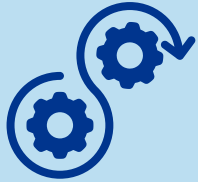


# Biomass plays a key role in the UK energy system and remains critical for future targets

Biomass has played a critical role in the UK energy system for centuries and, looking forward, sustainable biomass use paired with carbon capture could significantly reduce the cost and challenge of meeting the UK's 2050 Net-zero target

## Energy security



- Over two-thirds of biomass used for UK energy production comes from domestic feedstocks, and imported biomass is largely sourced from geopolitically stable regions (North America and Europe) – partly as a result, biomass prices are relatively stable compared to natural gas
- Biomass provides almost 12% of all energy consumed today across the power, heat and transport sectors<sup>1</sup>
- In the electricity sector, biomass provides over 5.5GW of 'firm' capacity, equivalent to c.13% of total dispatchable capacity; dispatchable capacity is forecast to decline by c.8GW by 2030, with only 1GW of new 'firm' capacity expected to be built, making biomass capacity even more important
- Biomass can complement the rapid deployment of weather-dependent renewables – with less biomass there would need to be even more flexible demand on top of the near six-fold growth from 2 GW in 2023 to 10-12GW targeted in NESO's Clean Power 2030 report

## Emissions reductions



- Since 2010, biomass generation in the power sector has cut emissions by 90 MtCO<sub>2</sub>—equal to removing all road transport emissions for a year
- Replacing biomass with gas generation would increase emissions by more than 10 MtCO<sub>2</sub> p.a. The lost biomass generation would be equivalent to the output of 8.5 GW of offshore wind capacity<sup>2</sup> and this would still result in higher emissions
- In the longer-term, biomass with Carbon Capture and Storage (BECCS) could deliver 10 MtCO<sub>2</sub> of carbon removals each year by 2035, offsetting residual emissions in hard-to-abate sectors – equivalent to removing 3.75 million combustion cars from roads or halting Heathrow flights for 17 months

## Cost savings



- In the near term, without biomass in the power sector, an additional c.4.7GW of capacity would need to be procured through the Capacity Market – potentially increasing costs by c.£500 - £900 million per year, offsetting biomass support costs, and risking falling short of the capacity target
- In the longer term, carbon removals via BECCS are critical to meeting Net-zero – by 2035, for every 10% increase in sustainable biomass supply that can be achieved, the cost of meeting carbon targets could be reduced by up to £5 billion, driven by the increased potential for BECCS
- By 2050, Baringa analysis estimates system cost savings of 6-14%, or up to £67bn, if biomass supply can be scaled sustainably along the path to Net-zero
- Each year of delay in deploying BECCS increases costs by around £1.2 billion due to the higher cost of the alternative options to reduce emissions

Notes: 1. Based on UK Energy Trends statistics for April 2025, Table 1.2: Inland energy consumption, primary fuel input basis for Bioenergy and Waste category

2. Using the five-year average load factor for offshore wind from the Digest of UK Energy Statistics (DUKES) 2024, Load factors for renewable electricity generation