sets the priorities for shaping our future energy system. It also assesses the TYNDP and identifies so-called "Projects of Common Interest" (PCIs) for financial implementation support. The priorities it sets today will thus shape the grids built tomorrow.
  https://ec.europa.eu/energy/en/topics/infrastructure/projects-common-interest

- Some in the NGO community say today's grid planning does not reflect the EU's commitments under the Paris Agreement, which stipulates that the global temperature rise should stay below 1.5° Celsius. We will hear from

one of its most prominent representatives, Climate Action Network (CAN) Europe on what is missing and how this can be remedied.

- CAN Europe is Europe's leading NGO coalition fighting dangerous climate change. With over 160 member organisations from 35 European countries, representing over 1,700 NGOs and more than 40 million citizens, CAN Europe promotes sustainable climate, energy and development policies. throughout Europe.
  http://www.caneurope.org/

L

- Offshore wind power will be one of the key enablers of transitioning to an energy system based on renewables. Connecting these resources to the grid comes with its own challenges. From technical obstacles to the consideration of complex ecosystems and a multitude of stakeholders. In this session, we will hear from the cross-border TSO TenneT about the potential of wind energy in the North Sea and how they work towards an offshore grid development that takes into consideration the habitats and livelihoods on the sea.