Fossil, synthetic or not at all?

The future of gas in a decarbonised energy system: Trends, technologies, strategic interests

Foto: Flickr/Michael Bliefert

Media study tour for journalists

organised by the Clean Energy Wire
in cooperation with the
Center for Security Studies at ETH Zurich

25 – 27 June 2017, Berlin/Mecklenburg-Vorpommern, Germany

You want to have an energy policy debate that is highly controversial, dizzyingly complex and marked by a bewildering plethora of political and corporate interests? You want to talk about an energy source that features prominently in the energy system of almost every single G20 country?

Let's talk about gas then.

The Clean Energy Wire will do just that: Two weeks ahead of the G20 Summit in Hamburg, Germany, we will take a closer look at an energy source of almost perplexing ambiguity – gas. Geopolitical, security of supply and foreign policy issues contribute to its complexity. As a fossil fuel it is a driver of climate change: Scientists thus argue that much of the remaining fossil gas reserves need to stay in the ground, unburnt. At the same time, the switch from high emission coal to low emission gas has been a remarkable mitigation factor in global greenhouse gas developments lately.

Some see gas as a bridge to a clean energy future – and a flexible partner to renewable energies. Others, however, see it as a barrier to a clean energy future. Still others have high hopes to use gas as a cleaner fuel for cars, trucks and ships or in heating. However, growing import needs from Russia and other countries make this appear like a risky choice. And some regard synthetic gas derived from power-to-gas technologies as a key option in solving the need for seasonal power storage in a future energy system based on wind and solar power.

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Gas to power: Where is the business model?

FRANKFURT, April 24, 2017 (Reuters) - German power companies are calling into question the economic viability of over 90 percent of planned gas-to-power plants in Europe's largest economy, German energy industry association BDEW said, demanding policymakers clarify the role of gas.

"Investment in gas-fired power plants will only materialise if the politicians ensure that gas as a feedstock and gas infrastructure have a political future," BDEW managing director Stefan Kapferer said.

Against this background, we are inviting journalists from across Europe to join us in understanding the complexity. During our three-day study tour we will talk to leading gas experts, industry stakeholders and policymakers. During on-site visits, in panel discussions and expert briefings we will look at the following questions:

- ➔ In the context of the German Energiewende, can gas be used as a cleaner bridge towards an energy system based almost entirely on renewables?
- ➔ What are the climate, foreign policy and security implications of expanding the European gas infrastructure by building new pipelines and new LNG terminals?
- ➔ What is the potential of power-to-gas technologies as a long-term power storage? And how could future business models based on power-to-gas look like?
- ➔ As heating and transport are key factors in bringing down greenhouse gas emissions: Is there a place for fossil gas to fuel cars and trucks and to heat homes en route to full decarbonisation? And could it gradually be replaced by synthetic gas made from renewable power?

Power-to-gas: Seasonal power storage from 2030 onwards?

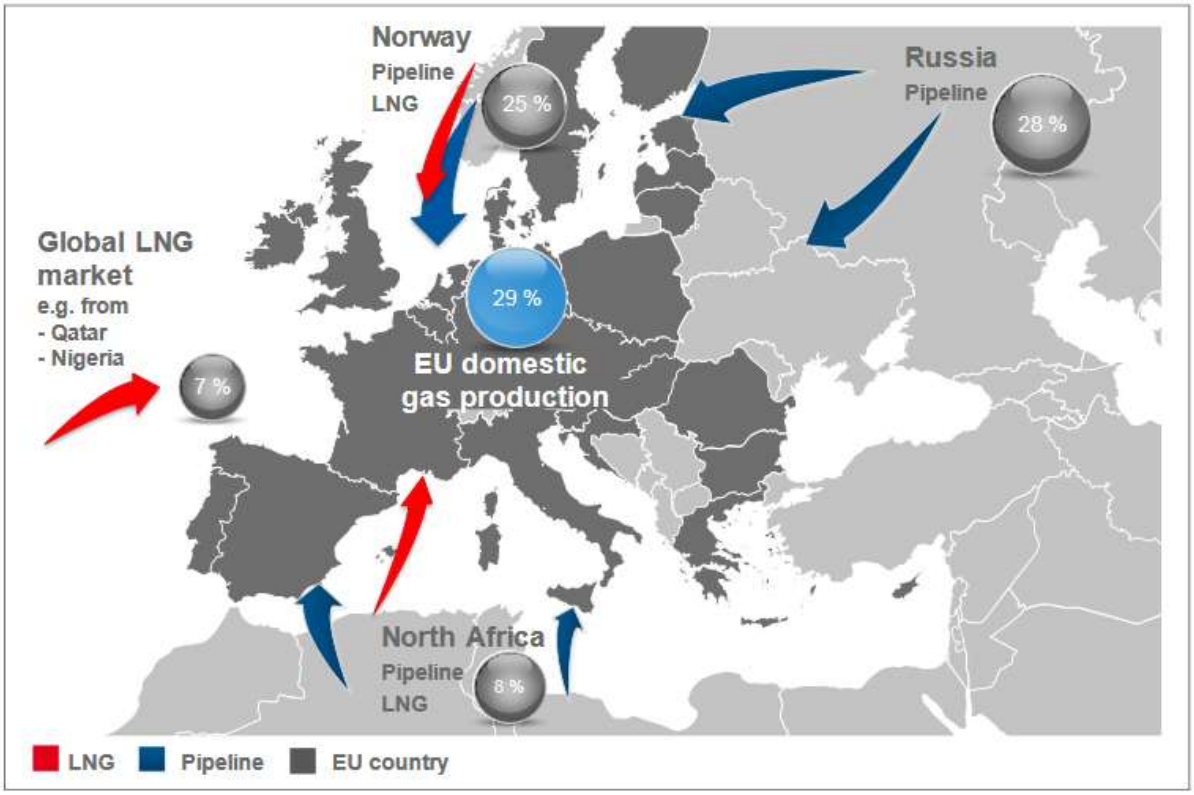
„As a business case, seasonal power storage will only become attractive from 2030 onwards. Today, the only option I see for seasonal storage is power-to-gas – producing hydrogen from excell wind power, which will be turned into synthetic methane in an additional step. This methane can then be used to generate power."

Boris Schucht, CEO 50hertz, Der Tagesspiegel, June 6, 2016

After Dieselgate: One million gas-powered cars

WOLFSBURG, May 2, 2017 (Automotive World) - Volkswagen Group, operators of CNG filling stations and gas networks have signed a joint declaration of intent, committing themselves to the extension of CNG mobility. CNG signifies "Compressed Natural Gas" and can be both natural gas or regenerative gas gained from green electricity. The signers thereby intend to multiply the CNG vehicle fleet in Germany tenfold to 1 million vehicles by 2025.

Moreover, the initiative aims to expedite the extension of the filling station network in Germany to increase it from 900 locations today to 2.000 by 2025. On the basis of the EU directive 2014/94 (the deployment of alternative fuels infrastructure), the expansion will also be promoted in other European countries.



The European gas market (source: Prognos AG 2017)

Content

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Foto: Siemens

Turbine of a gas and steam power plant in Düsseldorf

The programme: Who? What? When?

Sunday, 25 June 2017

Individual arrival of participants
Individual check-in at hotel (optional): Hotel Alexander Plaza, Rosenstraße 1, 10178 Berlin (S Hackescher Markt)

17.00 **Welcome and outline of the programme**
Sven Egenter, Executive Director, Clean Energy Wire
Location: Clean Energy Wire, Anna-Louisa-Karsch-Straße 2, 10178 Berlin (S Hackescher Markt)

Dinner

18.30 **Trends, technologies, interests: An overview of key dimensions of discussing the future role of gas**

A

Presentation and discussion on

- **Infrastructure, foreign policy and security:** Dr. Severin Fischer, Senior Researcher, Center for Security Studies (CSS), ETH Zurich
- **Power, heating and the Energiewende:** Matthias Deutsch, Senior Associate Optimisation of the Overall Energy System, Agora Energiewende
- **Mobility and transport:** Dr. Urs Maier, Senior Associate Freight Transport, Agora Verkehrswende

Overnight stay at Hotel Alexander Plaza, Rosenstraße 1, 10178 Berlin (S Hackescher Markt)

Foto: Carel Mohn
Power-to-gas research laboratory at Cottbus Technical University

Monday, 26 June 2017

8.45 *Joint transfer from hotel to dena*

9.15 **Power-to-gas: How it works, what it costs, how it could be integrated into a clean energy system**

B

Presentation and discussion with

- Andreas Kuhlmann, Chief Executive Deutsche Energie-Agentur GmbH (dena), German Energy Agency
- Dr. Christiane Golling, project manager "Power to Gas Strategy Platform", dena
- Jeanette Uhlig, senior professional, dena

Location: dena, Chausseestrasse 128a, 10115 Berlin

12.00 **On the road to 2050: The energiewende and Germany's Climate Action Plan – how does gas fit into the picture?**

C

Briefing with Jochen Flasbarth, State Secretary at the Federal Ministry of the Environment

Location: Federal Ministry of the Environment, Stresemannstr. 128 - 130, 10117 Berlin, Room 4.131

13.30 *Lunch*
Location: Clean Energy Wire, Anna-Louisa-Karsch-Straße 2, 10178 Berlin

14.30 **Gas security and foreign policy in Europe**

D

A panel discussion with:

- Dr. Franziska Holz, Research Associate, Resource & Environmental Markets, DIW Berlin (German Institute of Economic Research)
- Stefan Rolle, Head of Division, Gas and Oil Markets, Emergency Preparedness, Federal Ministry of Economic Affairs and Energy, Germany
- Dr. Sabrina Schulz, Head of Berlin Office, E3G
- Marta Babicz, Ministry of Foreign Affairs, Poland
- Olav Aamlid Syversen, Deputy Head EU Affairs Statoil
- Moderator: Dr. Heiko Lohmann, energate Gasmarkt

Location: Clean Energy Wire, Anna-Louisa-Karsch-Straße 2, 10178 Berlin
Please note: The Chatham House Rule applies for this session.

16.30 *Time off*

18.30 *Joint transfer from hotel to dinner session*

19.00 **Innovation, cost efficiency and climate targets: The perspective of the German gas industry**

E

Dinner session with

- Dr. Timm Kehler, Executive Director, Zukunft Erdgas e.V.
- Alexander Land, Head of Communications and Energy Policy, Open Grid Europe GmbH

Location: Restaurant Balthazar am Spreeufer 2, Spreeufer 2, 10178 Berlin

Overnight stay at Hotel Alexander Plaza

Tuesday, 27 June 2017

7.30 *Joint transfer with public transportation to Erkner*

9.00 **Road transport along the "Blue Corridor": LNG as a clean(er) fuel for heavy freight transport?**

F

Visit of the LNG gas station for trucks at Grünheide, A10 highway operated by LIQVIS GmbH and Ludwig Meyer GmbH & Co. KG
Presentation of the station and meeting with Karl-Josef Grobbl, LIQVIS GmbH
Location: Grünheide/Mark, A10

Bus transfer to Prenzlau

11.30 **Finding the power button for renewables: Turning wind to hydrogen**

G

On-site visit of hybrid power plant operated by Enertrag
Meeting with Robert Döring, Head of Public Affairs, Enertrag AG
Location: Dauerthal 3, 17291 Dauerthal

Lunch & bus transfer to Lubmin/Greifswald

14.30 **European gas infrastructure: The case of Nord Stream 2**

H

Visit of the landfall facilities of the pipeline in Lubmin/Greifswald, operated by GASCADE Gastransport GmbH
Presentation of Nord Stream and Nord Stream 2 with ensuing on-site visit
Meeting with Jens D. Müller, Spokesperson Nord Stream 2 AG and
Tatiana Babakina, Head of Communications Nord Stream

Location: Lubmin/Greifswald

17.00 **Reporting on energy and climate stories in Germany: The perspective of a public broadcaster**

I

Meeting with Carola Lewering, Head of the NDR Regional Office (North German Public Broadcasting)
Location: NDR Studio Greifswald, Knopfstraße 29, 17489 Greifswald

18.30 **Closing dinner: Future research stories and feedback**
Location: Theatercafé Greifswald, Anklamer Straße 106-108, 17489 Greifswald

20.00 *Bus transfer to Berlin*

23.00 *Individual departure OR overnight stay at H4 Hotel Berlin Alexanderplatz, Karl-Liebknecht-Straße 32, 10178 Berlin, phone: +49 30 3010411-0*

Official end of the programme

From A to I:
Background info on the programme items

A

Founded in 1986, the **Center for Security Studies** (CSS) at ETH Zurich is an independent think tank and centre of competence for Swiss and international security policy. CSS is part of the Department of Humanities, Social and Political Sciences at ETH Zurich, and offers security policy expertise in research, teaching, and consulting. It aims to be a bridge between academia and practice. Its research areas range from cybersecurity and post-conflict studies to security institutions and technologies, which constitute the core elements of its role as policy advisor. Since 2004, CSS has been jointly supported by ETH Zurich and the Swiss Federal Department of Defence, Civil Protection, and Sport (DDPS). Another partnership with the Swiss Federal Department of Foreign Affairs (FDFA) was established in 2012. CSS employs a 60-strong staff.

In 2015, Germany imported about one-third of its natural gas from Russia. The ensuing Ukraine crisis put Germany's and Europe's dependence on Russian fossil fuel imports back in the spotlight, and it also raised questions about Germany's motive behind its continuing support for plans to construct Nord Stream 2, a second pipeline that would bring natural gas from Russia to Germany (see below for further info). Most European policy makers were baffled by Berlin's seemingly contradictory backing of a more secure European Energy Union, while at the same time promoting an additional Russian-German pipeline, CSS Senior Researcher **Dr. Severin Fischer** noted in the policy journal Europe's World.

Dr. Severin Fischer is a member of the Global Security Team at CSS. He holds a PhD in political science from Trier University, Germany. Before joining CSS, he worked as a researcher at the German Institute for International and Security Affairs (SWP) and the Institute for European Politics (IEP) in Berlin, as well as an advisor in the European Parliament. His research focuses on European energy policy, global energy security challenges, and EU climate policy. He has also worked on the EU's Energy Union, and was involved in the negotiations on the 2030 energy and climate policy package and in the Europeanisation of national energy policies, with a focus on Germany's Energiewende.

- Center for Security Studies' official website (in English and German): http://www.css.ethz.ch/en/
- CSS Annual Report 2016 (in English and German): http://www.css.ethz.ch/en/center/css-annual-reports.html
- Severin Fischer's book "Die Energiewende und Europa" (2016) on the interactions and interrelationships between the energy and climate policies of Germany and Europe in the years 2007 to 2015 (in German): http://www.springer.com/gb/book/9783658146238#aboutBook
- Severin Fischer's article in Europe's World (in English): http://europesworld.org/2016/07/19/explaining-germanys-contradiction-energy-union-nord-stream-2/?utm_source=rss&utm_medium=rss&utm_campaign=explaining-germanys-contradiction-energy-union-nord-stream-2#.WTfjbNxCSpq
- For more in-depth background, see CLEW dossier and related content: https://www.cleanenergywire.org/dossiers/energiewende-and-its-implications-international-security

Agora Energiewende is one of the leading energy policy think tanks in Germany. In order to achieve Germany's climate protection goals and honour the Paris Agreement, carbon emissions from all sectors, including power, transport, and heating, must be reduced to almost zero by 2050. Established in 2012 by the European Climate Foundation (ECF) and Stiftung Mercator, Agora Energiewende undertakes and commissions research on the Energiewende with an emphasis on the energy sector. The Council of the Agora, under the chairmanship of former UNEP Director and former German Environment Minister Klaus Töpfer, brings together key stakeholders from politics, business, media, and civil society to forge a broad consensus on the policy framework for the Energiewende. Agora Energiewende has a commissioned budget of 15 million euros until 2021 and employs about 30 staff.

Dr. Matthias Deutsch is a senior associate at Agora Energiewende's Germany Team. He is responsible for topics related to the optimisation of the overall energy system. He worked as a consultant at Prognos AG from 2007 to 2015, focusing on renewable energy, energy demand, gas grid development, and statistical analysis. Previously, he was employed at the Hertie School of Governance and the German Institute for Economic Research (DIW) in Berlin. He is a graduate engineer in environmental technology (Berlin University of Technology), and holds a PhD in policy studies from the University of Maryland School of Public Policy, USA.

- Agora Energiewende's official website (in English and German): https://www.agora-energiewende.de/en/
- Agora Energiewende's "12 Insights on Germany's Energiewende" (in English and German): https://www.agora-energiewende.de/en/topics/-agothem-/Produkt/produkt/86/12+Insights+on+Germany%E2%80%99s++Energiewende/
- Agora Energiewende's recent study "Energiewende 2030: The Big Picture" (in German): https://www.agora-energiewende.de/fileadmin/Projekte/2017/Big_Picture/Agora_Big-Picture_WEB.pdf
- Agora Energiewende's study "Comparing the Cost of Low-Carbon Technologies: What is the Cheapest Option?" (in English): https://www.agora-energiewende.de/fileadmin/Projekte/2014/low-carbon-technologies/Agora_Analysis_Decarbonisationtechnologies_web_final.pdf

Agora Verkehrswende is a newly established think tank focusing on transport and mobility. It was set up by Stiftung Mercator and the ECF in 2016. Following the success of the two foundations' Agora Energiewende initiative, Agora Verkehrswende aims to catalyse public discourse over the decarbonisation of Germany's transport sector. Similarly to its sister organisation Agora Energiewende, the Council of the Agora brings together key stakeholders and decision makers for regular discussions and debates. It is chaired by Achim Steiner, former UN under-secretary general and executive director of UNEP. Agora Verkehrswende's permanent team includes engineers, economists, urban planners, and political scientists. It has a starting budget of 5 million euros.

Dr. Urs Maier is Agora Verkehrswende's senior associate for freight transport. A geographer by training, he worked as a project manager for the German non-profit environmental and consumer protection association Deutsche Umwelthilfe (DUH) between 2011 and 2016, focusing on transport and air quality control. Prior to that, Urs Maier was a research associate at the Institute of Geography and Spatial Planning at the University of Luxemburg, where he also completed his PhD studies on the effects of the socio-technical change of the automobile.

- Agora Verkehrswende's official website (in English and German): http://agora-verkehrswende.de/en/index.html
- Agora Verkehrswende's "12 Insights on Germany's mobility transition" (in German): https://www.agora-verkehrswende.de/12-thesen/

Note: Like the Clean Energy Wire, Agora Energiewende and Agora Verkehrswende are projects funded by Stiftung Mercator and the European Climate Foundation.

B

Headquartered in Berlin, the **German Energy Agency** (dena) works on topics such as energy efficiency, renewable energy sources, and intelligent energy systems. Founded in 2000, it calls itself the "Agency for the Applied Energy Transition" as its projects aim to help its national and international partners put their energy and climate objectives into practice, thereby enabling economic growth while reducing energy consumption. Dena also publishes information on buildings, mobility, grids, and power storage. A hybdrid mix of think tank, consultancy, and stakeholder platform, dena is funded by a large number of public and private investors. Its key shareholders are the German state (50 percent), the government-owned KfW Bankengruppe, Allianz SE, Deutsche Bank AG, and DZ Bank AG.

Since 2011, dena has been in charge of the **Power to Gas Strategy Platform**. Together with partners from business, associations, and science, the platform analyses the role of the power-to-gas technology for the use of renewable electricity. Its core objective is to devise large-scale power-to-gas system solutions that are technically available and economically feasible after 2022. By 2025, they aim to have installed at least 1,000 MW of power-to-gas capacity in Germany. Currently 20-odd research and pilot facilities use and develop the power-to-gas technology in Germany, converting electricity from renewable energies to hydrogen and synthetic methane. These "renewable gases" can either be used directly, or fed into, stored, and transported via existing natural gas infrastructure to where they are needed. Furthermore, they can be used for multiple purposes (e.g. heating, alternative fuel for transport, long-term storage of electricity). The question is whether this technology can become a key contributor to reducing Germany's $C0_2$ emissions and successfully integrating the increasing share of renewables into the energy system?

Andreas Kuhlmann has been dena's chief executive since July 2015. Since September 2015, he has also been the spokesperson for the Alliance for Building Energy Efficiency (geea), and a member of the Executive Committee of the World Energy Council in Germany. Previously he worked at the German Association of Energy and Water Industries (BDEW) as Director Strategy and Politics. In that position, he was responsible for the association's strategic and political development, and for the coordination of all activities relating to the energy transition. Prior to 2010, he had held positions at the German Embassy in Stockholm, the European Parliament, the German Bundestag, and the Federal Ministry of Labour and Social Affairs. Andreas Kuhlmann majored in physics and minored in economics at the universities of Bonn and Heidelberg and at Oregon State University in Corvallis (USA).

Hannes Seidl has been Head of Energy Systems & Energy Services at dena since January 2016. His department is involved in a variety of projects, including the power grid, innovative system solutions for renewable energy integration and sector coupling, digitalisation, and the development of efficiency and energy services markets. He studied physics at the Technical University of Munich and the University of Cape Town.

- Dena's official website (in English and German): https://www.dena.de/en/home/
- Power to Gas Strategy Platform's official website (in English and German): http://www.powertogas.info/english
- Power to Gas Strategy Platform's brochure "Power to Gas system solution.Opportunities, challenges and parameters on the way to marketability" (in English): http://www.powertogas.info/fileadmin/content/Downloads/Brosch%C3%BCren/dena_PowertoGas_2015_engl.pdf
- Power to Gas Strategy Platform's 2014 policy paper (in English): http://www.powertogas.info/fileadmin/user_upload/141204_dena_Policy_paper_RED_FQD_final.pdf

C

The **Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety** (BMUB) was established in 1986 in the aftermath of the Chernobyl nuclear disaster, under Helmut Kohl's government. Its mandate includes climate policy, and in 2013 the policy areas of building and urban design were added to its remit.

In November 2016, on the eve of the COP22 climate summit, Germany's grand coalition government of Conservatives (CDU/CSU) and Social Democrats (SPD) approved, after months of dispute, a trimmed-down **Climate Action Plan 2050**. Originally drafted by the environment ministry, this plan provides a basic framework for decarbonising the German economy by 2050. Following through on its commitment to the 2015 Paris Climate Agreement, the Climate Action Plan 2050 includes target corridors for reducing greenhouse gas emissions in individual economic sectors, and emphasises the need to ensure economic competitiveness throughout the transition. However, certain more ambitious and rigid goals that the environment ministry under Barbara Hendricks had originally proposed were rebuffed by the Ministry of Economic Affairs and Energy and Angela Merkel's chancellery. Earlier drafts had included plans for a deadline for all new cars to be emission-free, as well as a timeframe for Germany's coal exit. The latter remains prominent in public debate and threatens Germany's legacy (and legitimacy) as a climate protection frontrunner and renewables pioneer. If Germany is to ditch coal next, after phasing out nuclear energy by 2022, it will become crucial to define the future role of gas in the country's energy system.

Jochen Flasbarth has been state secretary in the environment ministry since 2013. From 2009 until 2013 he was president of the German Federal Environment Agency (UBA). Between 2003 and 2009 he served as Director-General for Nature Conservation and Sustainable Use of Natural Resources at the environment ministry. Between 1994 and 2003, he held the post of president of Naturschutzbund Deutschland (NABU), the German affiliate of Birdlife International. Jochen Flasbarth studied economics, political science, and philosophy in Münster and Bonn.

- Environment Ministry's official website (in English and German): http://www.bmub.bund.de/en/

- Climate Action Plan 2050 executive summary (in English): http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimaschutzplan_2050_kurzf_en_bf.pdf
- Climate Action Plan 2050 (in German): http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimaschutzplan_2050_bf.pdf
- For in-depth background on Germany's climate protection efforts and the Climate Action Plan 2050, see CLEW dossier and related content: https://www.cleanenergywire.org/dossiers/energy-transition-and-climate-change

D

The **German Institute for Economic Research** (DIW) is based in Berlin, and its core mandates are applied economic research and economic policy. It has nine research departments, two of which (Energy, Transportation, Environment and Climate Policy) look into the economics and politics of climate change and energy. Research Associate **Dr. Franziska Holz** coordinates DIW's research on resource markets in the Energy, Transportation and Environment Department. Her research deals with the international natural gas, coal, and oil markets. She studied economics at Paris 1 University Panthéon-Sorbonne, and her PhD thesis at TU Berlin dealt with modelling the European natural gas markets.

- DIW's official website (in English and German): https://www.diw.de/en

Stefan Rolle is Head of Division Gas and Oil Markets, Emergency Preparedness at the German **Federal Ministry for Economic Affairs and Energy** (BMWi).

- BMWi's official website (in English and German): http://www.bmwi.de/Navigation/EN/Home/home.html

Marta Babicz works at the Polish **Ministry of Foreign Affairs**.

- Ministry's official website (in English and Polish): http://www.msz.gov.pl/en/

Olav Aamlid Syversen is deputy head of the EU Affairs Office at **Statoil**. Founded in 1972, this energy company, based in Norway, operates in more than 30 countries with 20,500 employees. It explores, develops, and produces oil and gas with strongholds in Europe, Africa, North America, and Brazil. It also develops a portfolio of renewable energy solutions, currently supplying 650,000 British homes with electricity from offshore wind farms. According to Statoil CEO Eldar Sætre, the company supports the Paris Climate Agreement and plans to gradually build its renewable energy portfolio, while continuing to produce oil and gas with lower emissions. By 2030, 15 to 20 percent of its annual investments are planned to be allocated to its new energy solutions division.

- Statoil's official website (in English): https://www.statoil.com/

- Politico interview with Olav Aamlid Syversen from July 2016 (in English): http://www.politico.eu/video/interview-olav-aamlid-syversen-deputy-head-of-eu-affairs-office-statoil/

E3G is an independent, European non-profit organisation dedicated to accelerating the global transition to a low-carbon economy. It has offices in London, Berlin, Brussels, and Washington. Founded in 2004, E3G tackles the challenge of how to deliver transformational policy change. Its areas of focus include sustainability, climate, energy, and financing. **Dr. Sabrina Schulz** has been head of E3G's Berlin office since June 2012. She is a policy expert specialised in climate change and energy. Her current work focuses on climate diplomacy and climate security, the low-carbon transformation in Germany and Europe, as well as low-carbon urban development in China. Sabrina Schulz holds a master's degree in international politics as well as a PhD from Aberystwyth University. She received her MA in public policy and management from the University of Potsdam.

- E3G's official website (in English) https://www.e3g.org/

E

Dr. Timm Kehler is the executive director of **Zukunft Erdgas**. This German industry group represents about 100 natural gas companies, and is supported by industry assocations, such as the German Association of Energy and Water Industries (BDEW). Its goals are to promote gas, in its various forms and applications, as a climate-friendly and affordable energy source for consumers, and to bolster the energy transition as a whole. In 2016, Zukunft Erdgas published a study on the German "Heating market 2050". It concluded that by raising the share of gas used in heating to 35 percent, the building sector could reduce its CO_2 emissions by 80 percent. By saving 16 million tonnes of $C0_2$ emissions, this could be an important lever to reach Germany's target of reducing its overall greenhouse gas emissions by at least 80 percent compared to 1990 levels. Zukunft Erdgas argues that this option is also more affordable than electrifying the heating sector e.g. through building refurbishments.

- Official website of Zukunft Erdgas (in German): https://www.zukunft-erdgas.info/
- Press release "Heating market 2050" by Zukunft Erdgas (in German): https://www.zukunft-erdgas.info/news/artikel/80-prozent-weniger-co2-im-waermemarkt-sind-moeglich
- Study on Germany's "Heating market 2050" by Zukunft Erdgas (in German): https://www.zukunft-erdgas.info/index.php?eID=tx_nawsecuredl&u=0&g=0&t=1496838113&hash=4239d12936e1e2e6fa0483d0fc8e5922b600d537&file=/uploads/media/Waermemarkststudie_online.pdf

Alexander Land is head of communications and energy policy at **Open Grid Europe GmbH**. With a gas transmission system of about 12,000 kilometres and 1,650 employees, the Essen-based Open Grid Europe is one of the biggest gas transmission system operators in Germany, and the country's leading natural gas transporter. Its core business areas are the design,

construction, and operation of natural gas transmission pipelines. Open Grid Europe was formerly known as E.ON Gastransport GmbH. It was founded as a subsidiary of one of Germany's largest utilities, E.ON, in 2004. In 2010, it was recognised as an independent transmission operator (ITO), in compliance with EU energy legislation and the German Energy Industry Act, which require ownership unbundling of energy suppliers and network operators.

The company's origins date back to 1926, when the "Aktiengesellschaft für Kohleverwertung" started using the coke oven gas released during the production of coke for large-scale long-distance gas transmission. Open Grid Europe, as well as its precursors and affiliates, respectively, have been involved in building and operating the German sections of key European gas infrastructure, such as the Trans Europa Naturgas Pipeline (TENP) and the Central European Gas Pipeline (MEGAL). Today, under Germany's Network Development Plan for Gas, Open Grid Europe GmbH is commissioned with several projects that aim to increase reversible north-south and cross-border transmission capacities. While the generation of renewable power is on the rise, its storage and transport/transmission remain problematic. Using the existing gas infrastructure in combination with innovative technologies like power-to-gas could provide a solution. According to Open Grid Europe, the theoretical storage range of Germany's electricity grid is only 0.6 hours, compared to 2,000 hours (three months) that gas storage facilities can already provide today. Gas (infrastructure) could therefore be a vital part of the future decarbonised energy system.

- Open Grid Europe's official website (in English and German): https://www.open-grid-europe.com/cps/rde/oge-internet/hs.xsl/index.htm
- Open Grid Europe infographic on storage solutions for renewable energies (in English): https://www.open-grid-europe.com/cps/rde/xbcr/oge-internet/20170424_OGE_Power-to-Gas_Grafik_ENG_v1.pdf
- Information on TENP pipeline (in English and German) http://www.fluxys.com/tenp/en/TenpSystemInfo/TENPSystemInfo
- Information on MEGAL pipeline (in English and German): http://www.grtgaz-deutschland.de/en/transparency/technicalparameters and http://www.grtgaz-deutschland.de/en/transparency/pipelinesystemmap

F

On top of the efforts in the energy and heating sectors to reduce greenhouse gas emissions, transport will also have to contribute its due share to a decarbonised economy. In 2016, the ever growing transport sector accounted for almost a fifth of Germany's greenhouse gas emissions, and realised virtually zero emission reduction compared to 1990. Energy company Uniper's subsidiary, **Liqvis GmbH,** is convinced that liquefied natural gas (LNG) is the fuel of the future for the heavy-duty transport and logistics sectors. It builds LNG infrastructure for the commercial transport sector. Liqvis has recently opened its first public LNG fuelling station in cooperation with food industry service provider **Ludwig Meyer Logistik GmbH & Co. KG** in Grünheide, on the eastern stretch of the Berlin beltway (A10). The Federal Ministry of Transport supported the project, which is part of the EU's growing "Blue Corridor", a network of LNG fuelling stations along Europe's main roads. Trucks fuelled by LNG emit less carbon dioxide, nitrogen oxides, and particulate matter than combustion engines running on conventional fuels. They even operate more quietly, and according to preliminary calculations by Ludwig Meyer Logistik, each LNG truck could save 50 tonnes of CO_2 over the course of five years.

- Joint press release by Liqvis and Ludwig Meyer Logistik (in English): https://www.uniper.energy/content/dam/uniper-corporate/documents/en/press/20170425_PM_Einweihung_LNG_Tankstelle_Berlin_Gr%C3%BCnheide_BMVI_EN.pdf
- Offical website of Liqvis (in English and German): http://www.liqvis.com/en/
- Ludiwg Meyer Logistik's official website (in German) http://www.meyer-logistik.com/willkommen-bei-meyer-logistik/
- For more background, see CLEW's factsheet on Germany's greenhouse gases and climate targets: https://www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets

G

Robert Döring is head of communications at **Enertrag AG**, a European energy supplier which generates electricity solely from renewable sources. One of Europe's leading wind energy suppliers, the company has 630 wind turbines installed and produces 2.7 billion kilowatt-hours of electricity per year. Enertrag's hybrid power plant in the Uckermark region of northern Brandenburg combines a wind energy plant, a hydrogen generation facility, and a combined heat and power plant. When there is an oversupply of wind energy, the electricity is used to power an electrolytic process to generate hydrogen. Unlike electricity, hydrogen can be easily stored. When demand for electricity is high, the hydrogen can be used to fuel hydrogen vehicles, or can be converted back into electricity in the combined heat and power plant. Waste heat from the latter process is also used for district heating in the town of Prenzlau.

- Article from Public Radio International in English (with audio version available): http://www.pri.org/stories/2015-04-08/car-future-very-near-future-might-be-driven-wind
- Profile of hybrid power plant (in English): http://ec.europa.eu/regional_policy/en/projects/germany/the-first-hybrid-electricity-fuel-heat-power-plant-with-hydrogen-storage-in-the-world
- Enertrag website's description of hybrid plant (in German) : https://www.enertrag.com/90_hybridkraftwerk.html?&L=1

H

Nord Stream, completed in 2012, is a 1,200 kilometre offshore twin pipeline system through the Baltic Sea, from Portovaya Bay near Vyborg (Russia) and Lubmin near Greifswald (Germany). It has an annual capacity of 55 billion cubic metres of natural gas, and in essence it directly connects Russia's gas fields with Germany's mainland and Europe's gas infrastructure. Russian energy giant Gazprom holds a majority stake (51 percent) in Nord Stream AG, and is responsible for the pipeline's operation. German subsidiaries of E.ON and BASF each hold 15.5 percent. In 2015, about one-third of the European Union's overall gas demand was supplied by Russia via the Nord Stream pipeline (see Prognos' study below).
Gazprom's plans to construct a second pipeline system, **Nord Stream 2**, alongside the existing Nord Stream have caused much controversy and tensions within the European Union.

Germany's support for the project was met with criticsm and bewilderment by its fellow member states (see Severin Fischer's article above). Nord Stream 2 is scheduled to become operational in 2019. It would double the capacity of Russia's gas connection to the German and European energy markets. In the wake of the Ukraine crisis, the Baltic states, Poland, and some other countries have been advocating against Nord Stream 2. In their opinion, it would increase Europe's energy dependence on Russia, and would pose a threat to its security. Furthermore, critics say the contentious project would starve out Ukraine's existing gas transit pipelines, and would endanger a crucial billion-dollar branch of the country's economy. Nevertheless, considering that the EU's domestic gas production and also that of its important partners, such as Norway and Algeria, are set to decline over the next decades, the EU must find new ways to secure its gas supply. Increased and diversified LNG imports, as well as long-term deals with Russia, could be part of the future supply mix in what appears to be a delicate balancing act between the EU and its member states' national security, foreign policy, and economic interests.

- Consultancy Prognos' study on the "Current Status and Perspectives of the European Gas Balance" (in English) : https://www.prognos.com/uploads/tx_atwpubdb/20170406_Prognos_study_European_Gas_Balance_final_1.pdf
- Nord Stream's official website (in German, English, and Russian) : http://www.nord-stream.com/
- Nord Stream 2's official website (in German, English, and Russian) : https://www.nord-stream2.com/
- Project fact sheets of Nord Stream and Nord Stream 2 (in English): https://www.nord-stream.com/download/document/12/?language=en and https://www.nord-stream2.com/en/pdf/document/5/
- For more in-depth background, see CLEW dossier and related content: https://www.cleanenergywire.org/dossiers/energiewende-and-its-implications-international-security

I

Carola Lewering is head of the regional office of **NDR** (North German Public Broadcasting) in Greifswald. Leading a 30-strong team, she is responsible for the office's contribution of television, radio, and social media content to NDR's broadcasting. NDR belongs to a consortium of German public service broadcasters and covers the city-state of Hamburg, as well as the states of Lower Saxony, Mecklenburg-Vorpommern, and Schleswig-Holstein.

- NDR's official website (in German): https://www.ndr.de/

Organisational details

Who can take part?
The media workshop is open to European journalists with a professional background in energy, environmental or climate policy journalism.

How to apply?
Please apply by following the online application procedure on the Clean Energy Wire website.

What are the deadlines?
The deadline for applications is 4 June 2017.
We will inform you whether your application has been successful no later than 7 June 2017.

What are the costs?
Participation in the media workshop is free of charge. All expenses during the workshop, including food, accommodation and transport, will be covered by the Clean Energy Wire.

Please note: participants must cover their own expenses for travel to and from Berlin (where the workshop will begin and end).

In specific cases and upon individual application we can provide funding support for travel of up to 300 euros per person.

What languages will be spoken?
Presentations during the workshop will be either in English or in German. English-German simultaneous translations will be provided where necessary.

What about travel arrangements?
Local transport *during the workshop* will be organised by the Clean Energy Wire. Participants are kindly asked to organise their own travel to and from Berlin.

For more information, please contact:

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www.cleanenergywire.org

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Suggested **readings**

- ➔ Germany's Energiewende. The Easy Guide: A dossier by the Clean Energy Wire
- ➔ Germany's dependence on imported fossil fuels: Fact sheet by the Clean Energy Wire
- ➔ The Energiewende and its implications for international security: A dossier by the Clean Energy Wire
- ➔ Bioenergy in Germany – facts and figures on development, support and investment: Fact sheet by the Clean Energy Wire

About the **organisers**

Clean Energy Wire

Germany's Energiewende – the energy transition – is a project of global relevance. It is a reference point in a world that has embarked on a path to end the use of fossil fuels, laid out by the Paris Agreement on Climate Change. As the share of renewables in the power sector is growing rapidly, there is an increasing focus on how the world's second biggest export nation and Europe's largest importer of oil and gas is tackling decarbonisation.

The Clean Energy Wire provides well-researched, fact-based and unbiased information as well as support for international journalists reporting on decarbonisation and the energy transition in Germany. We believe that quality journalism plays a key role in productive domestic and international debates, which are essential for the successful transition to a low-carbon economy.

The Clean Energy Wire is committed to the highest standards in journalism. Our charter sets out the guiding principles of our work, including independence from commercial, political or other special interests.

As an independent non-profit and non-partisan organisation, the Clean Energy Wire can offer its services free of charge thanks to its funders, Stiftung Mercator (stiftung-mercator.de) and the European Climate Foundation (europeanclimate.org). It has a staff of nine and is located in Berlin.

www.cleanenergywire.org