

Digital Tour

Hydrogen: wHere, wHy, wHat, wHo, wHen, and How

Day 2: Berlin



THE GERMAN HYDROGEN MARKET – CURRENT STATUS AND OPPORTUNITIES

MARCH 2021

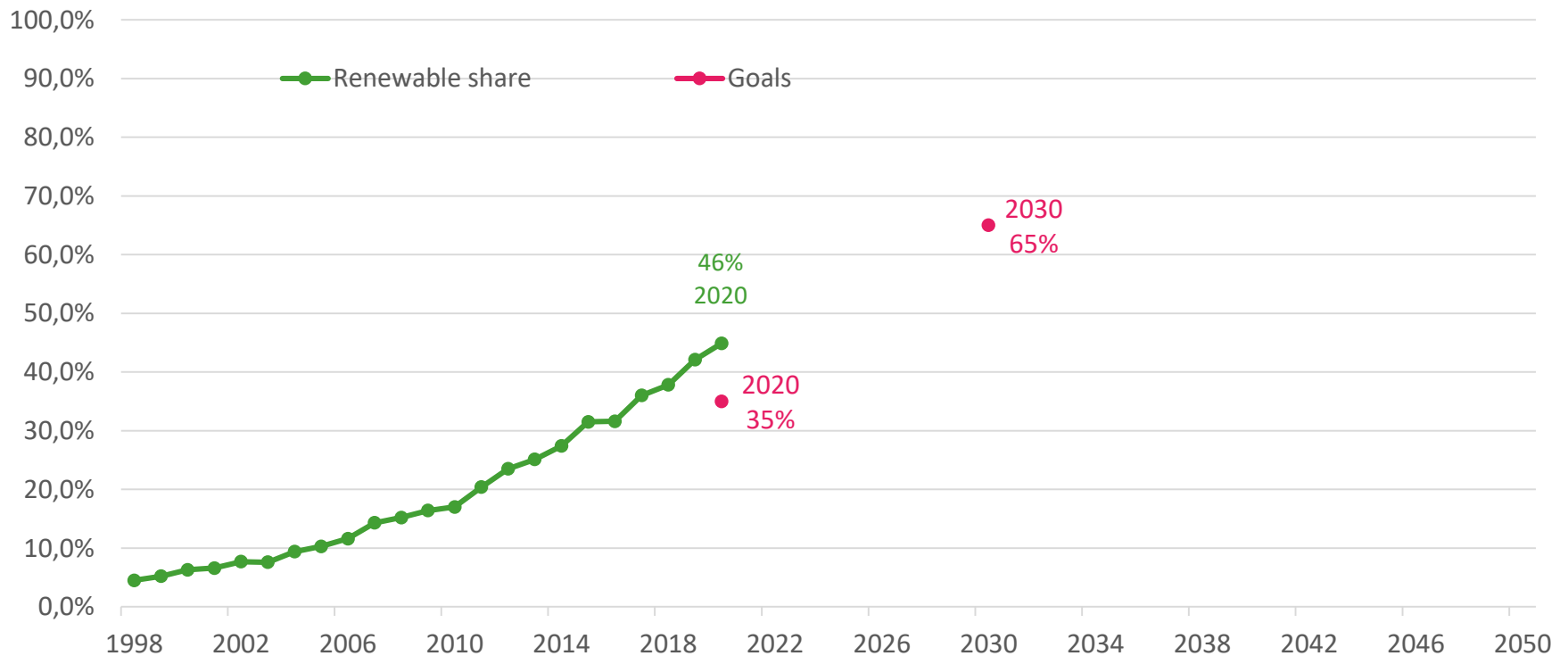
Heiko Staubitz
Germany Trade & Invest



Renewable Electricity in Germany

Renewable's share on Germany's gross electricity consumption growing beyond expectations

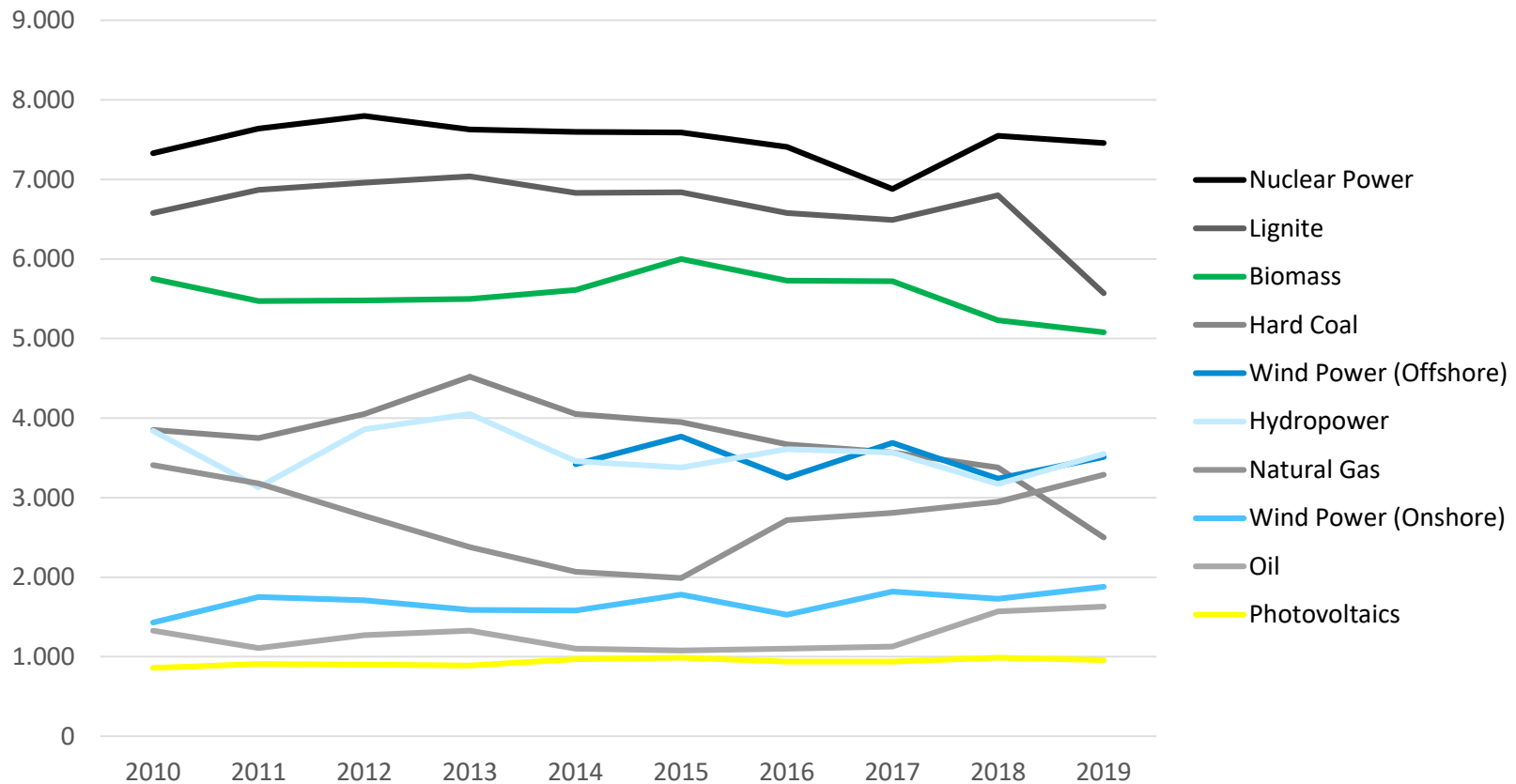
Renewable's share on Germany's gross electricity consumption vs. goals of German Energiewende



Sources: BMWi, 2019

Full Load Hours in the German Electricity Market

Full Load Hours of Power Plant Types

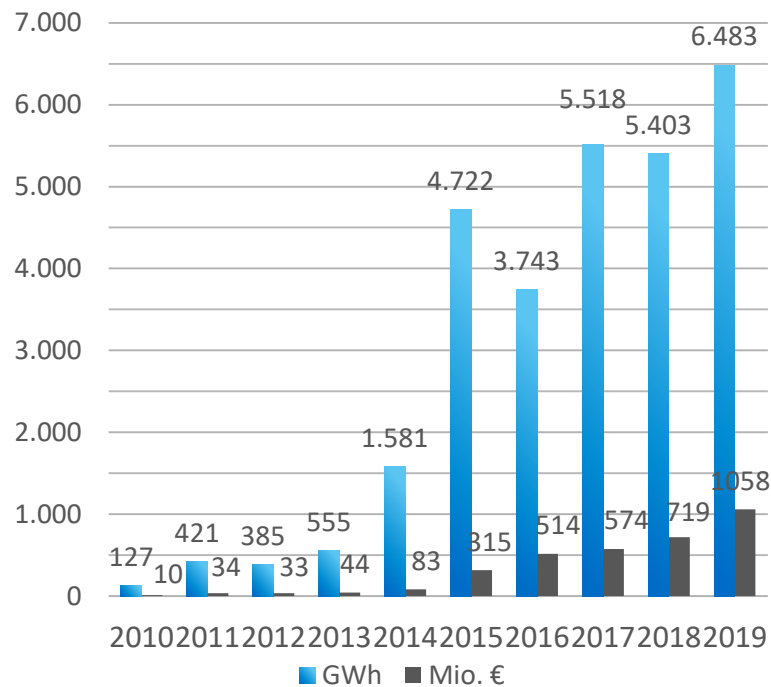


Source: BDEW 2020

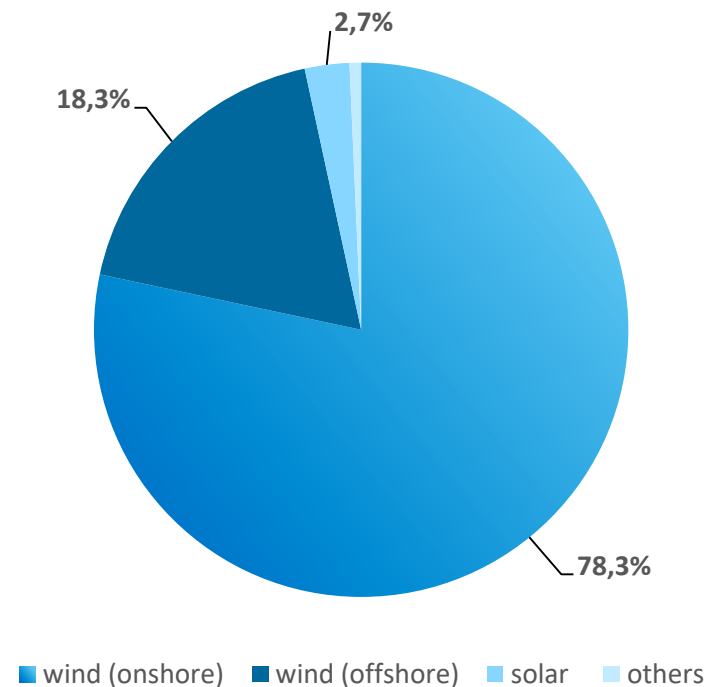
Development of Renewable Energy Curtailment

Long term energy storage technologies are needed

Disconnected energy for grid stabilization and compensation
(2010-2019)



Disconnection for grid stabilization by energy source
(2019)



Hydrogen Technologies in the Energy Transition

The largest hydrogen electrolysis plant will be installed on Shell's refinery in Wesseling

Key Parameters

- Project name: REFHYNE
- Input power: 10 MW
- Hydrogen production: 1,300 ton/year
- Start of plant construction: June 2019
- Funding: 10 Million € from European Commission's Fuel Cells and Hydrogen Joint Undertaking & 6 Million € from partners



Goals

- Processing and upgrading products at the refinery site
- Testing the PEM technology at the large scale
- Exploring applications in other sectors including: industry, power generation, heating for buildings, and transport

Partners

- Shell
- ITM Power
- SINTEF
- Thinkstep
- Element Energy

Source: REFHYNE

Germany's National Hydrogen Strategy

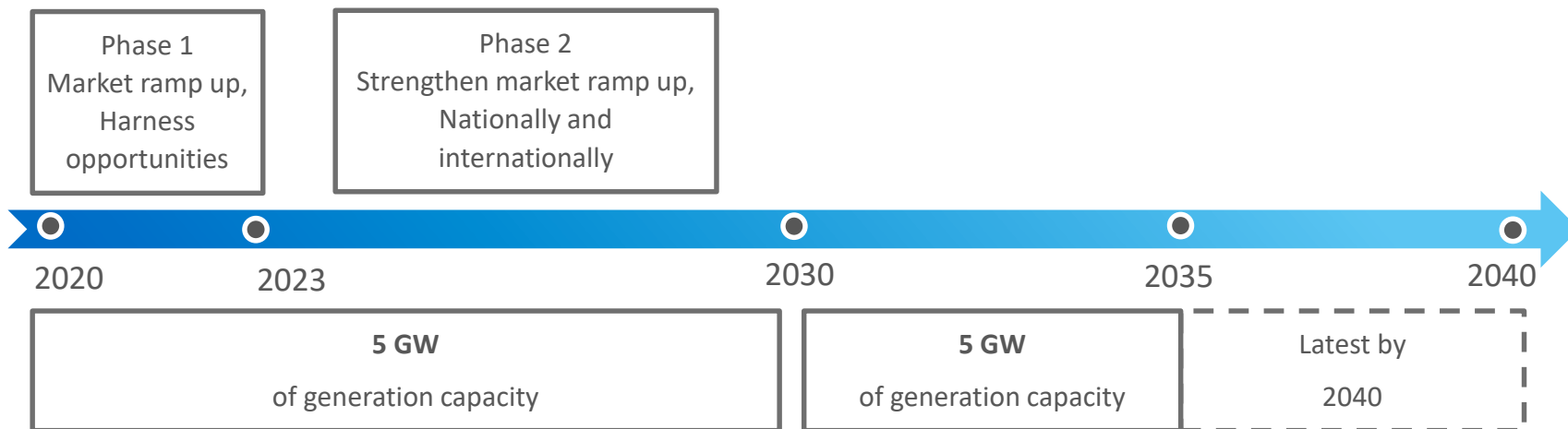
Hydrogen will become central pillar in achieving Germany's climate protection targets

EUR 7 billion for a national market ramp up

- Hydrogen Production (3 measure)
- Hydrogen Use
 - Mobility (9 measures)
 - Transport (4 measures)
 - Heat (2 measures)
- Infrastructure and Supply (3 measures)
- Research, Education and Innovation (7 measures)

EUR 2 billion for international partnerships

- European activities (4 measures)
- International hydrogen economy (5 measures)



Source: BMWi, 2020

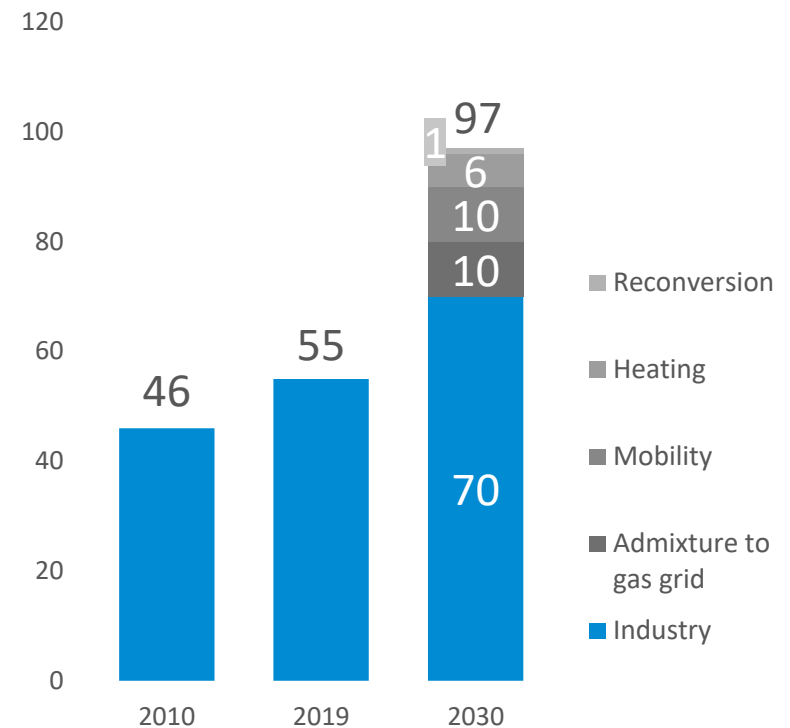
Germany's National Hydrogen Strategy

Hydrogen will become central pillar in achieving Germany's energy transition

Goals of the National Hydrogen Strategy

- The Federal Government expects that around 90 to 110 TWh of hydrogen will be needed in Germany by 2030
- Green hydrogen will be especially important in decarbonizing industries such as steel and chemical
- Germany as an energy importing country will also need to import hydrogen in the future

Hydrogen utilization in Germany (in TWh)



Source: BMWi, 2020; e.venture, 2020

Source: BMWi, 2020

© Germany Trade & Invest

National Innovation Program II (NIP II)

With the NIP II, the German government continues to facilitate R&D and market launch activities in the area of fuel cells and hydrogen

Governmental funds: up to **€1.4 bn** between 2016 and 2026

60%
of funds for **market activation activities**

40%
of funds for activities in the field of **R&D, demonstration and market entry preparation**



Funding for the following fields of activity:

Infrastructure for
emission-free
transport

Stationary
applications:
combined heat
and power units

Support of
supplier industry

Fundamental
research for the
next generation
of fuel cells and
hydrogen
technologies

The use of fuel
cells for securing
critical
infrastructure

Note: For more detailed insight and whether your company is eligible for funding, please ask your GTAI expert.

Source: Federal Ministry of Transport and Digital Infrastructure 2016.

Contact Us

Energy Storage – Smart Grid

Heiko Staubitz

Senior Manager

T +49 (0)30 200 099-226

heiko.staubitz@gtai.com

Friedrichstr. 60

10117 Berlin

Germany Trade & Invest is the economic development agency of the Federal Republic of Germany. The company helps create and secure extra employment opportunities, strengthening Germany as a business location. With more than 50 offices in Germany and abroad and its network of partners throughout the world, Germany Trade & Invest supports German companies setting up in foreign markets, promotes Germany as a business location and assists foreign companies setting up in Germany.

Supported by the Federal Ministry for Economic Affairs and Energy on the basis of a decision by the German Bundestag.

© Germany Trade & Invest

All market data provided is based on the most current market information available at the time of publication.

Germany Trade & Invest accepts no liability for the actuality, accuracy, or completeness of the information provided.