Energy security
Why renewables are the answer
October 2016

Renewables now make up almost half of the electricity generated from UK sourced fuels.

57.6% (Imported fuels)

37.8%

4.4% (Unknown)

14.7% North America

12.0% Europe

20.8% Asia

4.1% South America

6.0% Africa
Foreword from Juliet Davenport

Good Energy was established 15 years ago with a mission to tackle climate change, and help deliver energy security for the UK. Our aim is to give consumers and businesses a choice in where their energy comes from, providing the blueprint for how energy companies can and should look in the 21st century.

Our vision is a decentralised energy system in the UK - away from the old-fashioned high carbon system, to a modern low carbon system - where consumers, businesses and communities play a far more active role in the market.

In recent years, the UK has witnessed the start of a revolution, and year-on-year for more than a decade a growing proportion of our electricity has come from renewables powered by the sun and the wind. Today almost 25% of our electricity comes from clean, green sources. This is incredible considering that just six years ago, only 6.6% came from renewables. If we rewind a further five years – this figure was just a few percent.

Despite the year-on-year successes of renewables, the majority of electricity in the UK still comes from burning fossil fuels, or from nuclear power stations. With declining UK fossil fuel production and no nuclear resource, the UK is now largely reliant upon fuels imported from abroad to generate electricity.

Good Energy’s Energy Miles research, now in its fifth year, explores the origins of the UK’s electricity.

Pioneering data research

There’s currently no published data which pinpoints exactly where the UK imports its fuel from to power its many fossil-fuelled and nuclear electricity generators, so we had to use the data that’s out there and work it out for ourselves.

The main table of data we’ve used can be found at the end of the report, and more detail on our methodology can be seen on our website at goodenergy.co.uk/energy-security-data

Juliet Davenport OBE
Good Energy Chief Executive and Founder
Why is the UK importing coal from Russia and uranium from Kazakhstan...

The electricity we use to power our homes and businesses comes from a variety of sources, with the bulk still being generated by large power stations burning coal or natural gas and despite the UK having some of the best natural resources at its disposal – some of our power is even generated abroad and transported via huge wires underneath the sea.

Every year, the government releases information about where the UK’s electricity has come from over the past year – this is the UK’s fuel mix. The latest fuel mix shows that in 2015/16, almost a quarter of the UK’s electricity came from renewable sources.

The UK has some fossil fuel resources, but coal mining has declined dramatically from its peak 100 years ago, when over a million people were employed in the industry.

...when we could be powered by British wind, water and sunshine?

Relying on imported fuels isn’t good news for our economy, and it isn’t good news for our energy bills either. That’s before we even consider the cost to the environment.

Almost 60% of the fuel used to generate the UK’s electricity comes from abroad

This year’s research shows that the majority of the fuel used to generate the UK’s electricity comes from abroad. All the uranium for nuclear power stations and the majority of gas and coal for fossil fuel power stations come from foreign countries.

This fuel travels from as far away as Colombia, which accounts for 28% of the UK’s coal imports.

Imported fuel travels not only by boat, but also pipe. Norway accounts for almost 70% of the UK’s gas imports, all of which travels through a 725 mile long undersea pipeline capable of carrying over 25 billion cubic metres of natural gas a year. That’s enough to fill Wembley stadium almost 6,500 times over.

Gas also arrives via boat. Since 1982 the UK has imported gas in liquid form – Liquefied Natural Gas (LNG). The majority of this comes from Qatar, which accounts for around 30% of the UK’s gas imports.
On average fuel travels 2,600 miles to reach our shores

That’s enough for a round trip to 8 European capitals and back home again (as the crow flies).

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Renewables up 30%...

A blossoming renewables industry means renewables now contribute more to electricity production than UK coal or gas – increasing by almost 30% in the last 12 months. However, not all of the fuel for renewable generation comes from the UK – there is an increasing trend in fuel for biomass stations being imported from abroad.

...the largest share of homegrown electricity production

Renewable electricity generation

2004 14.2TWh
2015 83.5TWh
The UK’s renewable mix

The UK is fortunate to have some of the best and most diverse natural resources at its disposal. The growth in renewable electricity production in the UK means we can power ourselves more than ever with clean, green electricity.

The percentage of UK sourced fuel is increasing

Despite still being heavily reliant on foreign fossil fuels, the proportion of domestically sourced fuel used in electricity production is increasing.

This increase is largely thanks to the growth of renewables in the UK. Last year, renewables were responsible for almost a quarter of the UK’s electricity generation, and their total capacity is 5 times greater than 10 years ago.

Almost half of energy generated from ‘home-grown’ fuels (including fossil fuels like coal and gas) now comes from renewable sources.

Power to the people

We’re always going to need electricity

But do we need to continue relying on burning imported fossil fuels which leave the UK increasingly vulnerable and damage our climate? Our research shows most people don’t believe we do. We’ve also seen an explosion of individuals taking power into their own hands, and their homes.

In April 2010, there were just a few thousand individuals generating their own electricity in the UK. Today, that figure stands tall at over 800,000. That’s more than a 14,000% increase.

We’ve seen an explosion of individuals taking power into their own hands, and their homes.

Behind the imports

Demand for imported fuels from developing countries comes at a high cost. Communities, rivers, ecosystems and entire landscapes are being despoiled and devoured by mining activities. The high price of dependency runs deeper than just keeping the lights on.

Niger accounts for 24% of the UK’s uranium imports.

Niger is the fourth poorest country in the world – 60% of its population survive on less than $1 a day and half don’t have access to clean water.

Extraction is carried out by Areva, a French multinational. Areva are partly responsible for the nuclear decommissioning at Sellafield. They are also supplying the reactors for the UK’s first nuclear power station in almost 30 years – Hinkley Point C. In 2013, the company’s turnover was twice the size of Niger’s GDP.

Coal mining in Colombia

In the top 30 poorest countries in the world, Colombia accounts for 29% of the UK’s coal imports and is home to the Cerrejón mine, considered to be one of the largest open pit coal mines in the world extending over 69,000 hectares – almost 500 times the size of Hyde Park.

The company running the Cerrejón mine has been accused of evictions, pollution and human rights abuses. 80% of human rights and international humanitarian law violations in the last 10 years have been carried out in mining and energy regions in Colombia.

Why we think nuclear is not the answer

Some people think building more nuclear power stations in the UK will help us tackle the challenges facing the energy system. We disagree.

Expensive

Nuclear projects carry a lot of financial risk and, unlike renewables, decommissioning and waste disposal are very expensive. The financing of Hinkley nuclear power station has been subjected to repeated debate. Estimates of final construction costs have risen from £16 billion in 20121 to £18 billion in 20152.

Outward investment

100% of the uranium used to fuel nuclear power stations must be imported from abroad and the UK no longer has expertise to build and operate nuclear power stations. Hinkley will deliver outward investment to French and Chinese investors (EDF and CGN), rather than inward investment to the UK.

Inflexible

Big, nuclear power stations take a long time to be built and reinforce an inflexible system that does not fit with the need for a dynamic, flexible future energy system in the UK.

Investing in nuclear could choke the renewable energy revolution that is happening in the UK.

Niger is nearly half the size of Greater London.

Cerrejón mine is nearly twice the size of the Isle of Wight.

More than 12x bigger than Loch Ness.

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Niger accounts for 24% of the UK’s uranium imports.

Coal mining in Colombia

Loch Ness
Isle of Wight
Cerrejón mine
Greater London

switch for good
goodenergy.co.uk
The alternatives.

1. Measures that focus on energy efficiency could reduce the need for two-fifths of Hinkley’s generation.¹

2. Large-scale solar is currently the only technology forecasted to become cheaper than wholesale electricity. Costs of solar are predicted to fall by 23% by 2020, and reach grid parity by 2028.²

3. Four additional large offshore wind farms could bring as much electricity to the UK as Hinkley.³

4. Low cost storage can be the key for smoothing out the peaks and troughs in the output of variable renewables allowing these technologies to provide constant, reliable, renewable output. Storage and other measures including demand flexibility could save consumers up to £8 billion a year by 2030, while helping to meet 2050 carbon targets.⁴

Power from the tide.

Good Energy has invested in Swansea Bay Tidal Lagoon, a project that will deliver renewable, predictable power to more than 155,000 homes for 120 years.⁴

It will provide a blueprint for a further six tidal lagoons planned around the UK, helping the transition to a sustainable, low carbon future with greater energy security and lower electricity costs.

Local investment, value creation and regeneration...

Swansea Tidal is expected to bring investment of over £500m, by prioritising local skills, contracts and manufacturing.⁴ Once operational, the lagoon is expected to attract 100,000 visitors per annum, equal to approximately £76m on Welsh Gross Value Added each year.⁴ The Lagoon can become the cornerstone development for the Swansea Bay City Region, and major recreational amenity, stimulating a vibrant waterfront economy and providing a scalable blueprint to meet regeneration objectives elsewhere across the UK.

⁴ Tidal Lagoon Swansea Bay www.tidallagoonswanseabay.com/the-project/proposal-overview-and-vision/51/
Switch for Good. Make Britain cleaner and greener

The UK's fuel mix, 2015

Good Energy has always believed the UK can be powered purely by renewables, and we're working towards that.

Good Energy fuel mix

Wind (53%)
Solar (24%)
Hydro (4%)
Biogen (19%)

Coal (17.0%)
Gas (32.3%)
Nuclear (23.7%)
Renewables (24.3%)
Other (2.5%)

Energy security: Why renewables are the answer

Dataset

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switch for good
Come and find out more.

Visit us to find out more about renewable energy and what it can do for all of us.

Visit our website goodenergy.co.uk
Email us at enquiries@goodenergy.co.uk
Call us on 0800 254 0000

Thoughts on this booklet? Let us know.
If you’d like to know how we worked out our figures, visit goodenergy.co.uk/energy-security-data