

Onshore Wind: Powering Ahead

A Report Prepared by BWEA
March 2006



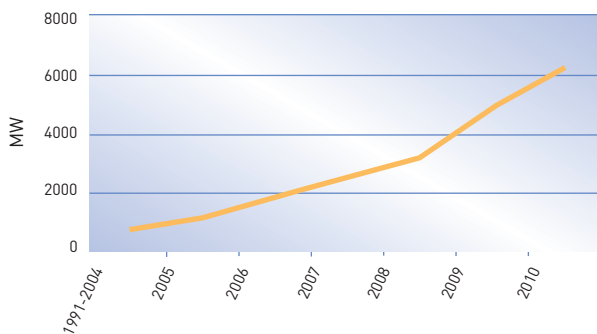
Executive Summary

Onshore wind is the leading renewable energy technology of the times. The UK in particular benefits from the best wind resource in Europe; an indigenous and free fuel supply which is not dependent on imports. Over the last three years, onshore wind build rates have doubled year on year and 2006 is no exception with 665 megawatts (MW) due to be completed by year end, twice that of 2005. With 3,000 MW already certain to be operational by 2010 from projects consented, under construction and currently operating, this report investigates how much additional capacity can progress through the planning system and be built by 2010.

In October 2005 BWEA undertook research to accurately forecast the delivery of onshore wind capacity in the UK by 2010. This research is the most robust and comprehensive ever produced about the onshore wind industry and will be used to inform Government of the contribution this sector will make to the energy mix and its significant role in meeting renewable energy and climate change targets.

The research produced a range of scenarios for onshore delivery and has concluded that the most realistic cumulative onshore wind capacity that will be delivered from operational and forecast projects is at least 6,000 MW or around 16 terawatt hours (TWh) of output by 2010, equating to nearly 5% of projected electricity supply.

Cumulative onshore delivery compiled from operational projects, existing and projected consents (based on average local planning authority approval rates & delays and a 50% approval rate with 36 month delays for Section 36 applications)



Cumulative year on year by country with 50% S36 approval, 36 month S36 decision delay

(91-04)	2005	2006	2007	2008	2009	2010
767	1,124	1,789	2,508	3,241	4,904	6,219

Comparative analysis of deliverables

- Onshore wind alone can deliver almost half the Government's 10% renewable energy target equating to nearly 5% of projected electricity supply by 2010
- By 2020, existing and forecast wind farms are poised to generate at least £4.2 billion for UK plc from the associated investment in development, construction and operation of wind farms and contributions to business rates, local communities and landowners. Further benefits will accrue over the remaining lifetime of projects.

6,000 MW of onshore wind in 2010 will:

- avoid burning the equivalent of 2.9 billion m³ of natural gas or 6 million tonnes of coal, or
- reduce gas imports by 45 days from the UK-Europe gas inter-connector
- avoid 6 million tonnes of carbon dioxide (CO₂) emissions from gas-fired power stations or 13 million tonnes of CO₂ emissions from coal-fired power stations
- amount to a total of around 3,500 turbines in the UK
- supply the electricity needs (annual average equivalent) of 3.3 million homes or 8 million people, equivalent to the combined populations of London & Glasgow or Scotland and Wales.

Methodology and Objectives

The methodology focused on statistical analysis of data from BWEA's UK Wind Energy Database (UKWED), the most definitive dataset of wind energy projects in the UK. As the industry association, BWEA is also in prime position to establish developer intentions in the near future and has conducted interviews with its member developers to inform forecast submissions.

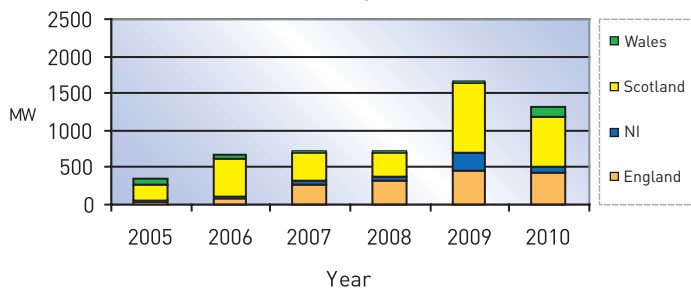
The key objectives of the study were:

- To provide an analysis of wind energy capacity in the planning system, and future submissions that may contribute to the 2010 target
- To determine how much local planning authority (LPA) submitted capacity might be approved in order to contribute to the 2010 target, according to average approval rates in each country taken over the last 4 years and a more conservative 40% approval rate scenario
- To determine how much Section 36 submitted capacity (applicable to projects over 50 MW) might be approved under different approval rate scenarios, and how this might be affected by different decision delay scenarios
- To assess the impact that restricted grid capacity may have on the 2010 forecast
- To assess the impact that continued non-determination of Section 36 projects in Scotland will have on the UK 2010 renewable energy target – current trends suggest that development will be constrained to 2,500 MW
- To assess the potential build scenarios in the Welsh Technical Advice Note 8 (TAN8) Strategic Search Areas
- To add the existing capacity which is built, under construction and consented to the investigations above to give a potential range of onshore wind development year on year to 2010 with cumulative totals and country breakdowns
- **To identify the most realistic assessment that onshore wind capacity can deliver in the UK year on year to 2010.**

Key Findings

- Onshore wind will deliver 50% more than previous projections, increasing to a cumulative total of at least 6,000 MW by 2010

LPA & Section 36 UK total year on year build by country with 50% approval rate & 36 month decision delay scenario

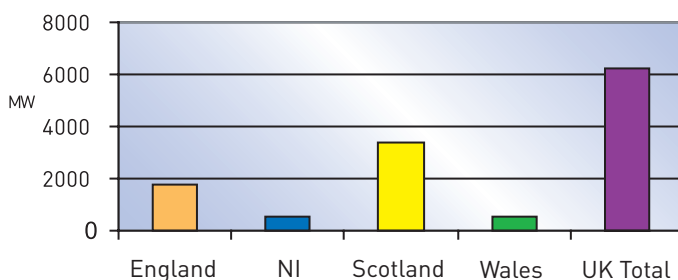


Year on year build by country with average LPA approval rates & delays, and 50% approval rates over 36 month delays for Section 36 projects (MW)

	2005	2006	2007	2008	2009	2010
England:	39	81	261	336	448	435
NI:	20	17	73	35	240	87
Scotland:	218	521	360	334	951	666
Wales:	80	46	25	28	24	127
Total:	357	665	719	733	1,663	1,315

- Scotland is expected to make the greatest contribution as it benefits from having the best wind resource in the UK

UK estimated 2010 build by country



	(MW)
England:	1,774
Northern Ireland:	543
Scotland:	3,397
Wales:	505
UK Total:	6,219

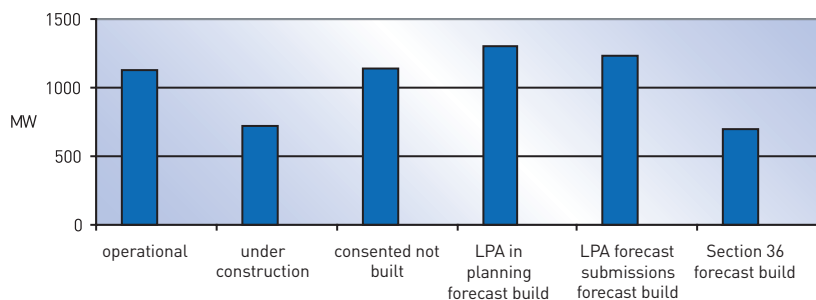
- Approximately 3,000 MW of onshore wind development comprising operational, under construction and approved wind farms is confirmed for 2010
- Approximately 1,300 MW of onshore wind energy capacity currently in the local planning process (including appeals) is expected to be approved and built by 2010, given average approval rates and decision times

(continued)

Key Findings (cont)

- Approximately 1,250 MW of onshore wind energy capacity from forecast local authority planning submissions are expected to be approved and built by 2010, given average approval rates and decision times
- A range of 340 MW to 1,772 MW of onshore wind energy capacity currently in the Section 36 assessment process is expected to be approved and built by 2010, given alternate approval rate scenarios and decision delays. The most realistic forecast assumes 699 MW build by 2010 based on a 50% approval rate and 36 month decision times
- A range of onshore wind capacity between 4,681 MW (worst case) to 7,515 MW (best case) is deliverable by 2010. This range depends on a variety of factors: local planning authority approval rates & decision delays, Section 36 approval rates & decision delays, the level of development in the Welsh TAN8 Strategic Search Areas and the extent to which development in Scotland that would contribute to the 2020 target can be brought forward for delivery in 2010

UK estimated 2010 build



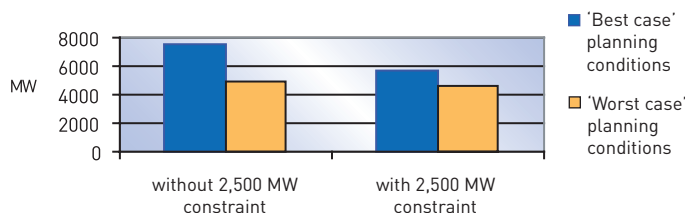
	(MW)
Operational:	1,124
Under construction:	723
Consented not built:	1,138
LPA in planning forecast build:	1,297
LPA forecast submissions forecast build:	1,238
Section 36 forecast build:	699
Total:	6,219

- The local planning process is very inconsistent with significant contrast in performance across the four countries of the UK. Decision times are 10 months in England; 14 months in Scotland; 27 months in Wales and 28 months in Northern Ireland (wind farm planning applications supported by an Environmental Impact Assessment should be determined within 16 weeks). Approval rates range from 59% to 100% (by MW capacity) on average (based on decisions made between 2002 and 2005)

Key Issues

- Based on a 'business as usual' scenario for local decision making and a pragmatic approach to Section 36 decisions and timeframes, at least 6,000 MW of onshore wind will be delivered by 2010. This assumes existing approval rates at the local level with decisions being made at the existing rate of 10 to 28 months from submission. It also assumes a 50% approval rate with decision times of three years for Section 36 applications
- The industry is ready and able to deliver at least 6,000 MW as long as the pace of the planning system does not deteriorate beyond the current decision times
- The TAN8 Strategic Search Areas are anticipated to contribute up to 221 MW of additional capacity relative to the 800 MW onshore target set by the Welsh Assembly Government
- Forthcoming planning decisions in Scotland are essential as 3,397 MW of the forecast capacity will need to be met in Scotland. Only 2,500 MW of onshore wind development in Scotland will be achieved if the existing trend of non-determination of Section 36 projects is maintained. Only 509 MW have been determined in the last two years while 3,267 MW were submitted during the same period
- Delivery of only 2,500 MW in Scotland would have a significant impact on the total UK built capacity by 2010. With no constraint, 4,999 MW to 7,515 MW of capacity could be built in the UK under 'worst case' and 'best case' planning conditions respectively. If development is constrained to 2,500 MW in Scotland, 4,681 MW to 5,654 MW of capacity would be the maximum range, thereby eliminating a capacity of between 318 MW and 2,082 MW from the UK 2010 target

UK total potential built capacity by 2010 with and without 2,500 MW constraint in Scotland



Total UK potential built capacity with and without 2,500 MW constraint in Scotland (MW)

	Without constraint	With constraint
Best case planning Conditions	7,515	5,654
Worst case planning conditions	4,999	4,681

(continued)

Key Issues (cont)

- Grid capacity will not be a barrier to the installation of 6,000 MW of onshore wind by 2010 provided all the development activity is not targeted in the north of Scotland, although without upgrades it will be an increasing constraint to free access to the nominal capacity of the system at any one time. Grid capacity constraints also represent a significant barrier to maintaining the momentum of development for all renewable technologies early in the next decade
- Depending on the local planning and Section 36 decision making process, onshore wind could deliver much more than 6,000 MW – potentially as much as 7,515 MW.

Recommendations

- UK Government and devolved administrations in Scotland, Wales and Northern Ireland must maintain a positive and robust approach to national, regional and local planning policy in accordance with the Government's renewable energy and climate change targets
- Action must be taken to address local planning decision delays across the UK, in particular Wales and Northern Ireland where additional contributions to the 2010 renewable energy targets are severely constrained
- With the average decision time for Section 36 applications moving upwards, prompt action is required to ensure the necessary resources and skills are put in place to ensure quality and timeliness of decision making
- In driving forward the Welsh 800 MW onshore wind target, the Welsh Assembly Government must:
 - oversee efficient preparation of Supplementary Planning Guidance and ensure local planning authorities policy revisions are consistent with the Assembly's national policy on renewable energy as contained in TAN8
 - encourage development activity outside Forestry Commission-owned land within the Strategic Search Areas
 - oversee prompt decision making with the necessary resources being committed at the local level,
 - and for Section 36 projects, the Department of Trade and Industry should also ensure timely decision making and commit to additional resources in order to reflect the increase in development activity thus ensuring a greater contribution from Wales to the 2010 target
- To contribute £2.5 billion to the Scottish economy by 2020; ensure that 6,000 MW of onshore wind can be delivered in the UK, and provide the necessary confidence for future investment in all renewable technologies in Scotland, the Scottish Executive must:
 - avoid a hiatus of onshore wind delivery towards the end of this decade and therefore bring forward the early delivery of Scotland's 2020 renewable energy target
 - accelerate its decision making process for Section 36 applications - not all decisions are expected to be favourable but they must be made in realistic timescales
- Plans to reinforce the grid infrastructure in northern Scotland and mid-Wales should move forward urgently to facilitate the full utilisation of generating capacity; provide the necessary investor confidence for all renewable technologies and to avoid a hiatus early in the next decade at a time when momentum of onshore wind delivery must be maintained.

A full copy of 'Onshore Wind: Powering Ahead' with full reference listings and an account of assumptions and methodology is available online at www.bwea.com.

BWEA is the UK's largest renewable energy body with over 300 companies in membership. Formed in 1978, BWEA is leading the UK debate on the wind and marine renewables industries, acting as a central point of information for members, government and public alike. BWEA's specialist team provides members with essential market information and in-depth technical support. In addition, BWEA lobbies on behalf of members, conducts profile raising campaigns and organises business development opportunities throughout the year, including the industry's main annual conference and exhibition.

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