Affordable and clean energy

Ensure access to affordable, reliable, sustainable and modern energy for all

Prepared by

regen
transforming energy
Many existing forms of energy used for electricity, heating and transport are high emitters of carbon, contributing to climate change. Building an affordable and sustainable future energy system is a complex and multifaceted challenge. At its heart sits the balance between investment needed today with the growing cost of inaction tomorrow.¹

The solutions to decarbonise electricity are already working and cost-effective. Renewables are fast becoming the cheapest source of electricity.² The UK has reduced greenhouse gas emissions by 42% since 1990, half way to its 80% reduction target by 2050.³ Renewables now provide 30% of UK’s electricity; including nuclear, low-carbon sources provide over half of our electricity. However, progress in decarbonisation of heat and transport has been slow and more renewable generation is needed in all future decarbonisation pathways.

The best way to reduce both energy costs and carbon is for people to use energy efficiently and flexibly. Batteries and smart technology can help people use more when it is plentiful and less when it is not. Though technology is important, engaging people to use information to take control of their energy needs will be key. The prize is a smarter, more affordable low-carbon energy system.

### Performance rating

<table>
<thead>
<tr>
<th>Sustainable Development Goal Target</th>
<th>Rating</th>
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<tr>
<td>7.1       By 2030, ensure universal access to affordable, reliable and modern energy services</td>
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<td>7.2       By 2030, increase substantially the share of renewable energy in the global energy mix</td>
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<td>7.3       By 2030, double the global rate of improvement in energy efficiency</td>
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<td>7.a     By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology</td>
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<td>7.b     By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support</td>
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Key findings

1. The UK has made significant progress in decarbonisation of electricity, backed by a strong policy framework in the Climate Change Act. However, progress in heat and transport remains elusive.

2. Fuel poverty has reduced but more needs to be done to achieve a goal of all fuel poor homes having an energy rating of C or above by 2030.

3. New government commitments in the Clean Growth Strategy could reboot progress on energy efficiency but will need to be translated into effective policies.

4. At least 50-70 TWh per annum of new renewable and low carbon electricity generation will be needed in the next decade to fill the capacity gap identified by the Committee on Climate Change.

5. 25-30 GW of flexibility capacity from batteries and demand response is needed to run a more efficient network, manage renewable generation and handle new demand technologies such as electric vehicles.

Performance and progress

With 100% of the UK population having access to electricity and clean fuels, affordability and fuel poverty is the key element of Target 7.1. The number of UK households in fuel poverty has been falling but the proportions of households in fuel poverty are still high, particularly in Wales and Scotland. The Government estimate that in England 11% of households (2.5m) are fuel poor, rising to 23% in Wales and 31% in Scotland.

Energy efficiency (Target 7.3) is the most cost-effective way to tackle fuel poverty and to manage long-term affordability in heating and powering homes. The UK Government has an existing target to upgrade fuel-poor homes, where practical, to Energy Performance Certificate (EPC) Band C or above by 2030. The 2017 report by the Department for Business, Energy and Industrial Strategy (BEIS) Committee on Fuel Poverty stated that currently only 11% of fuel poor homes reach this target and £14bn of further funding would be needed. The Committee recommends steadily increasing the minimum energy efficiency requirements for let properties, moving minimum EPC from level E to level C by 2030. Improving energy efficiency requirements for properties was recognised as a target in the Government’s Clean Growth strategy but it lacked a plan for how to achieve this, the Committee’s recommendations outline how to reach this target.

Target 7.1 also covers reliability and ‘modern energy services’. The Government’s approach is outlined in the Smart Systems and Flexibility plan published in July 2017 and action relies on the successful roll out of smart metering by 2020 as well as increasing flexibility capacity on the network. The smart-meter roll-out remains broadly on track with less than three years to go. However, a modern energy system also needs effective engagement and energy products and services to help people manage energy use through smart technologies. As well as changing behaviour, the system needs to avoid leaving behind those who are unable or unwilling to engage – an issue Ofgem has explored but has yet to solve.
The indicator for Target 7.3 is energy intensity of primary energy and GDP. Indexed to 100 in 1990, the UK’s ratio of primary energy consumption to GDP fell to 52.5 in 2016 \(^{14}\) with the reduction attributed to fewer UK energy-intensive industries and more efficient generation (gas rather than coal) as well as energy efficiency. However, with ‘easy wins’ already achieved, continuing this level of improvement will be challenging and needs a new policy focus. A recent report by the Ministry of Housing, Communities and Local Government shows that improvements in energy efficiency of homes have stalled since 2015. \(^{15}\) Commitments made in the 2017 Clean Growth Strategy could reboot progress, but still need to be translated into effective policies. Energy use of electrical products in use and on standby also remains an important part of energy efficiency and reducing consumer bills. The significant progress made through EU Product Directives \(^{16}\) needs to be continued post-Brexit.

Target 7.2 is about substantially increasing the share of renewables in final energy consumption. Key to this is the Climate Change Act 2008 and the associated policy framework including the carbon budgets set by the Committee on Climate Change. The UK also has shorter term targets for renewable generation by 2020 through the EU Renewable Energy Directive. In 2016, 8.9% of total UK energy consumption came from renewable sources \(^{17}\) against a target of 15% of all energy. Renewables provide 24.5% of electricity but a much lower proportion of the energy required for heat (6.2%) and transport (4.5%). The UK plan for the EU Directive also has 2020 ‘illustrative’ sub-targets of 30% for electricity and 12% heat \(^{18}\) and EU target of 10% for transport. The Government expects to exceed the electricity target, hitting 35% in 2021 and in 2017 it increased the Renewable Transport Fuel Obligation to hit 9.75% by 2020. \(^{19}\) Renewable heat remains challenging, however, and the UK is likely to be below the 12% renewable contribution level in 2020. The 2017 Clean Growth Strategy \(^{20}\) contains strong statements on low-carbon heat and the subsequent call for evidence on heat solutions is starting the process of policy development, though the impacts of any new policies are still some years away. \(^{21}\)

The Committee on Climate Change (CCC) has warned that the UK is currently off-target to deliver the carbon savings required for the fourth and fifth five year carbon budgets up to 2032, despite a strong commitment to phase out coal generation by 2025. \(^{22}\) A key shortfall concerns new capacity of renewable and low-carbon generation. The CCC recommends further support through new Contract for Difference (CfD) auctions. \(^{23}\) However, least cost delivery of new renewable capacity is challenging because both solar and onshore wind (the cheapest form of renewable energy) are currently ineligible for CfDs and deployment of onshore wind has ceased in England due to planning restrictions. Recent large subsidy cuts for small-scale renewables have also halted most small and community energy renewable energy developments.

Transport is now the largest carbon emitter in the UK with 26% of emissions. \(^{24}\) Road transport has existing targets in place through the Renewable Transport Fuel Obligation. The Government has also made a commitment to phase out new diesel and petrol cars by 2040. \(^{25}\) There has been policy and industry support for electric vehicles and the Government is now being asked to bring this deadline forward to 2030, to reflect more ambitious targets elsewhere including in Scotland where it is set at 2032. \(^{26}\)

However, the programme of rail electrification replacing diesel trains has been abandoned due to cost overruns \(^{27}\) and the proposed Heathrow Airport expansion is also likely to increase carbon emissions in the sector overall.
Synergies and coherence

The UK Government still supports oil and gas exploration and production onshore in the UK and on its continental shelf mainly through tax relief. The annual average of national subsidies given to fossil fuels between 2014 and 2016 was £13.26 billion according to one estimate.28

There are important synergies across the 17 SDGs including Climate Action (SDG13) and particularly SDG3 on Good Health and Well-being related to the high levels of UK urban air pollution and associated premature deaths. Energy affordability also has a clear link to SDG1 and halving poverty in all its dimensions by 2030.

Local to international dimension

The UK is part of a global trade in carbon, with large quantities of emissions embodied in the goods and services that are exported and imported. Carbon Brief has calculated that more than half of the reduction in carbon emissions in the UK since 1990 have been imported back through products manufactured elsewhere and consumed in the UK.29 UK companies need to recognise and reduce the carbon impacts of their supply chains using frameworks such as the Carbon Disclosure Project (SDG12).30 Overseas Development Assistance and private sector investment overseas should support renewable energy deployment, helping poorer countries develop sustainable energy systems and provide energy access to all.31
**Recommended actions**

1. Increase ambition for action on climate change in line with the Paris Agreement. Facilitate contracting at least an additional 50-70 TWh per annum of low-carbon electricity generation and 25-30 GW of flexibility capacity to be installed during the 2020s:

   i. Bring forward a new CfD auction open to solar and onshore wind

   ii. Reform the Capacity Market to allow all technologies to compete

   iii. Amend the planning regime to allow further development of onshore wind in England

   iv. New route to market for small scale and community renewables replacing Feed-in Tariffs

2. Develop a combined strategy for energy efficiency and low-carbon heat, building on the commitments in the Clean Growth Strategy and focusing on the fuel poor, to include:

   i. A zero-carbon new homes standard

   ii. An increase in EPC requirements for landlords up to band C by 2030

   iii. A new Green Deal with low cost borrowing to unlock energy efficiency investment

   iv. Exempting rooftop solar and batteries from business rate calculations

   v. Continue to improve and accelerate energy efficiency of product standards post Brexit

   vi. A comprehensive engagement programme around people and smart energy

3. Increase ambition in decarbonising transport:

   i. Bring forward ban on new diesel and petrol vehicles to 2030

   ii. Re-evaluation of electrification of rail investments
Repowering London

SDG TARGETS: 1.2, 7.1, 7.2

Repowering London is a not-for-profit organisation that helps communities to develop community-owned renewable energy projects, particularly using photovoltaic (PV) panels. According to Community Energy England, the UK is home to 222 community energy organisations, with over 30,000 members. Repowering London is helping to set up and support community energy groups within the capital.

Projects include the successful Brixton Energy Solar, which resulted in the first inner-city cooperatively owned energy project on a social housing estate, and Repowering Lambeth Schools, an education programme for local school children. A new project, Energy Garden, is creating spaces for community members to come together to grow food, green their local areas and generate energy. This includes using solar energy to power notice boards, lights and water pumps.

Repowering London’s activities aim to reduce carbon emissions, tackle fuel poverty and encourage local leadership through cooperative business models. Their approach includes connecting groups with local and national investors so they can raise the finance needed for their projects as well as providing them with the technical and practical support they need to get their schemes off the ground.

www.repowering.org.uk
In the first quarter of 2018, electricity in Scotland generated by onshore wind turbines was up by 44%, breaking its previous record from the same period in 2017. Between January and March 2018, wind turbines generated enough electricity to power around five million homes.

Scotland’s 2009 Climate Change Act is recognised as world leading in ambition, and in 2018 the Scottish Government reported it would achieve its existing emissions reductions target by 2032, 18 years earlier than its 2050 target. This has led to further ambition through the Climate Change Bill which sets an emission reduction target of 90% by 2050.

The surge in onshore wind power is helped by the Climate Change Act and its 2020 Routemap for Renewable Energy 2011. The Routemap lays out actions to achieve Scotland’s target of meeting an equivalent of 100% demand for electricity from renewable energy by 2020, for instance by providing a supportive planning system. For onshore wind in particular, this includes identifying the best locations for turbines so they are in balance with the natural environment and landscape.
Endnotes

4 This could increase as the UK moves to increase its emissions reductions in line with the Paris Agreement.
6 Ibid.


33 www.edie.net/news/10/Scotland-smashes-onshore-wind-record/


35 The Scottish Government, Climate Change www.gov.scot/Topics/Environment/climatechange
