

WIND ENERGY – FACTS AND FICTION

CONTENT

1. UK is global leader in off-shore wind energy.
 1. How much of the total capacity is off-shore?
 2. How does the total capacity compare to other countries?
 3. How does the development over the past 10 years look like?
 4. How does Europe compare to the Big 2?
 5. Where do we go from here?
- References

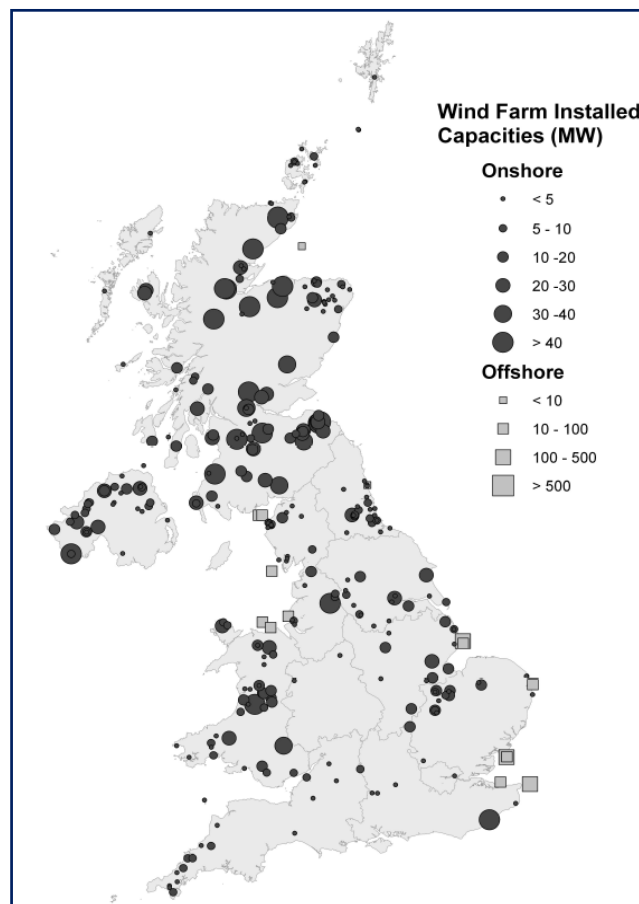
HELP

Confusion is frequently caused, when various reports refer to different units and thereby show different figures or distorted proportions.

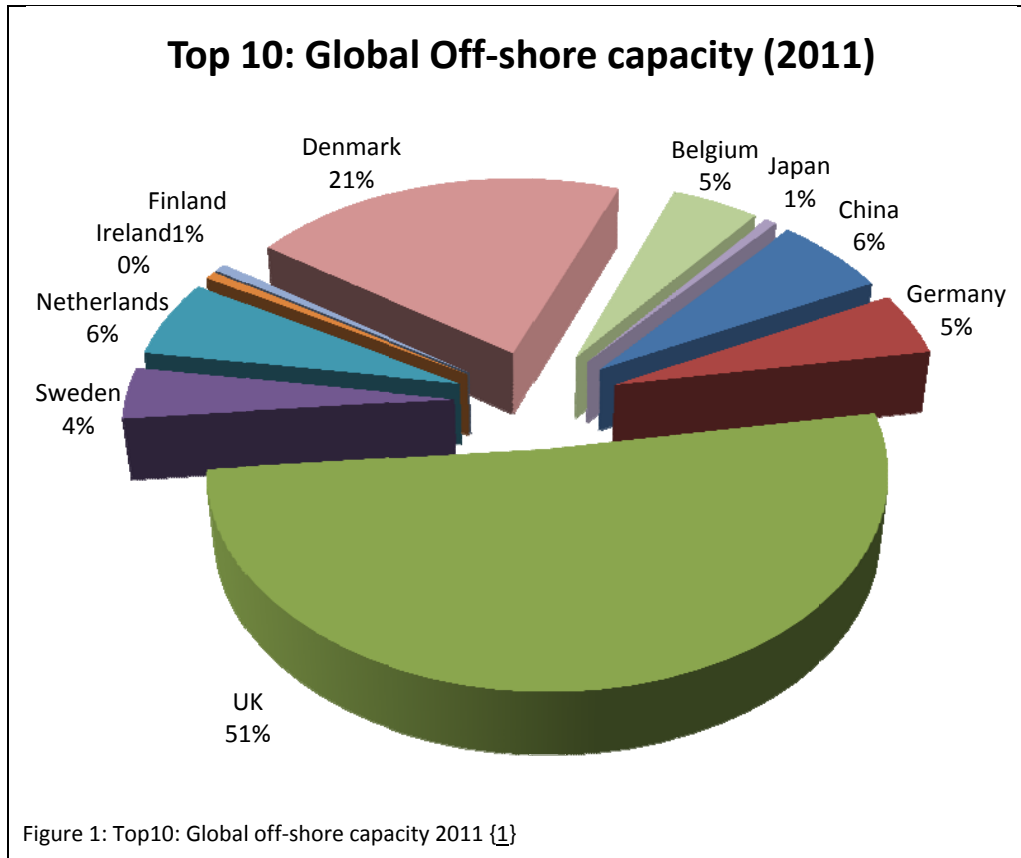
Capacity: Capacity is used as an indicator of the theoretical output of energy plant (turbine) running at maximum performance 24hours 365 days a year.

Energy: Total output of energy plant, generally combining electricity and heat.

Electricity: Output of power plant, which is being fed into the grid, i.e. excluding heat.

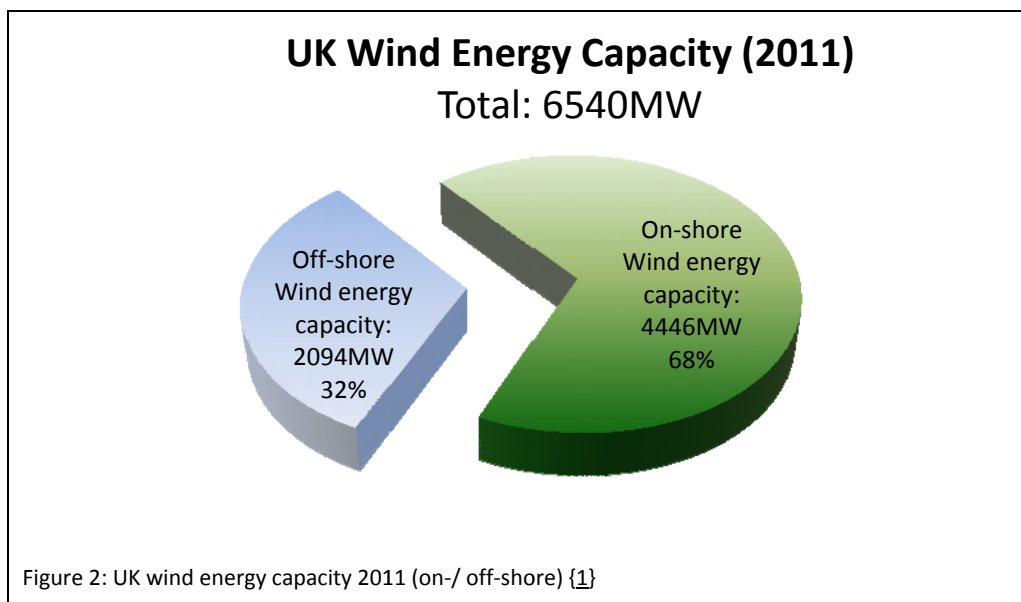


1. UK IS GLOBAL LEADER IN OFF-SHORE WIND ENERGY.



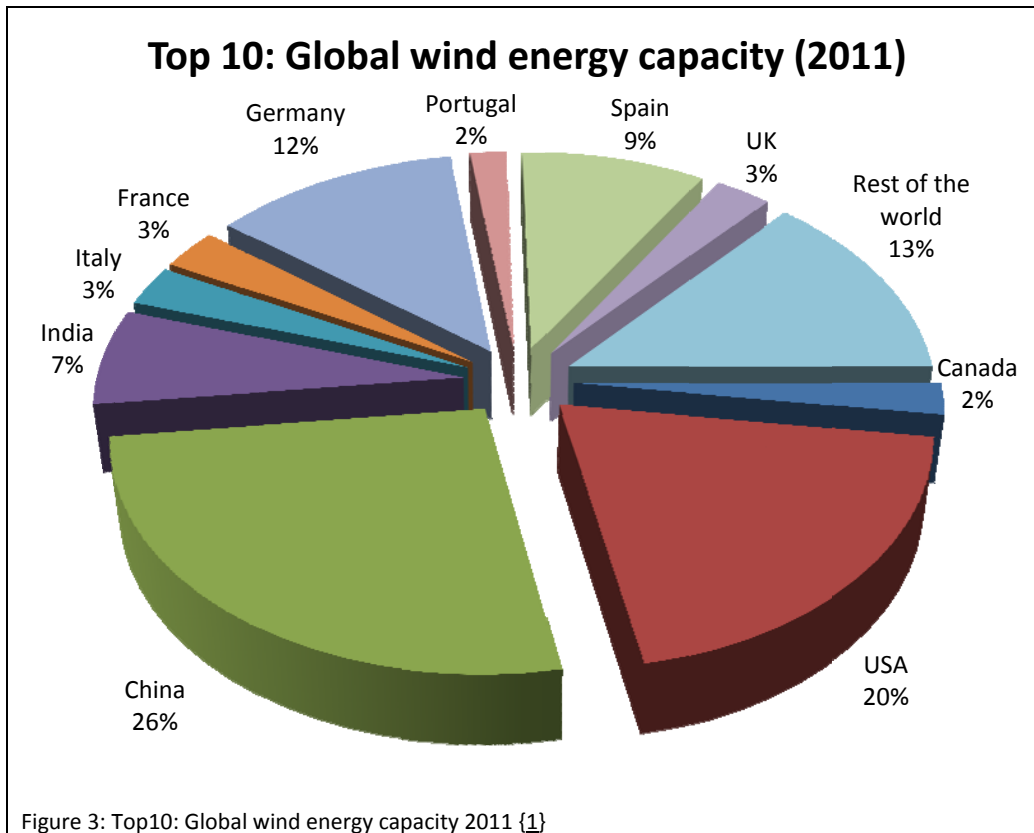
The UK has 51% of the global installed off-shore capacity, by far outranking any other country.

1. HOW MUCH OF THE TOTAL CAPACITY IS OFF-SHORE?



Off-shore capacity is about **a third** of the total wind energy capacity in the UK (6540MW).

2. HOW DOES THE TOTAL CAPACITY COMPARE TO OTHER COUNTRIES?



Among the top 10 wind energy suppliers the UK's total capacity equals 3% of the global installed capacity, putting it in 8th place.

Notably, not many of these countries have a strong focus on off-shore production.

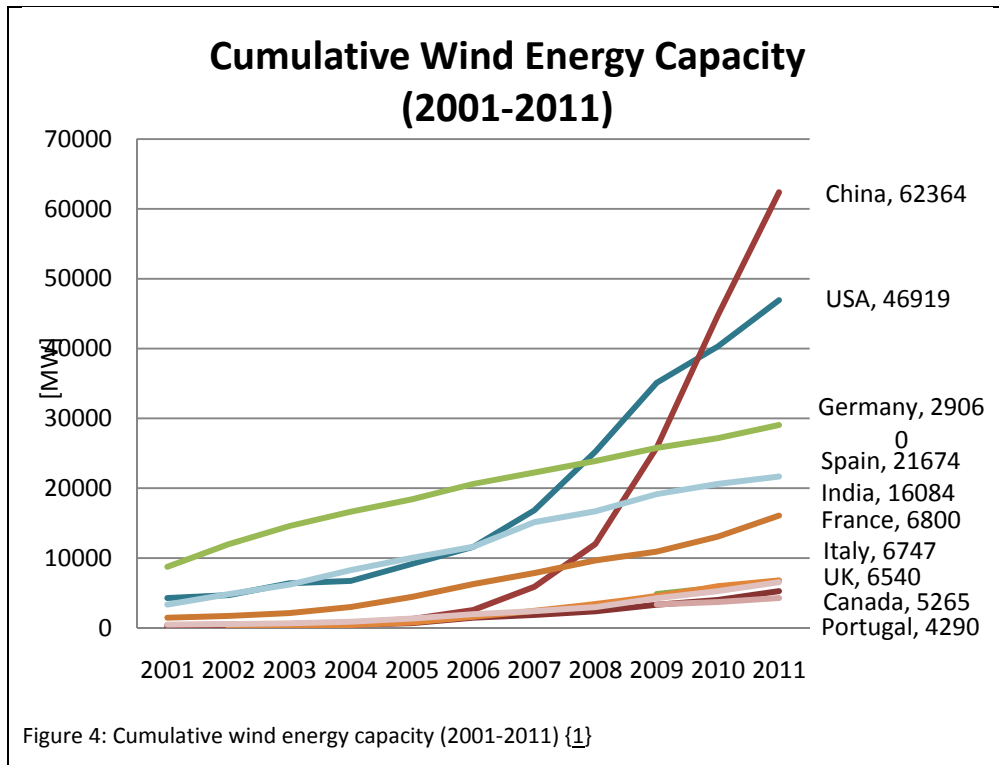
A significant difference between on- & off-shore wind energy production is the installation cost. Off-shore installation is about 10-times more expensive, which makes it a lot less attractive.

Given the UK's geographical location off-shore installation might be obvious, however the question has to be asked, if not more could be achieved for the same investment with on-shore production.

Some European countries, e.g. Spain or Germany concentrate more on on-shore installation and have so far installed 3-times, or almost 5-times the total UK capacity (see figure 4).

That the wind energy sector can contribute significantly to the national electricity production can be seen, when you once again look towards Germany. The UK is producing 9.5% of its electricity from renewables. {3} Germany is currently sourcing 20% of its electricity consumption from renewables, of which wind produces 38%. {6}

3. HOW DOES THE DEVELOPMENT OVER THE PAST 10 YEARS LOOK LIKE?

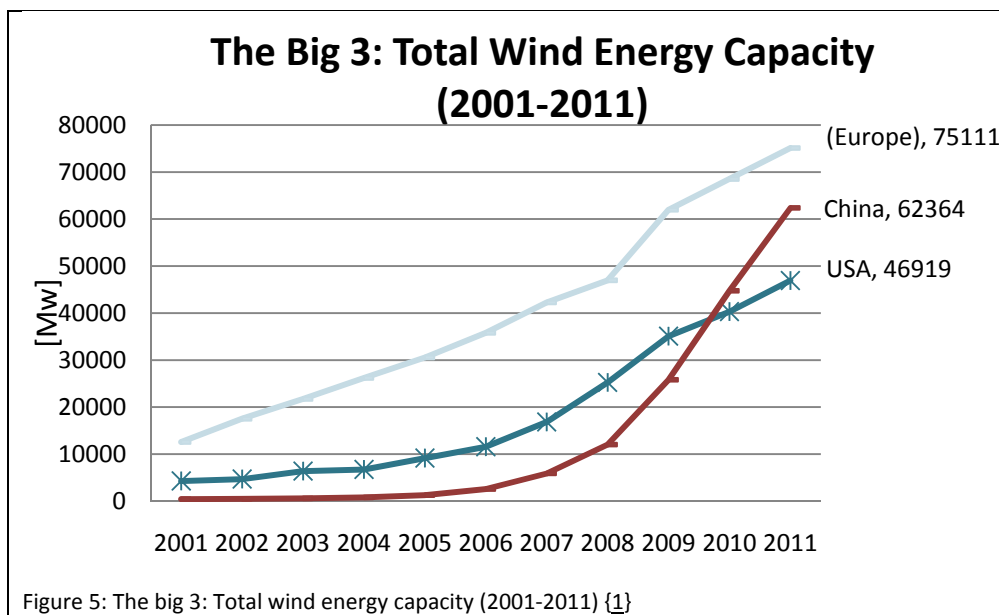


As figure 4 shows, European countries production has been very stable over the past 10 years.

The USA and China however have both managed a significant step-change between 2006 & 2007.

At that time China had an equal capacity level with the UK. China has since increased its capacity 30 fold. The USA has still managed to increase the capacity 4 fold in the past 5 years.

4. HOW DOES EUROPE COMPARE TO THE BIG 2?



According to the trend in figure 5 China will surpass Europe in 2013 with the total installed capacity.

As the increase of wind energy capacity in all European countries

has been very stable, if not slightly declined in recent years, it would require a substantial step-change to alter that trend.



5. WHERE DO WE GO FROM HERE?

What are the targets?

The UK set the target to source 15% of its energy consumption from renewable energy by 2020.

How close are we at this moment?

In 2010 the renewables contribution to the UK energy consumption was 3.3%. {4}

Expectations towards wind energy production?

In 2020 more than a seven fold increase in total wind energy production is required, based on 2010 figures. Table 1 shows the figures in direct comparison.

	On-shore production [TWh]	Off-shore production [TWh]	Total wind energy production [TWh]
2010	7.14	3.04	10.17
2020 target:	24-32	33-58	73.5
Average:	28	45.5	73.5

Table 1: Comparison of 2010 and 2020 wind energy production {4}

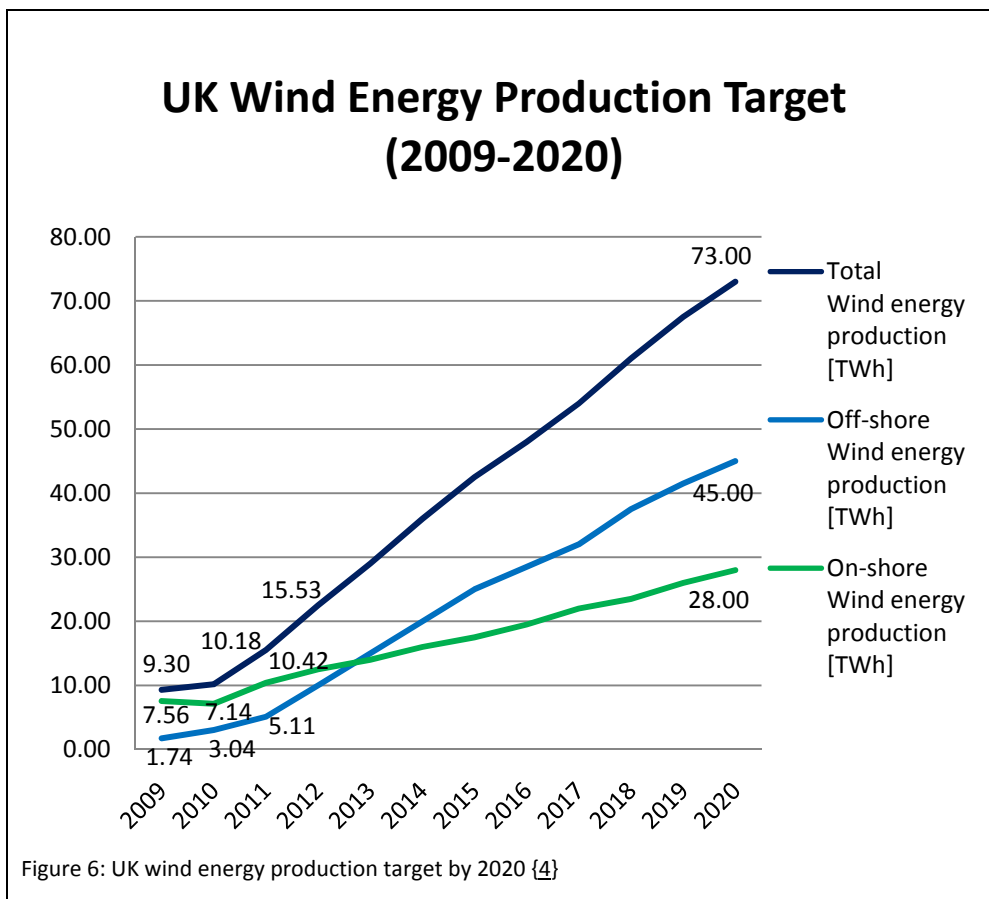


Figure 6 illustrates the projection to 2020 following on from 2009.

This increase is surely an ambitious target, but who could be better placed, than the UK-Europe's windiest country.

The examples set by China and the USA in 2006 show, that a significant step-change is possible.

In the current economic situation consideration should also be given to the potential for job creation within this target. Projections show that UK workforce employed in the wind energy sector could increase from currently 10600 to 88000 by 2021. {1}



REFERENCES

- {1} GEWC: Annual report 2011,
- {2} DECC, Energy Trends Dec.2011,
- {3} DECC, Energy Trends Mar.2012,
- {4} UK Renewables Energy Roadmap, Jul.2011,
- {5} DUKES-Digest of UK Energy Statistics, Chapter 7-Renewable, Jul.2011,
- {6} BMU, Erneuerbare Energien in D, 2011

For more details, see our website at: www.intelligentfutures.co.uk

Report compiled by:

Marco Boettcher, CEng MIMechE, Dipl.Ing,

Intelligent Futures Ltd.

June 2012

