Energiewirtschaftliches Institut
an der Universität zu Köln

The Potential of Natural Gas As a CO_2-Mitigation Option

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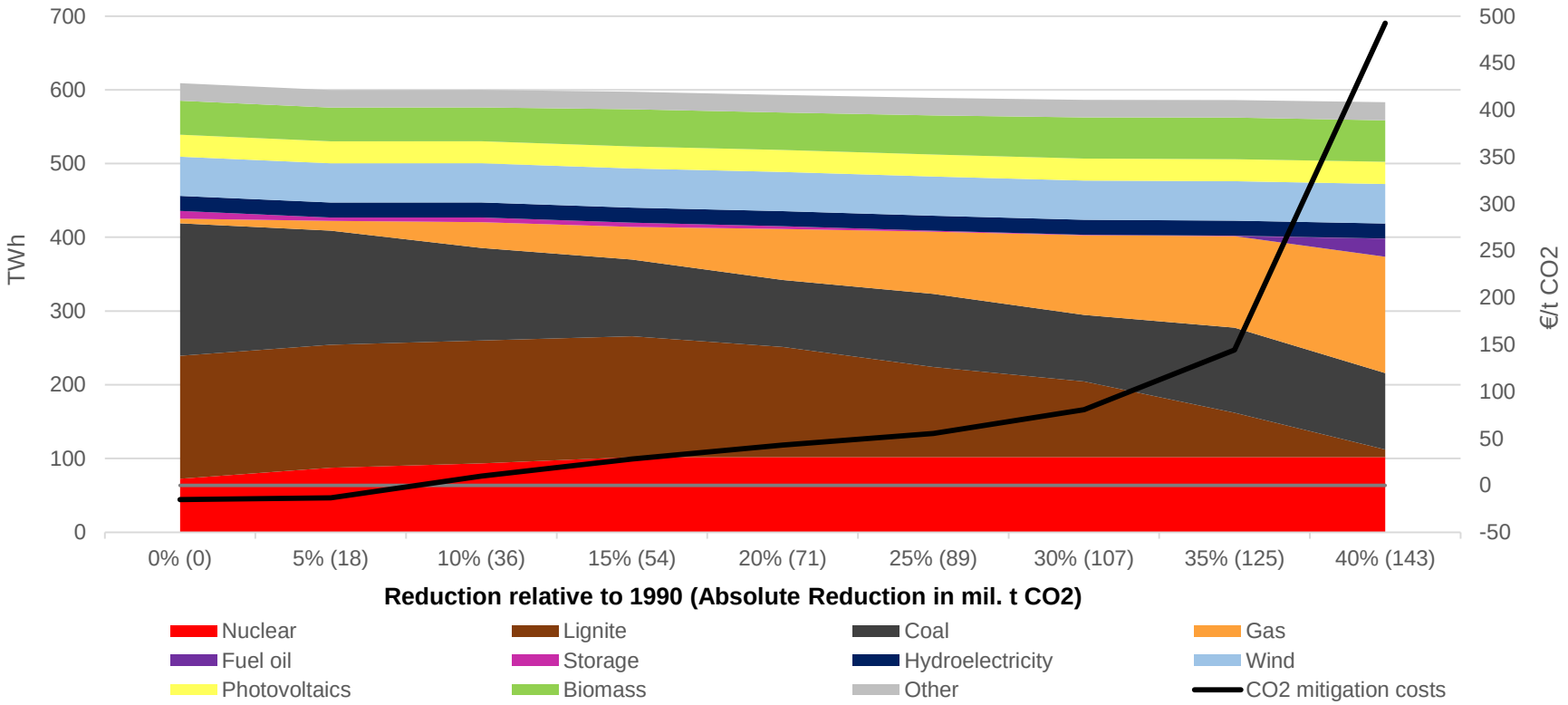
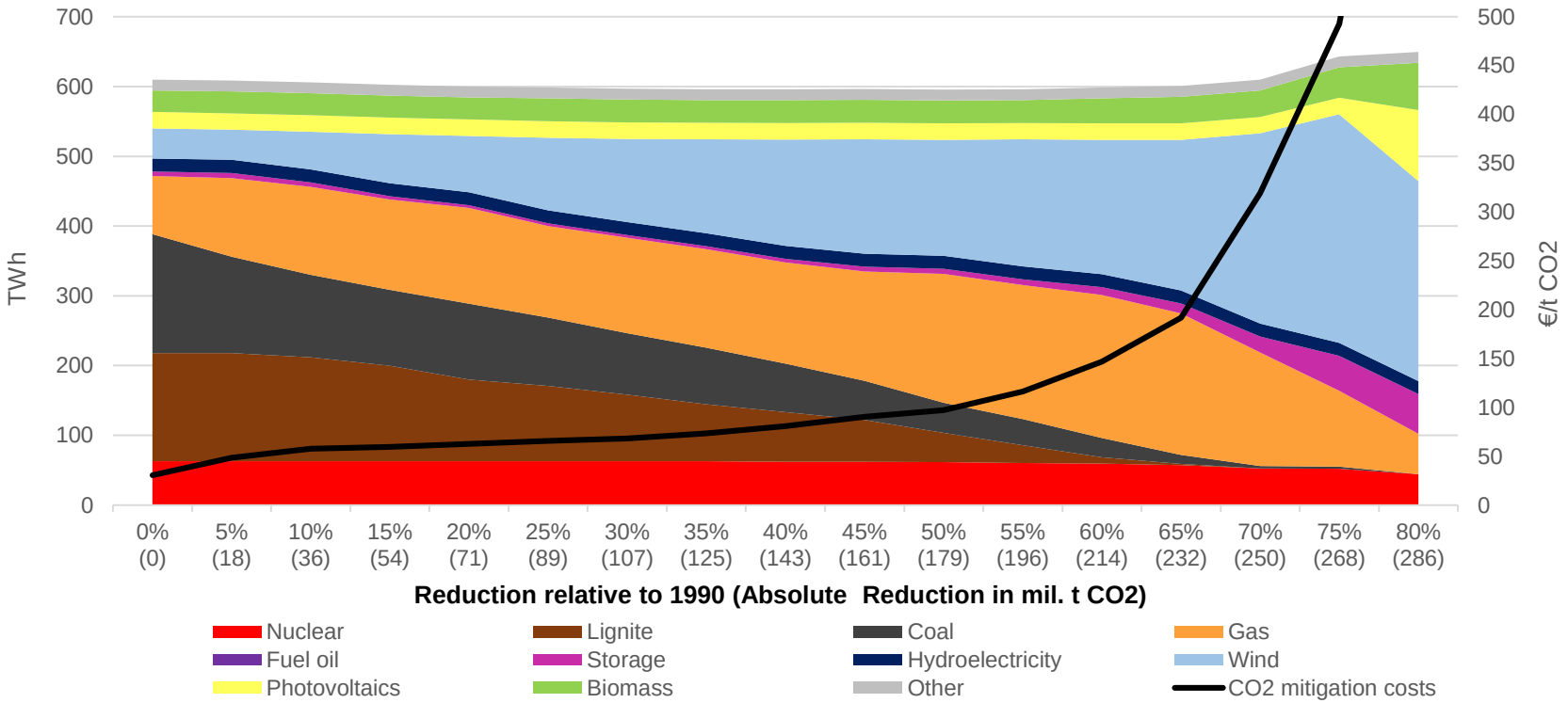
Power: Results for the Current Plant Fleet



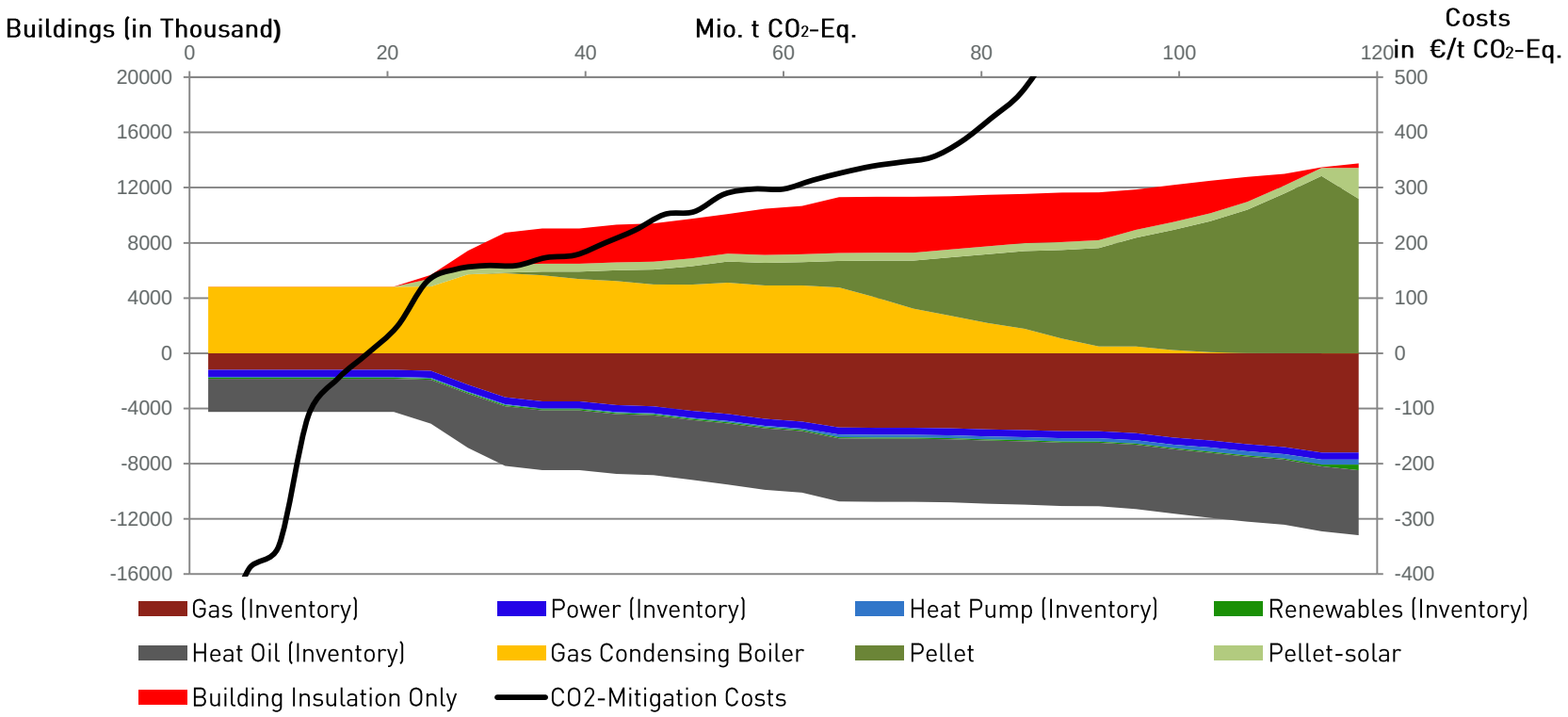
- In case of optimal climate policy, power generation from gas-fired plants increases with more ambitious reduction goals and crowds out generation from coal-fired plants
- The existing power plant fleet allows a reduction by 40% compared to 1990
- Beyond a reduction of 25%, the marginal mitigation costs amount to about 50 €/t CO_2. They increase up to levels of 400 €/t CO_2.

Power: Results for 2020



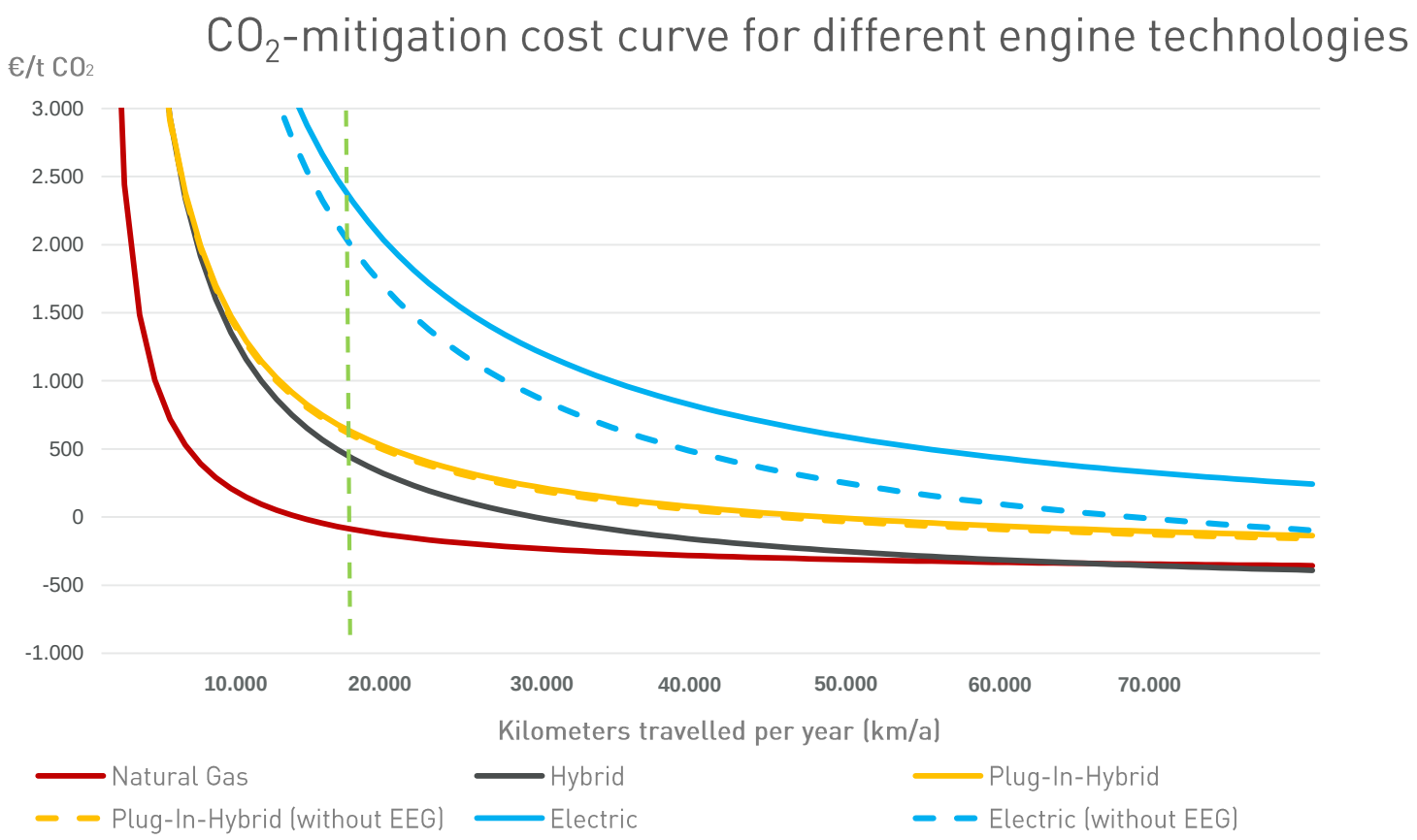
- If investments in new power plants are possible, an achievement of more ambitious goals is possible in the medium-term (up to 80% compared to 1990)
- First, reduction goals up to 65 % are achieved by a higher utilization of gas and wind plants. Only after that, capacity additions of PV takes place
- Beyond a reduction of 50%, the marginal mitigation costs amount to about 100 €/t CO_2. They increase up to a level of 400 €/t CO_2.

Heating



- The gas condensing boiler technology is the least costly replacement alternative for reduction goals below 65 Mio. t CO_2-Eq.
- A 13 % emission reduction (18 Mio. t CO_2) compared to 2010 is possible at „negative costs“ and saves about 1.42 billion EUR per year.

Passenger Cars



	Natural Gas	Hybrid	Plug-In-Hybrid	Electric
Break-Even-Kilometers (km/a)	13.000	28.000	47.000	>100.000

Summary

In all analyzed sectors, natural gas is currently the most cost-efficient option for mitigating CO_2.

- For CO_2-reductions up to 50% compared to 1990, the substitution from coal-plant power through power from gas plants is the most cost-efficient mitigation option in the current power plant fleet.
- Substituting old gas and oil heating systems with gas condensing boilers reduces emissions by 13 % compared to 2010 and saves about 1.42 billion EUR per year.
- Natural gas-fuelled passenger cars are the most cost-efficient CO_2-mitigation option in that sector.

Thank you very much for your attention!

Questions of Remarks?

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