Federal Ministry
for Economic Affairs
and Energy

Indo-German
Energy Forum

Energie wende
Switch to the Future

From GW to GWh – Germanys transition towards 65% power from renewables by 2030

Dr. Christine Falken-Grosser

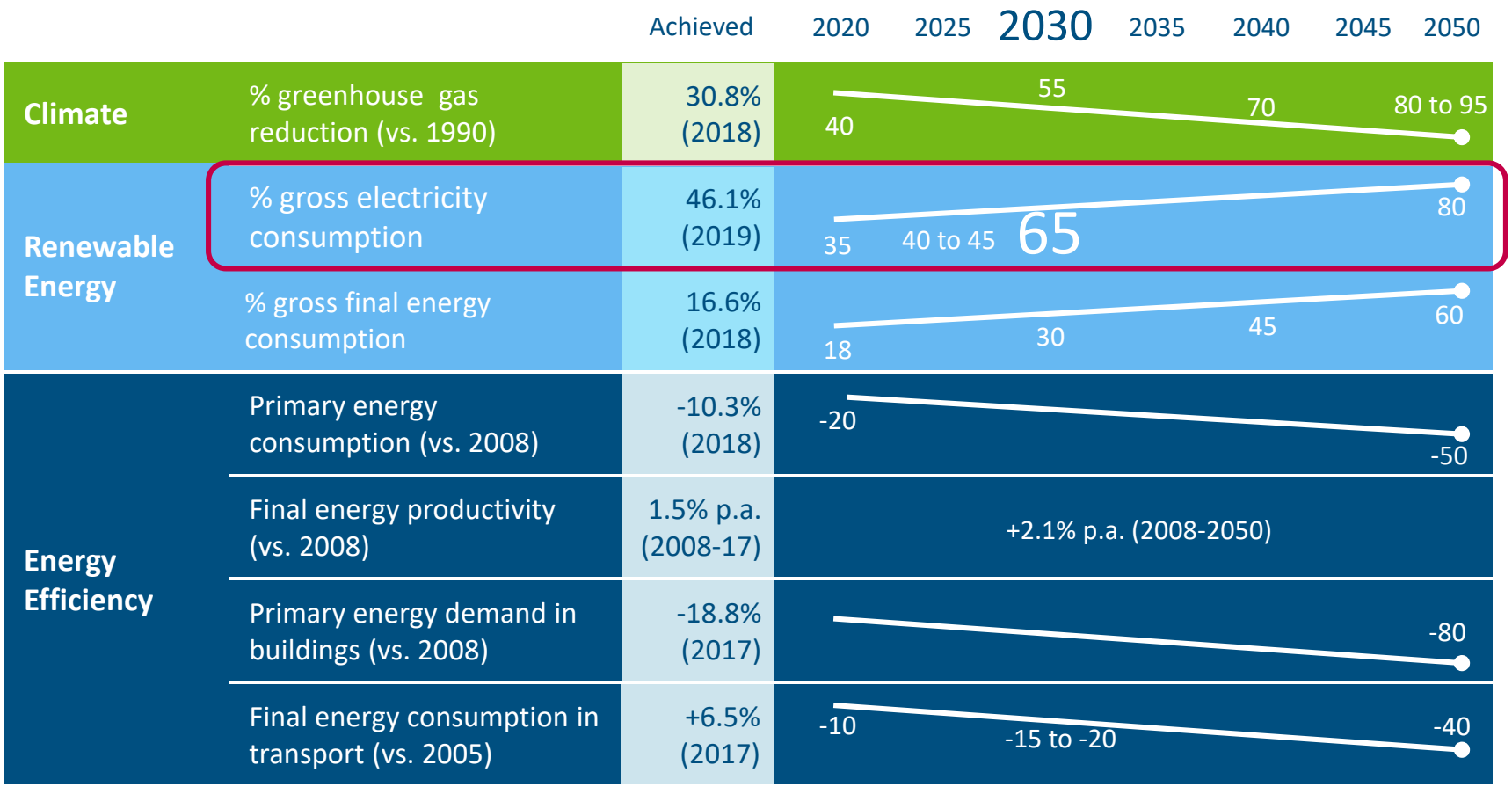
Head of Division Bilateral Energy Cooperation

Federal Ministry for Economic Affairs and Energy

www.bmwi.de

at India Smart Utility Week

The *Energiewende* is Germany's long-term energy and climate strategy



Source: BMWi 2016, UBA 2019, AGEB 2018, Fraunhofer ISE 2020

Federal Ministry for Economic Affairs and Energy

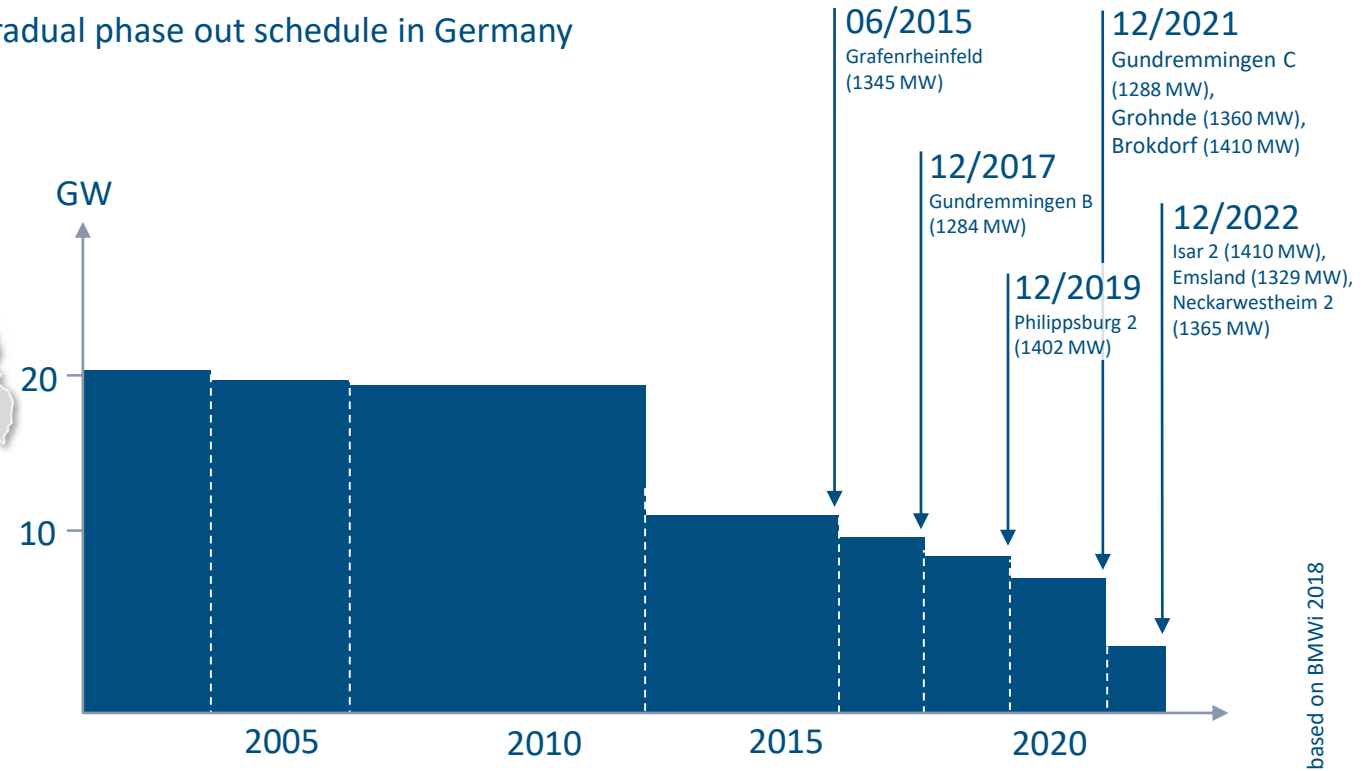
Energiewende Switch to the Future

Germany is gradually phasing out nuclear power up to 2022

Nuclear power plants and gradual phase out schedule in Germany

already retired

scheduled for retirement



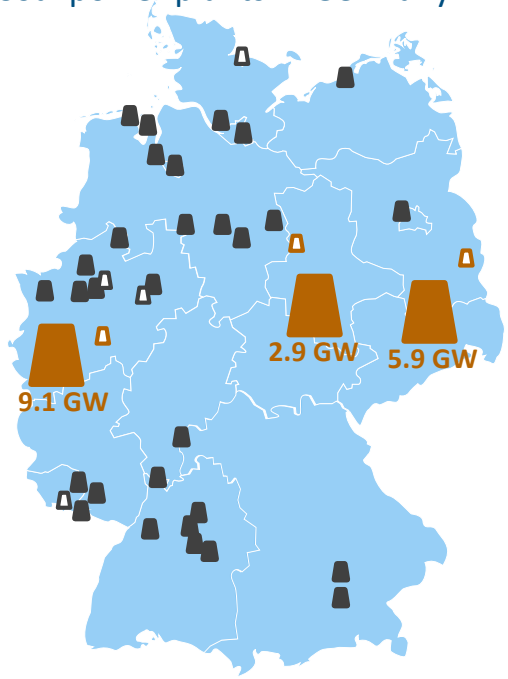
Source: Navigant 2019 based on BMWi 2018

Federal Ministry for Economic Affairs and Energy

Energiewende Switch to the Future

German government agrees on total coal phase-out by 2038

Coal power plants in Germany

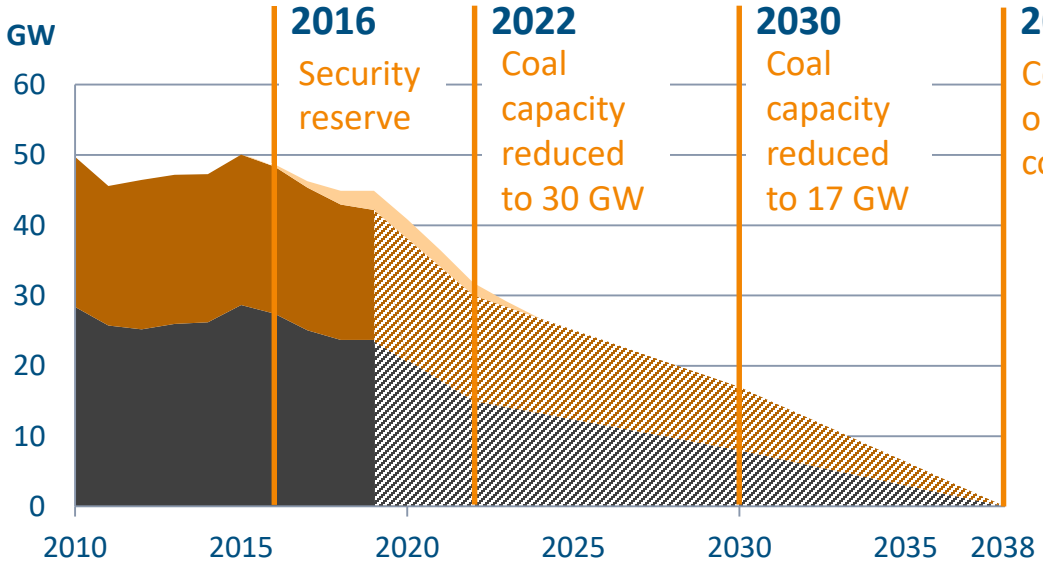


Lignite

Hard coal

By 2020: decommissioning / transition to security reserve

Recommended development of net installed coal capacity



Lignite – net installed capacity

Hard coal – net installed capacity*

Lignite – recommended capacity development

Hard coal – recommended capacity development*

Security reserve (only lignite)

* *includes grid reserve capacity*

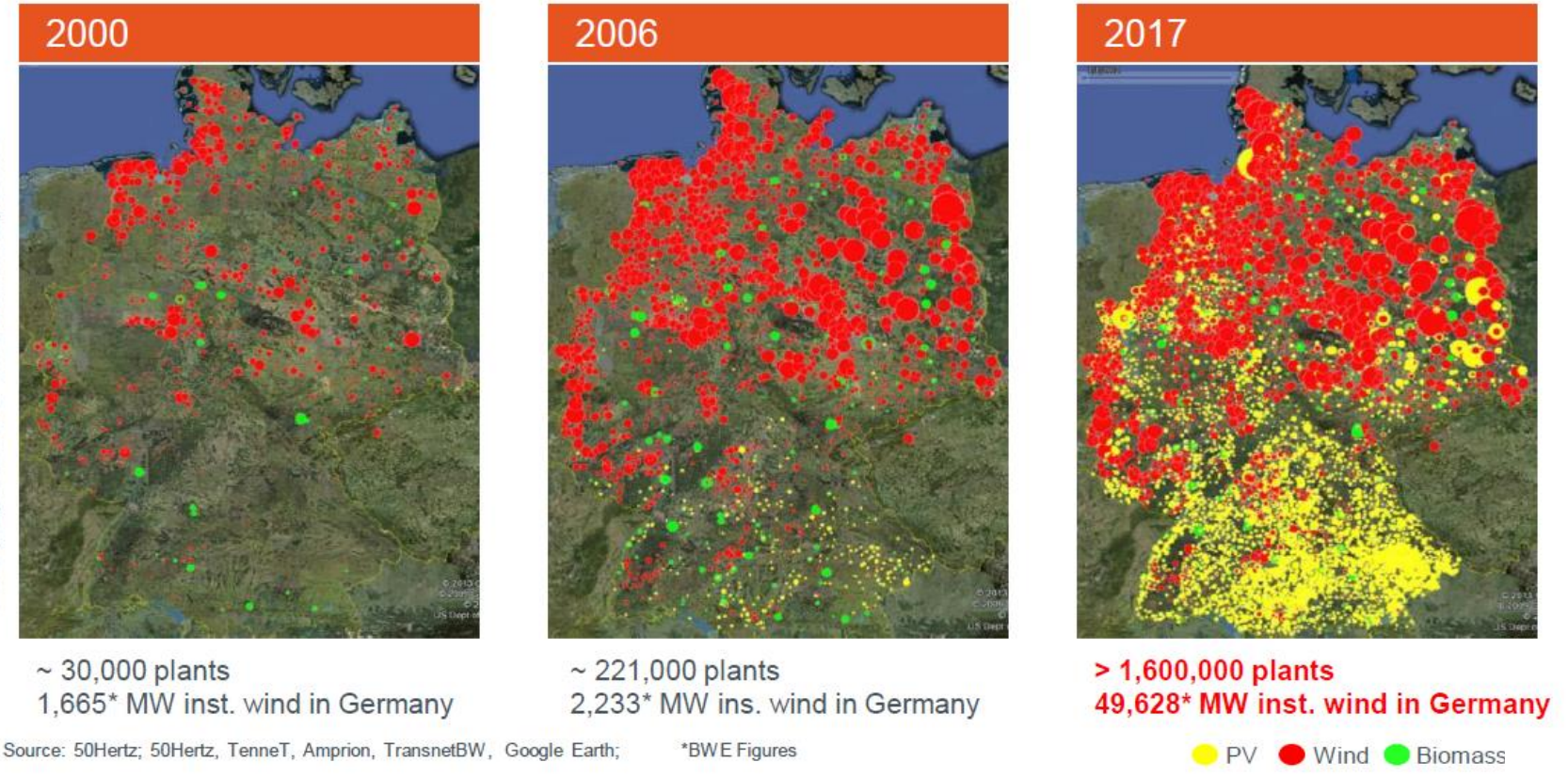
Source: Navigant 2019 based on Kommission WSB 2019 and DIW/Wuppertal Institut/Ecologic 2018

Federal Ministry for Economic Affairs and Energy

Energiewende Switch to the Future

Massive RE capacity increase over the last 20 years reaching 49 GW PV, 53 GW Wind Onshore & 7.5 GW Wind Offshore (2019*)

Area proportional to the installed capacities



Source: 50Hertz; 50Hertz, TenneT, Amprion, TransnetBW, Google Earth; *BWE Figures

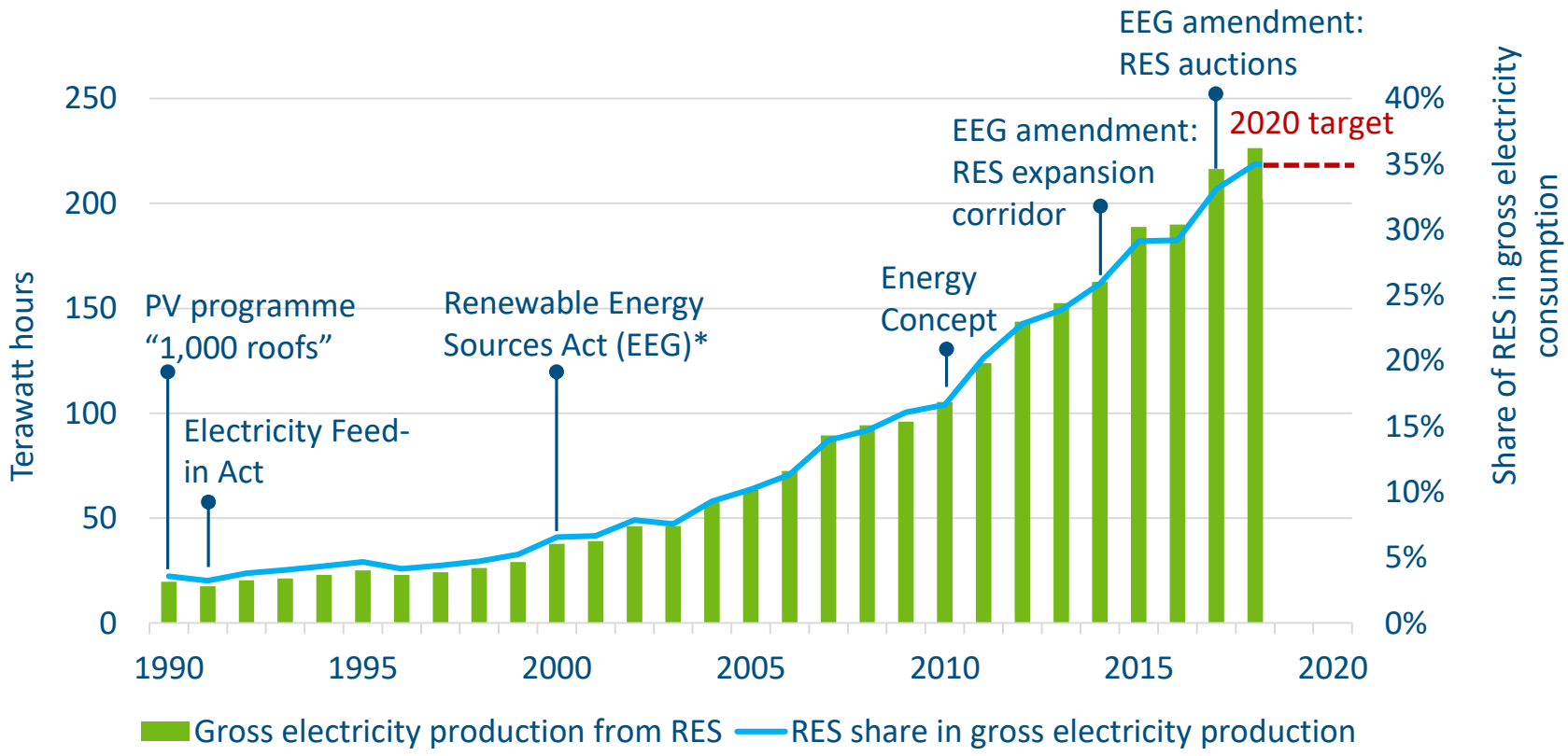
Source: 50Hertz
**Fraunhofer ISE, 2019*

Federal Ministry for Economic Affairs and Energy

Energie wende Switch to the Future

Continuous policy development has fostered the deployment of renewables in Germany

Electricity generation from renewable energy sources (RES) and political milestones



Source: Navigant 2019 based on BMWi 2019

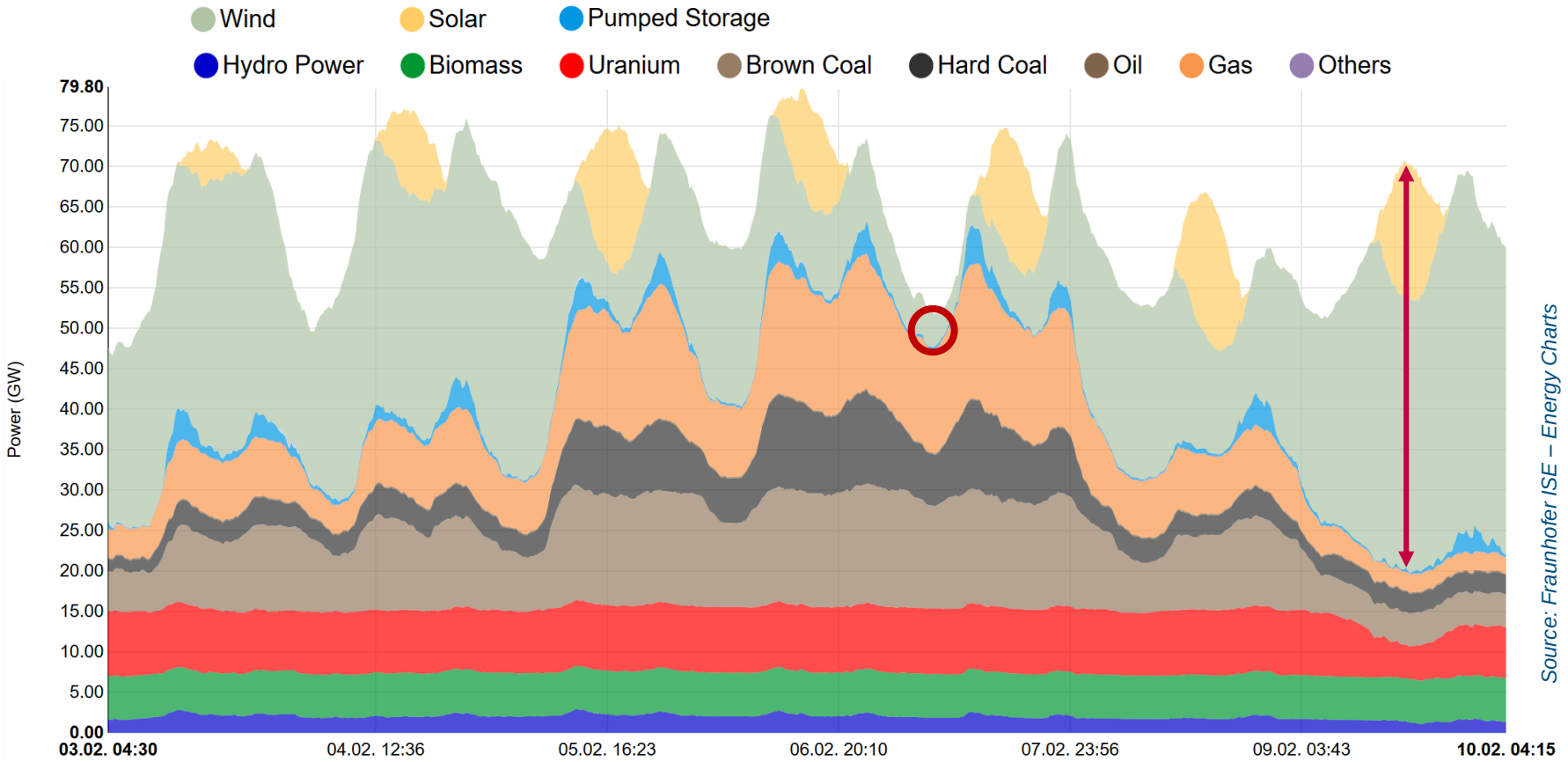
Federal Ministry for Economic Affairs and Energy

Energiewende Switch to the Future

** EEG amendments in 2004, 2009 and 2012 are not depicted.*

Increasing shares of RE require flexibility of the electricity system

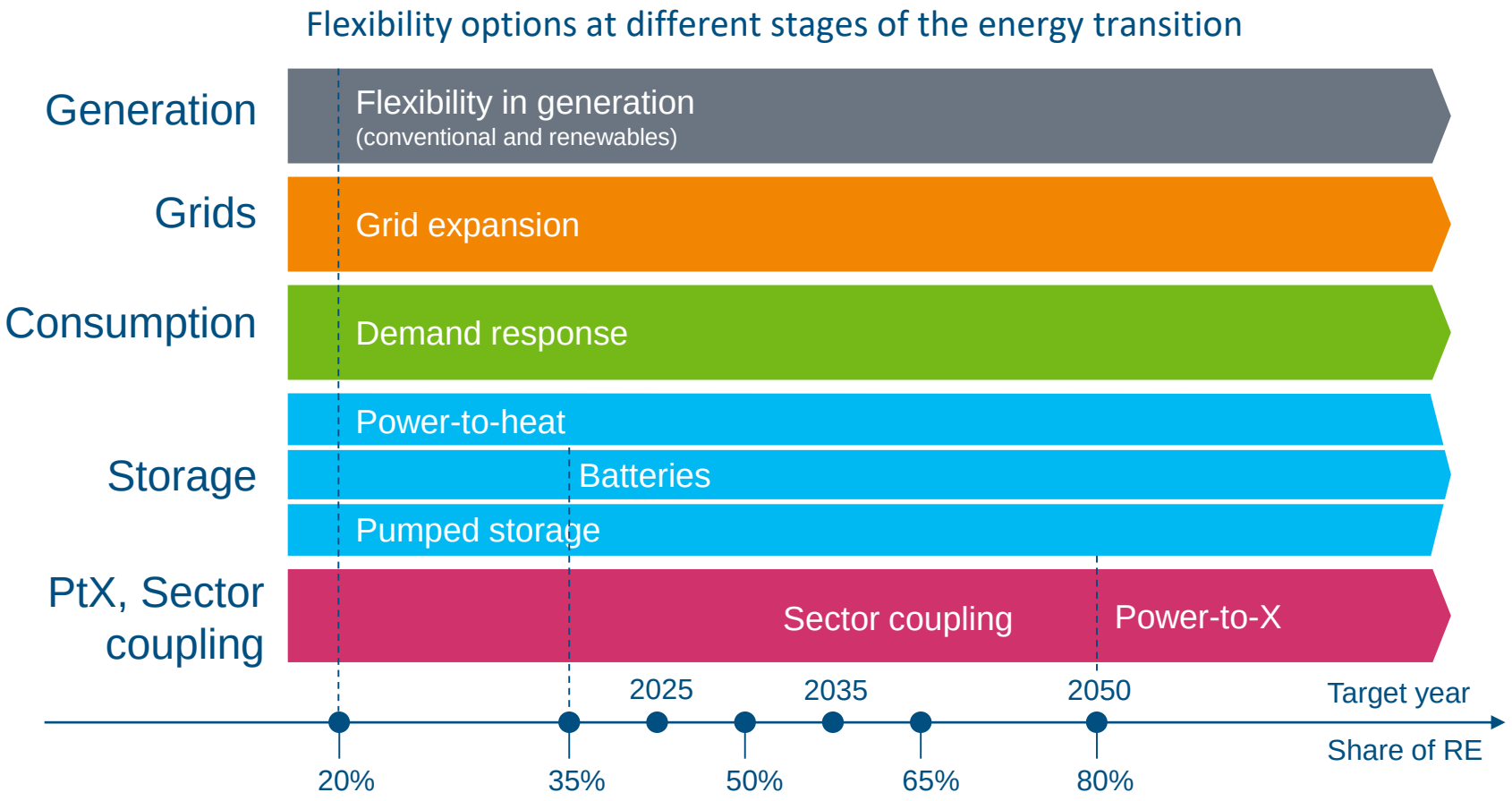
Snapshot of weekly electrictiy production in February 2020 (winter)



Federal Ministry for Economic Affairs and Energy

Energiewende Switch to the Future

Flexibility options are key to making the system renewables-ready



Source: Navigant 2019 based on BMWi 2018

Federal Ministry for Economic Affairs and Energy

Energiewende Switch to the Future

Federal Ministry
for Economic Affairs
and Energy

Indo-German
Energy Forum

Energie wende
Switch to the Future

Thank you for your attention!

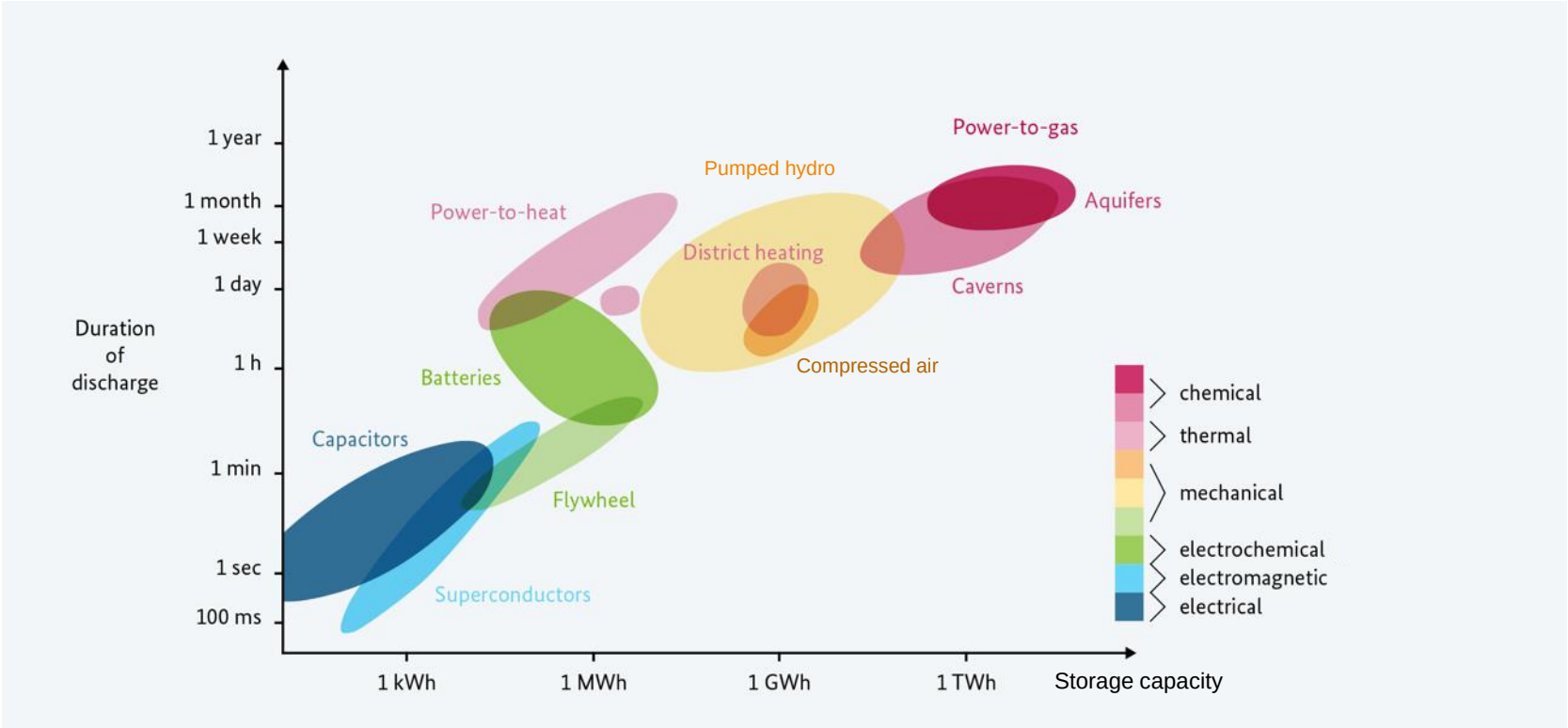
धन्यवाद

www.bmwi.de

Backup

Storage technologies differ widely in duration of discharge and storage capacity

Energy storage technologies by potential of storage capacity and duration of discharge



Source: Sterner, Stadler et al 2014

Federal Ministry
for Economic Affairs
and Energy

Indo-German
Energy Forum

Energie wende
Switch to the Future

Thank you for your attention!

धन्यवाद

www.bmwi.de