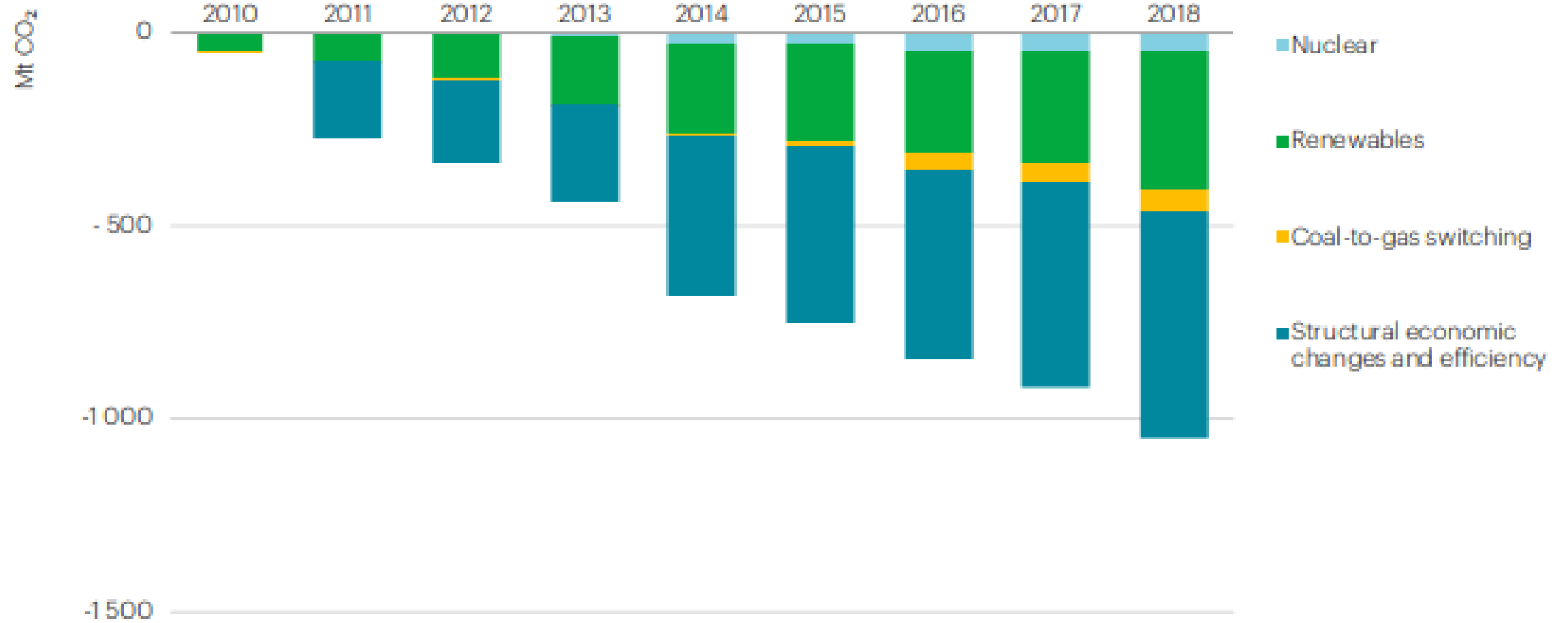


# Decarbonisation and energy security

Andris Piebalgs

20/09/2019

Breakdown of cumulative emissions reductions in the European Union versus the baseline projection since 2010



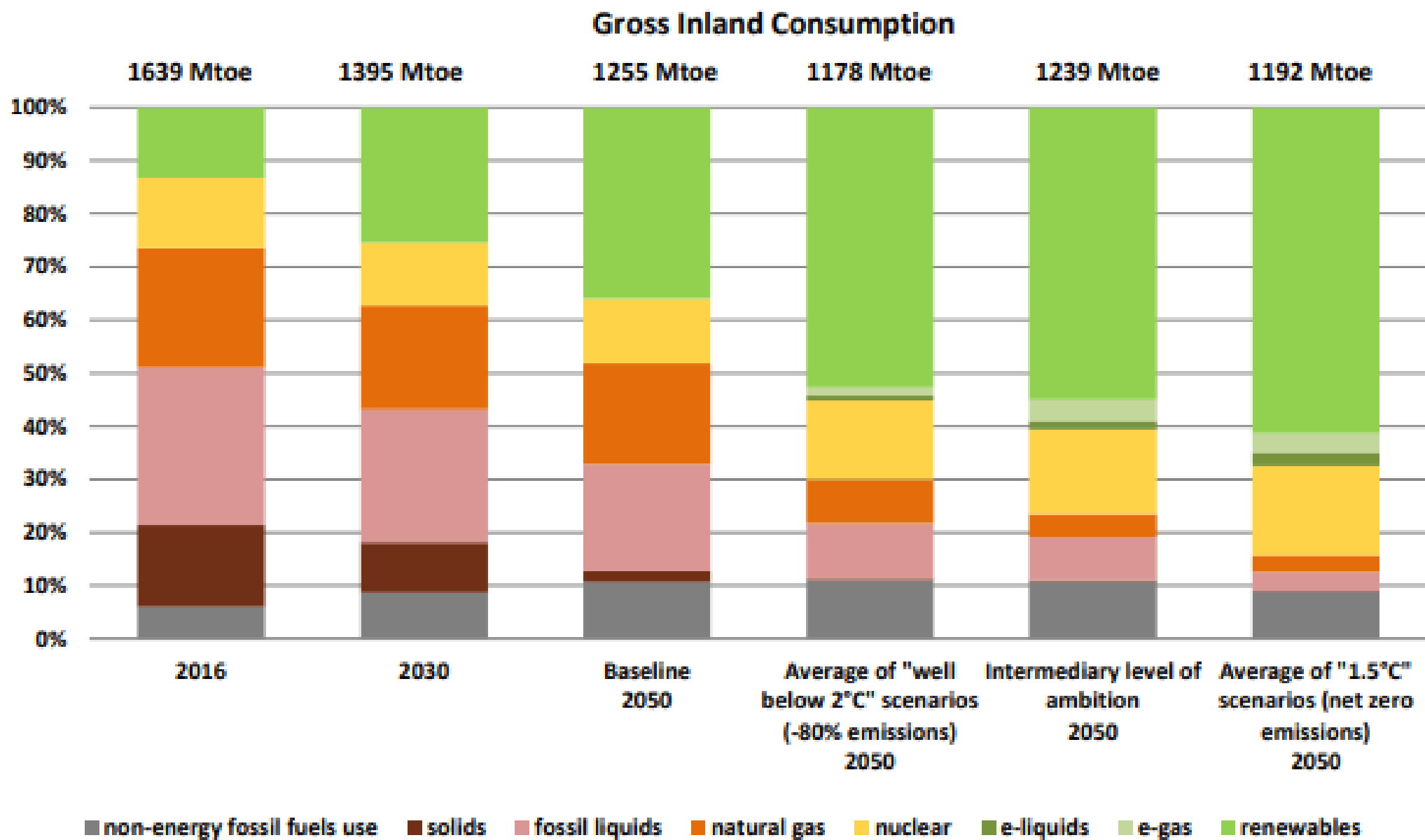
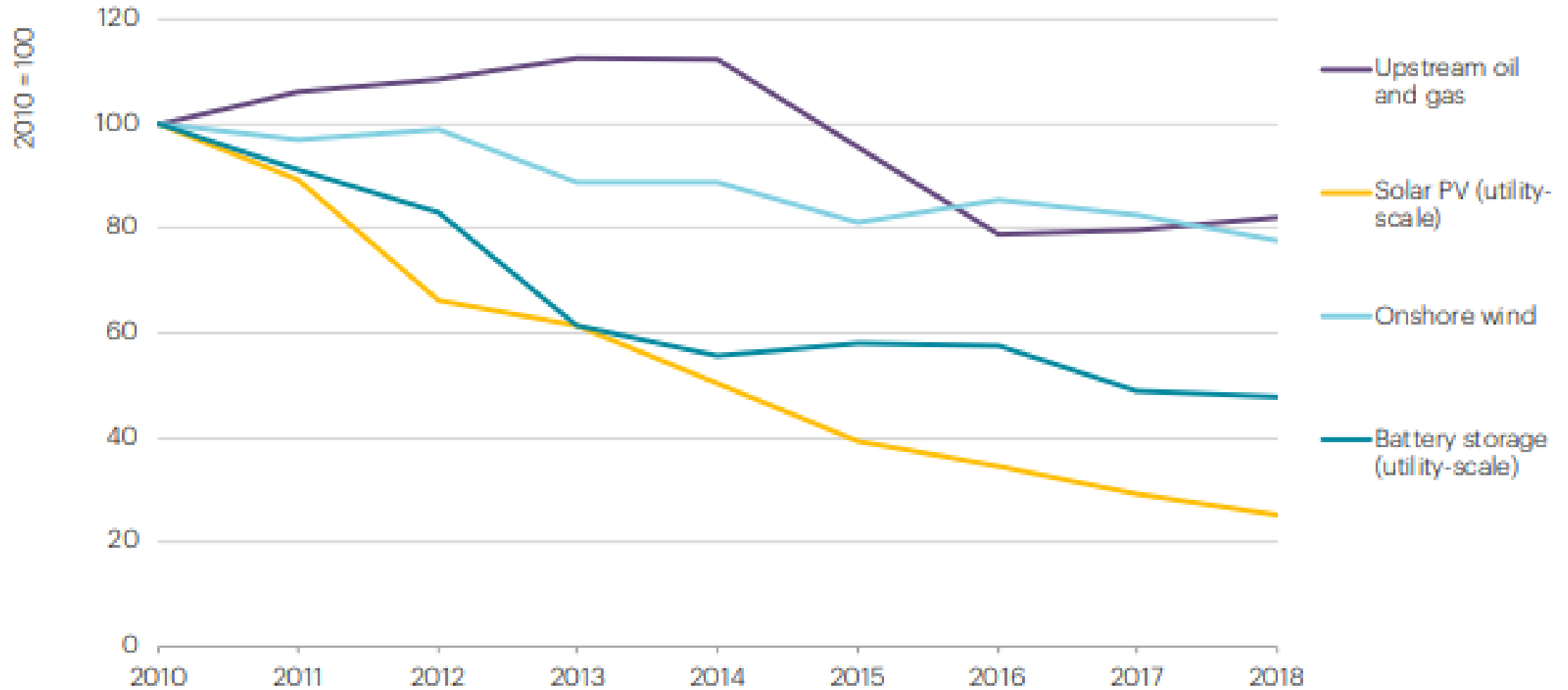
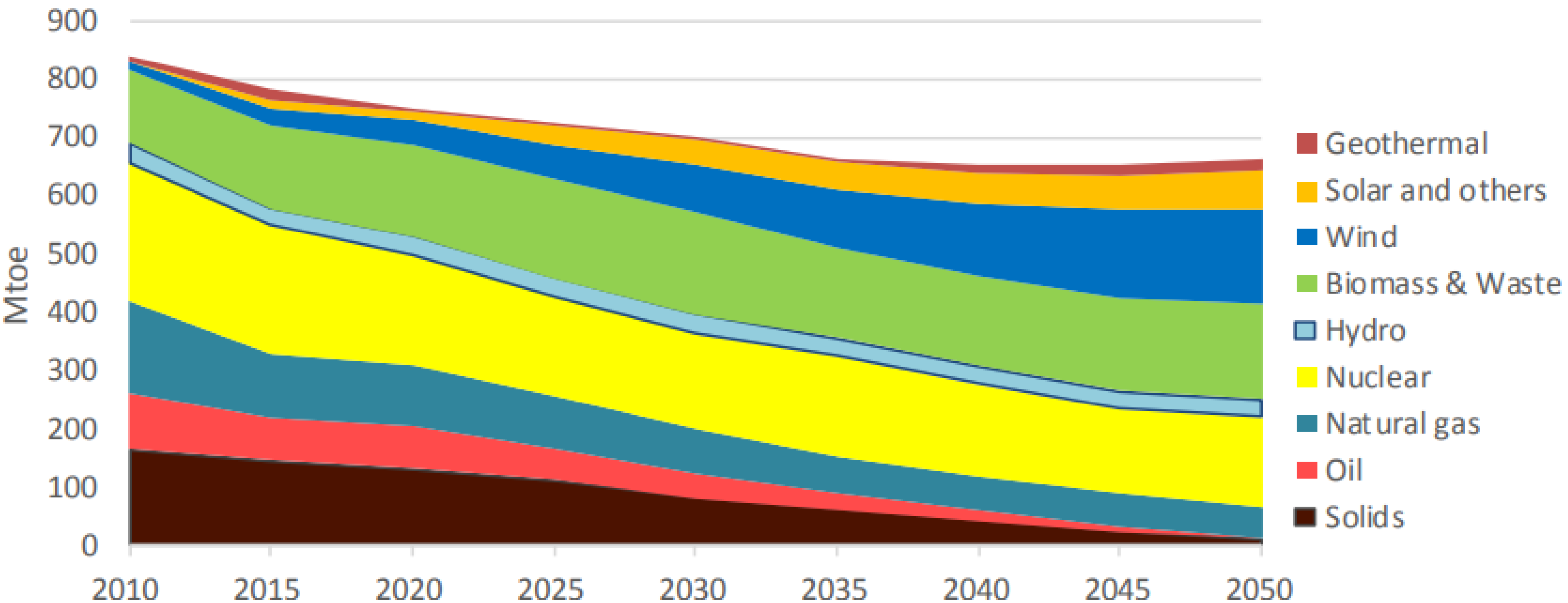


Figure 2. Fuel mix in Gross Inland Consumption

Change in capital costs of selected fuels and energy technologies

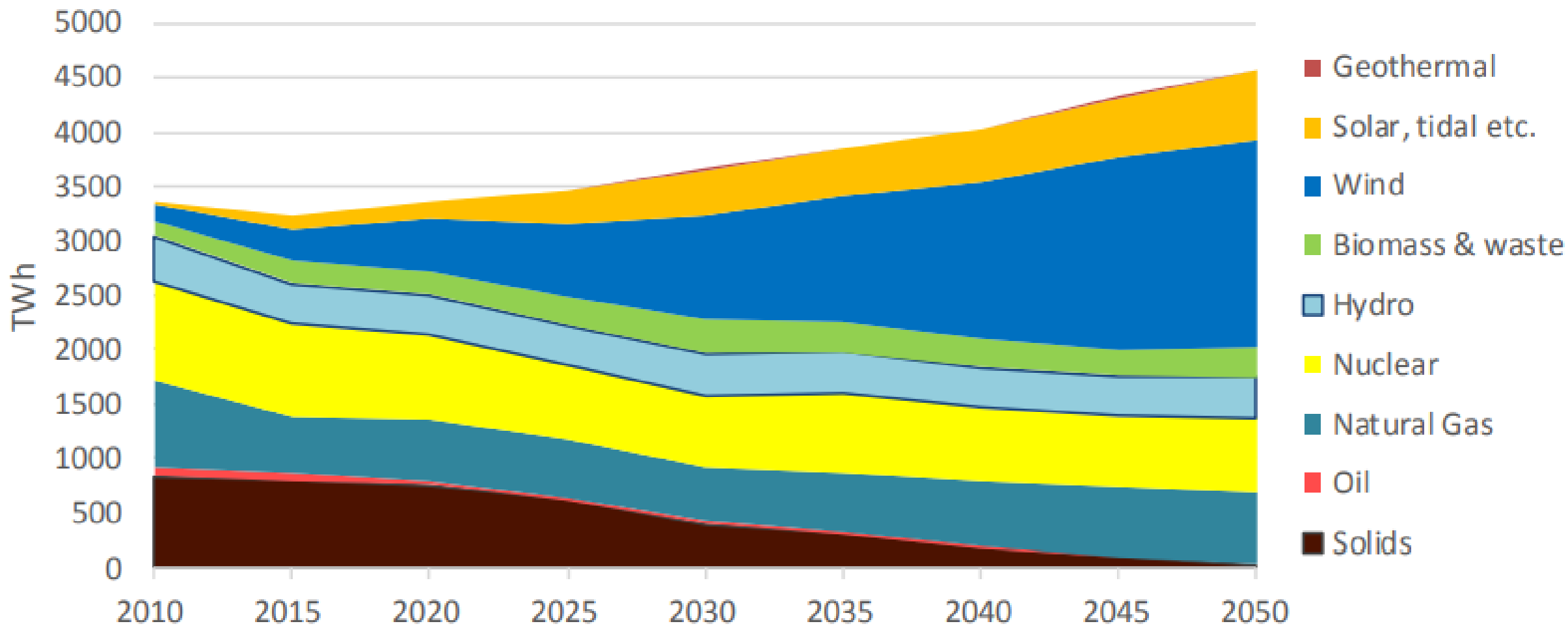


# Primary energy production in the Baseline



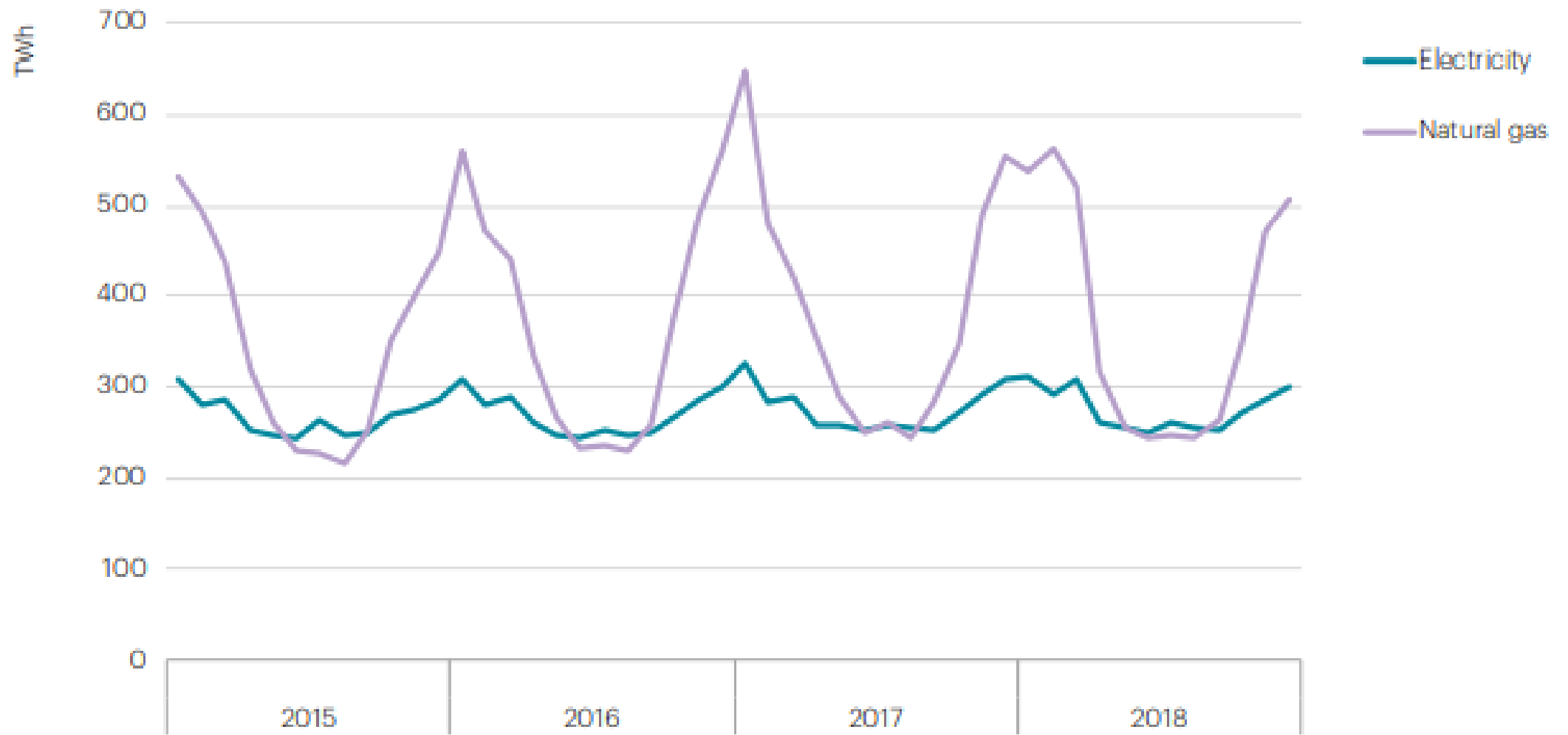
Source: Eurostat (2010, 2015), PRIMES.

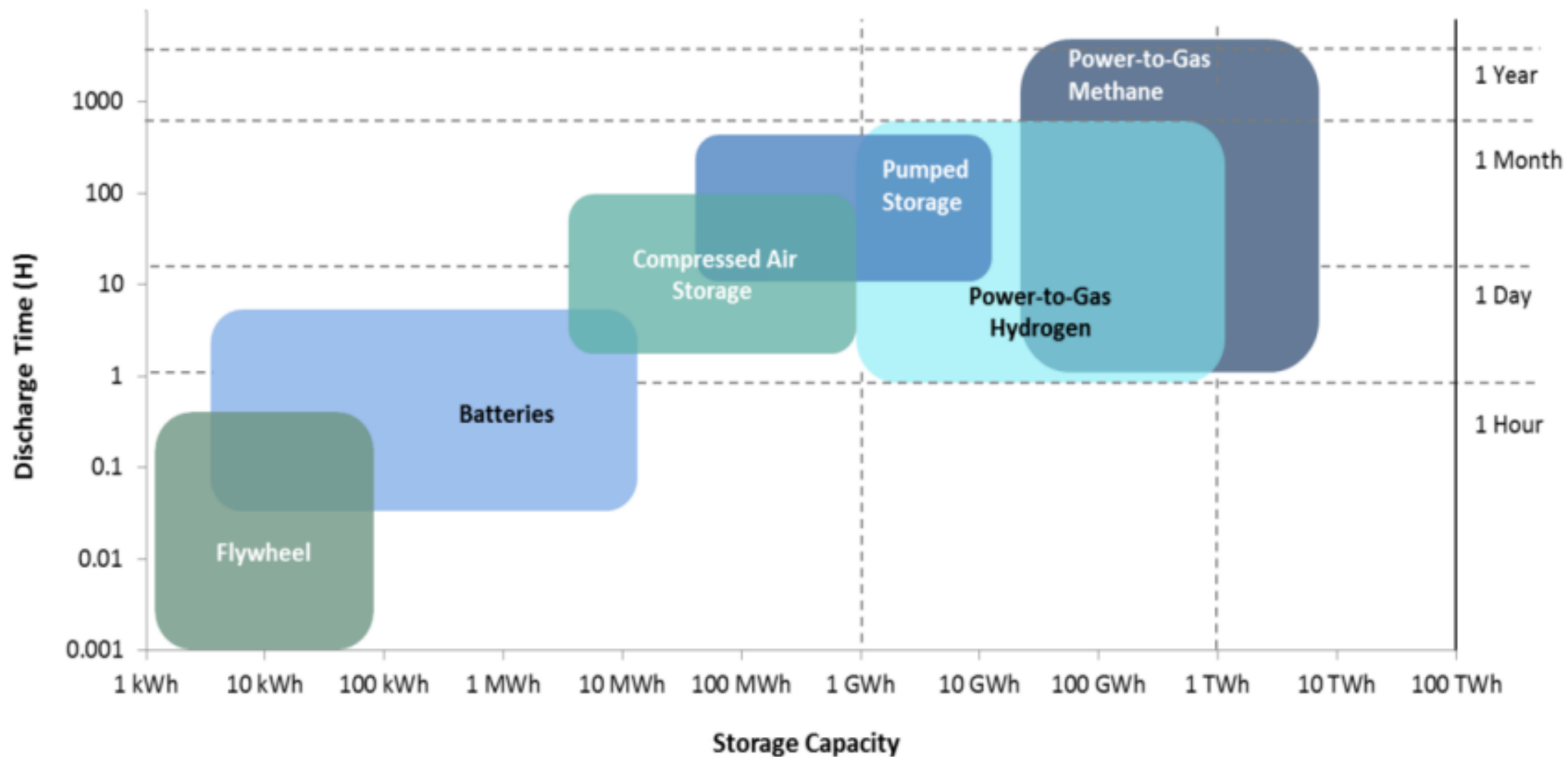
# Gross electricity generation in the Baseline



Source: Eurostat (2010, 2015), PRIMES.

Comparing the monthly consumption of electricity and gas in the European Union

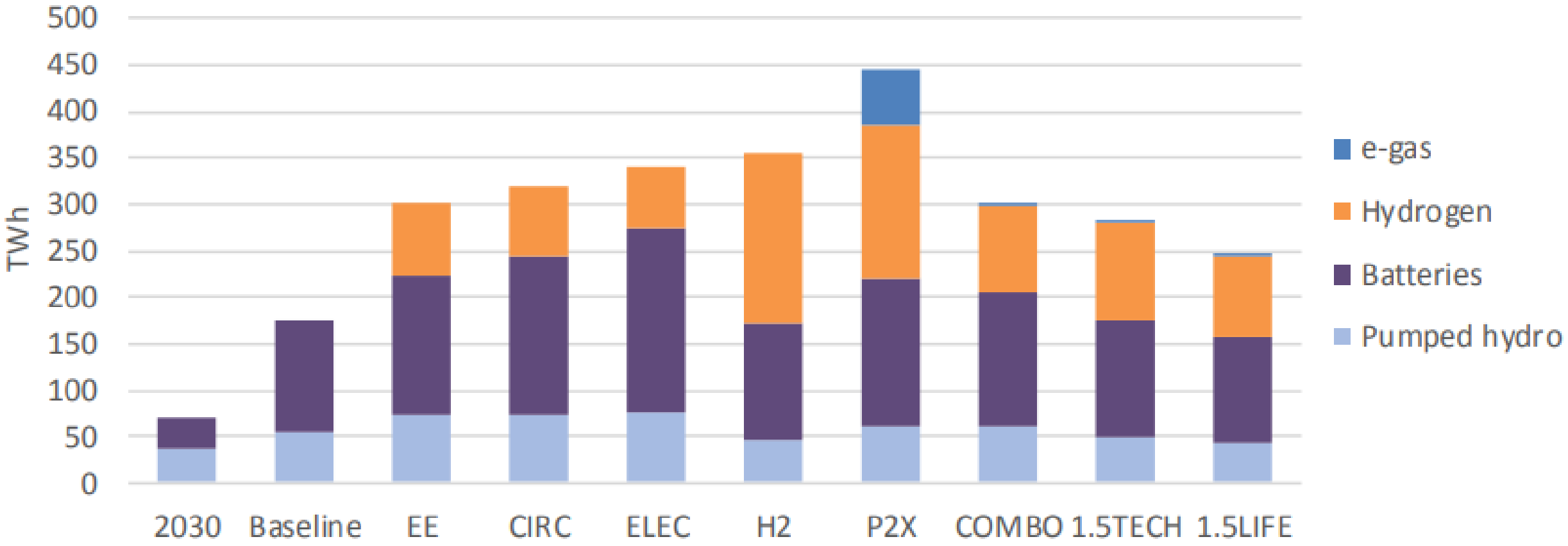




Source: European Commission (2017), Energy storage – the role of electricity<sup>178</sup>.



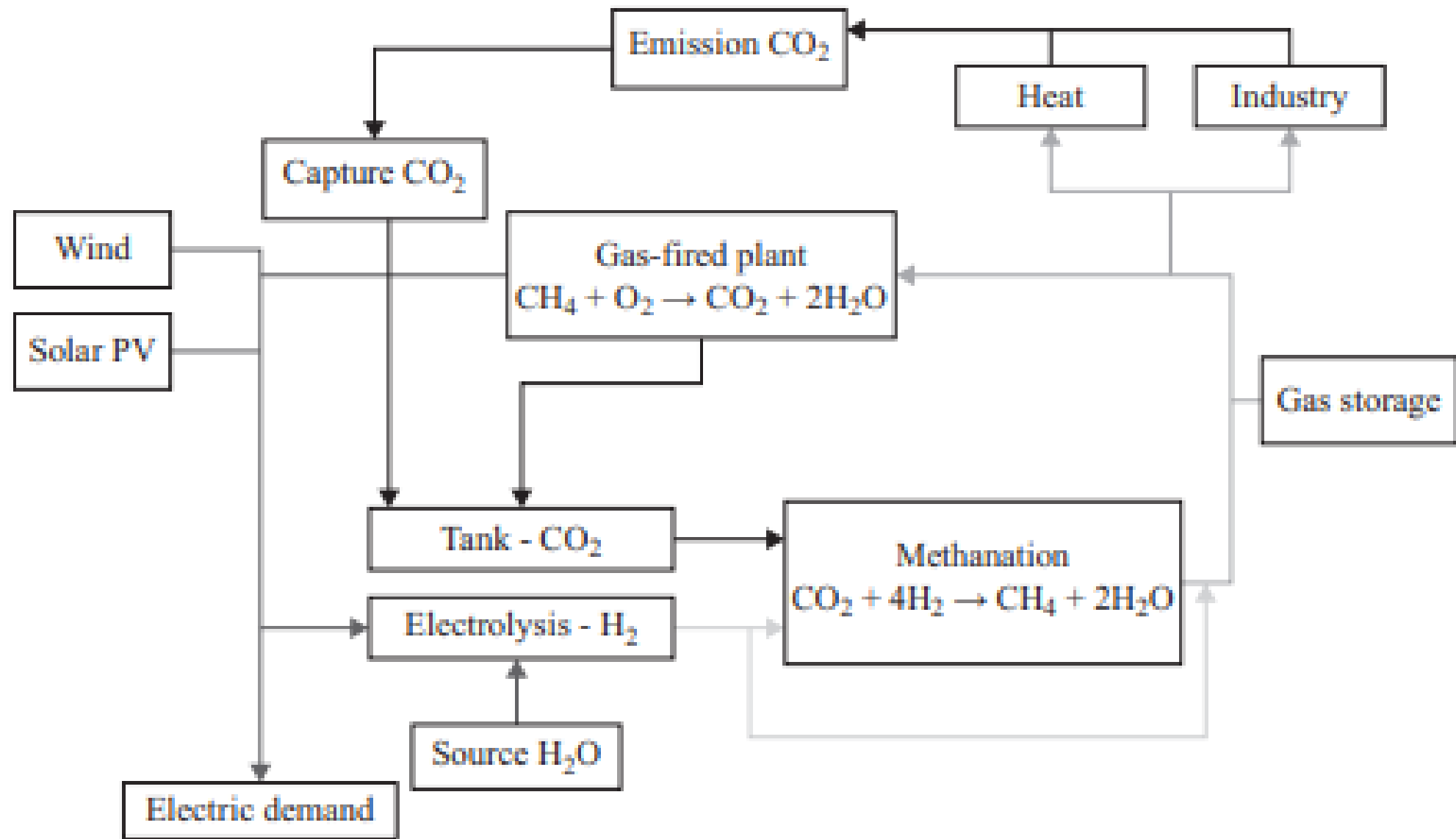
# Storage in 2050



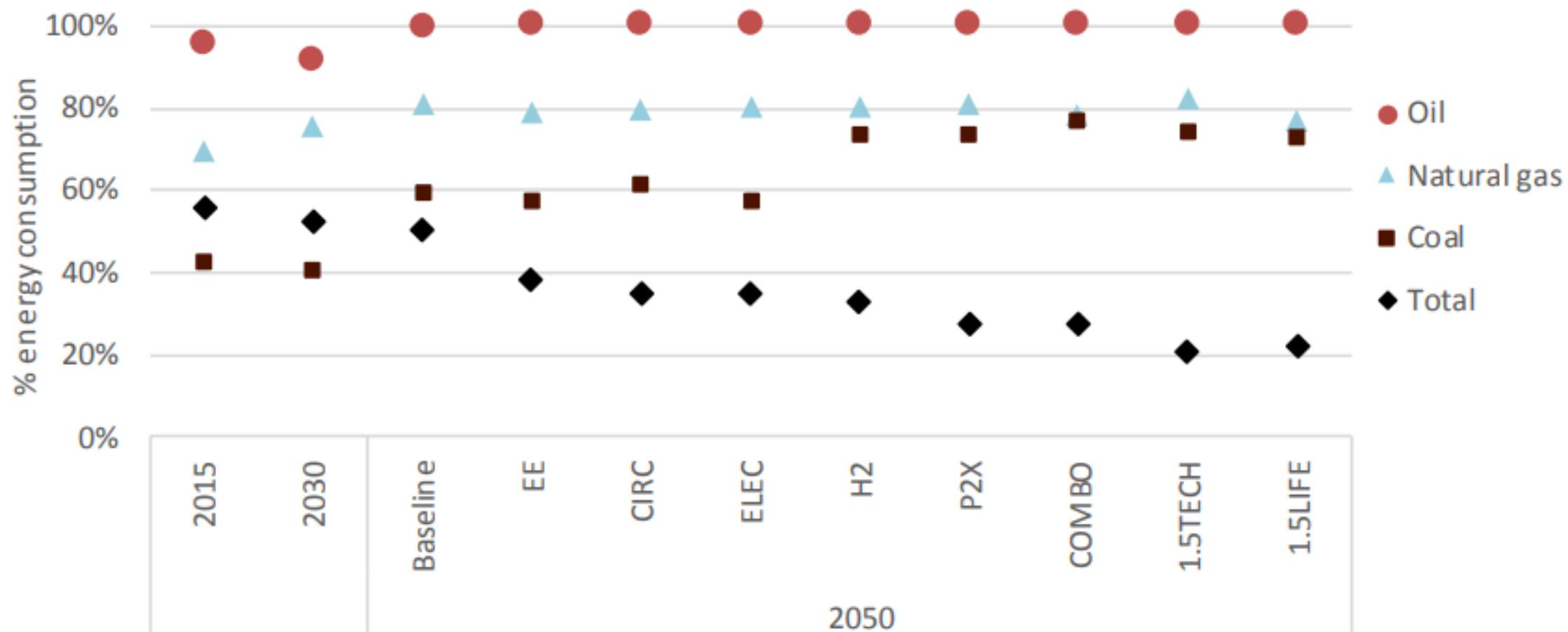
*Source: PRIMES.*

# Three Pillar Strategy

- Strong electrification on the basis of RES
- Greening of molecules and low carbon molecules
- Sector coupling/integration (P2X, grids, demand side)



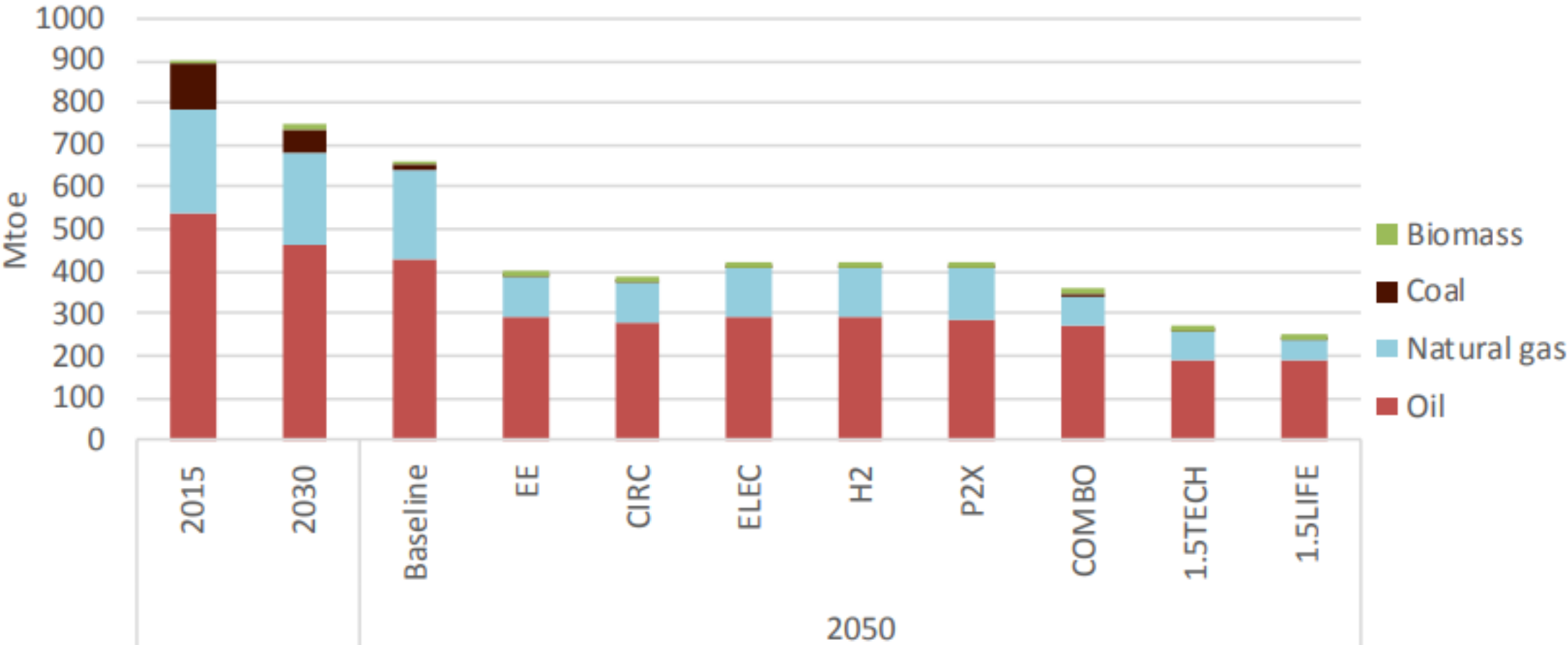
*Figure 4.1 Basic scheme of the Power-to-Gas concept*



*Note: the rate is calculated by dividing the net imports per fuel by the sum of the gross inland consumption and of the energy use in international bunkers for that fuel. The Total data series corresponds to the ratio of imports to gross inland consumption.*

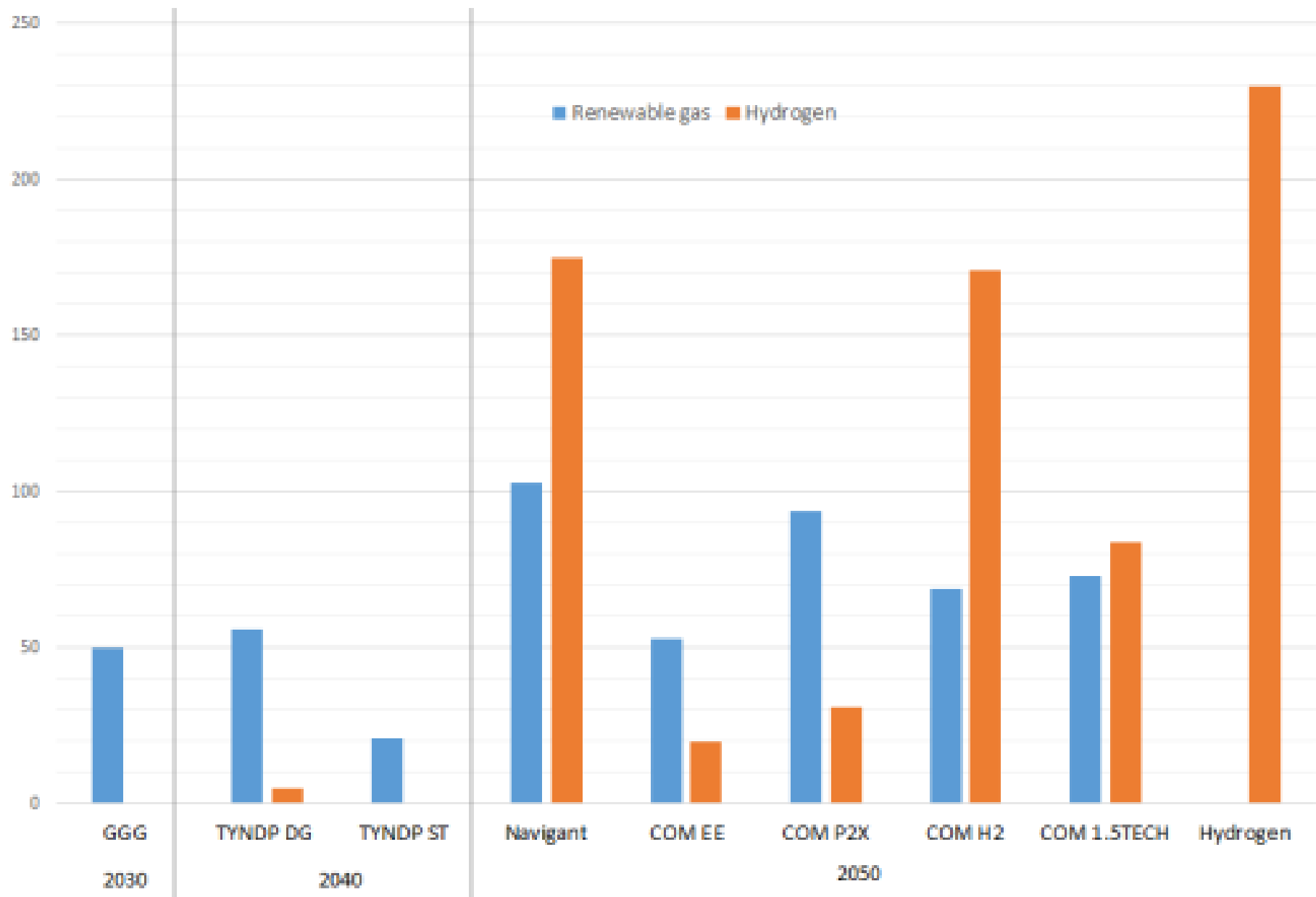
*Source: Eurostat (2015), PRIMES.*

# Energy imports



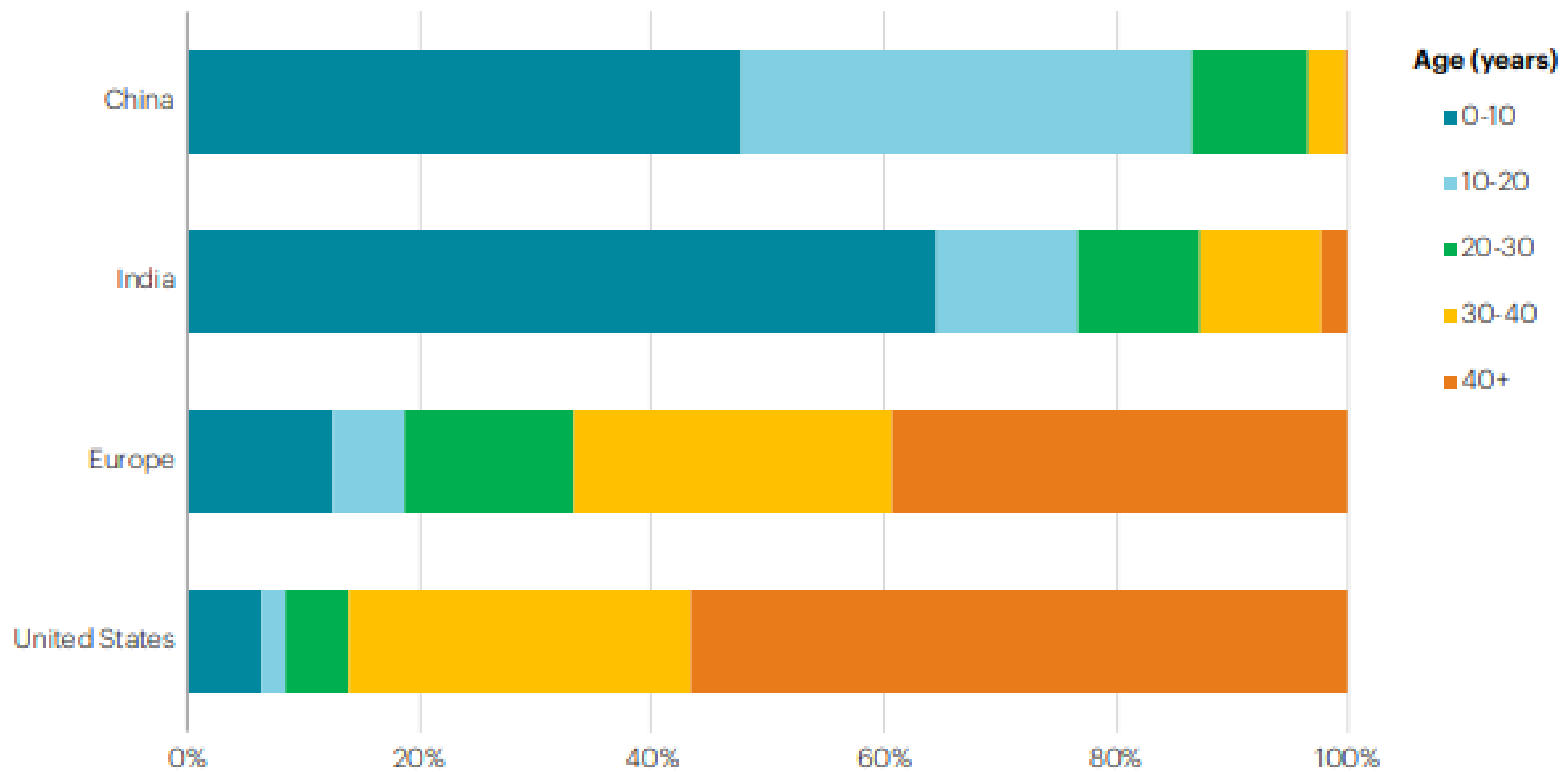
Source: Eurostat (2015), PRIMES.

Figure 4. Production projections for renewable gas and hydrogen (bcm)



Source: GGG (2014); TYNDP (2018); Navigant (2019); European Commission (2018); Hydrogen (2019).

Share of coal-fired plants in selected countries/regions by age



# European Energy Security Strategy

- Resilience to sudden disruptions in energy supplies
- Support to the most vulnerable Member States
- Protection of strategic infrastructure



# Legislative basis

- Oil stocks directive
- Security of gas supply regulation
- Regulation on risk preparedness in the electricity sector
- Network code on electricity emergency and information system
- Directive on security of network and information system

# Coordination

- Oil Coordination Group
- Gas Coordination Group
- Electricity Coordination Group

# New Challenges for Energy Security

- Strong growth in electricity consumption
- More variability more need for storage
- More hydrogen more need for electricity
- More decentralisation in supply
- Digitalisation
- Need for new infrastructure and stranded assets
- Critical role of energy efficiency in reaching targets
- How to keep consistency in efforts towards long term goal
- What degree of differentiation between MS is possible in the long term

Need for more integrated energy security