



Gas as an integral part of the EU
decarbonisation strategy: which
sources, challenges and
perspectives

Session II – What support is needed for the decarbonisation of energy intensive industries?

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The Paris climate agreement: key points

Temperatures

2100



- Keep warming “well below 2 degrees Celsius”
- Continue efforts to limit the rise in temperatures to 1.5 degrees Celsius”

Financing

2020-2025



- Rich countries must provide 100 billion dollars from 2020, as a “floor”
- Amount to be updated by 2025

Specialisation



- Developed countries must continue to “take the lead” in the reduction of greenhouse gases
- Developing nations are encouraged to “enhance their efforts” and move over time to cuts

Emissions goals

2050



- Aim for greenhouse gases emissions to peak “as soon as possible”
- From 2050: rapid reductions to achieve a balance between emissions from human activity and the amount that can be captured by “sinks”

Burden sharing



- Developed countries must provide financial resources to help developing countries
- Other countries are invited to provide support on a voluntary basis

Review mechanism

2025



- A review every five years. First mandatory world review: 2025
- Each review will show an improvement compared with the previous period

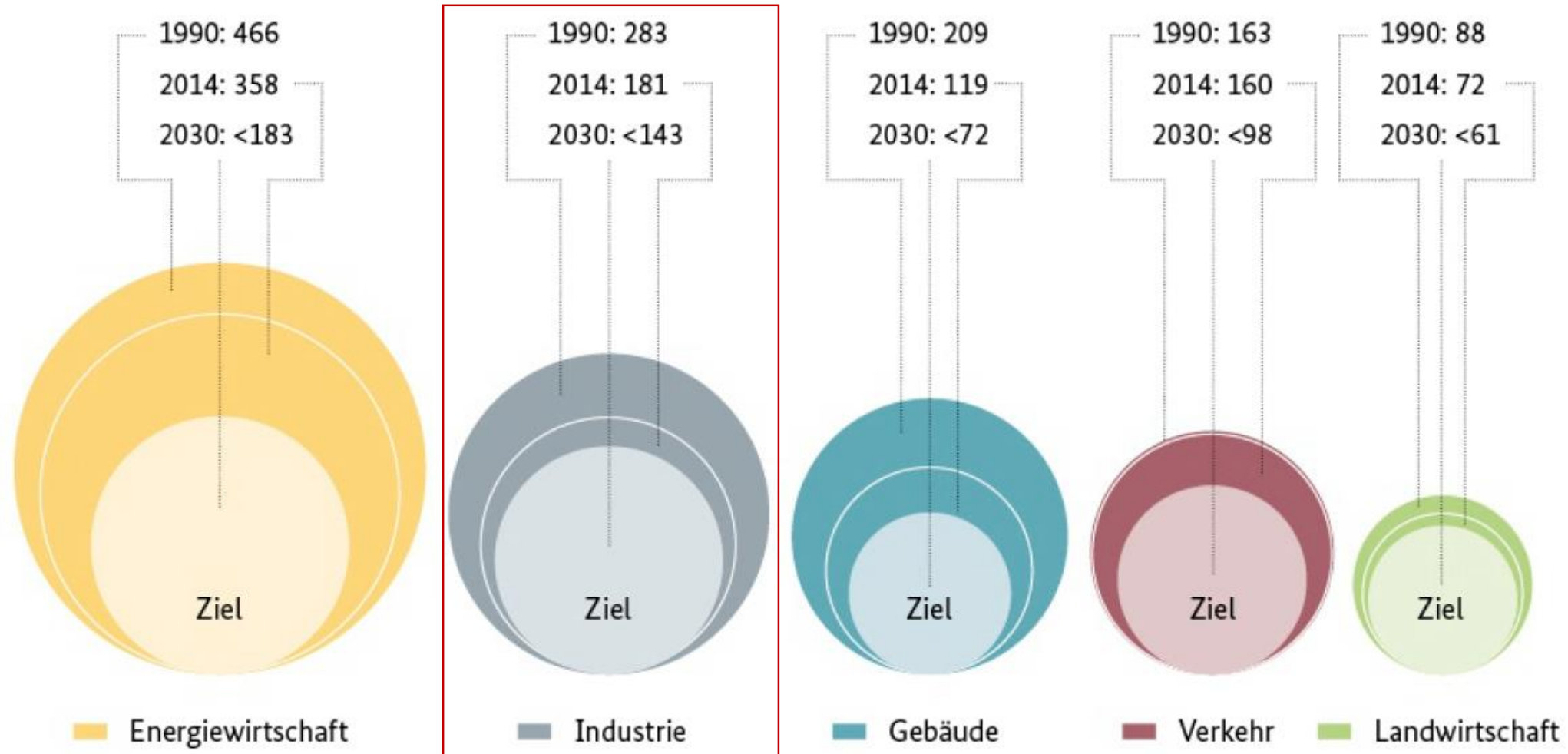
Climate-related losses



- Vulnerable countries have won recognition of the need for “averting, minimising and addressing” losses suffered due to climate change

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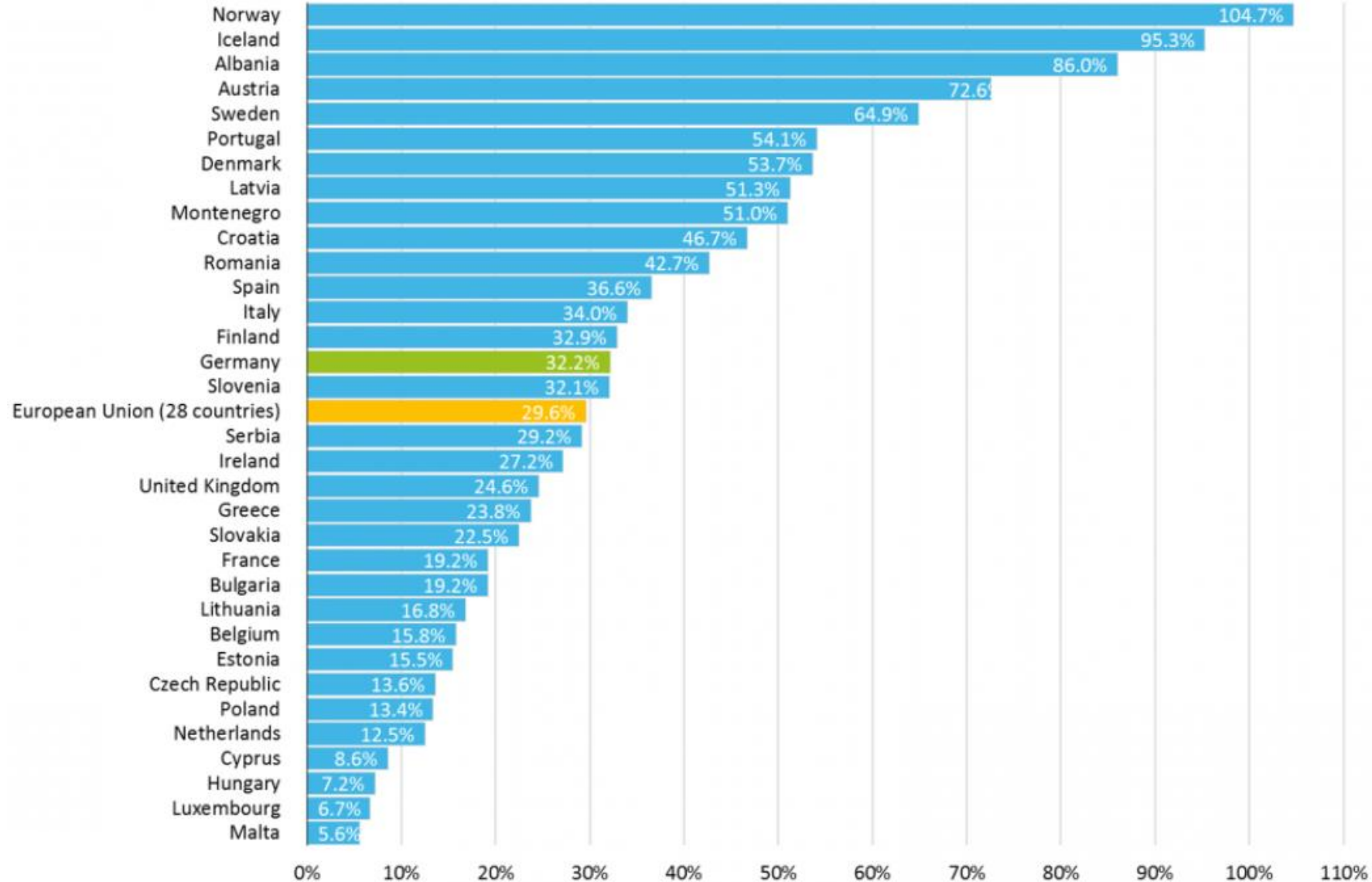
Climate Protection Plan Germany 1990 - 2030



Quelle: BMUB Klimaschutz in Zahlen 2017

Dargestellt sind die Sektorziele 2030 aus dem Klimaschutzplan 2050 (in Millionen Tonnen CO₂-Äquivalenten).

Increasing share of Renewables - 2016



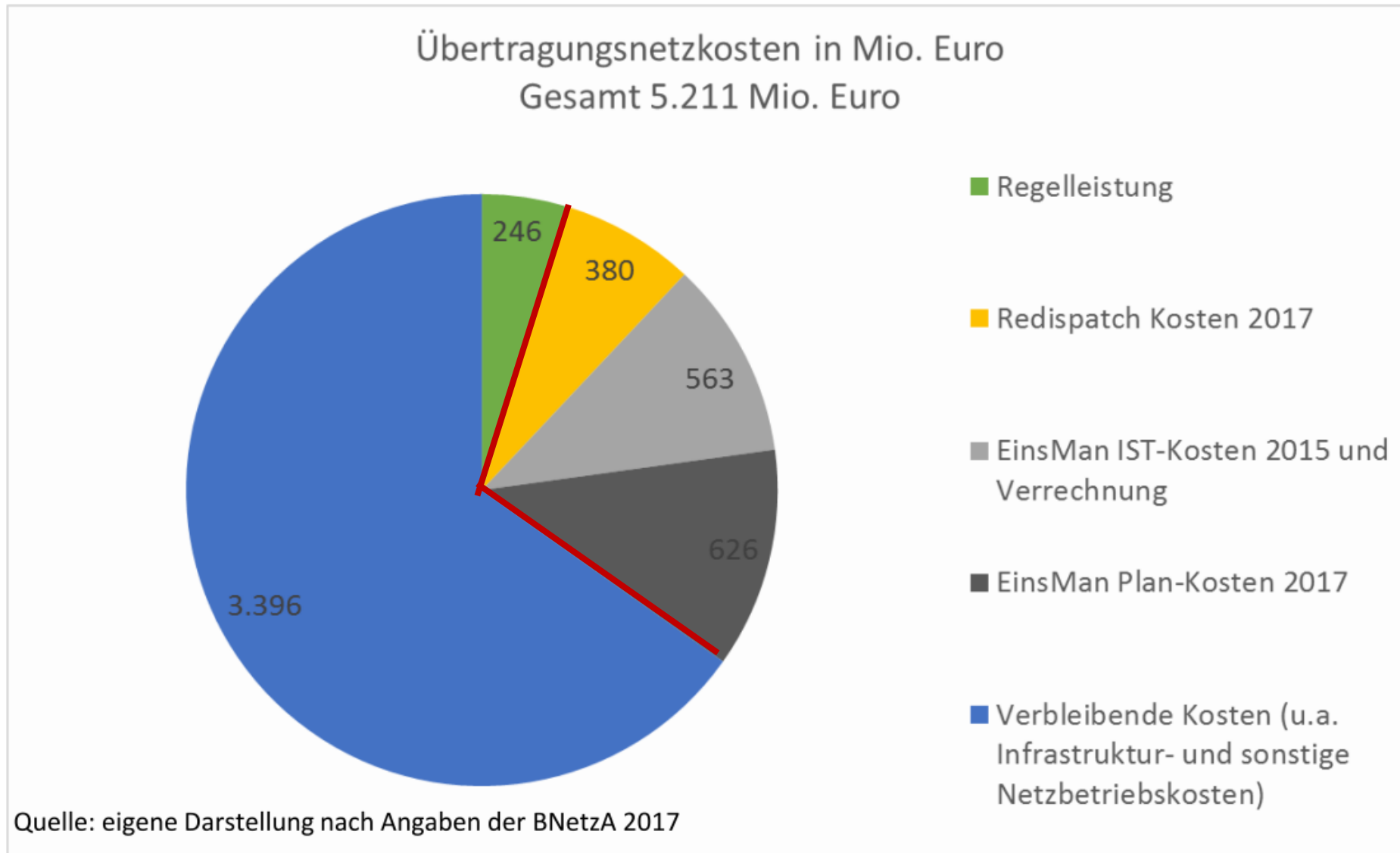
Installed Capacity Vs Load

Table 1: EU countries where the intermittent renewable electricity generation capacity exceeds the lowest load level, data from 2017

Country	Intermittent renewable electricity generation capacity	Highest electricity load	Lowest electricity load	Ratio of intermittent renewable capacity to load	
	MW			Highest load (%)	Lowest load (%)
BG	4032	7690	2739	52	147
CZ	4235	10900	4360	39	97
DE	110041	78710	35085	140	314
FI	7127	14374	5916	50	120
FR	48653	94497	30199	51	161
GB	37170	63626	21296	58	175
GR	8220	9674	3404	85	241
HR	2760	3079	1305	90	211
IE	3696	4907	1938	75	191
IT	55718	56584	19045	98	293
NL	8426	18620	7490	45	112
SE	26137	26224	8905	100	294
SI	1446	2270	937	64	154
SK	2680	4541	2320	59	116

Source: ENTSO-E (2018) Statistical Factsheet 2017 (GB represents data as sum of England, Northern Ireland, Scotland and Wales).

Intermittency Costs in Germany



Taxes and Network Costs in Electricity

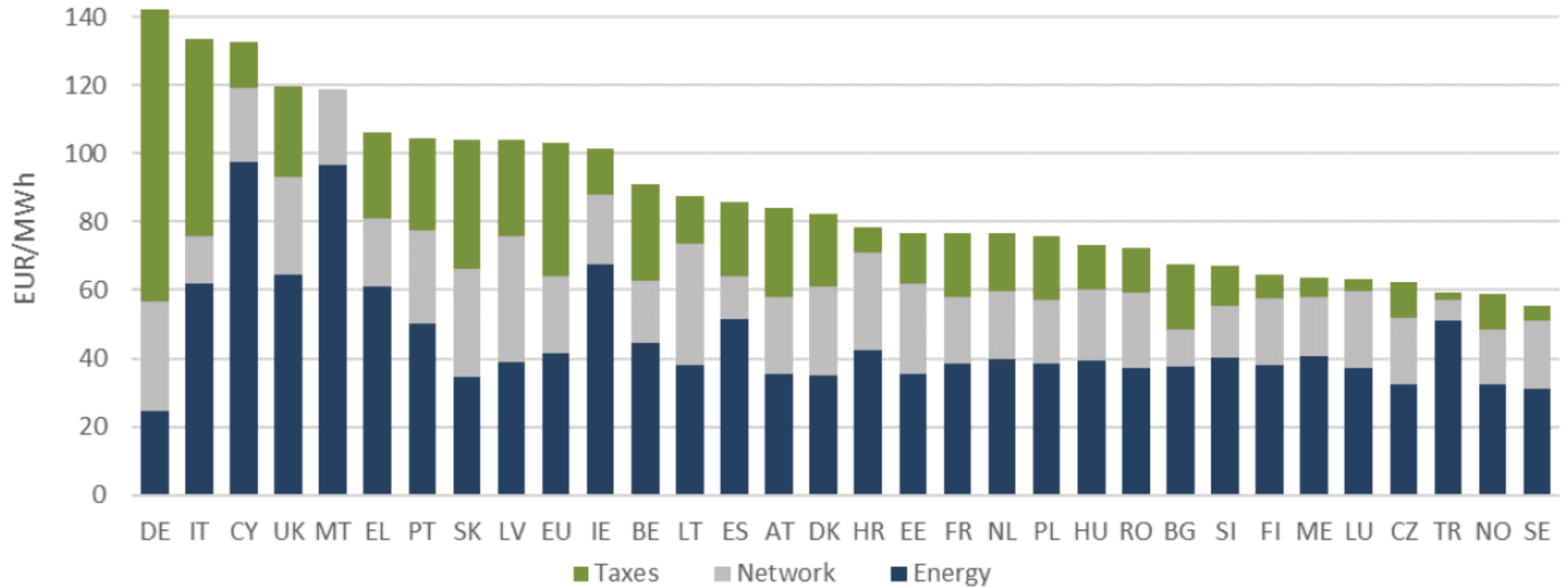


Figure 3 — Industrial electricity prices in 2017 — Source: DG ENER in-house data collection

What can be electrified?

Figure 7: The maturity of decarbonisation strategies for various industrial processes

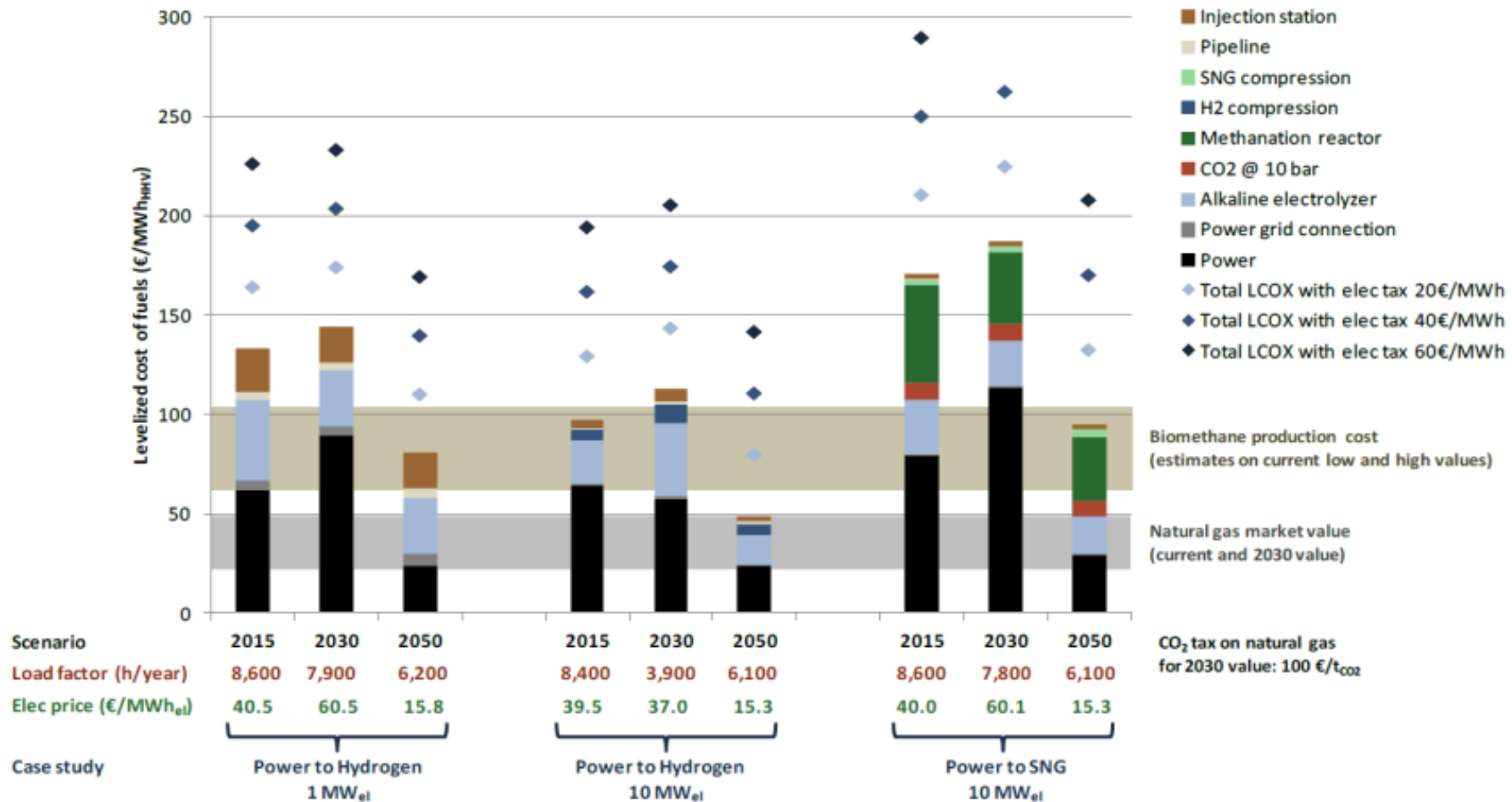
 Applied at industrial scale sites
 Technology (to be applied) in pilot site
 (Applied) research phase

		Electrification of heat	Hydrogen as a feedstock	Biomass as fuel or feedstock	CCS ²	Other innovations ³
Feedstock and fuel	Cement					   Alternative feedstocks ⁴
	Iron and steel					 Electrolysis for iron reduction
	Ammonia					 Methane pyrolysis for hydrogen production
	Ethylene					 Electrochemical processes for monomer production
Fuel	Other industry ¹ (heat)					 Medium temperature heat pumps

Source: Eurelectric, 2018⁶⁹.

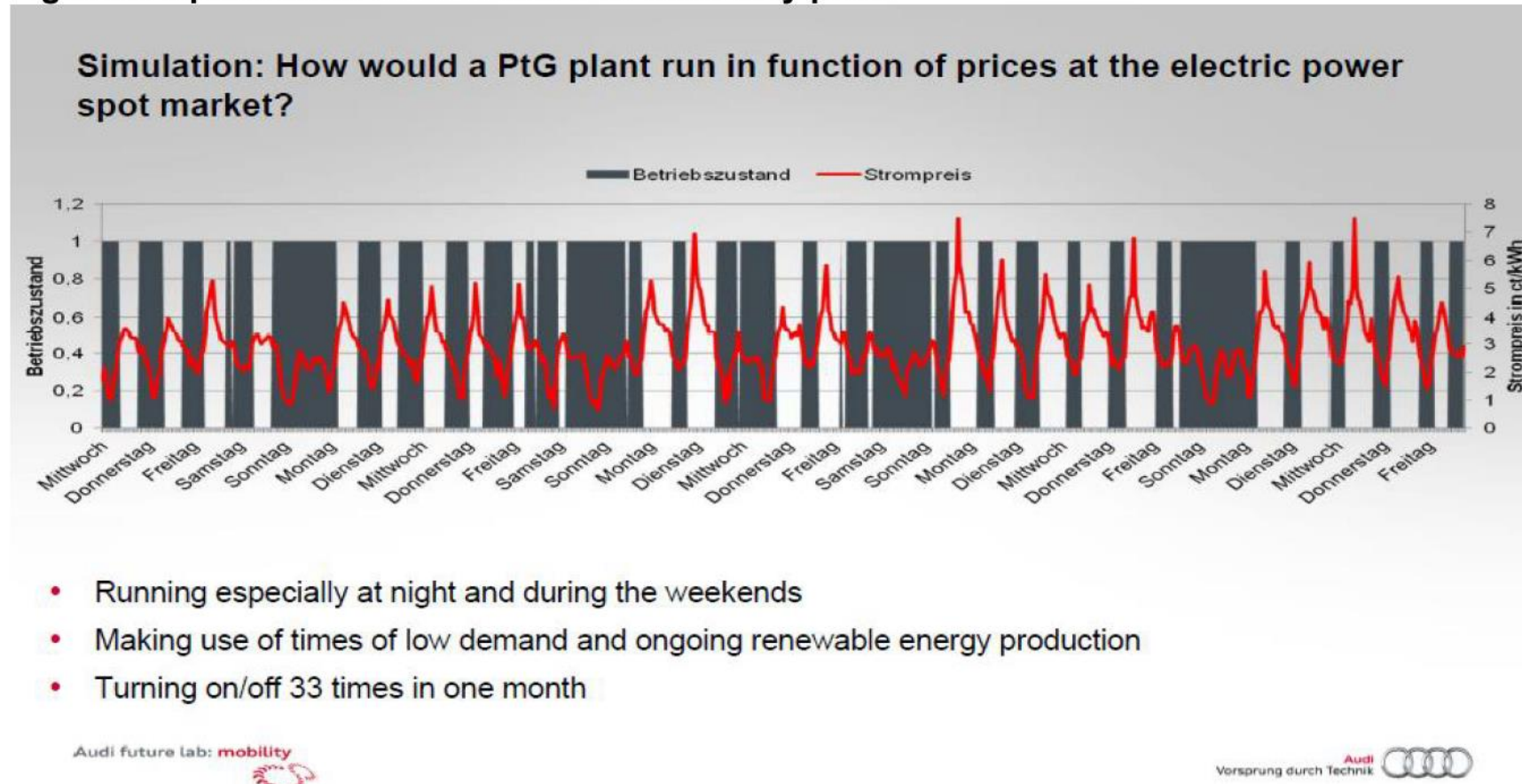
Costs of Power to Gas – ENEA study

Levelized cost of gas for grid injection from PtG plants at optimal load factors



Power-to-Gas Pilot Plant Audi

Figure 3: Operation of Audi Werlte and electricity price³⁹



45,50 Euro/MWh
← **EWE**netz



Happy to answer any questions



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