



The German National Energy and Climate Plan NECP

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16th International Summer School
NATIONAL ENERGY AND CLIMATE PLANS 2021-2030

Who I am

- ✎ Stemming from family whose origins is now on the border of Poland and Czech Republic (after having been on the border of Prussia and the Habsbourg Empire)
- ✎ Born in Bavaria (from a refugee and a Bavarian)
- ✎ Living in France, married to a French wife whose family has been fighting Germans for a century (and perhaps more). Two French children
- ✎ Working in Karlsruhe/Germany (sometimes also: China, Indonesia, Malaysia, Turkey, Mexico, Morocco, Egypt,)
- ✎ Teaching in Utrecht in the Netherlands

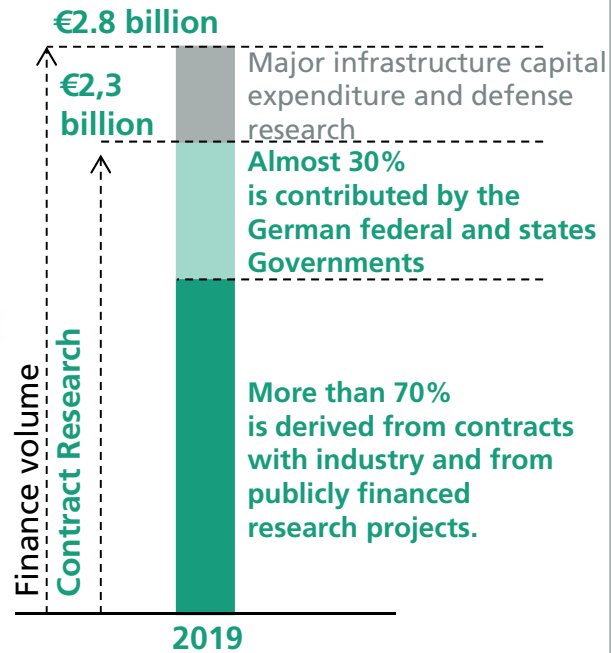
The Fraunhofer-Gesellschaft at a Glance

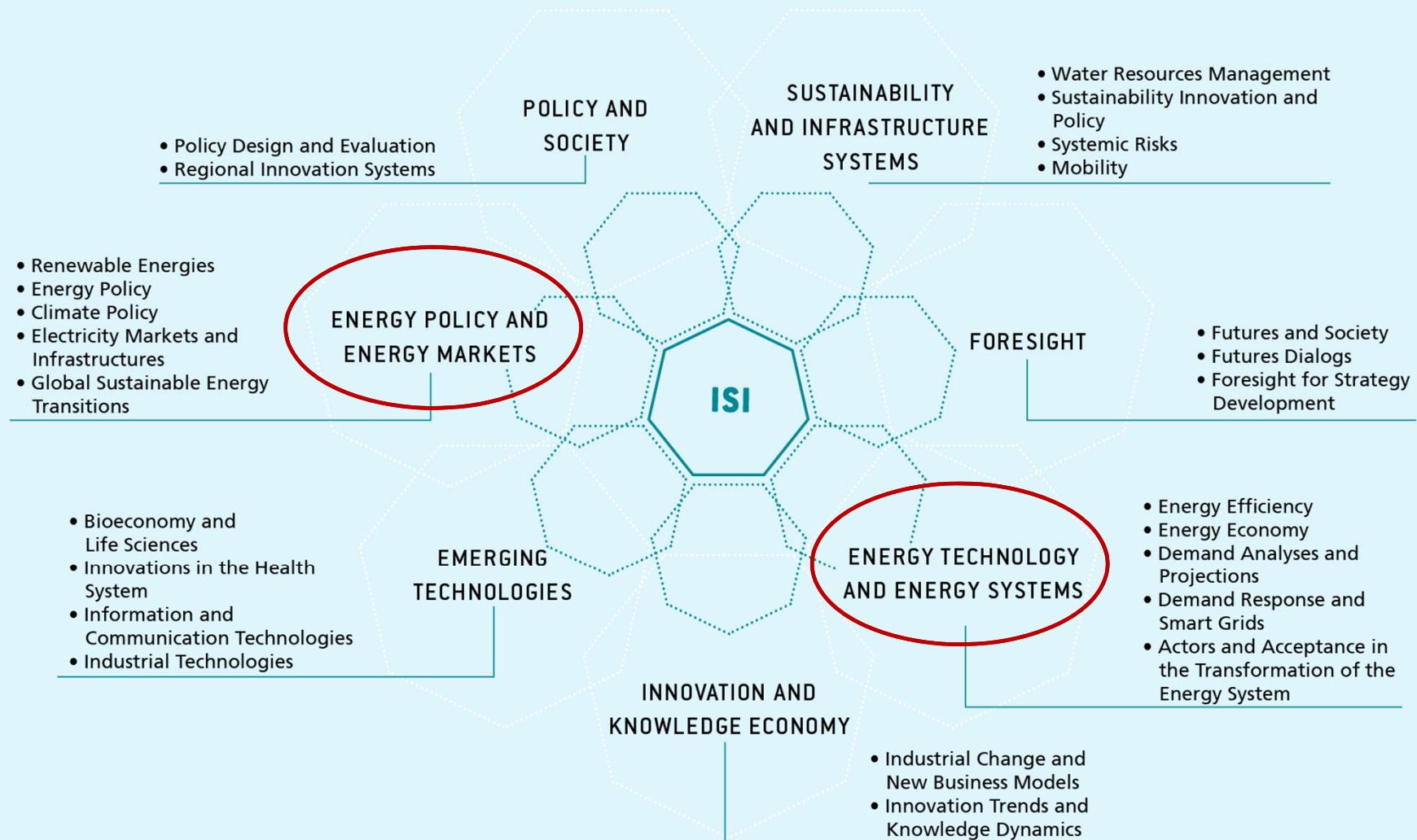
The Fraunhofer-Gesellschaft undertakes applied research of direct utility to private and public enterprise and of wide benefit to society.


28000 staff


74 institutes and research units

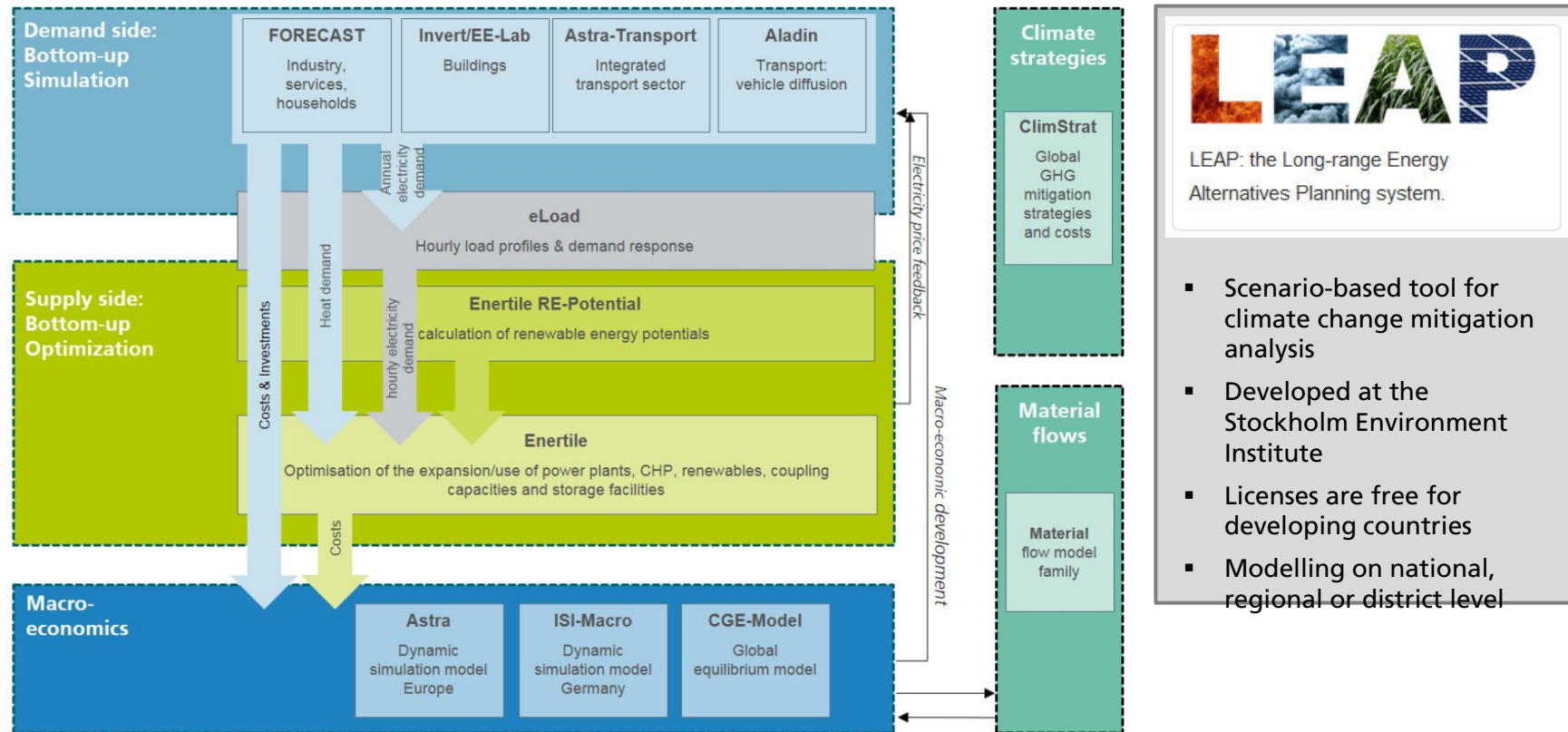
Main locations ●
Other locations ○





Energy system models at Fraunhofer ISI

Commercial software



<https://www.isi.fraunhofer.de/de/competence-center/energiepolitik-energiemaerkte/modelle.html>

National energy and climate plans (NECPs)

- ✎ To meet the EU's energy and climate targets for 2030, EU Member States need to establish a 10-year integrated national energy and climate plan (NECP) for the period from 2021 to 2030.
- ✎ Introduced under the Regulation on the governance of the energy union and climate action (EU/2018/1999), the rules requires the final NECP to be submitted to the Commission by the end of 2019.

Areas covered by the NECPs

- ∞ The national plans outline how the EU Member States intend to address (5 dimensions of the Energy Union):
- energy efficiency
 - renewables
 - greenhouse gas emissions reductions
 - interconnections/internal market
 - research and innovation

Process

- ✎ The governance regulation required that all EU countries submit their draft plans for the period 2021-2030 to the Commission by the end of 2018 and the final plans by the end of 2019, taking account of the Commission's assessment and recommendations on the draft plans.
- ✎ Each country must then submit a progress report every two years.
- ✎ The Commission will, as part of the energy union report, monitor EU progress as a whole towards achieving these targets.
- ✎ To better develop and implement the plans, the Member States must consult citizens, businesses and regional authorities in the drafting and finalisation process.

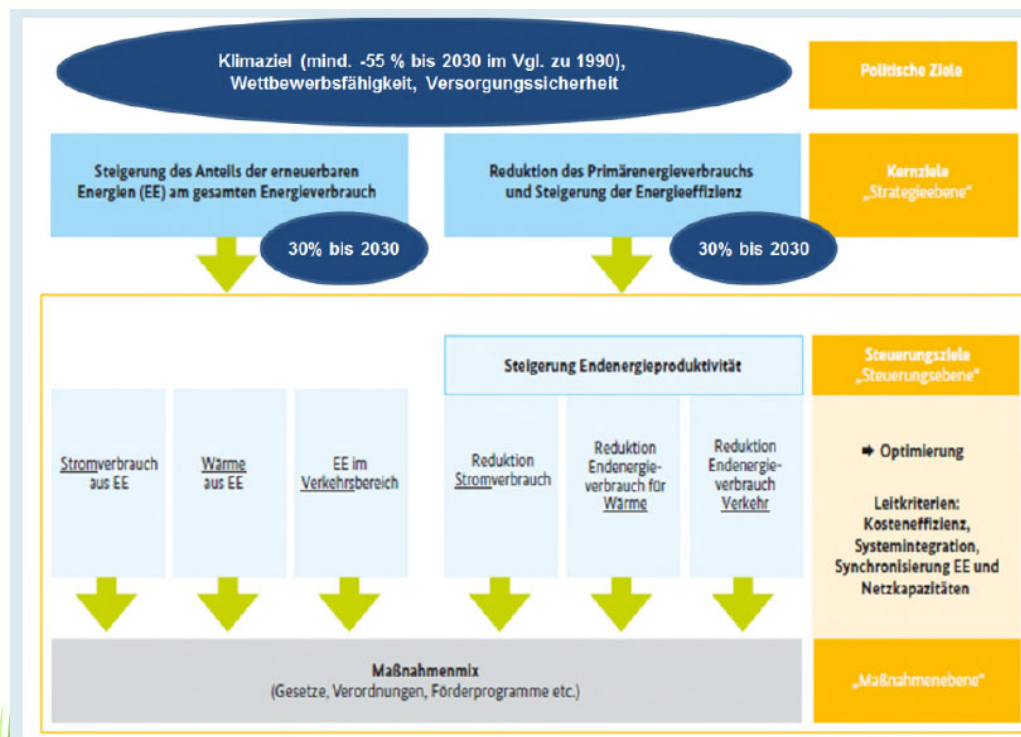
European Climate & Energy Targets

EU Targets	2020	2030
Emissions reduction	20%	40%
Share of renewables	20%	32%
Energy efficiency	20%	32.5%

To be
increased
under Green
Deal: 50/55%



German Targets in the NECP



- Climate target: -55% in 2030 (compared to 1990). Climate neutrality by 2030
- Renewables share in 2030: 30%
- Reduction in Primary Energy: - 30% compared to 2008

Sectoral contributions to GHG reduction

Sector	2019 status (cut from 1990 levels)	2030 target (cut from 1990 levels)
Energy	45.5 %	62.5 %
Buildings	41.9 %	66.7 %
Transport	0.6 %	42.1 %
Industry	33.8 %	50.7 %
Agriculture	24.4 %	35.6 %
Other	76.3 %	86.8 %
Total	35.7 %	56.6 %

Note: Without emissions from land use, land use change and forestry (LULUCF), 2019 data preliminary.

www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets

Indicative Targets for Renewables Electricity

2020	2025	2030
35% (gemäß EEG 2017) 43 % (prognostiziert)	40-45% (gemäß EEG 2017) 48–54 % (prognostiziert)	65 %

- 2020: now 43% reached (35% intended)
- 2025: 48-54% expected (40-45% intended)
- 2030: 65%

Indicative Targets for Renewables Transport

2020	2025	2030
9%	13%	27%

- Use of renewable electricity or sustainable biofuels (+ energy efficiency).
- Market uptake of emobility, especially in road traffic.
- Synthetic fuels: hydrogen / fuel cell or gas powered vehicles > National hydrogen strategy

Indicative Targets for Renewables Heat

2020	2025	2030
14 %	20,5 %	27 %


- ∞ Heat in Buildings
- ∞ Heat in the industrial sector
- ∞ District heating systems

Expert Assessment of Measures 2019

June 2019

Summary of the assessment by the expert commission tasked with monitoring the progress of Germany's energy transition - Reaching targets by 2020/2022

Dimension	Indicator	
Climate action	Greenhouse gas emissions reduction (lead indicator)	●
Nuclear phase-out	Nuclear power plants in operation (lead indicator)	●
Renewable energy	Increase renewables share in gross final energy consumption (lead indicator)	●
	Increase renewables share in gross power consumption	●
	Increase renewables share in heat consumption	●
	Increase renewables share in transport sector	●
Energy efficiency	Reduce primary energy consumption (lead indicator)	●
	Final energy productivity	●
	Reduce heat demand in buildings	●
	Reduce final energy consumption in transport sector	●
Supply security	Transmission grid expansion (lead indicator)	●
	Re-dispatch measures	●
	System Average Interruption Duration Index - power and gas	●
Price	Final consumer expenditure for power (of GDP) (lead indicator)	●
	Final consumer expenditure for heating services	●
	Final consumer expenditure in road traffic	●
	Power unit costs for industry compared internationally	●
	Energy cost burden on households	●
Acceptance	General approval of the goals of the energy transition (lead indicator)	●
	Approval of the implementation of the energy transition	●
	Approval based on how energy transition personally affects citizens	●
Target fulfilment	● likely ● not guaranteed ● unlikely	

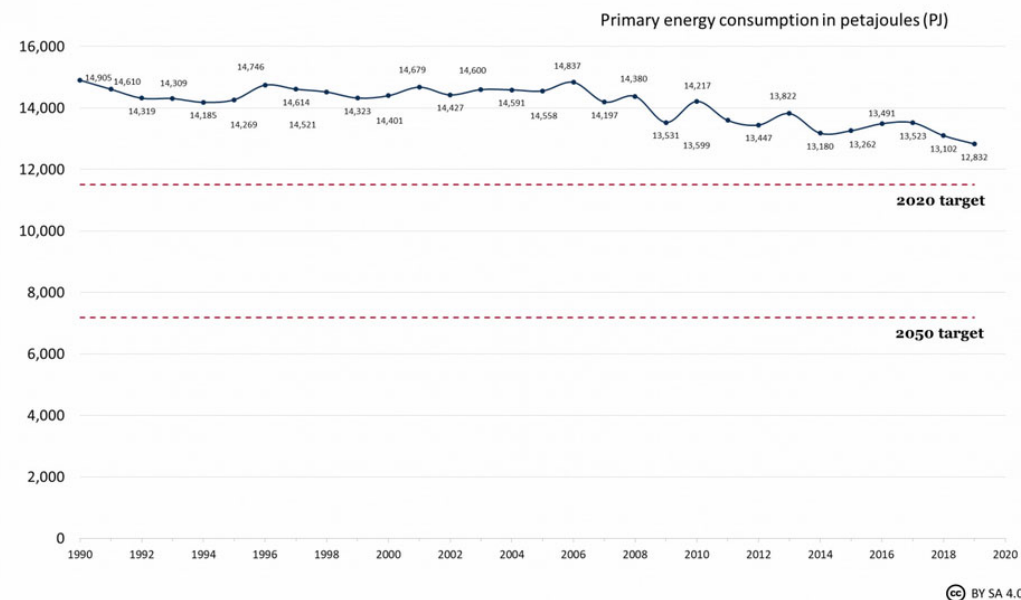
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Energy Efficiency : the weakest part

Development of Germany's primary energy consumption 1990 - 2019.

Data: AG Energiebilanzen 2020

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Important measures

German government coalition's 2030 climate package

key features were presented on 20 September 2019



details

Climate Action Law

- major framework climate law
- enshrines 2030 greenhouse gas reduction target into law (-55%)
- assigns sector-specific annual emissions budgets for 2020-2030
- says Germany will "pursue" greenhouse gas neutrality by 2050
- sets up expert commission on climate issues

details



Climate Action Programme 2030

- stipulates measures to reach 2030 climate targets for each sector
- includes support programmes (e.g. for building modernisation)
- includes system for CO2 pricing in transport/buildings
- measures to relieve citizens/industry (e.g. lowering power costs)
- includes regulatory measures (e.g. efficiency standards)

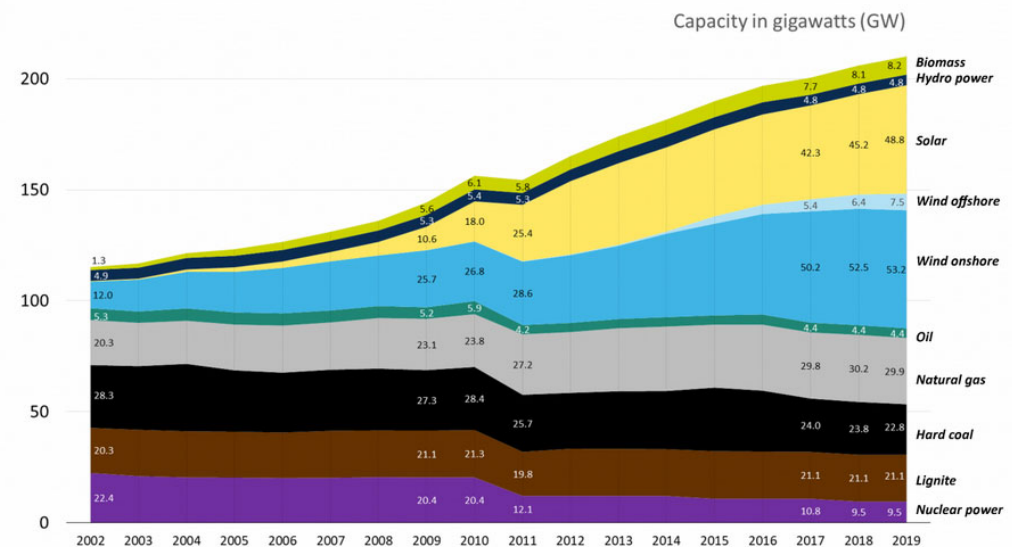
- ∞ framework Climate Action Law and a Climate Action Programme 2030
- ∞ pricing system for carbon emissions in transport and buildings
- ∞ coal exit law: coal phase-out 2038 (nuclear phase-out finished end of 2022)
- ∞ "Without the climate action programme, Germany would be able to reduce its emissions by only 41 percent" in 2030 (BMWi)

Coal phase-out

∞ coal exit law:
coal phase-out
2038
(nuclear phase-out
finished end of 2022)

Installed net power generation capacity in Germany 2002 - 2019.

Data: Fraunhofer ISE 2019.



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Important measures

Industry:

- EU ETS
- EU Innovation Fund
- D: Decarbonisation programme industry
- Forthcoming: carbon contracts for difference

Transport/Buildings

- ETS/Carbon tax for transport

Grid stability / “flexibility enablers” / Markets

- Grid expansion plan
- Load management
- Energy storage
- Market integration of renewables / market arrangements for flexibility

EU ETS

- ∞ GHG target of 40% (perhaps later 50/55%)
 - Emission trading scheme (energy sector, carbon intensive industry) > European wide system
 - Effort Sharing decision (buildings, transport, less carbon-intensive industry) > targets on a country basis, differentiated according to the wealth of a country
- ∞ Germany: Emission Trading Scheme for buildings and transport...

D ETS Buildings/Transport: What and who will be priced?

- ∞ Transport and heating fuels such as petrol, diesel, heating oil, natural gas and coal
- ∞ covers heating emissions in buildings sector and of energy and industry facilities not covered by EU ETS
- ∞ covers transport emissions except for air transport
- ∞ does not cover non-fuel emissions (e.g. methane in agriculture)
- ∞ participants are not emitters themselves, but companies that put fuels into circulation or suppliers of the fuels (upstream approach)
- ∞ government says this currently means about 4,000 companies will participate
- ∞ to avoid a double burden from the national system and the ETS, fuel deliveries to ETS facilities are exempt from the national price; where this leads to disproportionate administrative needs, there will be compensation

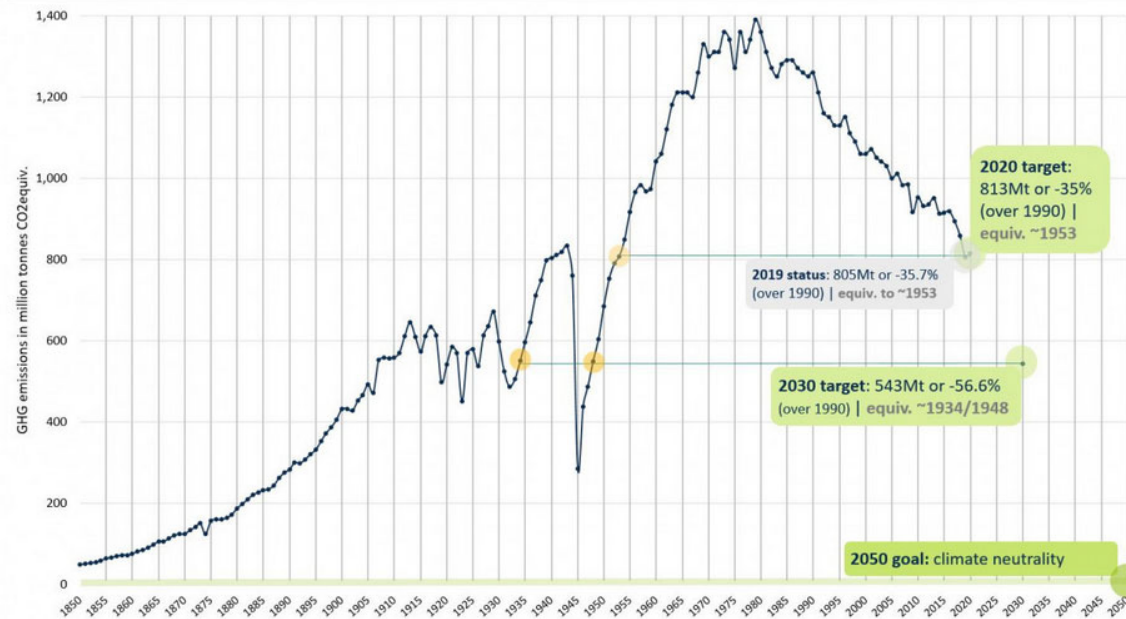
D ETS Buildings/Transport: The price...

- ✎ Emission allowances are transferable and can be traded. They will generally be auctioned. However, during an initial phase there will be a fixed price at which they are simply sold to companies (2021-2025).
- fixed price in 2021: 25 euros per allowance (tonne of CO₂ equivalents)
 - 2022: 30 euros, 2023: 35 euros, 2024: 45 euros, 2025: 55 euros
 - in 2026 in auctions, with a price corridor of 55 – 65 euros
 - from 2027: market price, with option for price corridors (to be decided in 2025)

Undeniably, there has been success but...

Germany's greenhouse gas emissions 1850-2019 and reduction targets

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<https://www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets>

Data: Gütschow, Johannes, Jeffery, Louise; Gieseke, Robert (2019): The PRIMAP-hist national historical emissions time series (1850-2016). V. 2.0. GFZ Data Services. <http://doi.org/10.5880/PIK.2019.001>; 2017-2019: UBA, 2020; Emission targets 2020, 2030, 2050: Climate Action Law (2019).

Please note: Both the historical GHG data and the current UBA data as well as the climate target values are without emissions from LULUCF; the two datasets do not follow exactly the same reporting standards but with a deviation in emission values of approx. 1% they are still very much comparable.

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Questions and discussion



Two interesting websites :

- On energy efficiency: ODYSSEE-MURE project on energy efficiency indicators and policies www.odyssee-mure.eu (Energy Efficiency First !!!)
- Clean Energy Wire <https://www.cleanenergywire.org/>



Thank you for your attention.

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