

# The implications of a European 2030 renewable energy target for the UK

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# Summary

Our analysis indicates that the likely level of an EU 2030 renewables target, and the share it implies for the UK, will not create additional costs for electricity consumers. It will also be below the level of renewables deployment needed for any cost effective route to meet economy wide carbon budgets. In this briefing we explain why a UK renewables target is complementary to a power sector decarbonisation target and why there are significant investor, energy market and industrial policy benefits to be gained by setting an EU renewables target beyond 2020.

Specifically, we conclude that:

## **1. The EU renewable energy target can be considered as a 'no regrets' policy for achieving UK carbon budgets**

A binding European target, to generate 30 per cent of EU energy from renewables by 2030 (above the level currently being considered), would equate to an approximate 23 per cent target for UK energy and would translate into an approximate 40 per cent target for UK electricity. This is less than the level of renewable energy deployment illustrated in all the Committee on Climate Change's (CCC's) 2030 power decarbonisation scenarios, which show that the UK can feasibly attain up to 55 per cent renewable power by 2030.

## **2. A binding EU target has many benefits and not having one could significantly increase the cost of decarbonisation**

It creates investor and supply chain certainty across the EU for high capital and high policy risk technologies.

The size of a growing EU-wide renewables market has the potential to generate significant economies of scale in the manufacturing and deployment of renewable energy infrastructure at the European level, which could generate significant cost savings for the UK.

A growing European renewables market creates considerable technological export opportunities for a country like the UK, given its current leadership position in the development of offshore wind, marine renewable and smart grid technologies.

A renewables target encourages European interconnection and regional co-operation. This could help reduce the cost of maintaining system security, and export opportunities for surplus UK renewables electricity.

## **3. A UK power decarbonisation target will continue to be needed in addition to a renewables target**

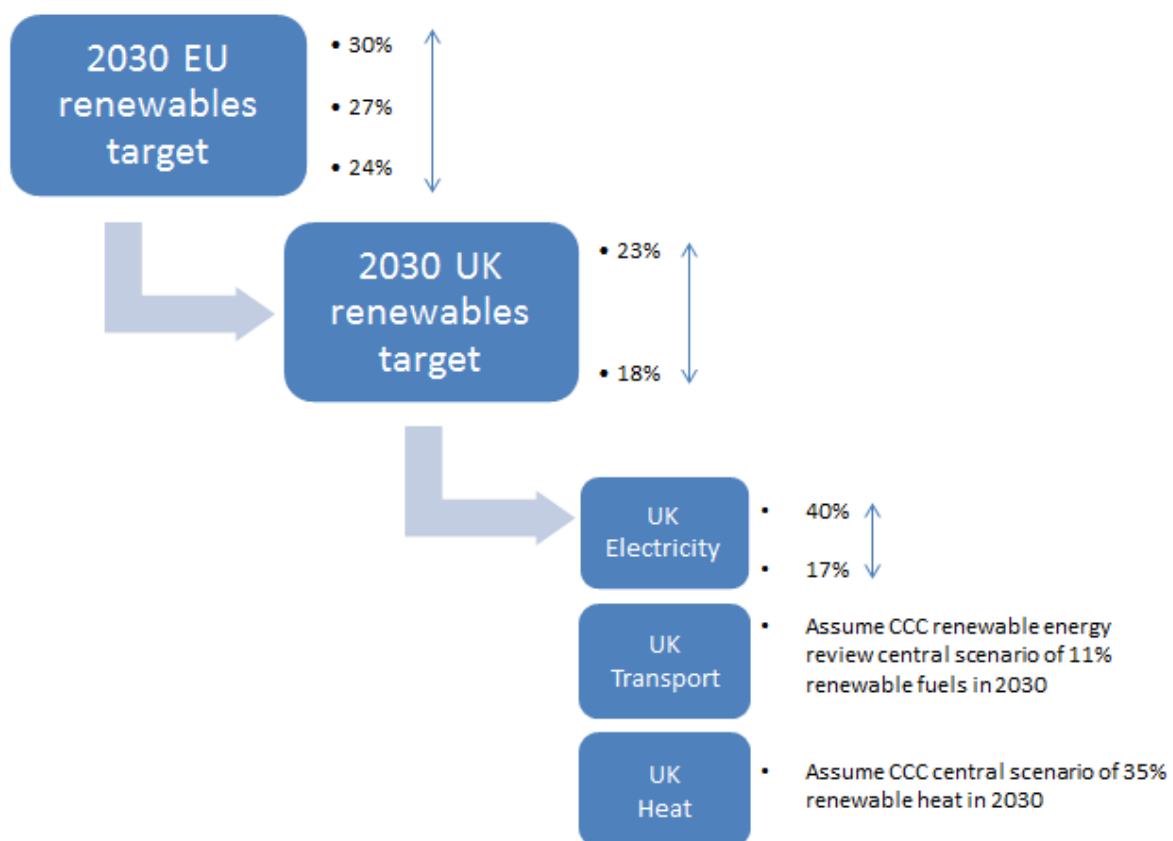
It is needed to signal the desired carbon emissions outcome for power generation and allows a flexible approach, driving competition and price transparency between differing low carbon supply options.

# What the European renewable energy target would mean for the UK

It has been reported that the European Commission is considering a 2030 EU renewable energy target of between 24 and 27 per cent.<sup>1</sup> We have assumed that it will be binding on member states, in a similar way to the 2020 target. We have estimated the UK's share, under a range of EU wide renewable targets, and conclude that it would result in a UK energy target of between 18 and 23 per cent.<sup>2</sup> Meeting a target in this range would require considerably less effort than was required to achieve the target for 2020, because it would only need an increase of three to eight per cent in renewable energy within ten years.

This upper UK renewables target (23 per cent) is likely to result in a maximal electricity-only renewables target of 40 per cent<sup>3</sup>, which will take relatively modest effort to achieve given that renewables are expected to meet around 30% of the UK's electricity demand by 2020.

Figure 1: How possible renewables targets at EU level could translate into UK targets



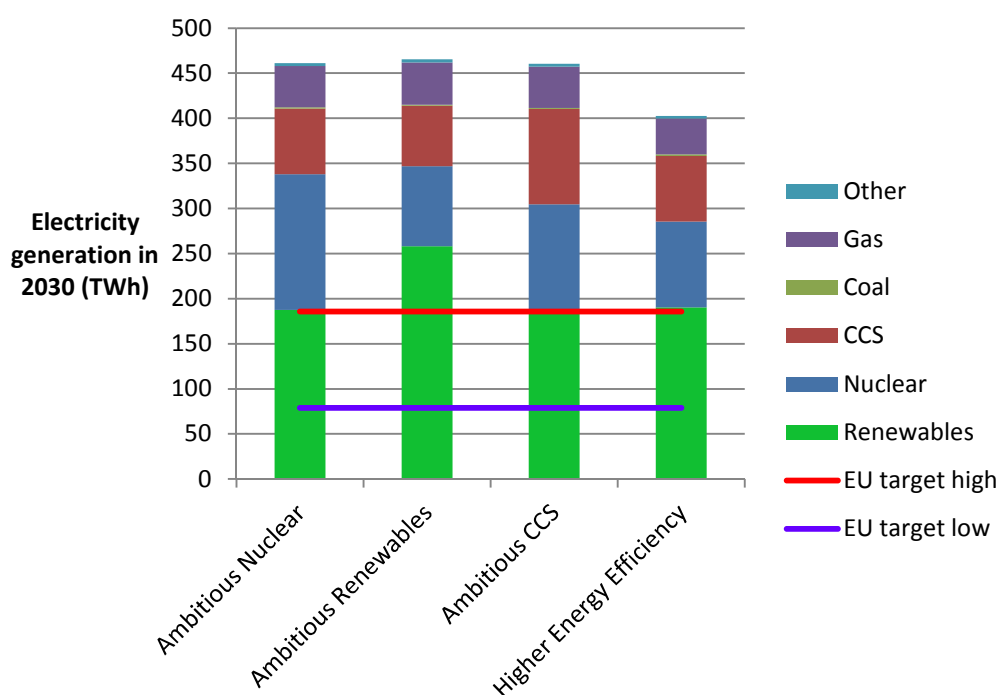
## How a renewables target fits with a decarbonisation target

The CCC's fourth carbon budget review, in 2013, looked at a range of options to achieve power sector decarbonisation in 2030. The proportion of renewables ranged from 41 per cent in both the ambitious nuclear scenario and the ambitious carbon capture and storage scenario to 55 per cent in the ambitious renewables scenario.

The following chart shows the four scenarios under which the CCC envisages the UK meeting a 50gCO<sub>2</sub>/kWh power sector target in 2030. It can be seen that the maximum plausible UK share of an EU renewables target, when translated into a target for the electricity sector, is lower than the minimum level of renewable power needed in any of the four CCC scenarios.

An EU target does not, therefore, act as a constraint in these scenarios, or set an upper limit on renewable generation. The costs of meeting an EU renewable target fall within UK electricity decarbonisation costs which the CCC estimates to be around £10 billion by 2030, up from around £8 billion in 2020.<sup>4</sup> It is estimated that meeting the CCC's recommended power sector decarbonisation target will add £20 a year to a typical household bill, compared to 2020, but is predicted to save between £25 billion and £45 billion relative to a focus in investing in gas generation during the 2020s.

Figure 2: An EU renewables target is likely to fall below a 'no regrets' level of renewable electricity in the UK



A UK decarbonisation target creates an upper market size for all low carbon power technologies and helps to stimulate competition and price transparency between technology families. It avoids the risk that policy becomes focused on only meeting the minimum renewables target.

# The benefits of an EU renewable energy target

**The biggest benefit of an EU renewables target is that it increases investor confidence, which can reduce capital costs and accelerate capital allocation. The size of a growing EU-wide renewables market also has the potential to generate significant economies of scale in the manufacturing of renewable energy infrastructure, thereby significantly accelerating cost reductions.**

A credible and binding renewable energy target provides some degree of certainty about the minimum market size for investors. A 2030 target is particularly helpful for supply chain companies, such as the seven companies that have expressed an interest in establishing turbine assembly plants in the UK.

Investors need to know that the market for their products will exist beyond 2020 before they will invest capital in new plant, machinery and skills programmes, as these are investments that have long payback periods. Alternative approaches to target setting which shift relative prices in favour of low carbon generation, such as committing to higher carbon taxation, do not give investors this confidence because they know that politicians are reluctant to impose planned price rises as taxation increases.

There are a number of additional benefits of having a pan-European target and nationally binding target for renewables deployment:

- It is less fragmented than having ad hoc national targets and programmes. Having a European target which is binding and apportioned at national level makes it easier for countries to collaborate in project development and deploy renewables where they are cheapest, eg the proposed development of wind farms in Ireland to meet UK energy needs.
- It enables the planning and financing of common infrastructure, such as electricity interconnectors, which take many years to deploy but reduce costs and increase network resilience, as evidenced in DECC's recent interconnection strategy.<sup>5</sup> This also creates potential export opportunities for surplus UK renewable electricity, as shown by the government's own Offshore Valuation Report.<sup>6</sup>
- It makes it easier to anticipate the impact renewables will have on power sector carbon emissions, making it possible to adjust the EU Emissions Trading Scheme cap.
- It provides a clear signal to international investors that renewable energy is an EU infrastructure priority, creates incentives to invest in innovation (such as electricity storage solutions, the development of co-ordinated offshore grids, etc) and will increase EU business advantage in the international renewable markets. From a UK perspective, a growing renewables market could result in significant export opportunities for the UK, given its current leadership position in the development of offshore wind, wave and tidal technologies.

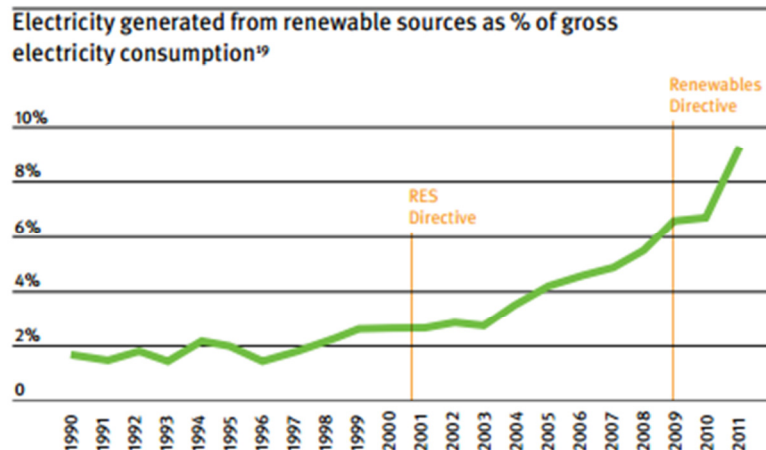
## What was the experience with the 2020 target?

The 2020 renewable energy target led to a significant increase in renewables deployment across Europe and sent a strong signal to investors around the world. It resulted in a 34 per cent increase in renewable energy sources in final energy consumption between 2007 and 2011.<sup>7</sup>

The target had a particularly strong impact on UK renewable electricity generation which grew 88 per cent between 2007 and 2011.<sup>8</sup>

### Kickstarting renewable electricity generation in the UK

Both the 2001 Directive on Electricity Production from Renewable Energy Sources (RES Directive) and the 2009 Renewable Energy Directive had a strong impact on UK renewable electricity generation, which grew by 98 per cent 2001-07 and 88 per cent 2007-11.



The design of the 2020 target caused some negative impacts, because it drove unsustainable use of biomass in transport fuels and coal power stations, but it had a big positive impact on the cost of renewables by increasing competition. Over the past decade, the solar PV industry has grown by an average of more than 40 per cent a year and production costs have decreased by around 60 per cent.<sup>9</sup> Wind turbine prices fell by 18 per cent per MW between 2009 and 2011.<sup>10</sup>

## Support for an EU 2030 target

- 78 European companies and business associations have publicly backed a binding 2030 renewable energy target including SSE, Dong, Vestas and Alstom.<sup>11</sup>
- Eight national governments, including Germany, France and Ireland have signed a letter to the European Commission stating that:

“A target for renewable energy is crucial to provide the certainty that can ensure cost-effective investments in energy systems that will strengthen the internal market for energy.”

## Endnotes

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<sup>1</sup> See: [www.ft.com/cms/s/0/b7de8ac2-7b98-11e3-a2da-00144feabdc0.html](http://www.ft.com/cms/s/0/b7de8ac2-7b98-11e3-a2da-00144feabdc0.html) and <http://www.theguardian.com/environment/2014/jan/10/eu-commissioners-2030-climate-goals>

<sup>2</sup> We estimate that an EU renewables target of 24, 27 and 30 per cent would lead to a UK renewables target of 18, 20 or 23 per cent, respectively. We assume that the UK's existing renewables target will increase by the same proportion as the overall EU renewable target.

<sup>3</sup> Assuming the UK meets central CCC scenarios for heat and transport: CCC, 2011, *Renewable energy review*, [http://archive.theccc.org.uk/aws/Renewables%20Review/The%20renewable%20energy%20review\\_Printout.pdf](http://archive.theccc.org.uk/aws/Renewables%20Review/The%20renewable%20energy%20review_Printout.pdf)

<sup>4</sup> CCC, 2013, *Next steps on Electricity Market Reform*, [www.theccc.org.uk/wp-content/uploads/2013/05/1720\\_EMR\\_report\\_web.pdf](http://www.theccc.org.uk/wp-content/uploads/2013/05/1720_EMR_report_web.pdf)

<sup>5</sup> Department of Energy and Climate Change, December 2013: *More interconnection – improving energy security and lowering bills*. Online: <https://www.gov.uk/government/publications/more-interconnection-improving-energy-security-and-lowering-bills>

<sup>6</sup> The Offshore Valuation Report, July 2010, [www.offshorevaluation.org](http://www.offshorevaluation.org)

<sup>7</sup> EEA, 2012, [www.eea.europa.eu/data-and-maps/figures/share-of-renewable-energy-to-4#tab-metadata](http://www.eea.europa.eu/data-and-maps/figures/share-of-renewable-energy-to-4#tab-metadata). Eurostat, 2013, <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdcc110>. Data 1990 – 2003 taken from EEA. 2012. Data from 2003 – 2011 taken from Eurostat, 2013.

<sup>8</sup> Eurostat, 2013.

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdcc330>

<sup>9</sup> Ernst & Young, 2012, *Renewable energy country attractiveness indices* [www.ey.com/Publication/vwLUAssets/CAI\\_issue-35\\_Nov-2012/\\$FILE/CAI\\_issue-35\\_Nov-2012\\_DE0372.pdf](http://www.ey.com/Publication/vwLUAssets/CAI_issue-35_Nov-2012/$FILE/CAI_issue-35_Nov-2012_DE0372.pdf)

<sup>10</sup> Bloomberg New Energy Finance, 2011, *Global trends in sustainable energy investment 2010*, [www.rona.unep.org/documents/news/GlobalTrendsInSustainableEnergyInvestment2010\\_en\\_full.pdf](http://www.rona.unep.org/documents/news/GlobalTrendsInSustainableEnergyInvestment2010_en_full.pdf)

<sup>11</sup> [http://www.erec.org/fileadmin/erec\\_docs/Documents/Open\\_Letters/Industry\\_Statement\\_for\\_Binding\\_2030\\_RES\\_Target\\_October\\_2013.pdf](http://www.erec.org/fileadmin/erec_docs/Documents/Open_Letters/Industry_Statement_for_Binding_2030_RES_Target_October_2013.pdf)