

Norsk olje&gass

# The future of European gas supplied by Norway in the European energy transition, in the medium and long term

Berlin, 18 September

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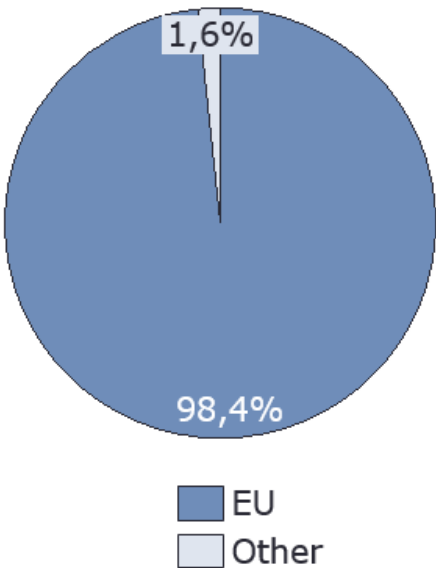


# European gas supplied by Norway

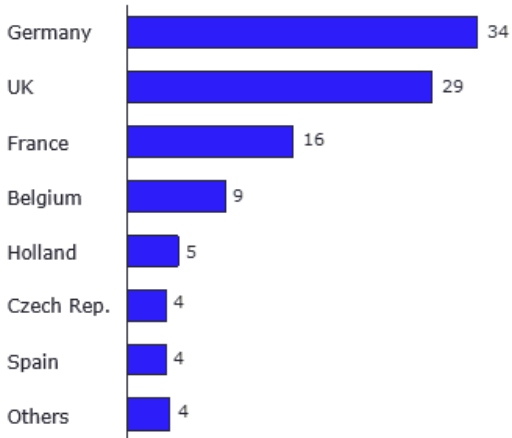
## Norwegian export of oil and natural gas to the EU


In 2013, Norway exported 106,2 BCM of natural gas and more than 98% of this export went to the EU countries

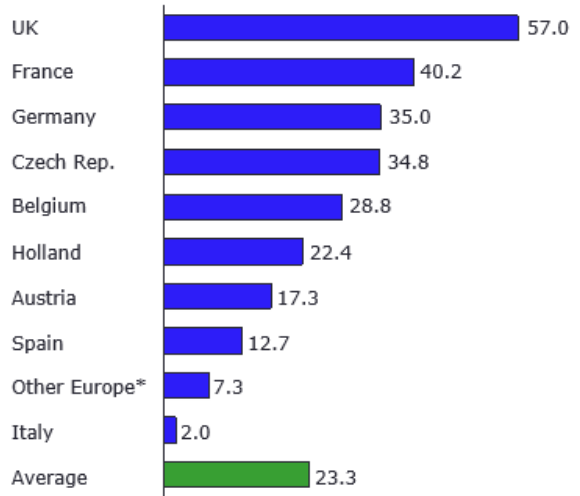
Norwegian export of natural gas 2013 



Import of Norwegian gas (2013)   
Import (bcm 2013)



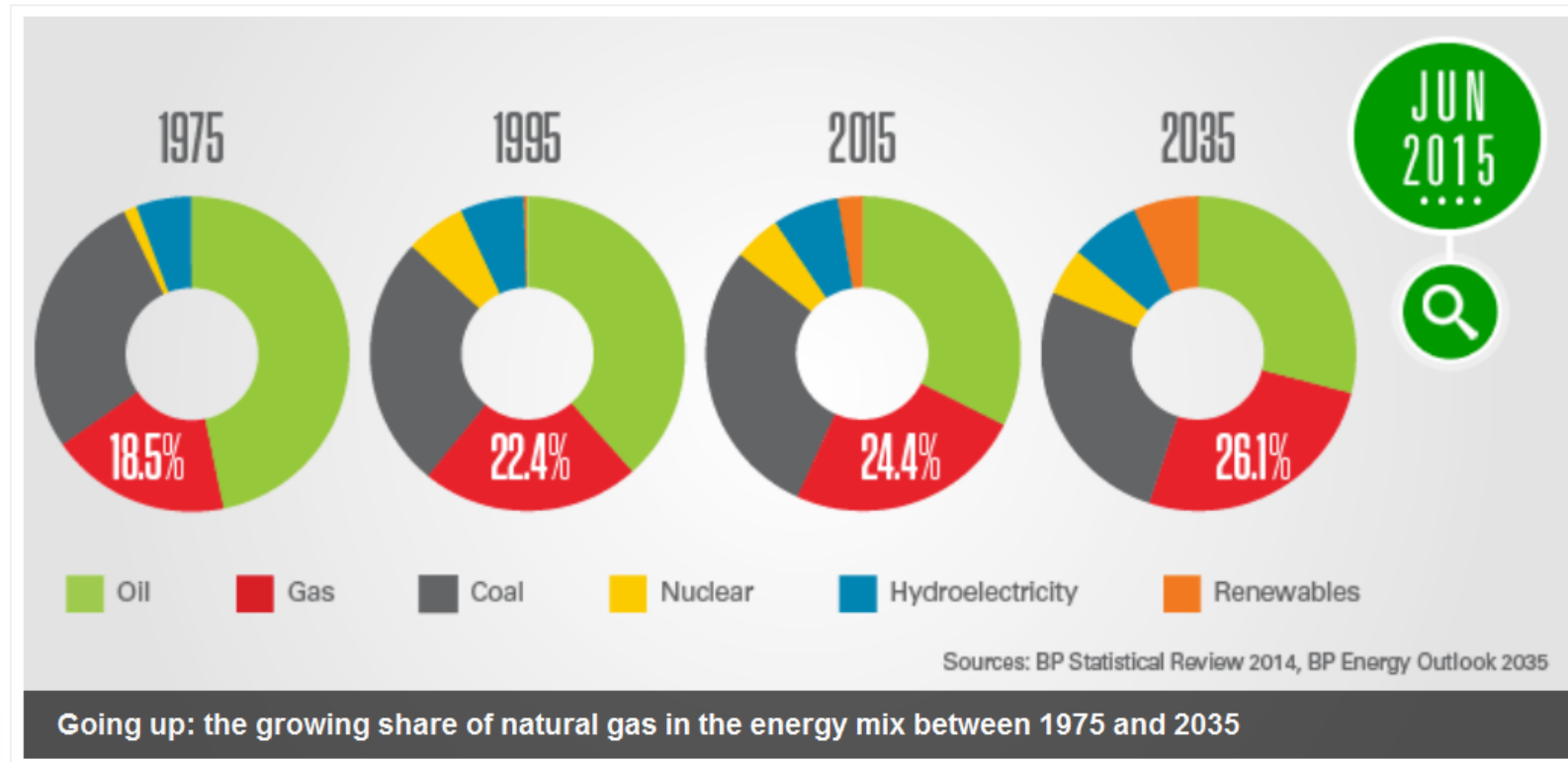
Share of Norwegian gas in EU countries gas supply (2013) 



Source: BP Statistical Review of World Energy 2014. \*Not included domestic consumption



## Today and tomorrow – the rise of gas



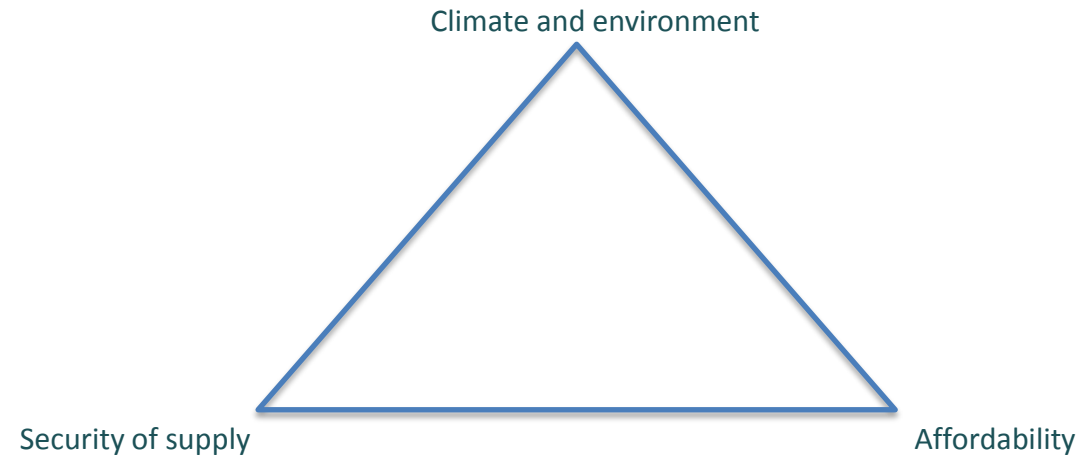
# The role of gas in Europe

- In the short term (2020) the *market* decides
- In the medium (2030) term the role of gas is dependent on *climate and energy policy*
- In the long term (2050) *technology development* will decide



# European gas from Norway

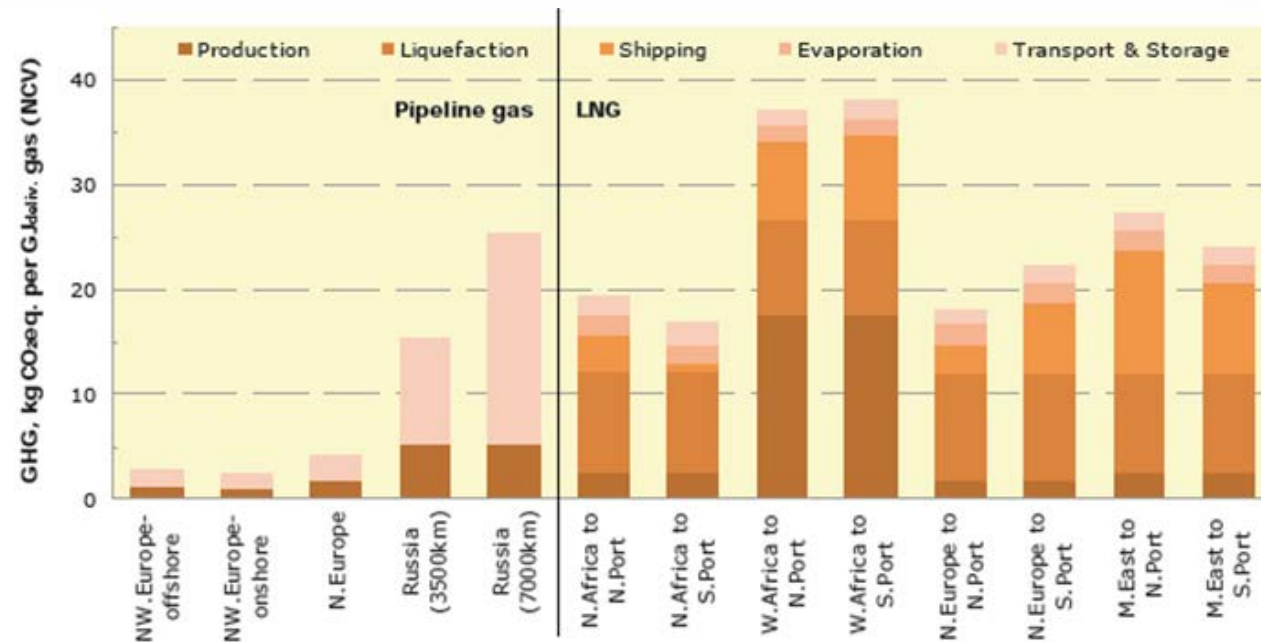
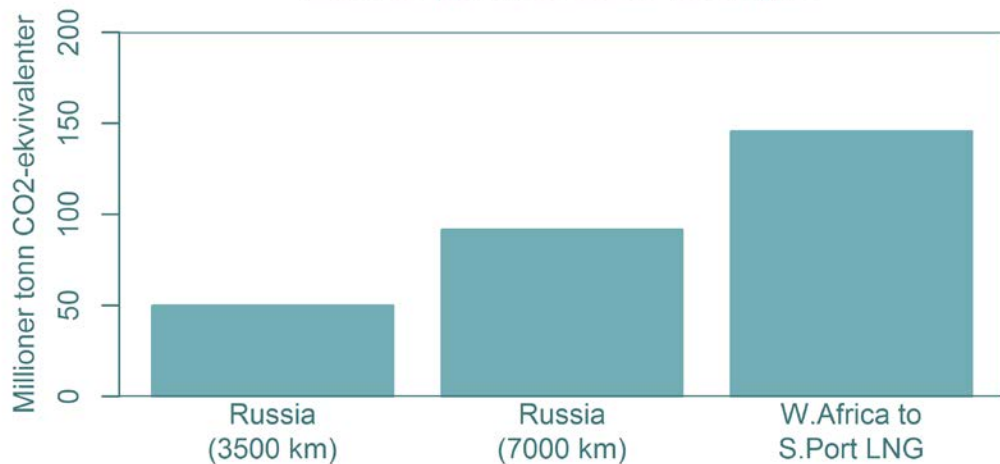
- The EU is strengthening the partnership with Norway
- Gas from Norway is important for European security of supply
- Gas from Norway is competitive on price (per definition)
- The climate footprint is substantially lower from gas from Norway



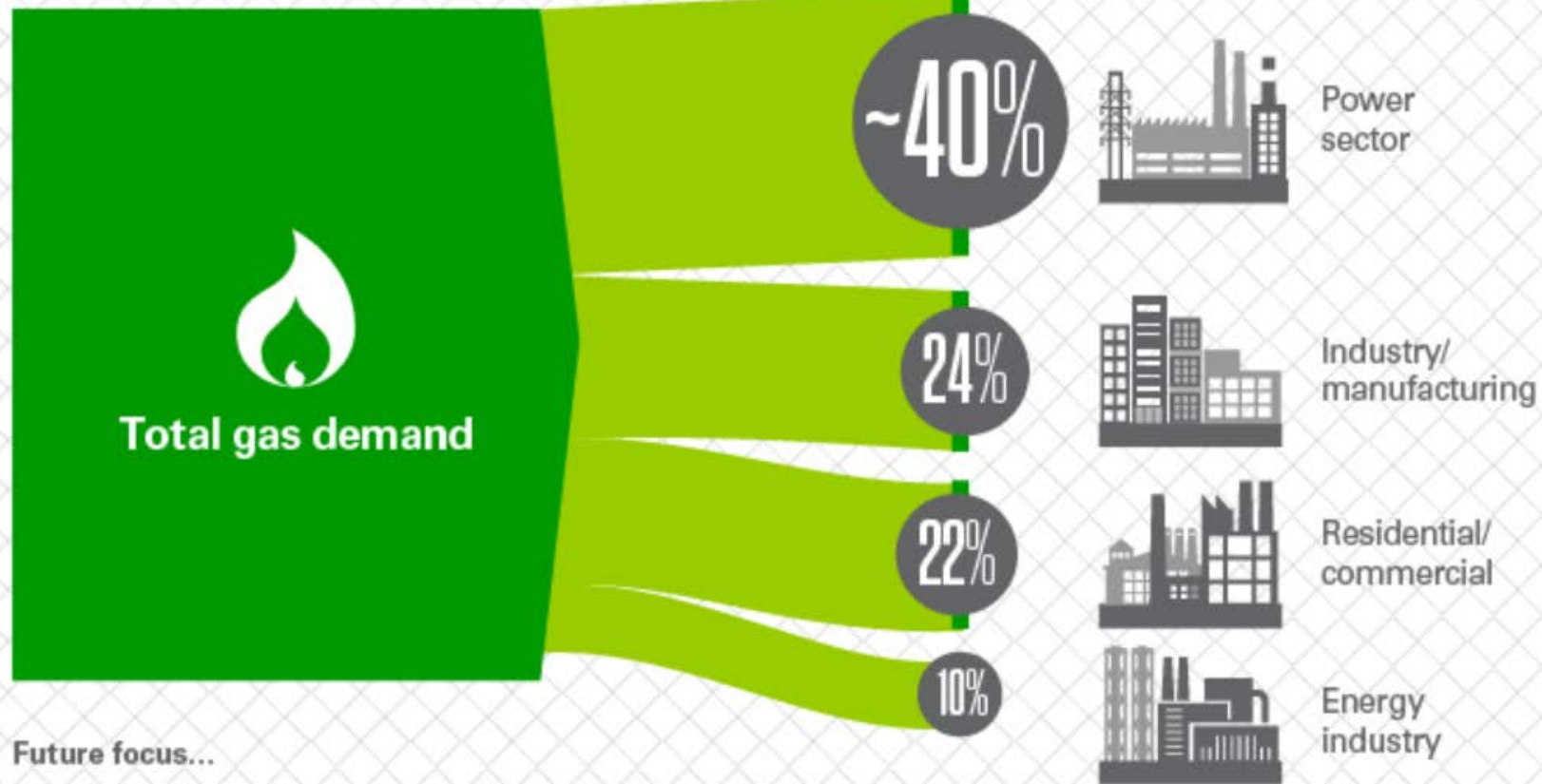
# Emissions are higher from alternative gas suppliers

Increased emissions by replacing gas from Norway

Økte utslipp ved å erstatte norsk gass



## How and where is gas used?



### Future focus...

Transport is a rapidly developing sector; it is expected to reach 2.5% of total gas use by 2018.

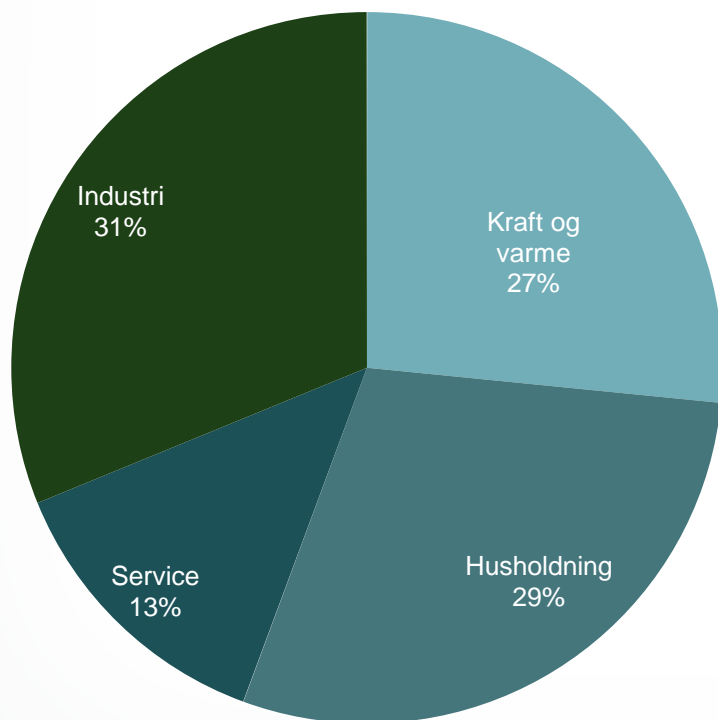
Source: International Energy Agency



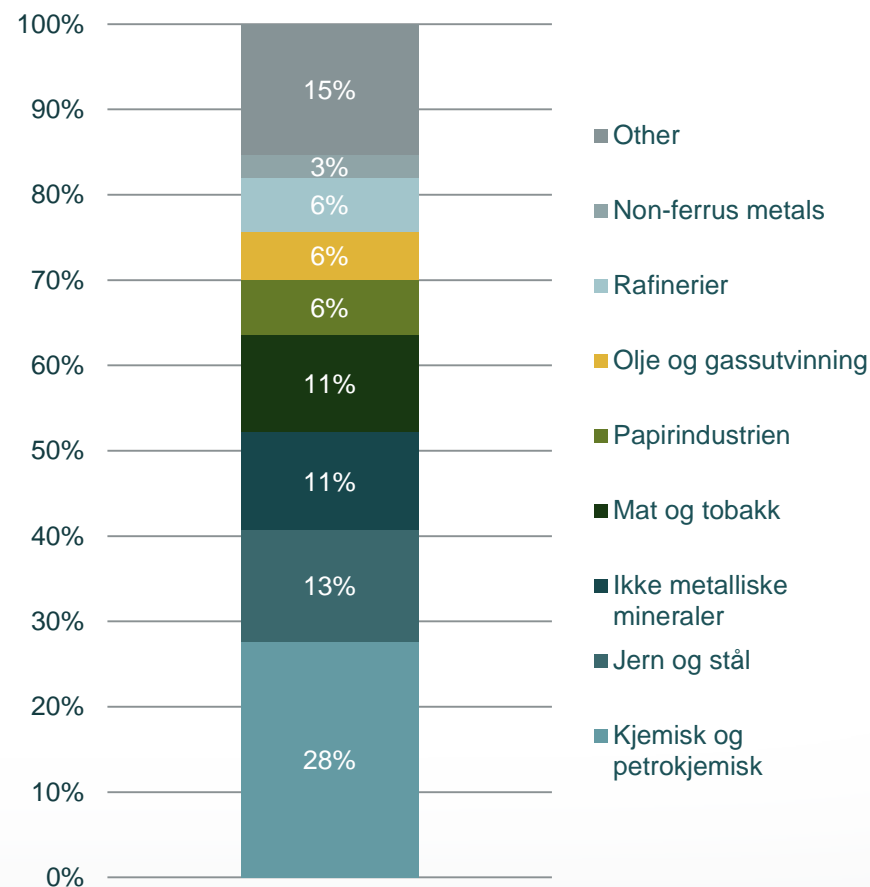


# Chemical industry use natural gas for energy and in feedstock

Industry uses 1/3 of the gas

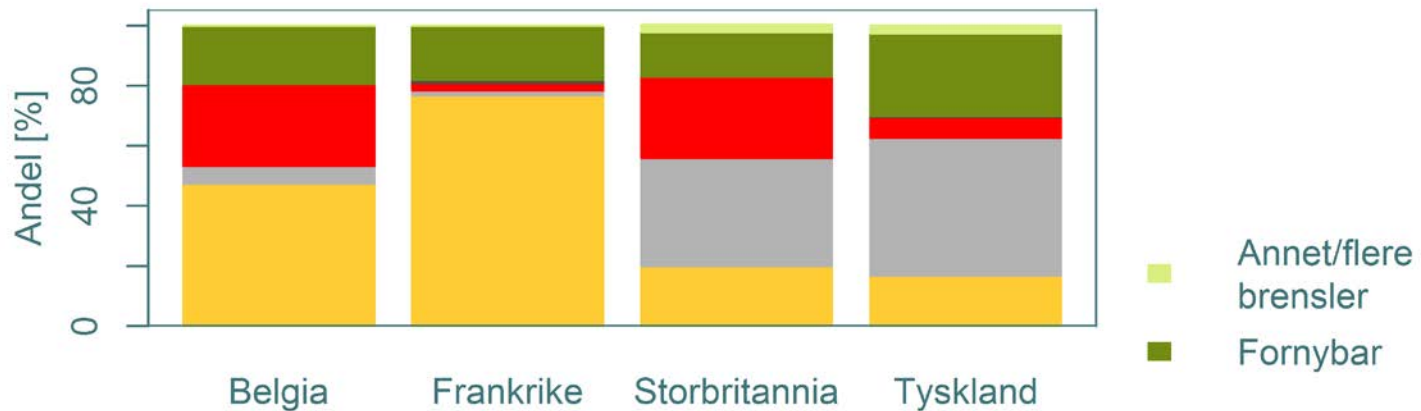


Chemical industry most important



# Gas for power generation in Europe

Markedsandeler kraftproduksjon (energi) 2014



Markedsandeler kraftproduksjon (kapasitet) 2014



# Possibilities for substitution of gas in industry and power generation

## Short term (2020)

Capacity and regulations in place – the market decides

- What happens if Norwegian gas is withdrawn from the market?
- High price of gas in Europe?

## Medium term (2030)

The energy and climate policy can be a game-changer

- ETS
- Can change in production processes make substitution easier

## Long term (2050)

Technology decides

- Production level
- CCS
- Other sources of energy

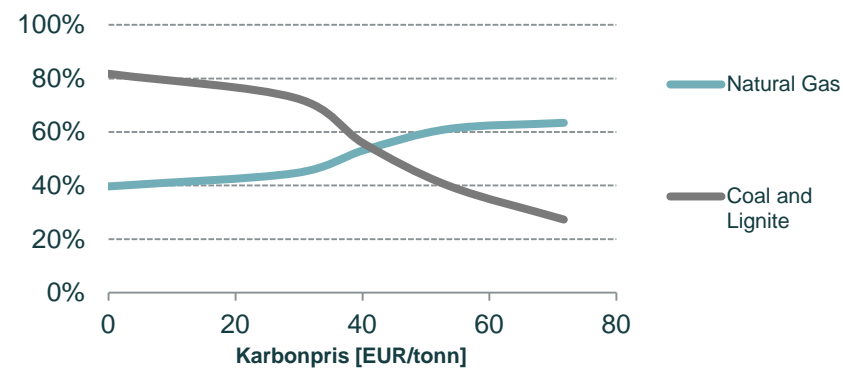


# EU ETS is decisive for gas in power generation

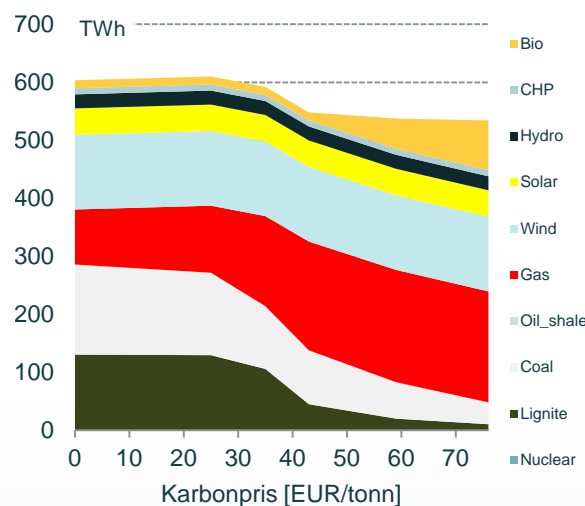
- The price of carbon is low due to a massive surplus og quotas
- EU ETS reform
- The price of carbon must exceed 30 EUR/tonn before we see a large scale fuel switch
- Gas substitutes coal completely on 70 EUR/tonn
- Fuel switch will change production amongst countries

## Gradual switch from coal to gas

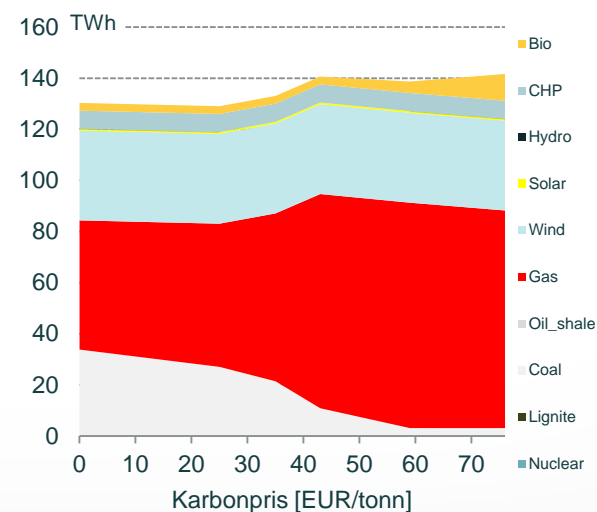
Kapasitetsfaktorer kraftsektoren i nordvest-Europa 2030



Produksjon Tyskland 2030

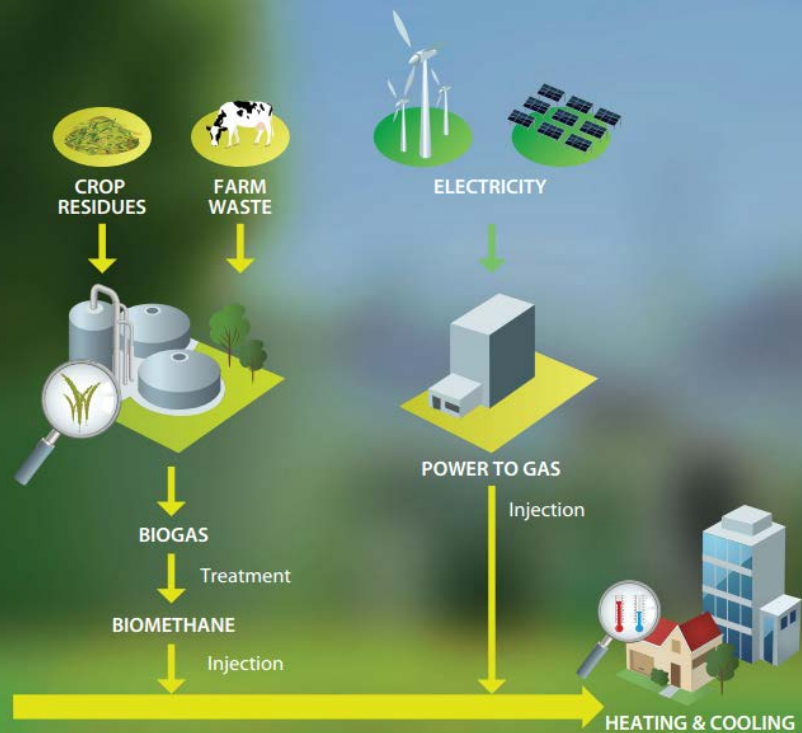


Produksjon Nederland 2030



# Interplay between gas and renewables

FIGURE 6: PRODUCTION OF RENEWABLE GAS

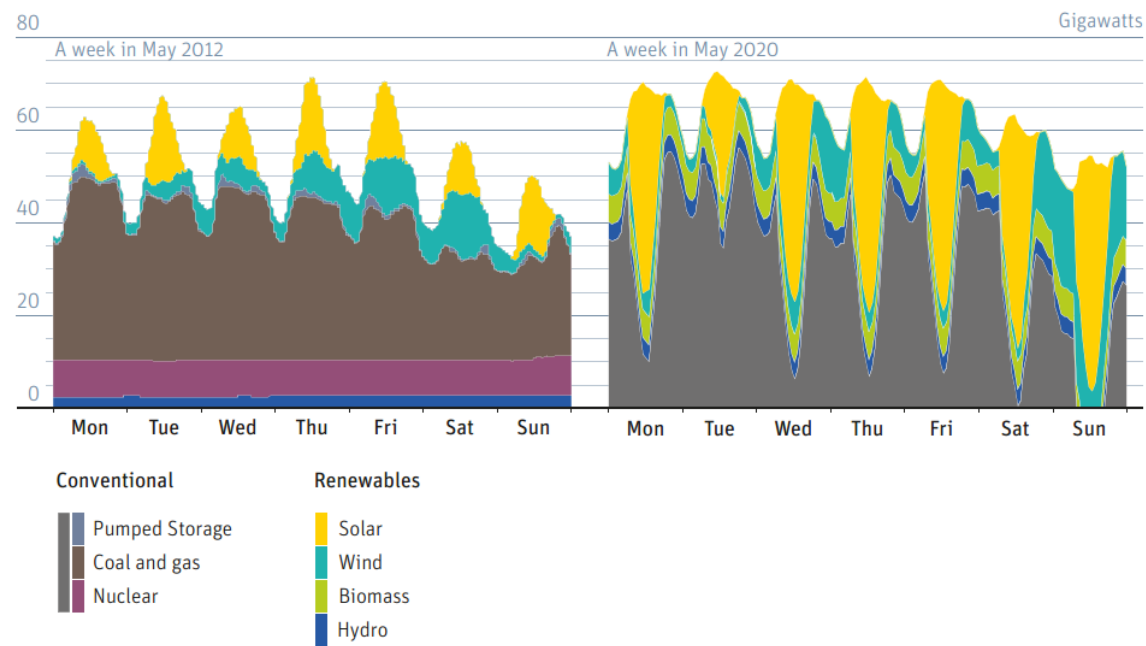


Source: Eurogas 2014.

## Renewables need flexible backup, not baseload

Estimated power demand over a week in 2012 and 2020, Germany

Source: Volker Quaschnig, HTW Berlin



# Recognition by Renewables

## European Photovoltaic Industry Association



Today it is clear that talking with all technologies that offer flexibility solutions, such as gas, storage, demand response, etc., will be essential to support the development of renewables. Taking a comprehensive approach to the development of Europe's energy system is the only sensible and pragmatic option.

We need more renewables to tackle the climate crisis, including solar and wind energy. Both of these sources are predictable, and these technologies together with flexible sources such as storage, gas, DSM, hydro power and other solutions, complement each other well and offer a solution for low carbon energy production now.

## European Wind Energy Association



It is no secret that in the short to medium-term gas and renewables together are an essential part of Europe's energy make-up to guarantee security of supply. Moreover, it is important that we take a holistic approach when discussing the future of our energy system. And from a systemic point of view, gas and wind actually complement each other quite well.



## Conclusion

- Gas is a part of the solution in 2050 (IEA, IPCC)
- Gas will continue be important in industry production
- Gas and renewables are systemic partners
  - Flexible backup in the European energy transition
  - Provides necessary backup in the internal energy market
  - Ensures security of supply

