

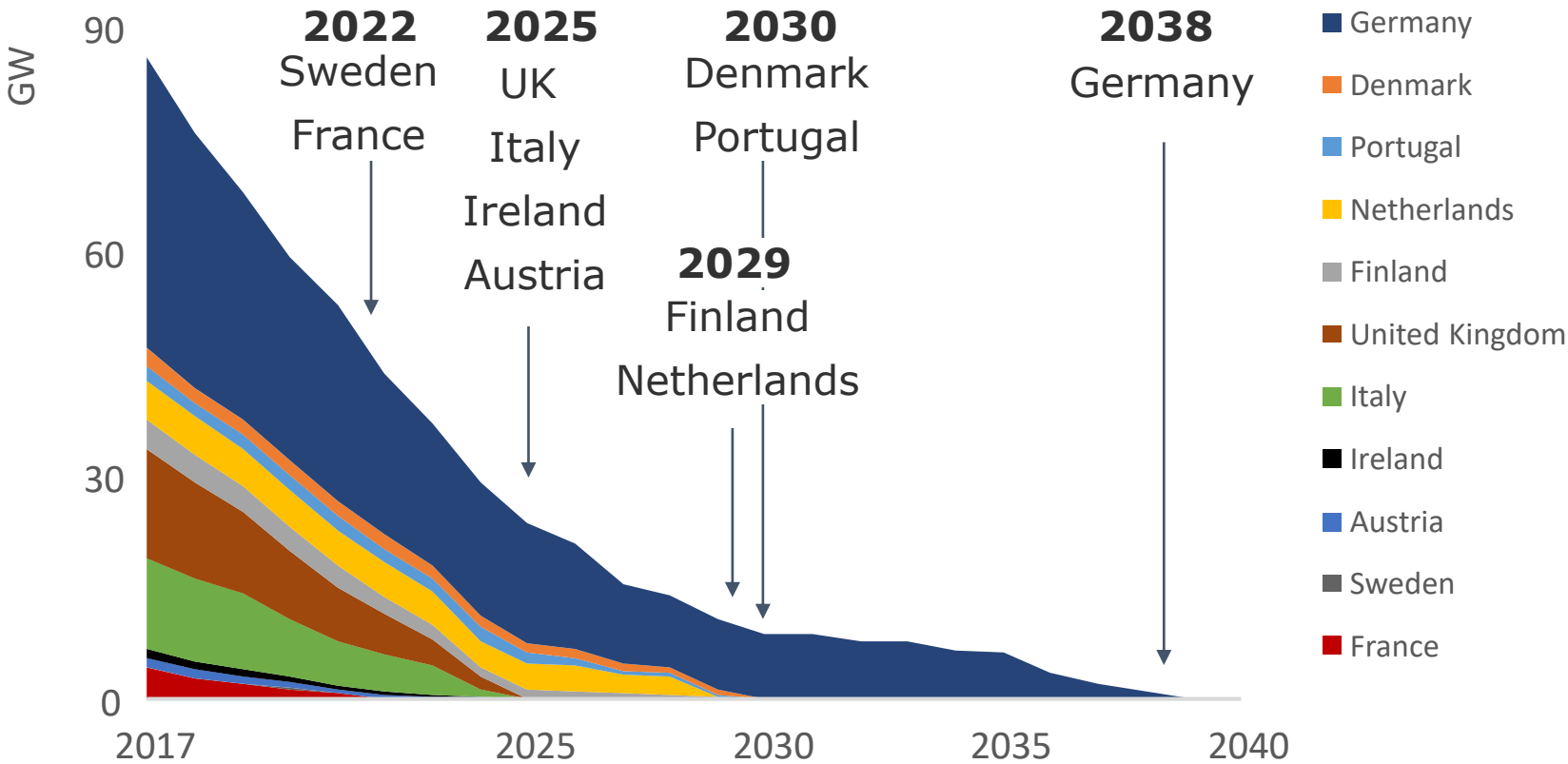


Opportunities and constraints for gas in the European coal phase out

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European coal phase out is accelerating

Plans to phase out coal in the European Union

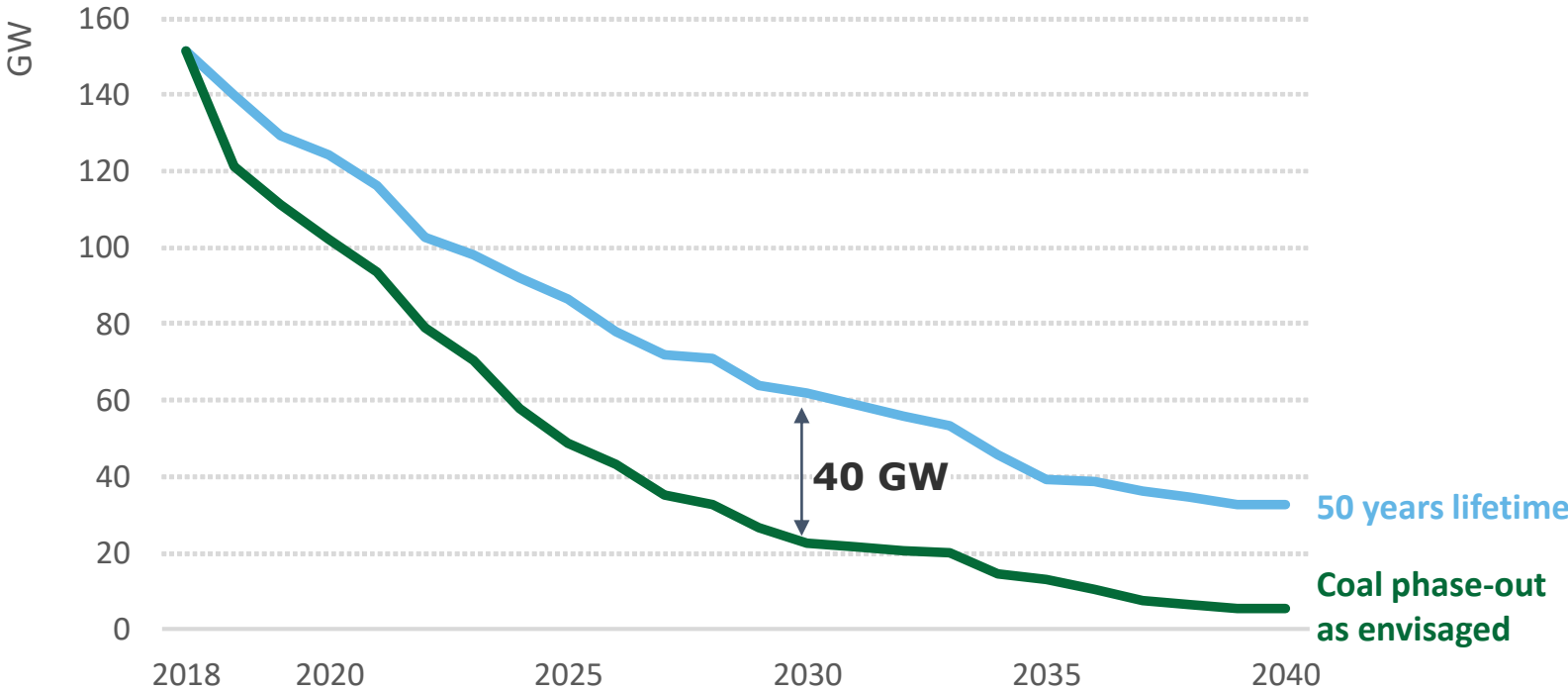


Source: Deloitte European Electricity Model; IEA World Energy Outlook 2018

At least half of the EU coal fleet will be affected by a policy-driven phase out; Policy action so far concentrated on Western and Northern Europe

Coal phase out plans make a big difference on the EU level

Installed coal capacity in the EU assuming 50 years technical lifetime and coal phase out plans as envisaged

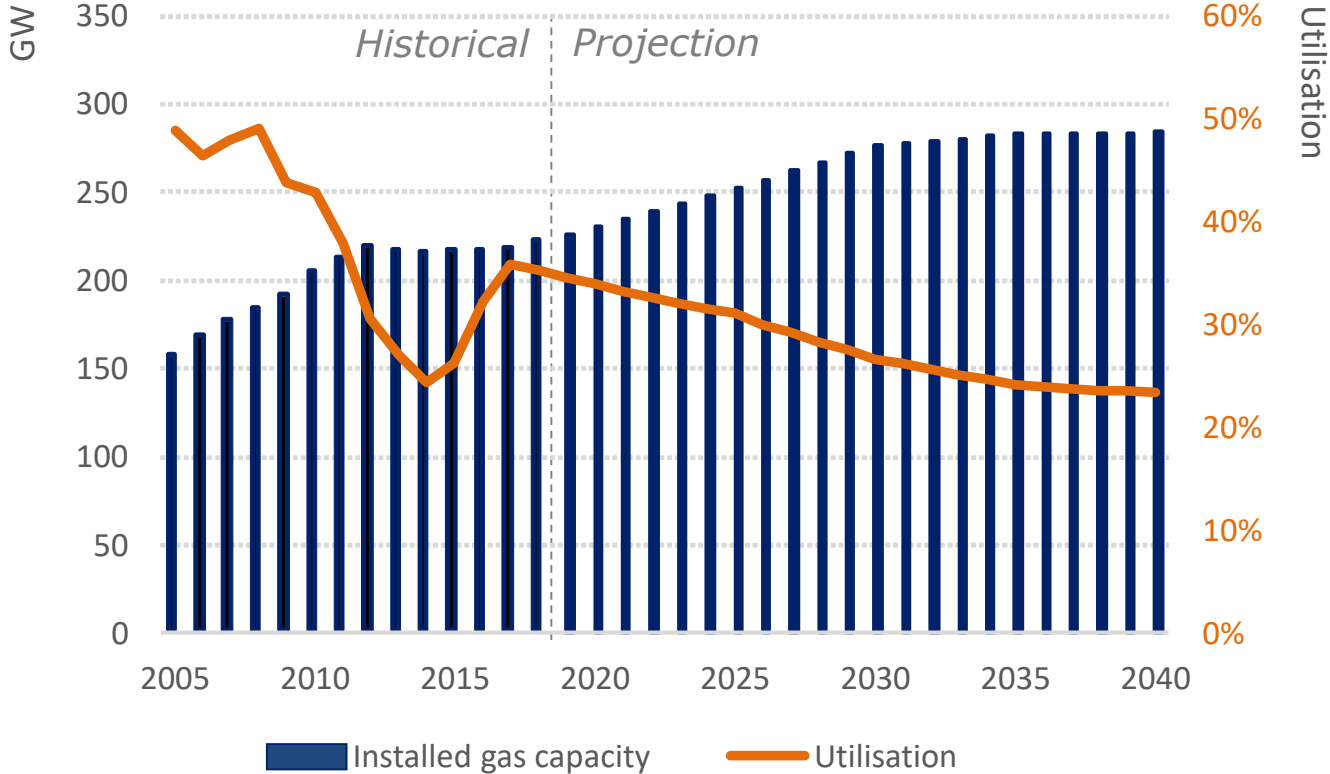


Source: Deloitte analysis

Policy push to phase out coal accelerates decommissioning of European coal-fired capacity. On the EU level the phase out plans require replacement 40 GW of early closure coal capacity

Gas plays an important role in replacing coal during the 2020s...

**Installed gas-fired capacity in the European Union and utilisation of the gas fleet to 2040
Typical technical lifetimes scenario**

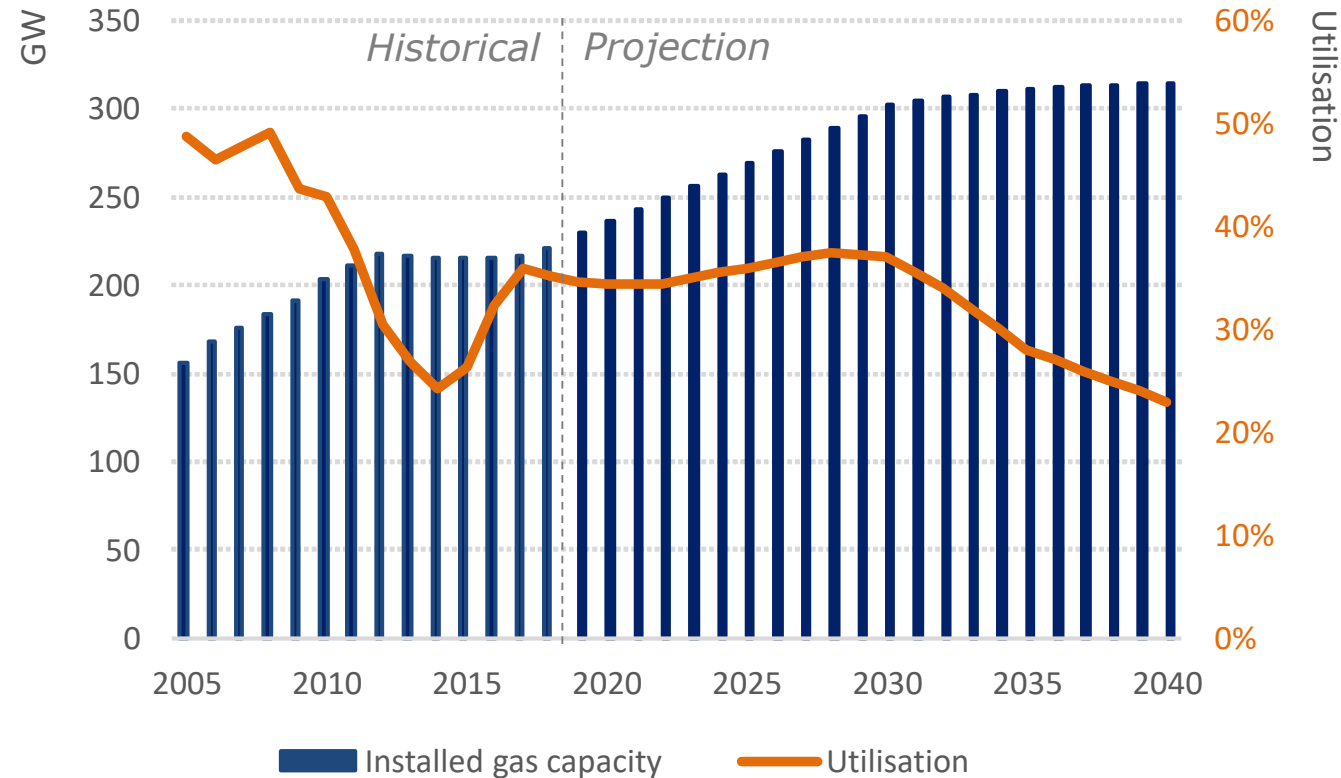


Source: Deloitte analysis

Significant additional gas capacity is needed in the coming decade; Edison's Marghera CCGT investment decision is a start, but in many markets financial viability remains questionable

...after 2030 the role of gas depends on climate policy ambition

**Installed gas-fired capacity in the European Union and utilisation of the gas fleet to 2040
Coal phase out scenario**

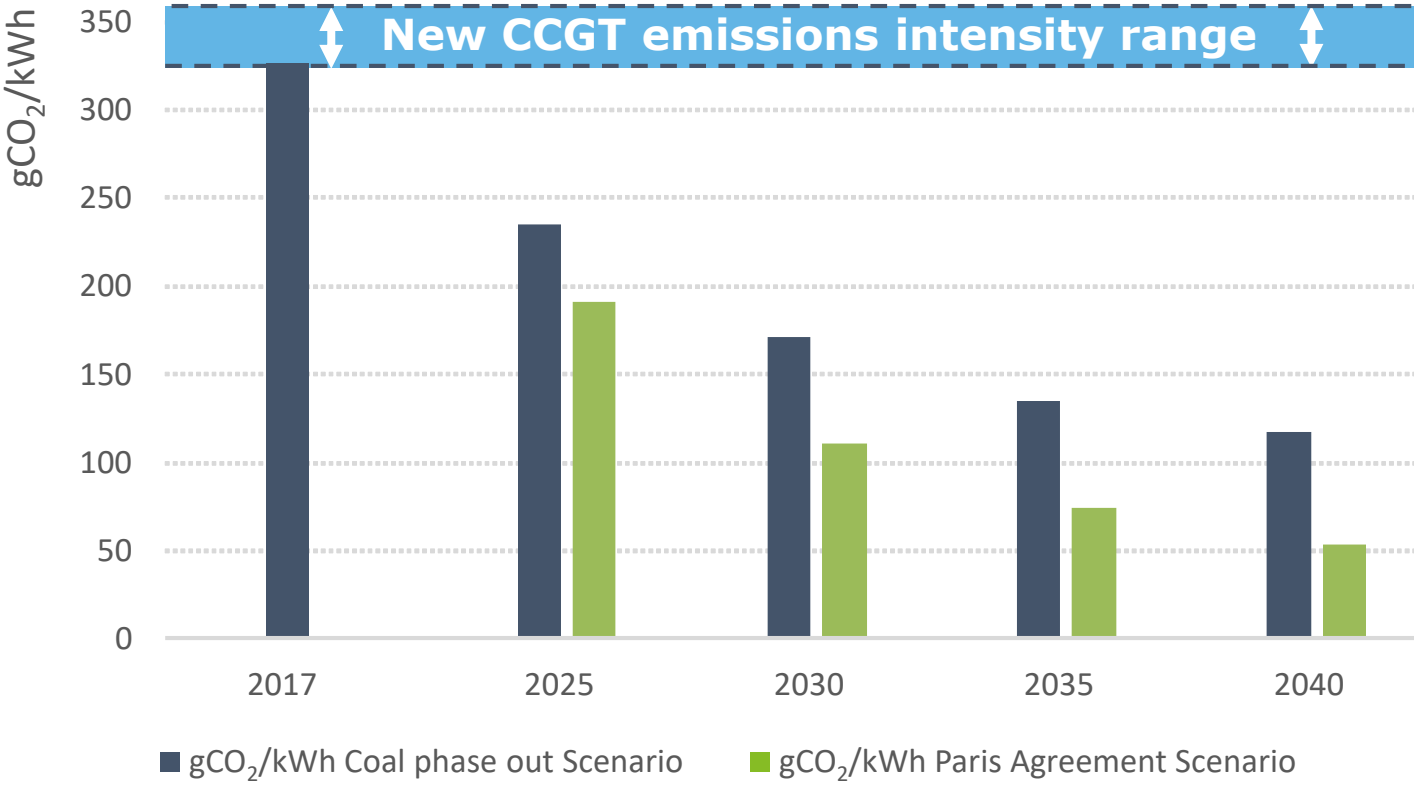


Source: Deloitte analysis

Significant additional gas capacity is needed in the coming decade; Edison's Marghera CCGT investment decision is a start, but in many markets financial viability remains questionable

Just a 'golden decade' of gas in Europe?

CO₂ intensity of electricity generation in the EU and new CCGT emission intensity range





Source: Deloitte analysis


Gas can help to lower the CO₂ emissions intensity as it displaces coal plants but after 2030 gas gas-fired electricity becomes too carbon intensive to be part of a long term solution


Conclusions

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1 With a series of recent **policy advances** the European coal phase out gathered momentum
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2 There will be winners: gas-fired power plants will capture a **larger market share** whereas nuclear and renewables will receive higher prices
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3 There will be losers: **premature closure** of (often quite new) coal plants will result in substantial foregone profits for the owners
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4 A wave of **new gas plant investments** is needed to ensure adequacy but whether an economic or environmental business case exists is to be seen
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5 **Fair compensation** and **safeguards** for a smooth phase-out are key in minimising economic disruptions

Thank you for your attention!



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