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Gone Green 2011
Key facts and figures

Gone Green is a scenario that represents a balanced approach to meeting renewable energy and CO2 emissions targets in 2020 and 2030, in which electricity generation, heat and transport all contribute. It is a scenario not a forecast: environmental targets are always met. Gone Green is compatible with the Committee on Climate Change 4th budget (CCC4) and with the DECC Renewables Roadmap.

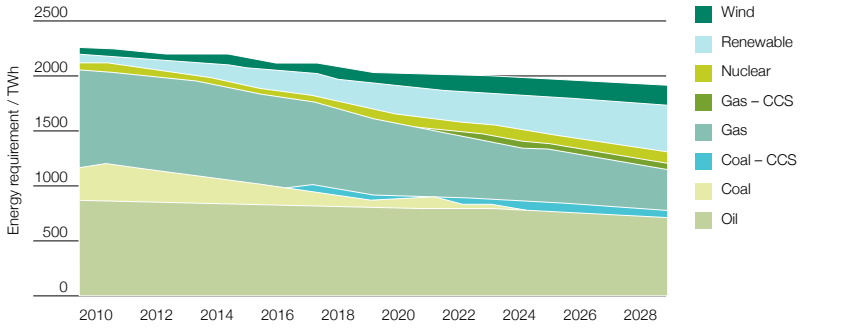
Heat

- Improved insulation leads to lower demand: -18% by 2030
  CCC4 -15%
- 1.2 Million domestic heat pumps by 2020, 8 Million by 2030
  CCC4 8 Million by 2030
- Renewable heat 12% in 2020, 37% in 2030
  CCC4 12% in 2020, 32% in 2030
- 20 TWh Biogas in 2020, 50 TWh in 2030
  CCC4 8 TWh in 2020, 27 TWh in 2030
- Heat demand is very peaky so full electrification of heat would be very expensive and difficult
- Using gas to meet the peak heat demand alongside heat pumps for baseload heat means that **Gas still makes up 63% of domestic space heating in 2030** *(down from 83% today)*
- 46 TWh total Biomatter (biogas + biomass + waste) heating in 2020
  DECC Roadmap 36-50 TWh.
- Limited Micro CHP & some district heating

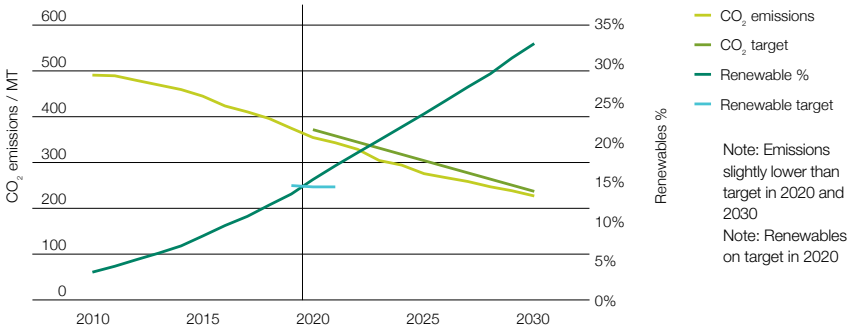
Transport

- 1.8 M Vehicles (EV and PHEV) by 2020, 13.5 M by 2030
- 17% of new car sales in 2020, 76% in 2030
- 40 TWh electricity demand by 2030
  (CCC 4 has 31 TWh)
- No hydrogen vehicles before 2030
- Some CNG in HGVs
- 37 TWh biofuel in 2020
  (DECC Roadmap 'up to 48 TWh)
- On target for 10% of road and rail transport by 2020
- 7% of all transport energy from renewable sources by 2020

UK Target
Total UK energy requirement

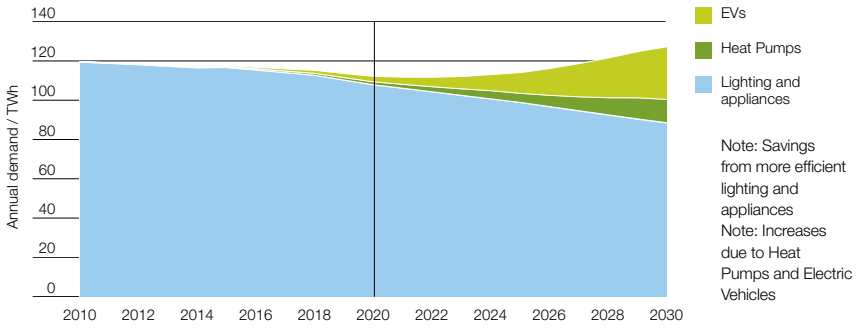


UK Target
CO_2 emmisions and renewable energy %



Note: Emissions slightly lower than target in 2020 and 2030
Note: Renewables on target in 2020

Electricity demand
Residential electricity Annual



Note: Savings from more efficient lighting and appliances
Note: Increases due to Heat Pumps and Electric Vehicles

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Electricity Generation

- AGR nuclear plant receives 10 year life extension
- First new nuclear plant connects in 2019/20
- Significant amount of coal plant closes due to IED and age
- 4 GW of coal with CCS connects post 2023
- Existing gas-fired plant assumed to close at around 25 years of age
- 13 GW of new conventional CCGT capacity: 7GW already under construction / commissioning or recently commissioned
- 7.0 GW of new gas plant with CCS is included in the forecast from 2023
- 7.6 GW interconnection from 2020
- 26 GW of wind capacity in 2020 (17 GW offshore) and 47 GW (37 GW offshore) in 2030
- 5% of wind nameplate capacity used for plant margin calculation
- Intermittent generation managed with Smart technology: demand side reductions and cars charging overnight
- 4 GW Marine generation in 2030: Pentland Firth in Scotland and around the Severn in England
- 31% of electricity from renewable sources in 2020, 48% in 2030

Low carbon capacity
2020 - 48 GW
2030 - 94 GW

Renewable capacity
2020 - 36 GW
2030 - 64 GW

Carbon intensity

Generation
2010 ~ 500 g CO_2/kWh
2020 ~ 222 g CO_2/kWh
2030 ~ 48 g CO_2/kWh

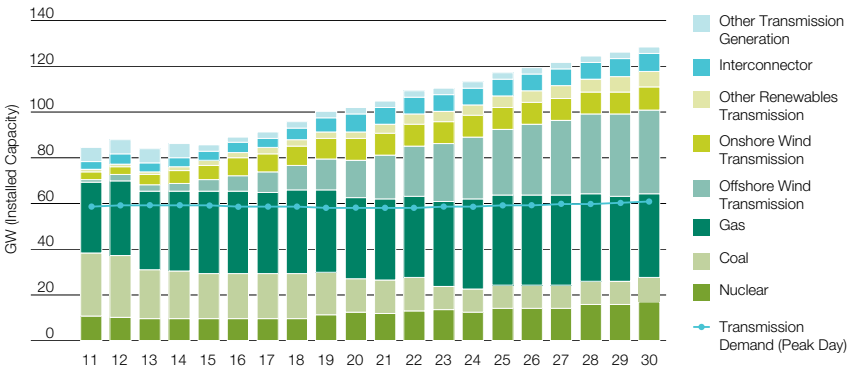
Private car
2020 ~ 875 g CO_2/KWh
2030 ~ 685 g CO_2/KWh

Domestic gas
2020 ~ 225 g CO_2/KWh (heat)
2030 ~ 195 g CO_2/KWh (heat)

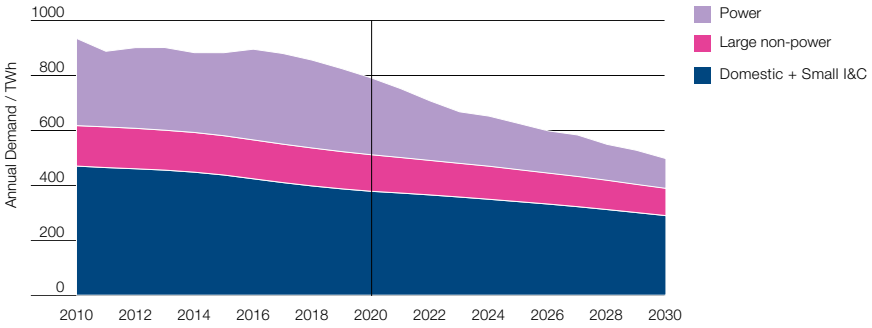
Gas demand and supply

- Domestic + I&C demands are lower due to energy efficiency
- Limited gas in new homes
- Power generation maintained initially due to coal closure then falls as more wind is installed
- Imports are not materially higher than today as decline in UKCS is comparable to decline in demand
- Unless new LNG facilities are built, supply flexibility from LNG could be reduced due to the need to operate close to peak flows for much of the time

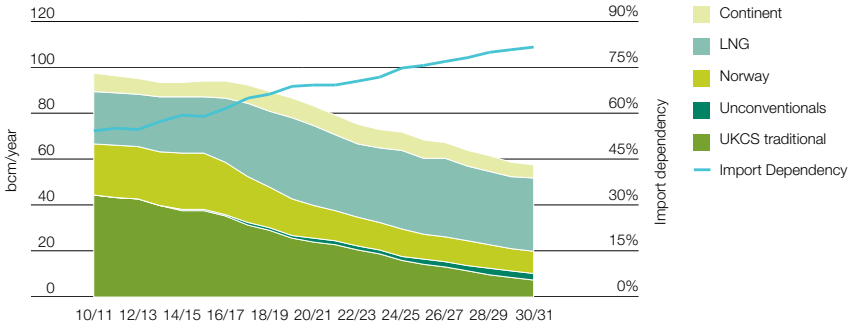
Electricity Generation
Total UK energy requirement



Gas demand and supply
GB Gas demand



Gas demand and supply
GB Gas supply



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