

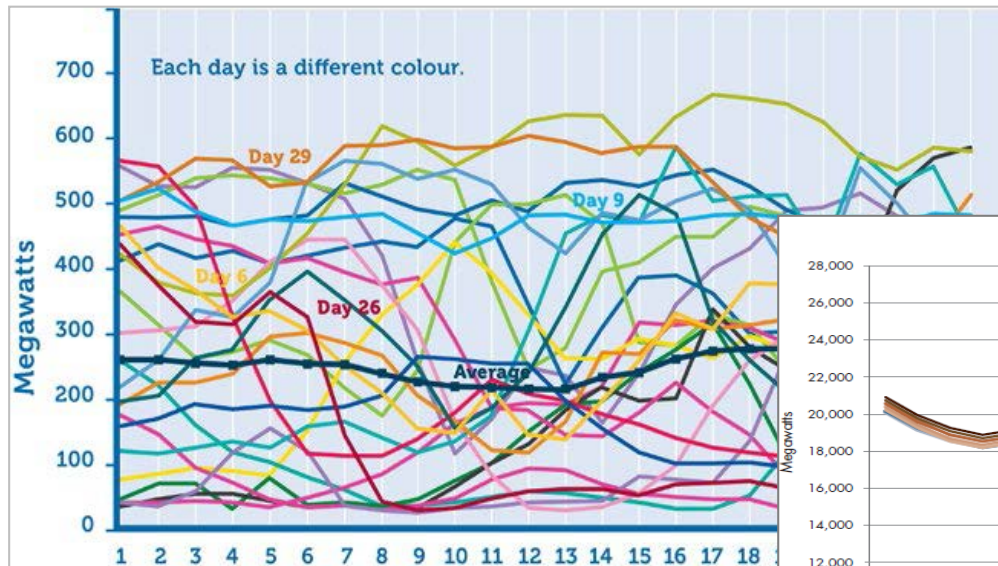
GAS VS. ELECTRIFICATION

CHALLENGES FOR GAS INDUSTRY

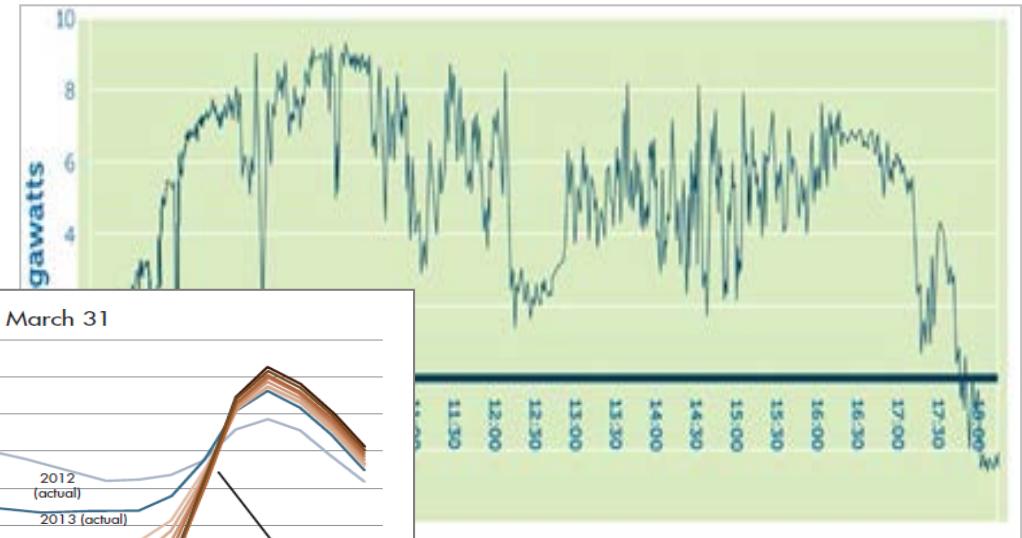
NOT, because:

Gas is an integral part of modern energy mixes and in fact, **its importance as a stabilisator of energy production grows** with decommissioning of traditional power plants and booming renewables.

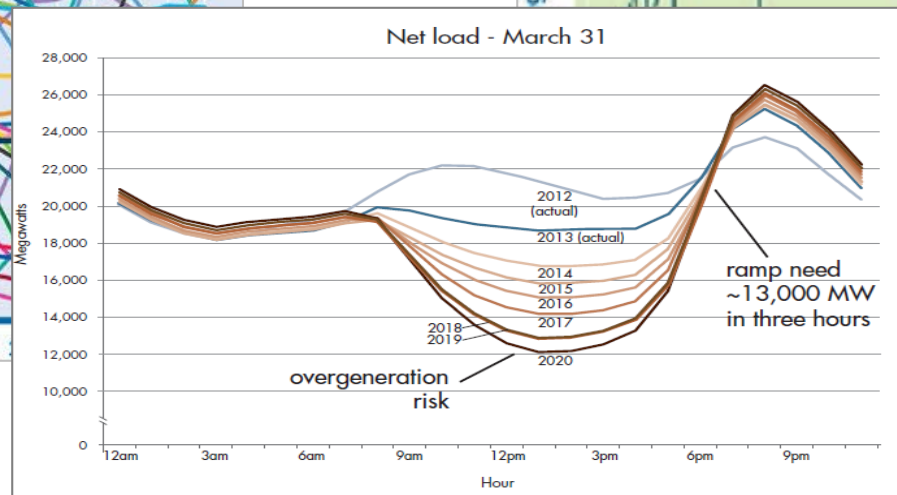
Daily wind output over one month



Solar PV output on a partly cloudy day



Net load - March 31



Duck curve

YES, because natural gas is :

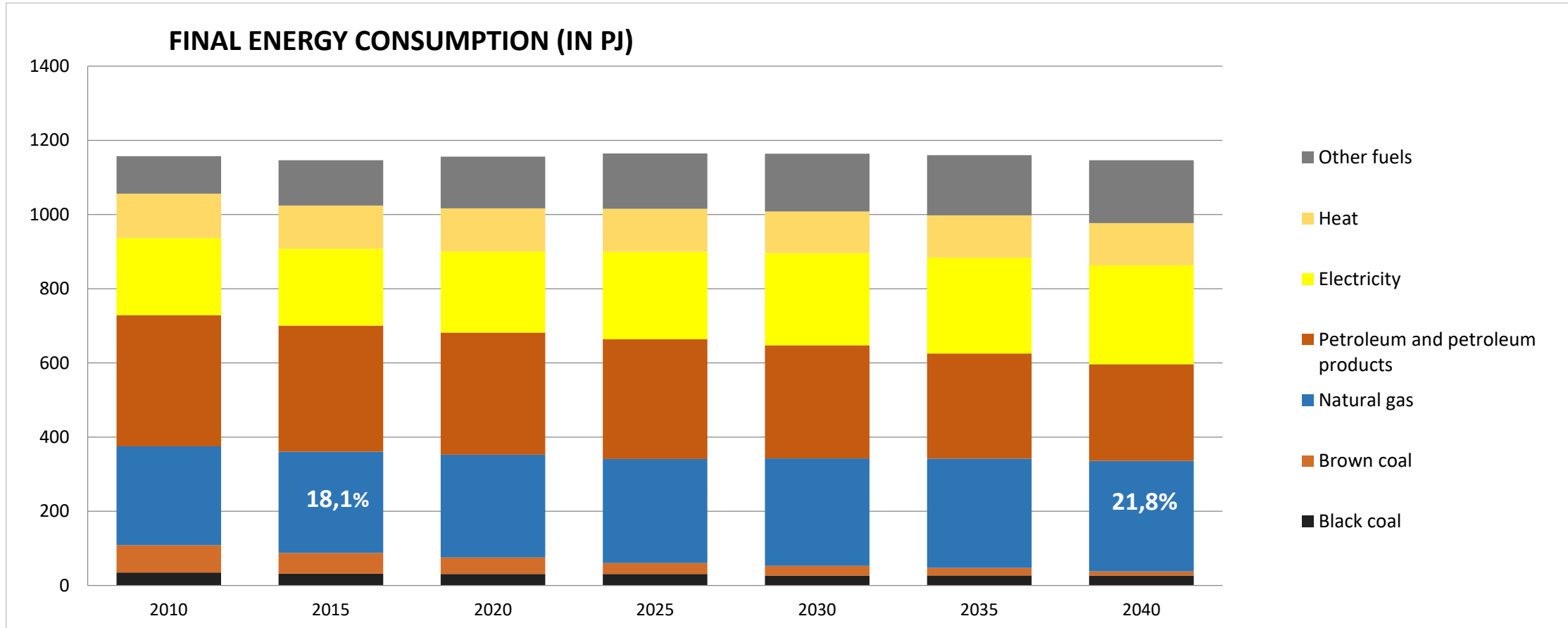
- **available** (vast exploitable deposits; transportable),
- **clean** (carbon footprint, emissions),
- **effective** (useable in highly effective processes),
- **flexible** (irreplaceable for power engineering),
- **comfortable** (especially for a use at home).

However:

Gas needs wide and positive communication of its advantages in front of the public and politicians:
emancipation of gas.

Gas must become an integral part of innovative energy solutions.

Gas is an important part of country's energy mix with anticipated slight overall increase of its share by 2040:



Undoubtedly, a clear political support of natural gas is generally missing accross Europe !

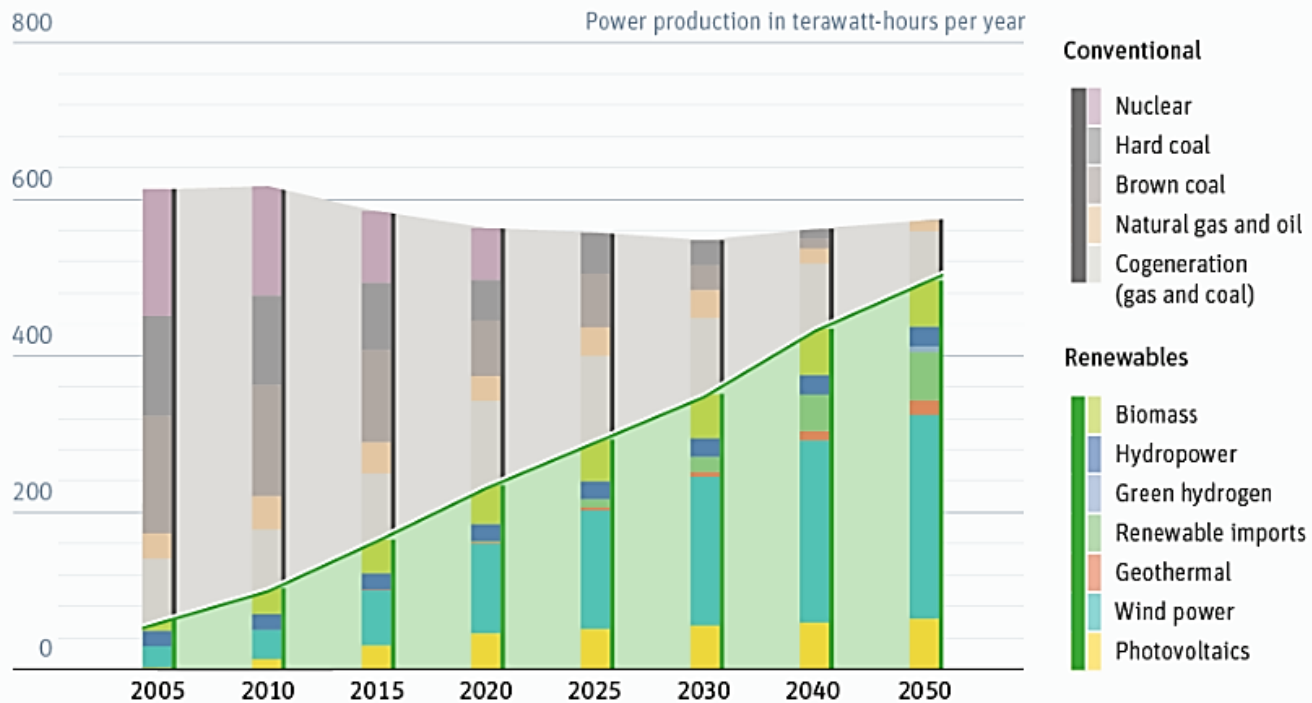
European energy policies derived from COP21 practically eliminate natural gas from future energy mixes !

Natural gas is fashionably branded as fossile, unclean, nasty fuel and - what's more ! – of mostly Russian origin.

Germany's plan: switch from coal and nuclear to renewables

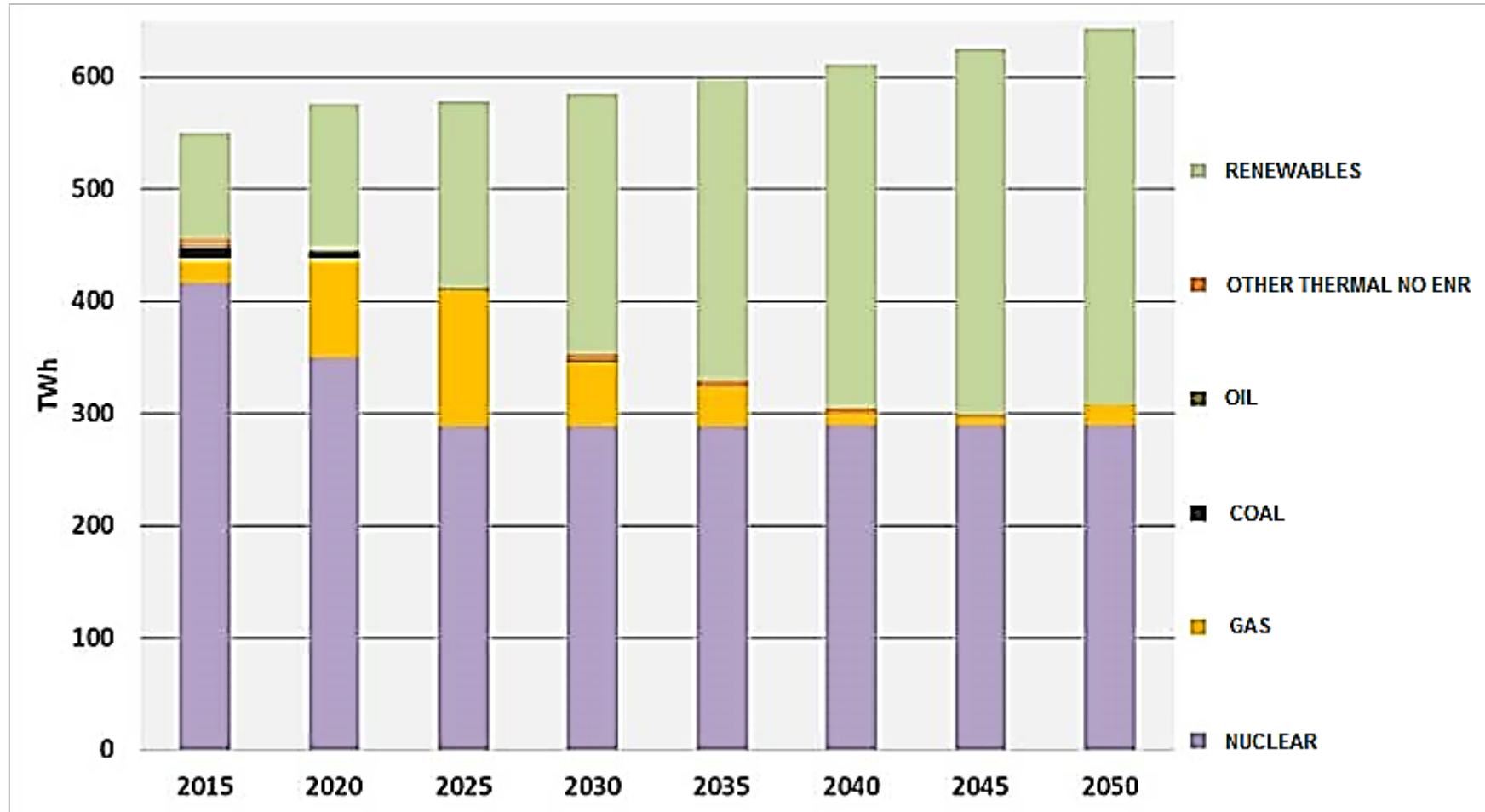
Electricity generation in Germany 2005-2050, scenario

Source: DLR and Fraunhofer IWES



However: Production of electricity from gas powered plants increased by 45% in 2016.

Natural gas is considered as transition fuel peaking in 2025....



However, in fact:

- world's proven deposits of natural gas are sufficient for far more than 100 years,
- North Stream II is ~under construction,
- majority of households in DE, GB, CZ etc. are heated with gas,
- despite being subsidized, most of the alternatives are not economical,
- gas grids in Europe are very flexible, allow for use of natural gas of any origin, as well as for other gases (biomethane, hydrogen, power-to-gas products).

Clear task No. 1 for European gas industry:

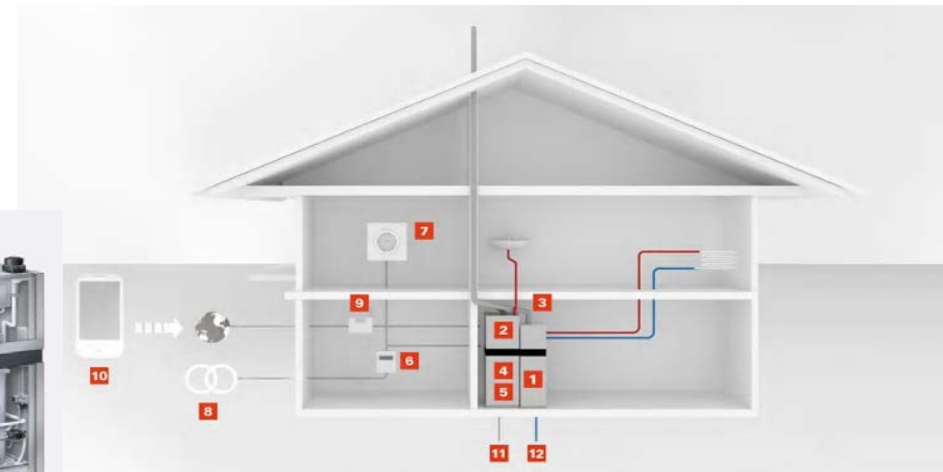
To convince politicians and general public that generation of energy must be:

- AFFORDABLE,
- SECURE,
- SUSTAINABLE.

To **communicate** to all the stakeholders that these goal can't be **reliably and rationally** reached without keeping a wider energy mix...

Domestic supply:

- **Comfortable satisfaction** of customers' needs; gas as a life-time economical and efficient solution ultimately **for all energy needs**; fully automated.
- Gas as a **solution for decentralised supply** of energy.
- Innovative highly efficient **appliances** for delivery of heat, cold and electricity (micro-generation, fuel cells, gas heat pumps etc.).
- Clean and economical fuel for **transportation**



Big customers – communities & industry:

- Alternative solutions for own **large scale production** of heat and electricity with advanced technologies, improving the efectivity of combustion.
- **Transportation:** Potential reduction of cost and emissions by switching to gas powered car fleets, alternative use of biomethane.
- Positive immediate impact on **public health and environment.**



Large scale power generation:

Gas is a key fuel for large power plants when:

- nuclear is not politically correct nowadays,
- coal is dirty,
- renewables have no capacity to substitute other fuels completely.

In general:

Gas sources are diversified, gas market is fully liberalized, transit network exists, security of supply is high.

Green gas is coming as a twin to natural gas, **not a substitute.**

Transportation: CNG, biomethane and electricity are together **fuels for future** with low carbon footprint and unlimited potential for growth.

- Customers require **affordable security, efectivity and comfort** – with limited concern of the energy mix which fullfills these wishes.
- Communication needs to be „trendy“, **adress all generations** – image of clean fuel, emphasize healthy life and future of our kids, reasonable cost of heat and electricity.
- Developing **green image** of natural gas – „green gas“ (mixture of methane and biomethane) and power-to-gas (hydrogen and synthetic methane).
- Gas as a **vital part of future „greener“ fuel mix** – clear position against coal, acceptance of nuclear.
- Strong lobbying for coordinated, long-term sustainable **taxation policies**.

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