POSITIVE PLANNING FOR ONSHORE WIND

EXPANDING ONSHORE WIND ENERGY CAPACITY WHILE CONSERVING NATURE

A REPORT BY THE INSTITUTE FOR EUROPEAN ENVIRONMENTAL POLICY COMMISSIONED BY THE ROYAL SOCIETY FOR THE PROTECTION OF BIRDS

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This report can be downloaded for free from www.ieep.eu and www.rspb.org.uk. For more information about this research please contact Catherine Bowyer at IEEP or Ruth Davis at RSPB.

EXECUTIVE SUMMARY

There is a pressing need to decarbonise the UK energy supply system. This will require more focused attention upon efficiency measures as well as a step change in the delivery of new renewable energy supplies. The timeline for the delivery of new capacity is short, driven by targets for emission reductions and renewable energy deployment set at the national and EU levels. Wind turbines, as a market ready technology suited to the UK's bountiful natural wind resource, will need to be constructed rapidly both on and offshore to deliver new sustainable, renewable sources of energy. Over the coming 11 years up to 2020, the UK is anticipated to need to install a minimum of 1GW per year every year of onshore wind capacity, in order to meet its renewable energy target set by the European Union. This would in addition to 2GW of offshore wind per year every year until 2020, coupled with an anticipated expansion of bioenergy use and increase in tidal based energy production.

To accommodate the extra capacity on a tight timetable while remaining sensitive to social and environmental considerations will be a significant challenge. This report seeks to address one of the central environmental concerns – nature conservation. Other issues, such as landscape are important and need due consideration, but are not the focus of this work.

There are genuine concerns over the impact of poorly sited wind farms upon nature conservation, which need to be balanced against the desire to expand wind energy capacity rapidly. Here the land use planning system has a pivotal role. At present, planning systems for onshore wind are not always successful in guiding development to sites that are appropriate from a nature conservation perspective, at a pace of development sufficient to meet the demands of the next decade. Based on analysis of planning systems across the UK and in Germany, Spain and Denmark, certain actions have been identified that could: improve planning processes; help increase acceptance of onshore wind; take account of nature conservation concerns; and simultaneously accelerate the expansion of environmentally sustainable onshore wind capacity.

To create an effective planning system that respects nature conservation concerns whilst securing rapid onshore wind development, it is not simply a case of streamlining planning requirements – as some might argue. This study identifies a number of elements that need to interact successfully, to deliver these dual aims.

- ***Early engagement of stakeholders*** – The value of early gathering and dissemination of reliable and relevant information about wind power proposals, along with public engagement and debate need to be appreciated. Engagement of this kind helps to inform local actors, facilitates the avoidance of particularly sensitive sites and allows effective consideration of alternatives. This needs to occur as early in the process as possible.
- ***Clarity over nature conservation concerns*** – A prerequisite for appropriate decision-making is a clear understanding of both national and more local nature conservation concerns. These are not confined simply to protected areas. When the relative sensitivity of habitats and natural systems across a landscape is clearly communicated in spatial terms, understanding of the potential locations and their appropriateness for onshore wind is increased.

- ***Appropriate institutional resourcing and the retention of central pools of knowledge*** – In order to support the decision-making process and improve the consistency of understanding, sufficient specialist capacity is necessary. Skills and expertise in wind energy should be invested in and developed by national governments and agencies. Such expertise must be made accessible to local and regional planning authorities and communicated via detailed spatial guidance, which clearly supports appropriate site selection and project design for onshore wind developments.
- ***Being spatially explicit*** – Evidence shows that structured, spatially explicit and proactive approaches to onshore wind planning can play an essential role in enabling ambitious wind programmes to move forward. This process also creates a clear framework for debate, without which discussions can be repetitive and divisive dominated by responses to individual planning applications. Approaches that distinguish spatially the potential areas where development should be prioritised, restricted or avoided appear to offer invaluable clarity to developers and nature conservation groups.
- ***High quality environmental impact assessments*** – The impacts of onshore wind are highly location specific; assessment tools such as EIA and SEA, should offer a solid information base and a platform for stakeholder engagement supporting informed, transparent decision-making. The quality of an assessment is key; poor completion can lead to delay in the determination of planning applications and/or contribute to inappropriate decisions.
- ***Maximising local benefits from wind developments*** – Wind turbines can impact on the amenity value of local wildlife and features valued by local communities. Local support is essential for the successful roll out of onshore wind. Well conceived and planned wind farms can give rise to local offsite nature conservation benefits, if this is prioritised. Combined with mechanisms for delivering community ownership and direct and in-kind benefits for local communities, this can increase local acceptance and engagement in the renewable energy debate.
- ***Ensuring effective ongoing management*** – Site specific mitigation measures, sensitive ongoing management and reliable monitoring are key to ensuring that impacts are understood, risks are minimised and benefits maximised. Actions completed on individual wind farms must be adequately overseen by an environmental regulator; central government or their agencies should collate and make available monitoring results to provide a better understanding of the effectiveness of management techniques. This will have resource implications that need to be accepted as part of a new approach.
- ***Political will to deliver new onshore capacity*** – Evidence from Germany and Denmark, along with Scotland, demonstrates the importance of mobilising political will for the delivery of onshore wind development. Without this impetus otherwise potentially efficient planning systems become constrained. More responsibility for delivering national priorities needs to be transferred to the local level. One possible mechanism for doing this would be the development of regional and local targets for renewable energy and onshore wind development – overseen by central government – to ensure that greater investment in renewable energy becomes a reality across the UK.

A system that contains all these elements would represent a more robust and proactive approach to onshore wind development, whilst also offering the more thorough

consideration of nature conservation concerns. ***The wider planning process now required should be more than simply a consent procedure for development but instead should: provide information to support decision making; generate strategic decisions about location; ensure effective oversight beyond the construction phase; and recognise the local impacts associated with delivering on a national shift in energy supply***. ***None of the systems reviewed in the UK contain all these elements, although Wales and Scotland have recently made significant changes to their planning systems for onshore wind. England has a strong tradition in land use planning, but has yet to implement a forward looking, clear and robust approach to onshore wind; there is now a need, and with the development of the Renewable Energy Strategy, an opportunity, to do so.***

To succeed, a more proactive system of planning for onshore wind will have to rely upon a broader acceptance by the public and decision makers that we must change the way in which we use and supply energy over the coming decade. ***The starkness of future energy choices and the speed at which we deploy renewable energy solutions must be clearly understood by all, and reflected in the decisions reached***. Planning must be made a more effective tool to facilitate renewable energy development in the UK. This requires commitment by policy makers and an effort to win public support, along with effective policy measures promoting renewable development, and investment in the sector. On this foundation, there would be an onus on developers to bring forward appropriately sited and well conceived applications for development, which can then be shaped, improved and approved via an efficient and clear planning process.

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1 THE CHALLENGES

1.1 Renewable Energy Solutions: Combating Climate Change and Protecting Biodiversity

'Recent upheavals in the economic establishment have exposed the danger of assuming that somehow the future either for the economy or the environment, will look after itself. It will not!'

Sir John Houghton, former co-chair of the Intergovernmental Panel on Climate Change and Former Director of the Met Office

Climate change represents a critical threat to our way of life, the environment in which we live and the flora and fauna that surround us. Predictions regarding the scale and speed of impacts continue to worsen; while our planet's systems are already changing around us much more rapidly than predicted. The March 2009 International Scientific Congress on Climate Change concluded that the worst case IPCC scenario trajectories set out in 2007 (IPCC, 2007), or even worse, are now being realised. For many key parameters - including global mean surface temperature, sea-level rise, ocean and ice sheet dynamics, ocean acidification, and extreme climatic events – scientists believe that the climate system is already moving beyond the patterns of natural variability within which our society and economy have developed and thrived (University of Copenhagen, 2009).

Climate change represents an unprecedented threat to huge numbers of species and habitats. A comprehensive study, by the Goddard Institute of Space Studies, found that anthropogenically induced warming has already been seen to cause 'significant changes in physical and biological systems … on all continents and in most oceans' (Rosenzweig, 2008). It concludes that some 90 per cent of changes in biological systems over the past three decades are consistent with warming trends, and that over time, climate change will be a major driver of ecosystem change. Decisive action is needed now to dramatically reduce emissions of greenhouse gases, limit global climate change, protect ecosystems and maintain global biodiversity.

The use of renewable energy sources, along with efficiency measures, will be central to creating a truly low carbon economy. The UK has exceptional renewable energy resources, but it is also known for its failure to capitalise upon these. Pressure is mounting to make more effective use of this bountiful capacity, to reduce emissions and increase energy security.

The UK government has recently adopted a target of an 80 per cent reduction in greenhouse gas emissions by 2050 (Climate Change Act, 2008)[1]. Moreover, the UK is also now bound by formidable targets for the roll out of renewable energy, agreed by the Heads of all EU Member States in December 2008. The UK will be required to deliver 15 per cent of its energy from renewable sources by 2020 (European Parliament, 2008). Soberingly, while these targets already provide an immense

[1] While welcome and progressive, recent evidence from the World Watch institute and others, suggests that in fact developed economies will need to be 100% zero carbon by 2050, to avoid dangerous and potentially irreversible climate change (Worldwatch, 2009).

challenge, the UK will have to go far beyond them in the following decades, to achieve the 80% reduction set in the UK Climate Change Act. According to the Committee for Climate Change's first report, the UK's power sector must be almost fully decarbonised by 2030 to meet this legally binding goal (Committee on Climate Change, 2008).

A step change in renewable energy generation is, therefore, necessary in the next decade. National energy scenarios repeatedly demonstrate that a major scaling up of wind power will be central to the UK's ability to meet its climate change targets (BERR, 2008; RAB, 2008). Despite the government's policy of 'not picking winners', it is clear that wind (both on and off shore) will need to play a key role in a low or zero carbon energy future, and that the policy framework for delivering wind power is in need of focused attention. It has been estimated that at least 14GW of onshore wind capacity will be needed in order to meet the UK's share of the EU Renewable Energy Directive target (BERR, 2008)[2]. If medium to long term climate goals are taken into account, and should sustainability concerns limit the future use of bioenergy, this figure is likely to increase. This compares to an existing 186 operational onshore wind farms producing approximately 2.6GW (BWEA, Dec 2008). The shift from 2.6 GW to a minimum of 14 GW in just 12 years represents a tremendous change of gear and political challenge.

There is, therefore, a pressing need to deliver an unprecedented scale of renewable energy development over a relatively short time span. For this expansion to be sustainable and publicly acceptable, it must be achieved without unnecessary damage to the natural environment, including the destruction of habitats and species that are an essential part of national and European heritage. Wildlife is already subject to habitat loss and degradation; this is set to be compounded by the pressures imposed as a consequence of climate change. The ability of ecosystems and species to respond to the demands climate change, will in part be determined by how effectively we protect them from inappropriate developments, including poorly sited and designed wind energy projects.

Planning policy is an essential tool for ensuring that the rapid deployment of wind energy is achieved whilst simultaneously protecting vulnerable wildlife from inappropriate development. In principle, effective planning systems can facilitate the development of a well conceived and viable wind energy sector. However, the wind industry often reports that its efforts are frustrated by slow decision-making and inconsistency of outcome (BWEA, 2004); whilst conservationists feel that they are subject to time consuming battles in order to prevent inappropriate developments. Figures for the UK from 2007/2008 demonstrate that wind applications are less likely to be granted planning permission, compared to other major development projects (69 percent of applications were granted for wind versus an average of 75 per cent for all major development). Wind farms are also unlikely to be determined within the target period set by central government, with 93 per cent of applications taking longer than the 16 weeks prescribed (BWEA, 2008).

[2] This BERR figure is based upon the assumption that there will also be a major expansion in offshore wind, along with substantial increases in the use of biomass and tidal resources. These represent potentially controversial technologies. If, for example, the use of biomass is constrained by concerns related to sustainability, onshore wind efforts may need to be more extensive.

To achieve the twin aims of onshore wind expansion and nature conservation, governments in the UK will need to improve their systems for the delivery of sustainable renewable energy. This report examines how the planning systems, in the UK and England in particular, can ready themselves to deliver a step change in the scale of onshore wind energy development, whilst simultaneously conserving biodiversity. The findings draw on experiences from stakeholders in Germany, Denmark, Spain and across the countries of the UK.

1.2 Delivering Emission Reductions: Integrating Onshore Wind Expansion and Nature Conservation

Onshore wind development poses a particular planning challenge, due to the scale of expansion required to meet climate and energy targets, and the well-founded concern that poorly sited wind farms and turbines can damage habitats and fauna. The biodiversity impacts of inappropriately located wind farms can be significant, causing habitat loss (especially from the construction of access roads), habitat degradation (for example, as a result of increased erosion and hydrological disruption), disturbance during construction and operation, and fatalities caused by collisions of vulnerable bird and bat species with turbines. The principal concerns are summarised in Table 1.

The killing of birds by wind turbines is probably the most high profile concern associated with wind farms. There is well documented evidence that wind farms can kill large numbers of sensitive species (Crockford 1992; de Lucas et al. 2007; Drewitt & Langston 2008; Drewitt & Langston 2006; Huppop et al. 2006; Langston & Pullan 2003). High collision rates are, however, unusual and a review of the available literature by Drewitt and Langston (2006) found that where collisions have been recorded, the rates per turbine are low, though variable with averages ranging from 0.01 to 23 bird collisions annually. Furthermore, typical bird collisions rates with wind turbines are much lower that those for overhead power lines, which range from 2.95 to 489 birds per km per year (Drewitt & Langston 2008). Average collision rates should be considered with caution, as they vary according the location of the turbine, the species that may come across it, their numbers and behaviour. The greatest losses have been seen at wind farms situated on narrow migration routes or near wetlands, which attract large numbers of gulls and other large birds. Much also depends on the species involved. Large, less-manoeuvrable species and species that habitually fly at rotor height may be more at risk (Garthe & Huppop 2004; Langston & Pullan 2003). Certain conditions may also lead to greater risk, for example in poor visibility or certain wind conditions (Langston and Pullan 2003, de Lucas et al. 2008)

While the majority of studies indicate that collision mortality rates per turbine in the UK are low, this does not necessarily mean that collision mortality is insignificant, especially for rarer longer-lived species (Langston & Pullan 2003). Habitats and sites in the UK that are of particularly high conservation importance and especially vulnerable include many upland and blanket bog areas, which may hold internationally important breeding populations of waders (such as Golden Plover) and rare raptors such as Golden Eagle. Many coastal sites are also vulnerable and can support important breeding populations of terns, gulls and other seabirds, along with rarer species such as White-tailed Eagle. Many major estuaries and some inland

wetlands in the UK support internationally important numbers of wintering water birds including ducks, geese and waders.

A particular conservation concern is that wind farms also may affect birds via disturbance displacement (e.g. Drewitt and Langston, 2006, Hötker et al., 2006). Disturbance can affect species in a number of ways; either by direct loss of nesting, foraging, roosting or moulting habitat, or by affecting productivity, and potentially survival. A meta-analysis of 19 datasets suggests reduced abundance of birds at wind farms, particularly of wildfowl and waders (Stewart et al., 2007). As with collision impacts, different species and groups of species are known to vary in their susceptibility. Hötker et al. (2006) present a review of disturbance displacement across 129 wind farms, mainly in Europe, focusing on species occurring in Germany. Disturbance displacement effects were observed to be more common in the non-breeding season, with waders and wildfowl particularly susceptible. Breeding season effects were only common in waders and gamebirds (Hötker et al., 2006). A review by Whitfield (2007) suggests that disturbance displacement around wind turbines is relatively common amongst waders, and particularly wintering birds, with fewer examples of disturbance displacement in breeding birds. This could be because breeding birds show greater site fidelity, or are more limited in their site choice. Effects on breeding birds could also be masked by a time lag, as birds faithful to the sites return, but new birds fail to settle.

The conservation significance of disturbance displacement responses depends upon whether there are knock-on effects on survival or productivity. These can occur, for example, if birds are excluded from nesting or foraging habitat with equivalent, alternative and suitable habitat not available (effectively habitat loss), or if energy expenditure is increased above levels for which birds can readily compensate. For example, construction of an offshore wind farm at Scroby Sands in Norfolk resulted in a nearly three-fold increase in foraging flight distances for little terns. (Perrow et al., 2006).

Figure 1 - Summary of potential biodiversity impacts resulting from onshore wind developments and potential mitigation and compensation measures

Impact types	Potential impacts	Potential mitigation	Potential compensation[3]
Direct mortality	Mortality of vulnerable birds and bats through collisions with turbines (and associated power lines), especially where turbines are inappropriately placed.	Avoidance of sites with sensitive species and appropriate turbine layout and design.	Offsite measures to increase survival or productivity rates of vulnerable species.
Direct habitat loss	Footprint of turbine base normally insignificant, but service roads can be more significant.	Avoidance of sensitive sites, especially peatlands, and sites with rare or threatened habitats and species	Offsite habitat restoration and enhancement measures, e.g. hydrological restoration and reduced grazing
Habitat fragmentation	Lines of turbines can form barriers to some species, restricting the use of some habitat patches.	Reduced density and / or careful location of turbines.	Offsite habitat restoration or enhancement
Disturbance	Disturbance during construction phase and during operation. Some species avoid breeding close to turbines.	Avoid construction during sensitive seasons. Avoid sensitive sites and reduce turbine density.	Offsite habitat restoration and enhancement and measures to increase survival or productivity rates of vulnerable species.
Indirect habitat degradation	Hydrological disruption and erosion, especially on peat soils, leading to siltation of water courses.	Avoidance of sensitive sites, especially peatlands; best practice methods for turbine and access road construction.	Offsite habitat restoration and enhancement, including downstream water courses if necessary.
Secondary impacts	Increased disturbance, littering, fires and hunting from increased access if new maintenance roads are open to public.	Regulation of access to new roads etc, and education and awareness actions to reduce harmful activities.	Offsite habitat restoration and enhancement and measures to increase survival or productivity rates of vulnerable species.

Sources - Drewitt & Langston 2008; Drewitt & Langston 2006; Langston & Pullan 2003; SGS Environment 1996

Despite the range of concerns, most threats can be minimised by avoiding sites with sensitive habitats, and those used by important populations of vulnerable species. If site selection is well-conceived, and appropriate mitigation measures are taken during construction and operation, the direct impacts of wind farms on biodiversity can eliminated or kept to acceptable levels in most cases.

When considering the impacts of wind development on a specific habitat or species, it is essential to take account of not only the implications of the individual wind farm but also the cumulative impacts of development across the landscape. Projections from a recent study of the potential biodiversity impacts of energy scenarios for the UK, suggest that the biodiversity impacts of a large increase in onshore wind power would probably be lower than those arising from a comparable increases in many other alternative energy technologies such as tidal barrages, open-cast coal mining and biomass (Tucker et al. 2008). Nevertheless, as wind farm development becomes more widespread there are concerns that, in particular locations, tolerable thresholds or the carrying capacity will be reached. For example, areas around estuaries often offer considerable wind resource, but were wind farms to become concentrated in such locals this could interfere with some species daily movements between feeding and roosting areas.

[3] It should be noted that stricter tests for the provision of compensation apply to Natura 2000 sites.

2 THE APPROACH

This study takes as its starting point the core challenge facing renewable energy developers, conservationists and planners within the UK and wider Europe: ***as we strive to rapidly transform our energy supply systems to combat climate change, how best can we protect our natural environment and the biodiversity this sustains***?

The planning approval process is often the forum in which this question is debated, and the mechanism we rely upon to deliver an appropriate outcome for the public, wildlife and developers. Without an appropriate planning framework, the consent process risks being resource intensive, damaging to the reputation of renewable energy and delaying the approval of appropriate projects. Such a situation is frustrating for industry, environmental and community groups alike.

This study examines the performance of planning processes for onshore wind in the UK and key European neighbours. It seeks to identify solutions for the future that will help deliver transparent and consistent outcomes, whilst removing hurdles to renewable development and protecting the natural environment.

The study draws upon and collates published and unpublished research, in order to develop an understanding of planning approaches within the UK. It examines how these compare with planning systems in European countries that have achieved a high level of onshore wind deployment – specifically Denmark, Germany and Spain. In particular, it looks at whether countries with a good record on renewable deployment have successfully integrated nature protection concerns, or whether development has occurred at the expense of the natural environment. This analysis is reinforced with more detailed case-studies, and supplemented by material from a series of semi structured interviews, held with staff from the RSPB and partner organisations, industry representatives, experts and policy-makers in the UK and the three other European countries.

On the basis of this analysis, the study identifies the issues critical for onshore wind development and nature protection. Conclusions are drawn as to how planning for onshore wind, and potentially renewable energy more generally, might evolve in the future. Aiming at the successful marriage of a significant increase in onshore wind development and nature conservation, priorities for future of planning systems are set out. The conclusions take account of the fact that wind resources and environmental conditions more generally will vary considerably depending upon the location. In drawing lessons from different countries and circumstances, care is necessary to take due account of these variations, before proposing the applicability or transferability of experiences.

The focus of this report is upon nature conservation. This is clearly only one of a number of factors that need to be taken into account when planning new wind capacity. Often there is a conflation of nature conservation and other environmental or community concerns which can obscure the debate over the impacts of development and the nature of objections that arise. Distinguishing between different environmental concerns is important for well founded decisions.

3 DEPLOYMENT OF WIND POWER IN EUROPE

The UK is among Europe's leaders in promoting a global political response to climate change; it has, however, been slow to realise the potential of its own renewable energy resources. This in part reflects the UK's ability to exploit alternative home-grown energy sources in terms of North Sea oil and gas. Some of our European neighbours, however, are now world leaders in wind energy development, mainly delivered onshore. In 2008, Germany and Spain were reported as having the second and third highest wind energy capacity in the world; historically Germany was the world leader but was over taken in 2008 by the USA (WWEA, 2009).

Since 2000, wind energy (both on and offshore) has accounted for 30 per cent of the new installed electricity generating capacity in the EU (EWEA, 2008). By the end of 2007, the EU's 27 Member States had over 55GW of installed onshore wind capacity, rising to over 63GW by the end of 2008. Of this, just three countries were responsible for approximately 70 per cent of total onshore generation in 2007 – Germany, Spain and Denmark (EWEA, 2007). Figures for all wind development in 2008, however, show that other Member States are also now investing seriously in wind power. Whilst 39 percent of the 8,484MW installed during 2008 was in the three 'top' countries, significant amounts of deployment are happening elsewhere. The top five European installers of wind capacity in 2008 were (in order of achievement) Germany, Spain, Italy, France and the UK.

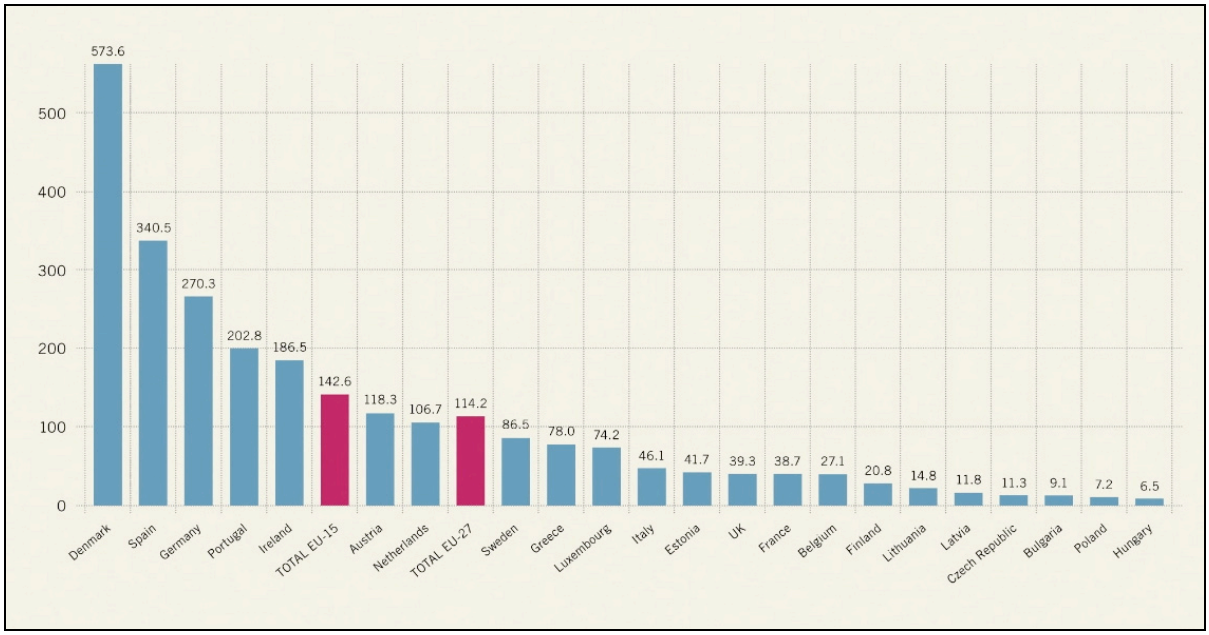
Whilst the UK's real level of onshore wind capacity is rising, along with its share of renewable energy more generally, wind power specifically delivers a small proportion of overall energy production and demand (see Figure 2). For example, although installation of wind energy in Demark has not risen rapidly in recent years, Danish wind capacity represented 21 per cent of total electricity demand in 2007, compared to only 1.82 per cent in the UK. Differences in the level of energy delivered by wind power per capita in European countries are illustrated in figure 3. Denmark provides 573 kWs per 1000 inhabitants, Spain and Germany 340 and 270 respectively; the UK by contrast only delivers 39. According to the Committee on Climate Change, the UK would need to deliver a 'similar pace of deployment over the next 12 years to what has been achieved on average in Germany over the last ten years, and a slower pace to that which has been achieved in Spain', if it is to meet its greenhouse gas emission reduction targets up to 2020 (Committee on Climate Change, 2008).

Figure 2 – Table comparing the wind capacity in the UK, Germany, Denmark and Spain and the implications in terms of meeting electricity demand.

Country	Installed onshore wind capacity (end of 2007) (MW)	Installed all wind capacity (onshore and offshore) (end of 2008) (MW)	Percentage of gross electricity production generated from renewable energy (2007)	Wind's share of electricity demand (as of end of 2007)
UK	2,389	3,241	5.1 %	1.82 %
Germany	22,247	23,903	15 %	7 %
Spain	15,145	16,740	20 %	11.76 %
Denmark	3,125	3,180	29 %	21.22 %

Sources: EWEA 2007, EWEA 2008, Eurostat 2007, EWEA 2007.

Figure 3 – Diagram demonstrating the amount of electricity generated by wind across the EU Member States as kW per 1000 inhabitants



Source: EWEA 2007

Installed wind energy capacity is unevenly distributed across the UK countries, as well as across Europe. Statistics for England, Northern Ireland, Scotland and Wales indicate both a difference in operational capacity and the scale of individual developments. Figure 4 sets out the number and capacity of the wind farms operational as of the end of February 2009 in the countries of the UK (based on figures provided by BWEA). These figures demonstrate that while England has the most individual wind farms, Scotland has by far the greatest generating capacity. Simple average capacities based on these numbers indicate that English wind developments have thus far been smaller scale than those in the other countries, with Scotland commanding the largest. In addition to existing capacity, the BWEA reports that there are 726MW currently under construction (of which 66 % is in Scotland);

3,268MW that have been granted planning consent (of which 68% are in Scotland); and 6,920 MW that are currently awaiting a decision within the planning system (of which 53 % are in Scotland).

Figure 4 – Table comparing the onshore wind capacity installed in the four countries of the UK as of the end February 2009[4]

Country	Number of Wind Farms	Capacity (MW)	Mean average wind farm size (to nearest whole MW)	Percentage of UK capacity
England	83	562.39 MW	7 MW	20 %
Northern Ireland	22	214.93 MW	10 MW	8 %
Scotland	68	1,641.53 MW	24 MW	60 %
Wales	27	316.95 MW	12 MW	12 %
Total	**197**	**2,724.10 MW**	**14 MW**	**100 %**

Source: Based on BWEA 2009 figures

Europe includes some of the world leaders in terms of onshore wind. While the level of UK wind capacity is increasing current levels represent only a small fraction of our total electricity production, comparing unfavourably with the achievements of progressive European neighbours. Onshore wind capacity is not evenly distributed across the UK, with Scotland contributing over 50 per cent of both existing and planned future development.

[4] These figures represent the capacity as of the end of February 2009 based on reporting by the wind industry. These figures may subtly differ from those reported by local authorities but currently represent the best comparable data set for the UK.

4 THE IMPORTANCE OF PROACTIVE LAND USE PLANNING

At its best, a planning system allows concerned groups of stakeholders to come together under a coherent framework and influence development decisions, ensuring they take account of broader societal and local concerns. It can guide development, ensuring it is channelled into appropriate localities, minimise negative impacts and maximise benefits for the environment and communities. In the absence of appropriate oversight through effective planning, development desires are not integrated with other needs, including nature conservation. This is true for onshore wind, as well as other types of development.

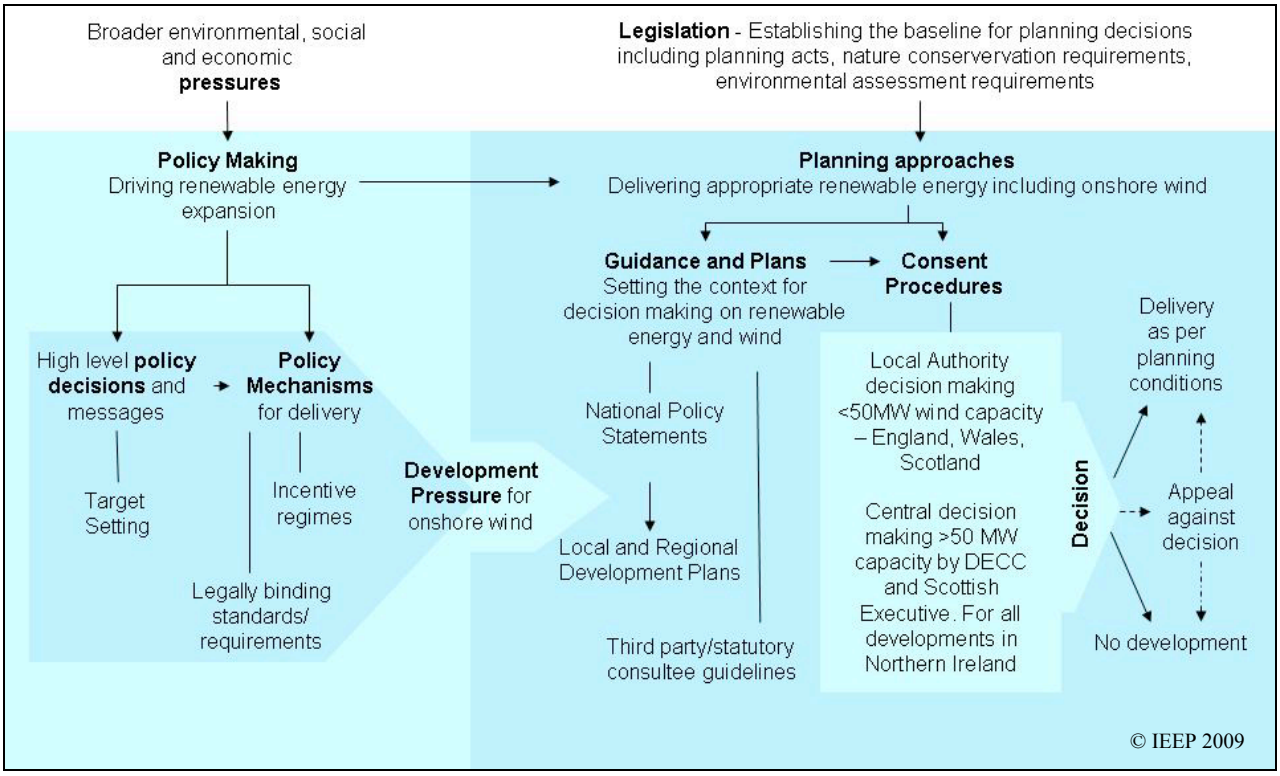
Evidence from Germany and Denmark, in particular, illustrates that wind power does not have to threaten wildlife, but appropriate siting is critical and must be the central goal of the planning and development control process, from a conservation perspective. An effective planning system should be capable of guiding the required level of development to appropriate sites, resolving site-specific issues in a balanced way and taking account of both national and local concerns. Proactive does not mean a purely top down and streamlined system. Where compromise is necessary, this can be achieved in consultation with key interested parties in a transparent and informed way. There are good practices already being employed in some regions and localities in the UK and other parts of Europe, aimed at delivering better planning and a much expanded onshore wind sector.

Land use planning represents one element in a policy chain stretching from high level strategic target setting, down to the detail of development control. It structures decision making about developments, which are driven by other pressures such as national targets, incentives and broader economic conditions. Planning in the wider sense does not represent a single process but is a multiplicity of different elements from strategic decision-making, to consent procedures for specific developments. Figure 5 represents a simplified and conceptualised picture of planning's role in the policy chain across the UK. Even the best planning systems, in isolation, cannot deliver the necessary step change in wind capacity; however, they can provide a clear, consistent and fair approach to development. In so doing, planning can make a significant contribution supporting the delivery of sustainable renewable energy at a significant scale. Without an effective planning regime, there is a substantial risk that sufficient renewable energy projects will not be consented in an appropriate timescale; or that wildlife will suffer needless harm; or both.

Land use planning is an essential mechanism for integrating the pressures for development with broader societal concerns. Planning is, however, only one element of a wide-ranging policy chain that needs to function effectively to deliver both nature conservation and a step change in renewable energy development.

Figure 5 – Conceptualising the UK planning system and its connectivity to other policy processes

This diagram illustrates how planning is only one element of a broader policy chain that needs to function effectively in order to deliver a reinvigorated approach to renewable energy and specifically onshore wind in the UK.



5 PLANNING APPROACHES IN THE UK, GERMANY, SPAIN AND DENMARK

5.1 Lessons from Germany, Spain and Denmark

Evidence from other European Member States demonstrates that it is that it is possible to roll out onshore wind generation rapidly and on a large scale (see section 3). The question is, has this been achieved whilst taking account of nature conservation, so as to develop an environmentally sustainable renewable energy supply? To support the study, information was gathered on the approaches adopted for onshore wind planning within Germany, Spain and Denmark. Germany and Denmark provide examples of highly considered, spatially explicit and indicative planning processes ie with specific areas identified where wind development is to be supported. This provides clarity for wind developers, whilst seeking to protect nature conservation sites in particular. Meanwhile, the Spanish system, although regionally operated, is much less considered and more permissive.

In ***Germany***, planning for the development of onshore wind primarily takes place at the regional and local level. Federal legislation such as the Federal Regional Planning Act and the Federal Building Code provide a general framework within which Länder (the local regions), who have primary responsibility for planning issues, act on the development of wind farms. The Federal Regional Planning Act requires the identification of different categories of areas to inform planning. This includes the identification of priority areas for development of onshore wind. It is, however, the Länder authority that defines the specific criteria upon which these areas are based.

The Federal Regional Planning Act, operating in parallel to the Federal Building Act, defines wind turbines as "privileged projects" in outlying areas, i.e. their development is generally permissible, where there are no conflicting public interests (including nature conservation). In order to avoid uncontrolled growth, however, Länder authorities have the opportunity to counter this general privilege by applying proactive locational planning. By delineating priority areas for wind farms in regional plans or delineating preference zones in land use plans, the authorities can define where it is and is not in the public interest to develop. Complementary areas, where wind farm development is to be restricted or excluded, are also determined by the Länder. They will judge, for example, whether a site protected for nature conservation should be defined as an exclusion or a restricted area. As a consequence, three distinct area classes are developed where onshore wind development is:

1) considered 'privileged' and proactively supported;
2) excluded or
3) restricted.

Stakeholders considered this approach to have been fundamental in reducing conflicts between nature conservation and the development of wind energy projects in Germany, leading to a successful expansion of onshore wind.

Denmark also operates a system that defines appropriate locations for onshore wind development regionally and locally. In contrast to the German system, however, there is a greater emphasis upon each municipality defining indicative areas considered appropriate for the development of onshore wind – that is, setting aside selected sites where wind developments that meet certain criteria will be deemed appropriate. Thus,

the broader categories of restriction or exclusion do not apply. In line with the Act on Spatial Planning, all counties prepare guidelines for regional planning which lay down the overall conditions for wind turbine deployment. Municipalities then prepare local wind-turbine plans. Typically, these prescribe where turbines can be installed, how (individual machines, clusters, parks) and the specific conditions to be met eg tower type, colour, distances to settlements, landscape features (Danish Energy Agency, 1999).

The development of wind power in Denmark has gone through a number of different stages. An initial surge in deployment slowed, as a result of changes in feed-in tariffs and price support, as well as saturation of sites allocated as appropriate for onshore wind development. Subsequently, new renewable energy targets were established, leading to the reconsideration of appropriate localities for development. These changes have had a dramatic impact on the number of onshore wind farms built as well as their ownership – shifting from what was strongly a cooperative-led sector to one where larger energy companies are increasingly important. Lessons from Denmark demonstrate that the highly prescriptive approach does deliver onshore wind development effectively, until the limitations of allocated areas are met. At this point, such a mechanism acts as a constraint on development, unless a rapid review is possible. Importantly, the Danish system also shows how different policy support tools can determine the nature and ownership of development. Finally, it highlights how community ownership can shape public acceptance and the implications this has upon the planning process. Box 1 sets out in detail the different stages of onshore wind development in Denmark and the lessons that can be learnt.

Box 1 – The evolution of onshore wind development in Denmark

There are four distinct stages in the development of onshore wind in Denmark, resulting from the interaction of changes in financial support mechanisms and the operation of the planning system. The stages and consequent lessons are set out below.

Stage 1: Co-operatives and Onshore Wind Development - Pre 1999, there was a surge in onshore wind developments, based on a long tradition of using wind power, combined with the oil crises in 1970s. Local initiatives and cooperative ownership of wind turbines was the norm throughout this period. These bottom–up efforts were supported by the government, which introduced subsidies, tax credits and ownership criteria that encouraged cooperative ownership of wind turbines.

Stage 2: Decline of New Onshore Wind Development – After 1999, wind power development slowed following Danish Electricity Reform. This brought about the liberalisation of the Danish electricity market from January 2000, including a redesign of the support to wind power producers. The combination of significant reductions in feed-in tariff support, and a planning process that that failed to take account of technological developments (Munksgaard et al, 2008) in turbines led to a slowing in development. The Danish approach of setting out prescriptive site localities for development had in effect, ruled out most locations from onshore wind development. In addition, turbines had outgrown planning requirements. As a consequence, the number of new onshore wind turbines declined sharply after 2001, with none being built in 2004. Instead, the focus shifted towards re-powering in order to increase the capacity and efficiency of land-based wind turbines.

Stage 3: Decline of Co-operatives – Re-powering initiatives essentially drove a shift away from cooperative developments. Most cooperatives were unable to undertake the re-powering of existing wind farms and subsequently many of these were bought by larger energy companies, with greater financial backing. Commentators report a trend of ownership moving away from cooperatives to investors, and as a consequence more people are starting to protest against wind power as the "beloved windmills are now seen as money machines for someone else" (Kruse, 2006). There has therefore been

a shift from small-scale local ownership to larger scale farms with Denmark's largest farm to date announced in December 2008 (Renewable Energy World, 2008)

Stage 4: A Second Wave of Expansion – In 2007, the Danish government adopted a new energy strategy aiming to increase renewable energy consumption to 30 per cent by 2025. This anticipated a doubling of wind power from 2006 levels of 3129MW to 6000MW. As a consequence, municipalities have been required to revise their spatial plans for onshore wind to provide additional development sites (Munksgaard et al, 2008).

An example of revised development plan (Ringkøbing-Skjern Kommune, 2008) is that proposed by Ringkøbing-Skjern municipality in September 2008. Currently there are 295 onshore wind turbines in Ringkøbing-Skjern municipality, totalling 112 650 kW. The newly proposed local plan for onshore wind includes the siting of an additional 182 wind turbines by 2020, with a total capacity of 464 MW. It is not possible for the municipality to allocate Natura 2000 areas for wind farms. Even so, the plan suggests the possibility of a demonstration project in the Natura 2000 area, in case of any future changes allowing wind farms into carefully selected protected areas. This is a clear indication that in the future there will be increasing pressures to relax the ban on wind farms sites in Natura 2000 areas.

Spain's recent development of onshore wind has been the most rapid in Europe. While land use planning is also regionally devolved in Spain (decisions on wind farms of up to 50 MW are made regionally, above this authorisation is provide by the Ministry of the Environment), development has, in contrast to Denmark and Germany, pursued a relatively unplanned path in a challenging environment with demonstrable consequences for wildlife.

Spain now generates over 10 per cent of its total electricity demand from wind energy, primarily onshore. This reflects favourable government financing of the sector, through feed in tariffs in place since 1997. Spain hopes to have 20 GW of wind capacity by 2010 and up to 40 GW by 2020.

Planning policy is generally supportive of development, but reported to be very permissive when it comes to environmental impacts. The implementation of the Environmental Impact Assessment Directive[5] has been inconsistent, resulting in environmental impacts not being appropriately taken into account during planning decisions. Experience shows that many regional authorities give strong priority to energy and economic aspects when considering their planning decisions – so far only Catalunia and Cantabria have submitted their plans to a Strategic Environmental Assessment (see section 6.5).

The limited use of effective impact assessment and a general presumption in favour of development have resulted in some dramatic examples of the impacts poorly sited wind farms can have. Box 2 below sets out details of challenges reported specifically in the Valencia region of Spain. The absence of any effective environmental impact assessment process in many regions is a particular concern, as Spain contains important populations of vulnerable bird species with wide ranges and distinct migratory patterns. The habits of these bird species mean that inappropriate areas for wind spread far beyond protected areas, and that the effective assessment of a

[5] This Directive creates the procedure upon which Environmental Impact Assessment in the UK is legally based. Prior to the development of certain projects an assessment is to be made of the effects it may have upon the environment (see section 6.5)

development's impacts is essential. As a consequence, several inappropriately sited arrays have lead to considerable damage, particularly of sensitive vulture and raptor populations. This failure of diligence at the planning stage means that Birdlife International representatives in Spain have submitted more than 600 appeals against wind farms in the last three years. It should be noted that only a relatively small number of the wind farms in Spain have ultimately resulted in significant bird deaths; however, this notorious minority have more generally sullied the reputation of wind energy within Spain, with repercussions felt across Europe.

Box 2 – Failure to Marry Conservation and Development Concern in Valencia[6]

In the Valencia region of Spain, until recently, local authorities granted developers permission to build wind farms in Important Bird Areas (IBAs), as identified by SEO/BirdLife. As a result, wind farms have been erected in areas where species of conservation importance occur, leading to reportedly significant impacts. For example, over a period of one month, SEO/Birdlife estimated that in one Valencian IBA, around 250 griffon vultures (*Gyps fulvus*) were killed by collisions with turbines. Another consequence of allowing construction on IBA sites is that these areas may no longer qualify as Special Protected Areas (SPAs), if the wind farm reduces the quality of the site to levels below the qualifying threshold. This further undermines attempts to enhance the levels of protection for bird populations in Spain.[7] As is the case in many other regions in Spain, local authorities in Valencia have loosely applied Article 6.4 of the Habitats Directive. This allows projects to go ahead within a protected site where there is no alternative and the project is required for reasons of overriding public interest. This Article has been reportedly applied so often in the region that it is now normal practice, not the exception.

In conclusion, the following lessons can be distilled from the experiences of these three leading countries for onshore wind development.

- ***The German system, which focuses authority regionally and divides land between priority areas for development, restricted or exclusion areas, provides both clarity and flexibility if properly implemented.***
- ***The Danish system, whilst to date effective in protecting nature conservation interests, has proved too restrictive to enable continued onshore wind expansion. Denmark's experience also illustrates the importance of both community engagement in engendering support for wind development and the implications of altering policies that promote renewable energy.***
- ***In Spain, wind development has been rapid, but the lack of proper impact assessment protocols and effective planning oversight has led to considerable damage to nature conservation and the reputation of wind energy.***

[6] Facts and figures provided in this case example have been provided by SEO Birdlife (based on an interview on 11 December 2008 and on further discussions in March 2009). These figures are based on field research and have not been formally published.

[7] Due to the poor implementation of the Habitats and Birds Directives, Spain has been required by the European Courts of Justice (ECJ) to attribute SPA status to all IBA areas.

5.2 Lessons from Land Use Planning in the UK

Planning in the UK is largely a devolved matter (although the extent of devolution differs for Scotland, Wales and Northern Ireland) and, as a consequence, there is a diversity of approaches to development planning across the different countries. The key features of each are summarised below.

The Scale and Success of Planning Applications

According to figures collated by BWEA (BWEA, 2008), 89 planning applications were submitted for onshore wind developments across the UK during 2008. This amounted to a potential capacity of approximately 1728MW. Of the 89 proposals, 50 were made in England with 11 in Northern Ireland, 17 in Scotland and 11 in Wales. Conversely, whilst by far the highest number of applications was made in England, the highest level of capacity was proposed in Scotland; 678MW compared to 579MW in England, 146 in Northern Ireland and 324MW in Wales. At the UK level, the number of applications made in 2008 was slightly lower than in 2007, and a significant reduction from 2006 levels.

During 2008, 84 planning applications were determined, ie approved or refused, (numbers differ to the applications recorded for 2008, given that an application is often not determined in the year of its proposal). This equates to 3470MW of potential capacity. Of this, 2058MW or 59 per cent of the capacity was approved across the UK. In 2007, 57 per cent of applications and 1,129MW of capacity were approved, while 56 per cent or 777MW of new capacity were approved in 2006. Therefore, percentage approvals have remained relatively static between 56 and 59 per cent; however, the level of capacity approved has increased significantly. It should be noted, however, that the decisions in a given year do not give an indication of the time taken to reach that decision; and that timely decision making will be fundamental to the achievement of our renewable energy goals. Moreover, planning approvals do not represent an end in themselves, but represent an opportunity for development. There is, therefore, a need to maintain and increase the amount of appropriately sited capacity approved into the future, in order to ensure delivery of adequate wind capacity.

Figure 6 sets out by UK country, the number of planning applications and the capacity approved in 2008, along with the percentage rate for approval in terms of numbers of applications and capacity. These figures show that Wales had the lowest rate of approvals in terms of the capacity delivered, where as England had the lowest rate based on the number of wind farms approved. Scotland had a very high percentage based on the number of wind farms approved, but this drops from 76 per cent to 60 per cent when considering the overall capacity approved. The figures show that Scotland approved by far the greatest capacity of onshore wind, with more large-scale developments and a comparatively high proportion of capacity being approved. Interestingly, in England the proportion of wind farms being approved is low, but the percentage of capacity approved is higher. For Wales, the overall level of determinations of planning applications and the percentage of approvals appear low. This may be a response to the first wave of applications following reforms for onshore wind planning based on Technical Advice Note (TAN) 8 (see below for details). As this system becomes more established this may alter.

The imbalance in existing and proposed levels of development across the countries of the UK is in part the product of variable natural resources, but this also reflects the different planning systems and levels of political support for wind. Whilst Scotland does have considerable wind resource, the high volume of capacity put forward may also be a product of the relative difficulties faced in pursuing an application for development, for example in England, plus the proactive stance of the Scottish government. Such differences risk placing a high level of pressure on sensitive sites in Scotland, when in fact there may be other potentially appropriate locations elsewhere in the UK, that are not being comprehensively explored (though clearly investment choices in all countries will be determined in the first instance by wind speeds). Improving planning approaches could enable overall onshore delivery to be increased, and potentially ease pressure to develop sensitive sites within one particular UK country.

Figure 6 – Statistics for the approval of planning applications for onshore wind development across the UK countries in 2008[8].

Country	Total number of wind farms determined	Total capacity determined	Number of wind farms approved	Total onshore wind capacity approved	Proportion of wind farms approved	Proportion of onshore wind capacity approved
England	45	663MW	21	393 MW	47 %	59%
Northern Ireland	6	95MW	6	95 MW	100%	100%
Scotland	25	2508MW	19	1,494 MW	76%	60%
Wales	8	201MW	4	74 MW	50%	37%
UK Total	**84**	**3470MW**	**50**	**2,058 MW**	**60%**	**59%**

Source: BWEA 2008

Local versus Central Decision Making

All onshore wind developers in the UK have to apply for planning permission and/or consent; however, the approach to decision-making varies depending on the scale of a development's anticipated capacity. Above 50 MW in England, Wales and Scotland, a development is considered to represent a "significant" infrastructure project. Below this level, local planning authorities take decisions as to the approval, or otherwise, of wind developments. Above 50MW, decision-making is centralised. Decisions are currently taken by the Department of Energy and Climate Change (previously decisions were made by BERR) for England and Wales, and by the Scottish Executive

[8] These figures represent the capacity as of the end of February 2009 based on reporting by the wind industry. These figures may subtly differ from those reported by local authorities but currently represent the best comparable data set for the UK.

for Scotland. With the adoption of the Planning Act 2008, decisions over 50MW in England and Wales will, in future, be taken by the centrally appointed Infrastructure Planning Commission rather than a government department. This move is intended to increase transparency; however, there is some trepidation among stakeholders as to who will participate on this Committee, what interests they will represent and what oversight there will be over decisions. In Northern Ireland, all development decisions are made centrally (as there are no local planning authorities); overseen either at the divisional level or the Head Quarters of the Planning Service depending upon the size of development.

Stakeholders report a significant difference across the countries of the UK with regards the balance of local and central decision-making. In Scotland, for example, a large number of planning applications exceed the 50MW threshold and are being dealt with by the Scottish Executive. As illustrated in section 3, the scale and size of wind energy investments in Scotland are greater than in other UK countries. This has lead to the development of expert capacity and knowledge within the Scottish Government and statutory agencies such as Scottish Natural Heritage (SNH). In comparison, there is less reliance, at present, upon central decisions across England and Wales. The proportion of centralised decisions is, however, anticipated to increase as wind turbine technology evolves, with individual turbines capable of producing greater outputs. This has led to concerns over the removal of local level oversight, and questions as to how the new Infrastructure Planning Commission for England and Wales will be resourced and operated.

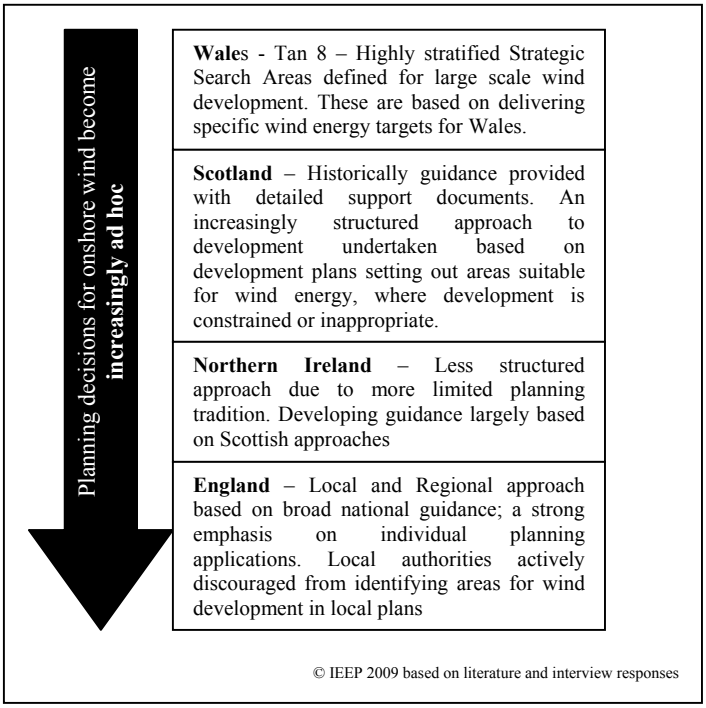
Approaches to Onshore Wind Planning - A Review of Planning Guidance for Renewable Energy Deployment

Each country within the UK has adopted, or is in the process of drafting, its own guidance on the development of renewable energy. These are Planning Policy Statement (PPS) 22 on renewable energy for England, Scottish Planning Policy (SPP) 6 on renewable energy development and Planning Advice Note (PAN) 45 on good practice in renewable energy technologies for Scotland, Technical Advice Note (TAN) 8 on planning for renewable energy for Wales. A draft of Planning Policy Statement (PPS) 18 for Northern Ireland on planning for renewable energy (DoE, 2007) is currently under consultation, with the final version scheduled for adoption in 2009.

These guidance dossiers vary greatly in terms of planning approach, spatial specificity, and the level of support and autonomy afforded to local, regional and national planning authorities. A pattern can be mapped from the more *ad hoc* approaches adopted in England, through to more structured and spatially explicit approaches in Wales. In England, the consent process relies primarily on individual planning consents. In Northern Ireland consents are coordinated centrally by the Planning Service but currently there are only draft guidelines setting out the approach. In Scotland planning authorities are required to produce development plans (many are still under formulation) to specify areas where wind energy development would be supported, should be constrained or avoided. Finally, in Wales a more prescriptive method is adopted, where by seven Strategic Search Areas are deemed generally suitable for onshore wind developments. Figure 7, below, illustrates this shift across the UK countries. Comparing approaches in the UK to those adopted in other

European countries, parallels can clearly be drawn between the Scottish and German approaches, and the Welsh and Danish approaches.

Figure 7 – Diagram illustrating the multiple approaches to onshore wind planning in the UK, and the shift from structured indicative planning under TAN8 in Wales to more ad hoc decision making



'Technical Advice Note 8: Planning for Renewable Energy' (TAN 8) was published in 2005 by the Welsh Assembly Government in response to the UK Energy White Paper 2003 (ARUP, 2007). TAN 8 aimed to assist the delivery of Welsh Assembly Government targets for renewable energy of 4TWh of electricity per year from renewable energy sources by 2010, rising to 7TWh by 2020. To deliver the 2010 target, it was deemed that an additional 800MW of wind power was needed (Welsh Assembly Government, 2005b). TAN8 sets out seven Strategic Search Areas (SSAs) within which large-scale wind development (ie greater than 25 MW capacity) should be focused. Each area is given a specific minimum target for generation based on the capacity of that area, in total intended to enable the delivery of 1120MW. Outside SSAs, development on brownfield and small-scale wind development ie below 5MW is also specifically supported.

It is the intention that the SSAs, by providing clear indicative areas for potential onshore wind development, should send a clear message to developers, boosting their confidence and focusing applications for development in areas deemed most appropriate. The criteria upon which SSA selection was based were developed through a process of round table discussions among key actors in the onshore wind debate (including developers, environmental NGOs and community interest groups). Together, this group developed a list of criteria that would exclude areas considered unsuitable for onshore wind (for example, Natura 2000 sites are excluded) while affording sufficient area for the requisite onshore wind capacity. The SSAs were essentially set centrally by the Welsh Assembly Government for the whole of Wales,

although local authorities were able to make limited amendments to boundaries, in order to take account of valued local features. SSAs are set as search areas only; proposals for development within an SSA still require detailed planning applications to be approved with local authorities and DECC retaining the right to refuse consent (Welsh Assembly Government, 2005b). In total, the seven SSAs amounted to approximately 3.6 per cent of the total land areas of Wales. The approach adopted under TAN8 in some ways echoes the Danish planning system for onshore wind, ie specific areas are selected where onshore wind would be welcomed. Differences include that the Danish decision-making process is much more focused at the county level, and only development that complies with the conditions imposed on a specific site is permitted.

TAN8 is the most extensive effort in the UK to map centrally and allocate potential locations for onshore wind, with the intention of proactively supporting the delivery of specific targets. The widespread acceptance and popularity of TAN 8 has, however, been hindered by several factors. The adoption of prescriptive SSAs within a technical advice note (TAN) took many by surprise; it has been suggested that this was not an appropriate tool through which to present information that is so politically sensitive (Power, 2008). Subsequently, parties have commented that the consultation process was insufficient, despite the inclusion of NGOs such as the RSPB on the Technical Advice Group. The result is a feeling of mistrust on the part of some local politicians and sections of the public (Welsh Assembly Government, 2004b; Power, 2008). Some local communities within the SSAs feel that their neighbourhoods have been unfairly encumbered, with little or no compensation for what they perceive to be negative developments. Local politicians often oppose development because they believe it to be unpopular with their constituents (Power, 2008). Local opposition has led to delay; some appropriately sited developments have been refused planning permission by elected Members, against officer recommendation. Many of these decisions have subsequently been overturned at Appeal, however, they have slowed development, endangering achievement of the targets and frustrating developers. The TAN8 system represented a significant change in the planning approach to onshore wind in Wales and, therefore, has taken time to bed down; it will only be over the coming years that its true success can be judged.

Scottish Planning Policy (SPP) 6: Renewable Energy was adopted in 2007. Building upon more wide ranging reform of the Scottish planning system, established under the Planning Act 2006 for Scotland, SPP6 emphasises the importance of the use of development plans to set out a 'long term and inclusive vision of the future'. During the lifetime of SPP6, wind energy is anticipated to make the most significant contribution to the generation of renewable energy in Scotland, and as such receives special attention. SPP6 sets out an approach to wind, based on the capacity of wind development.

In Scotland, for wind developments over 20MW capacity, development plans must set out the following: broad areas of search where proposals are likely to be supported (subject to a satisfactory development proposal); those areas that can be afforded significant protection through spatial policies; and criteria to be followed in the remainder of the plan area, to assess the merits of individual applications. Areas to be protected should take account of nature conservation, as set out in National Planning

Policy Guidance 14 on Natural Heritage[9]. SPP6 also requires planners to take account of the cumulative impacts of development; increasingly a concern in certain areas of Scotland, given the scale of development. A case study reviewing the development plan for the Orkney Isles is set out in Box 3, illustrating the application of this approach.

The ultimate intention of SPP6 is to identify areas where there are no significant constraints on the development of onshore wind. Of all the approaches adopted in the UK, the Scottish approach most closely relates to that adopted in Germany; with regional plans setting out three different area classes, either favouring, or highlighting sensitivity to, wind development. SPP6 is, however, still in the process of implementation. Interviews with Scottish Government officials highlighted that many local authorities have yet to complete their development plans; there is no specific timetable for their delivery set out in SPP6. In the meantime, many areas are relying on earlier guidance to identify appropriate localities for onshore wind. However, it should be noted that interviewees from across all stakeholder groups highlighted previous Scottish guidance as demonstrating good practice approaches. In particular, efforts to map the sensitivity of natural habitats and species to wind development were considered helpful. This is set out in SNH's Strategic Locational Guidance for Onshore Wind Farms in respect of Natural Heritage; three different zones are identified based on the sensitivity of natural heritage and hence the acceptability of development.

In contrast to more structured approaches now being implemented in Wales and Scotland, ***Planning Policy Statement 22 (PPS22)*** for England discusses renewable energy development at a much higher and more generalised level. Adopted in 2004, PPS22 responds to the Energy White Paper and ambitions to deliver 10 per cent renewable energy by 2010 and 20 per cent by 2020. It does state that renewable energy development should not take place in close proximity to nationally designated sites, and that within designated areas planning permission should only be granted if it can be demonstrated that the objectives of the designation will not be compromised. Much of the responsibility for dealing with planning issues related to renewable energy is, however, passed down to local and regional authorities.

PPS22 states that regional spatial strategies and local development documents should contain policies designed to promote renewable energy deployment. Criteria based policies should be set out in regional spatial strategies appropriate for identifying areas potentially suitable for renewable development. These strategies should also set targets for the level of new renewable energy capacity to be delivered. In addition, local planning authorities should develop criteria by which planning applications for

[9] NPPG14 for Scotland provides guidance on how the Government's policies for the conservation and enhancement of Scotland's natural heritage should be reflected in land use planning. This covers inter alia the main statutory obligations in relation to the conservation of natural heritage; describes the role of the planning system in safeguarding sites of national and international importance; provides guidance on the approach to be adopted in relation to local and non-statutory designations; and draws attention to the importance of safeguarding and enhancing natural heritage beyond the confines of designated areas.

renewable energy are to be judged. PPS22 specifically states that local planning authorities should only allocate specific sites for renewable energy in plans where a developer has already indicated an interest in the site, has confirmed that the site is viable, and that it will be brought forward during the plan period.

While PPS22 does state that targets and criteria for renewable energy development should be developed, there is no clarity over ambition and timescale. Thus the scale of ambition, the timetable for delivery and the selection of criteria upon which planning decisions are based, remain very much up to the different regional and local authorities. As a consequence, planning approaches to wind in England have remained ad hoc, focused upon individual planning decisions, and with little detailed guidance or clarity provided for both local authorities and industry. Given the magnitude and urgency of newly adopted targets, this seems unlikely to deliver adequate renewable energy capacity to meet future needs.

The ***draft Planning Policy Statement (PPS) 18 for Northern Ireland*** sets out clearly for developers and non experts the potential nature of wind development and the implications associated, within Annex I of the dossier. It also clearly lists principles a wind development should address in order for planning applications to be deemed successful. The proposed guidance appears to prioritise wind development; while not explicitly promoting wind, the statement's wording highlights that wind developments would generally be welcomed. For example, it is stated that the impact of wind farms on local nature conservation interests should be minimal beyond designated sites and peatland habitats.

Within the UK, planning approaches range from the highly stratified selection of indicative zones for development in Wales under TAN8; through a system in Scotland of local development plans setting out localities favourable to and sensitive to wind development; to a more ad hoc approach in England based on local and regional criteria with limited central coordination. Data appears to shows that England receives the highest number of individual planning applications for onshore wind farms but at present, these are primarily small-scale developments. When looking at delivery of potential capacity, Scotland received and approved applications for the highest level of onshore wind by some way.

Box 3 – Scottish Planning for Onshore Wind – A development plan for the Orkney Islands

Scottish Planning Policy 6, Renewable Energy, was intended to facilitate the delivery of 40 per cent of electricity generated in Scotland to come from renewable sources by 2020. SPP 6 states that Planning Authorities should have Development Plan policies that identify broad areas where projects for wind farms above 20 megawatts will be supported. Based on the SPP6 requirements, the Orkney Islands set up their development plan for onshore wind. The resulting Orkney Council's Supplementary Guidance will apply to all planning applications for onshore wind. The guidance classifies the Orkney Islands into three spatial categories:

- Wind Energy Development Area
- Wind Energy Sensitive Areas including designated nature areas and a World Heritage Site buffer zone, an airport safeguard zone and/or 2 km buffers around main settlements.
- Intermediate Areas

The spatial designations and associated maps are intended to guide potential applicants away from unsuitable areas. In addition, planning applications for proposed development have to demonstrate full compliance with the following nine development criteria:

- Natural heritage – species protection extends beyond protected areas following risks identified in the Strategic Environmental Assessment conducted on the development plan
- Water Resources
- Landscape Impact and Cumulative Landscape Impact
- Visual Impact and Cumulative Visual Impact
- Quality of Life and Amenity
- Historic Environment
- Safeguarding Aviation Interests
- Ancillary and Infrastructure Development
- Decommissioning and Reinstatement

6 TOWARDS POSITIVE PLANNING FOR ONSHORE WIND – THE CRITICAL ISSUES

Through semi-structured interviews, supplemented by additional desk research, the authors of this report have identified what they consider to be a number of critical factors for the successful planning of onshore wind development. These factors either facilitate efficient and appropriate planning decisions, and/or are the subject of controversy among stakeholders (and therefore require resolution). The concepts examined range from common sense approaches that should become good practice norms (for example, proper resourcing of the planning system) to more complex and contended concepts, such as the use of strategic spatial planning and providing incentives for community engagement.

The subsequent analysis follows the timeline of a planning process, explaining elements vital for proactive and robust planning. It includes an examination of the following steps:

- The establishment of a clear information base via early stakeholder engagement, providing clarity over the nature of conservation concerns, and building knowledge within an adequately resourced system;
- Providing clarity over the location of wind development and its impacts, discussing the value of strategic, spatially explicit plans for onshore wind and the importance of environmental impact assessment;
- Highlighting the potential and need for local benefits associated with onshore wind investment; and
- Reflecting on the role of planning consents in determining the effective management and monitoring of developments throughout their use and aftercare phases.
- The importance of political will in supporting change.

While these concepts are discussed in the context of rapid expansion in onshore wind and potential impacts upon nature conservation; these challenges and issues are, importantly, not specific to onshore wind development. The principles they embody could be usefully applied to other forms of renewable energy deployment and should be reflected in planning approaches across the UK.

6.1 Early Engagement

The most commonly cited best practice for the delivery of successful onshore wind developments is ensuring that different groups are brought together to discuss possible sites, alternatives and implications as early as possible in the planning process. The front-loading of information gathering, engagement and debate is consistently seen as key to delivering swifter, better considered planning decisions. It is also seen to avoid costly investment in inappropriate sites, focusing activity as early as possible on the best localities, with problems and solutions dealt with in the first instance. Stakeholders commented that best practice developments are often those that no one has heard of, as they pass through the system without controversy. More often than not, this is the result of early community and stakeholder engagement providing clarity as to what the concerns and priorities are, for a particular development. Open

and honest early engagement crucially allows better and more through consideration of alternative sites.

It was noted by experts, that as the onshore wind industry develops and matures, there is increasingly an open dialogue between developers and environmental groups. As the debate has evolved and development become more commonplace, trust has built up between specific individuals allowing the sharing of knowledge on pitfalls, challenges, possible sites and management approaches. This process can avoid unnecessary objections at the planning stage, and ensure that nature conservation interests are taken into account during initial discussions. Industry is far more accepting of the exclusion of a particular site, on nature conservation and other grounds, at this stage; the earlier the decision to exclude the less the investment made in a particular locality.

Many tools and approaches, if used effectively, facilitate early information exchange and debate. Strategic indicative plans, information tools such as sensitivity mapping, EIA and SEA all attempt to do this. These issues are explored further in subsequent sections of this chapter.

Early engagement with all actors is fundamental to success. At this stage, exclusion of inappropriate sites and consideration of alternatives is less costly, hence more likely to be acceptable. This process should not be ad hoc or left to proactive individuals within industry and environmental groups. Effective early engagement should become standard good practice prior to formal planning procedures.

6.2 Clarity of Conservation Concerns

When attempting to take account of an issue or concern within the planning process, it is vital to have a clear conceptualisation of the risks posed by development and the consequent implications for location and design. Given location's importance in determining the nature conservation impacts of onshore wind turbines, it is vital to have an understanding as to where potential conflicts may arise.

During interview discussions, a common concern raised for England in particular, was the lack of clarity for developers over the baseline concerns relating to nature conservation. In order to take account of nature conservation effectively during the planning of a development, developers need answers to certain critical questions informing their decisions. For example, where are the high risk areas for development, what are the limitations this places upon expansion, and are there areas where risks can be circumvented by effective mitigation measures?

Answers to these vital questions have been reported to vary across a given organisation, depending upon the personal experiences of different individuals. There can be a misconception that nature conservation concerns are avoided simply by locating development outside designated protected areas. Unfortunately, the natural environment, and its use by fauna, is more complex. Concerns can vary depending upon vulnerability to wind development; this in turn can be determined by numerous factors including, inter alia, habitat characteristics, species sensitivity to disturbance and the nature of migratory patterns. Protected areas, while a useful indicator, are also dependent upon the scope and nature of the designated site network – which varies between countries and indeed habitat types within country. Such networks are not

generally designed to take full account of the value of broader habitats and the services they provide to society; nor can they protect vulnerable populations of important species, which occur outside of the network[10]. Moreover, situations may arise where some types of development within protected localities are possible and appropriate, depending on the features of interest for which a site has been designated, and the impacts upon these of the specific development that has been proposed.

During discussions with decision makers, industry and environmental representatives it was consistently highlighted that, while not an exact science, sensitivity mapping is an effective way of communicating a wide range of nature conservation concerns across regions. Sensitivity maps can communicate visually the areas of greatest concern where development is unlikely to be possible or appropriate; those areas of concern, where mitigation may be possible; and areas where well-conceived development would have limited or no impacts on nature conservation goals. Whilst these maps should not prejudice the need for further impact assessment at the local level, or influence the final outcome of planning decisions, they do represent a key communication mechanism and a starting point for debate.

Reports from all stakeholders in Scotland, where such sensitivity maps exist, are highly positive. SNH's Strategic Locational Guidance for Onshore Wind Farms in respect of Natural Heritage was commented by stakeholders to be a particularly useful tool; this sets out three different zones based on the sensitivity of natural heritage and hence the acceptability of development. There is a feeling that such tools have opened up and clarified debate. Similar work has been completed in the North of England by RSPB, the Wildlife Trusts, Natural England and others, to develop a series of Alert Maps highlighting areas sensitive for birds – based on a clear set of criteria developed by Arup (MacGuire et al, 2009). Further, national sensitivity mapping for England is being undertaken by Natural England and other stakeholders, including the RSPB.

A prerequisite for appropriate decision-making is clarity of concerns. Discussions over the value of land for nature conservation and consequent impact of wind farm development can become confused, delaying appropriate developments. Designated site boundaries, on their own, are not a proxy for the full range of nature conservation issues that need to be considered in site selection. Sensitivity mapping is one proven approach to provide a better understanding of such issues, and aid appropriate site selection.

6.3 Building Knowledge, Effective Governance and Resourcing Planning Support

Knowledge is central to proper and effective decision making. Many of the delays within the planning process reported during interviews, are the results of requests for further information to understand the nature and consequences of development, for example to ensure that an EIA is of an appropriate scope and quality. The establishment of a common baseline, of which sensitivity mapping is one element, is

[10] It should be noted that certain species of European Community importance protected under the Birds and Habitats Directives, are also subject to additional safeguards in certain circumstances where protected areas are not relevant. Areas used by, or essential to the features of a protected area may extend beyond the boundaries of those areas – buffering of those areas may therefore sometimes be necessary in order to protect their integrity.

an illustration of the importance of building a knowledge base and then disseminating that knowledge to all actors.

There are many myths surrounding onshore wind development. The real challenges of climate change and energy security need to be communicated to the general public, and most importantly the officials taking decisions on wind farm development at a local level. The ambition of government targets, the stark nature of our energy choices into the future, and the role onshore wind in delivering this, should be clearly set out. An oft cited criticism of planning decisions, and general public objections to onshore wind developments, is that the need to embrace an alternative energy future and the role all communities have to play in delivering this, are either not fully understood or not taken seriously. Altering these conceptions will require clear, consistent messages from government; as well as from NGOs and the industry. Messages from government can be passed on through clearer guidance, consistent decision-making and the decisions of law courts on planning appeals.

Clarity of message and understanding within central government and its agencies is essential. Many stakeholders have held up the approach in Scotland as a good example. It is felt that the knowledge held in central Scottish government units and additionally the detailed guidance provided by both the Scottish Executive and Scottish Natural Heritage has improved debate and facilitated appropriate development. A high proportion of onshore wind proposals in Scotland are over 50MW wind farms. As a consequence, capacity has been developed within a central Scottish Executive team, who provide considered rulings and can be called upon by local authorities, industry and environmental groups. This central pool of understanding is felt to be vital to enable the navigation of a field as complex as wind development approval. Regional and local decision-making bodies are often unable to develop this degree of expertise, as planning applications are more sporadic. This means that it is not possible to retain expert resources and knowledge in-house; planning teams at the local level are also simultaneously facing a wide range of challenges associated with different kinds of development.

The provision of effective guidance from central government departments and agencies is also essential. Knowledge can be developed and communicated partly by the transmission of information via these formal processes. Abstract planning guidance for renewable energy, for example Planning Policy Statement 22 for England, is of limited use without more detailed advice notes to support their implementation. Many interviews felt that in Scotland the more detailed support offered on the siting of wind under Scottish Planning Policy 6, and supporting dossiers produced by Scottish Natural Heritage (SNH) and the Scottish Executive, provide greater clarity and confidence.

Models like that seen in Scotland, with central pools of knowledge in government complemented by clear guidance to facilitate delivery of high level targets, appear to work. However, this and broader communication to the public and decision makers, requires resourcing. Properly managing and considering applications for major wind energy developments can represent a major drain on the resources of regional and local planning authorities, as well as statutory consultees. If governments recognise the importance of rapid and effective delivery of onshore wind, adequate resources, both in terms of funding to deal with applications and the development of broader

pool of knowledge and support tools, are needed. This requires resources for local authorities, especially for England and Wales, where wind developments appear to be smaller in scale and therefore will continue to fall within a local authority remit. Moreover, it requires investment in research and the expansion of our understanding in terms of the impacts of existing onshore developments.

The development and communication of knowledge about climate risk, onshore wind and nature protection will be central to good decision-making. A pool of capacity, skills and experience on wind energy development and planning should be developed within central governments or their agencies. This offers a basis for future decisions on large scale wind developments (ie above 50MW) and a resource upon which local authorities can draw. Information should be communicated to planning authorities, local decision makers and statutory consultees through clear, detailed guidance. Guidance should not simply be focused on high level aims, but clearly support appropriate site selection and project design for onshore wind developments.

6.4 Strategic and Indicative Plans – Locating Onshore Wind

Within the UK, the question of whether and how best to take forward more strategic planning for onshore wind, is a divisive one. Environmental groups have generally argued for a structured, spatially explicit approach that sets out indicative areas for development (or conversely where development should not be sited). By contrast, many industry representatives have registered their concern that this would slow the planning process, and be overly restrictive.

From a nature conservation perspective, there are advantages to adopting an indicative, stratified approach to planning. This allows the sensitivity of different habitats and species to be taken into account at a national or regional scale, guiding development away from areas of particular concern. In Germany and Denmark, spatially explicit approaches have been consistently adopted for the allocation of areas for wind development. This type of approach, requiring the identification of indicative areas for development, has also been adopted in Wales, under TAN8. Scotland is also part way through the implementation of a spatially explicit new approach to onshore wind planning, delivered via local development plans (see section 5.2 for full details). There are lessons that can be learnt from these processes, and their effectiveness can be contrasted with the more ad hoc approaches adopted in other parts of the UK, and Spain.

To date, a significant scale of onshore wind development has been possible without encroaching into areas designated for nature conservation in Germany and Denmark. In Germany, this has been achieved via a three tier stratified system consisting of: areas prioritised for development; areas where development may be possible but in a restricted way; and complete exclusion zones for onshore wind. Nature conservation representatives based in Germany consider that this has resulted in a system that has delivered considerable onshore wind development while reducing conflicts with nature conservation interests. The success of this system hinges on the fact that sites are selected both for priorities for development and for restriction or exclusion ie both ends of the spectrum are covered (see section 5.1 for full details).

In Denmark, onshore wind capacity has increased in various phases. Initially development was swift, facilitated by the allocation of potential development sites by the different municipalities. A threshold was then reached whereby development had filled all the viable sites available. A process is therefore underway, by which local authorities are looking more carefully at whether there are additional sites that can be developed without impacting on nature conservation and other sensitivities. This process should kick-start a second wave of new onshore wind power in Denmark, complemented by the repowering of existing sites (see section 5.1 for full details).

The allocation of 'Strategic Search Areas' (SSAs) under TAN8 is the most advanced example of a UK system that establishes indicative areas for wind development. Key lessons that can be learnt from the TAN8 process are set out in Box 4. The complete implementation of the Scottish development plan approach for onshore wind would see an alternative model for indicative planning for onshore wind in operation in the UK (see section 5.2).

Box 4 - Lessons from TAN8 and the establishment of Strategic Search Areas (SSAs) for Wales

The TAN 8 process and its outcomes in Wales have been the subject of controversy. The following issues were identified from literature or during interviews with stakeholders, as either providing positive lessons for the future, or illustrating areas of conflict that could be avoided:

- An important feature of TAN8 was the ***negotiated stakeholder process,*** which led to an agreement on the criteria to be used as the basis for SSAs identification. Only by getting the different parties around a table to reach compromise agreements, is this sort of outcome possible.
- TAN8 has been criticised for ***delineating politically sensitive areas for wind development within a 'technical' advice note***. The development of SSAs under TAN8 took many actors by surprise. Moreover, this 'technical' process was opaque to communities and a lack of awareness and understanding of the likely outcomes helped to create resentment once SSAs had been adopted. The existence of such a process must well communicated, and it should be made clear how different groups of stakeholders can engage.
- It is essential to ***properly engage local actors in the development of strategic approaches, educate local authorities and build them into the process from the outset***. This may have avoided some of the objections to and the slow role out of development following the agreement of TAN8.
- The ***development of criteria*** as the basis for SSA identification meant that SSAs did reflect international and national priorities for nature protection, and areas for onshore development across the whole of Wales were selected based on consistent principles.
- The development of ***SSAs gave nature conservation groups confidence that it is possible to meet Welsh targets for wind energy development, without development in areas of high conservation value***. However, these targets were developed before the agreement of the EU 2020 agreement.
- There is ***need for effective follow up and ongoing oversight*** to monitor the planning process and ensure projects are delivered appropriately on the ground. Planning authorities and elected officials must be clear that they have a responsibility to deliver appropriate renewable development.
- The ***existence of a strategic planning approach, or a review of that approach, should not be an acceptable reason for delaying or dismissing appropriate, well conceived proposals for wind farms***. Action should be taken against local authorities who are seen to adopt this approach. There is insufficient time for all development to be halted while repeated rounds of consultation are undertaken, if the UK is to deploy adequate renewable energy by 2020. A review process will not change the baseline conditions of what is appropriate development, it will simply provide a clearer basis for delineating this in future.

The review of approaches to onshore wind planning in Denmark, Germany, Wales and Scotland reveals two different models for the identification of indicative areas relevant to onshore wind development. Within Denmark and Wales, a much more

prescriptive approach has been adopted where by a relatively small proportion of the land area is deemed appropriate for wind development, based on a series of criteria. The second model, adopted in Germany and Scotland, relies on the division of the land surface into three different categories; those areas deemed suitable for onshore wind development, those areas potentially sensitive to development; and areas where onshore wind development may be considered so long as certain criteria or constraints are taken into account. Based on the experiences of these different models a number of conclusions can be drawn about their benefits, and limitations.

Firstly, the Danish and Welsh experience demonstrates that land delineated for development needs to reflect, as far as possible, the true level of ambition for renewable energy expansion. In the case of Denmark, a multi-step approach has been possible, with targets increasing over time. This iteration, however, could pose a risk to the timely achievement of renewable energy goals if it were widely adopted in the UK. There are only 12 years in which to deliver 15 per cent of the UK's energy needs from renewable sources. Any strategic planning approach adopted now would need to meet these challenges, as a minimum, as well as aiming towards the delivery of a near zero carbon power sector by 2030 - as recommended by the Committee on Climate Change (Committee on Climate Change, 2008).

Secondly, indicative approaches reveal with clarity the point at which difficult decisions need to be made about development location. The review of development plans for several Danish municipalities has provided evidence that it is possible to develop significant quantities of wind energy onshore, without impacting on areas designated for nature conservation. As targets increase, however, and sites are utilised the question will be posed: can development then be permitted in the least sensitive protected areas, in order to meet more ambitious targets?[11] Structured approaches to planning, therefore, provide an opportunity to hold a transparent public debate around hard choices, and identify the best compromise solutions. With a largely ad hoc approach to development (such as that in England) this debate is constant and cyclical, slowing the planning process without allaying public concern about the impacts of wind power.

Across the UK we are now entering a phase in which the intense development of onshore wind, and other renewable sources, is needed in order to meet ambitious, binding targets. To make informed, appropriate judgements as to delivery, whilst protecting our natural heritage, both a clear vision of where wind development can be located and an understanding of the consequent implications are essential.

Critical factors determining the success of structured, spatially explicit approaches to onshore wind planning identified include, inter alia:

- Adequate and early engagement - all stakeholders including local actors must be involved in defining and developing the approach to site allocation and criteria used.

[11] This dilemma is illustrated in the plan for Ringkøbing-Skjern. This Danish municipality in its most recent plan highlights a natura 2000 site of limited sensitivity to onshore wind development as a possible demonstration project. It is commented that this may offer the opportunity to develop good practice approaches for operating in such localities in the event of future expansion.

- Consistency – throughout the process, clear, consistent and logical criteria need to be applied in order to distinguish areas that are priorities for onshore wind, where development may be restricted or excluded.
- Transparency - stakeholders need to understand the basis on which site allocations are being made, and how criteria indicating site suitability have been developed and used.
- Adequate sites to meet onshore wind capacity needs – there must be an explicit understanding of the potential scale of onshore wind capacity required to meet long term renewable energy and emissions reduction goals and how sites allocated will contribute towards this.
- Categorising the whole land area – the identification of areas where wind development will be prioritised, restricted based on clear criteria, or excluded offers clarity and flexibility. This offers greater potential than the more prescriptive allocation of smaller areas for potential onshore development.
- Actively supporting development - in areas allocated as priorities for onshore wind, while there can be no guaranteed approval of planning consent, there must be recognition that these are the most preferable localities for development. Developers must have confidence that applications will be viewed favourably in these areas.
- A forum for debate – Such strategic plans create an opportunity to debate and reach negotiated compromise. Without this, the only clear opportunity for debate is in response to individual planning applications, which can be highly divisive.
- No hiatus in planning decisions - the disadvantage of this approach is that it will take time to develop and, understandably, the industry fear that this will lead to further delays in development consents. This must be avoided; government must set out and enforce clear instructions, to avoid ongoing debate being used as a reason for failure in determining planning decisions for onshore wind.

Evidence from Germany, Spain, Denmark and the UK shows that structured spatially explicit approaches to onshore wind planning can support high levels of onshore wind development, and ensure the consideration nature protection. While not a panacea for all problems associated with onshore development, such approaches provide a forum for debate, enabling critical issues to be transparently discussed and ultimately resolved. This reduces the need for constant and repetitive debates at the planning application stage.

6.5 Improving the Use of Impact Assessments

Effective assessment of environmental and nature conservation impacts, for both individual wind farm applications and plans or programmes determining appropriate onshore wind localities, is vital to ensure that wind capacity is appropriately located. As demonstrated by experiences in Spain, correctly assessing environmental impacts is key to minimising the impact of development, and also maintaining wind's reputation as a sustainable energy source. There are three formal tools that can be used in order to assess environmental impacts in the UK, all derived from European

Directives: ***Environmental Impact Assessment (EIA)[12]; Strategic Environmental Assessment (SEA)[13]; and Appropriate Assessment***[14].

Appropriate Assessment is a tool intended to ensure the protection of Natura 2000 sites. If planned development is considered potentially to impact upon a Natura 2000 site[15] an Appropriate Assessment is required. In contrast to EIAs and SEAs, the Appropriate Assessment is a binding requirement. If it cannot confirm that a development will not adversely affect the integrity of any Natura site (with mitigation where necessary), planning permission cannot be granted. In exceptional circumstances, the Habitats Directive does allow projects impacting upon Natura sites to go ahead, if it is proven that there are no alternative solutions and demonstrated that the damage is justified for imperative reasons of overriding public interest. In these circumstances, formal compensatory measures will be required. If properly adhered to this tool provides relatively strict protection for nature conservation sites designated under EU law. Appropriate Assessment should be a key mechanism to avoid impacts in relation to Natura 2000 sites.

In contrast, EIA and SEA are essentially intended to support decision making. In combination, they aim to inform decision makers as to the implications of development at the individual project level and across a plan or programme area, respectively. Under both mechanisms, conclusions are drawn regarding the nature and scale of potential impacts, and how they might be mitigated or avoided.

SEA is the tool by which the environmental impacts of plans and programmes for a specific type of development can be evaluated, providing a basis upon which more detailed EIAs for individual developments can draw. Assuming that a plan or programme exists for onshore wind (in England, for example there are no plans

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[12] Derived from Directive 85/337 as amended by 97/11/EC and 2003/35/EC on Environmental Impact Assessment - this requires a systematic assessment of the likely environmental impacts of projects in a wide range of sectors. Onshore wind development is listed in Annex II of the Directive meaning they might require an EIA and must be subjected to screening in order to evaluate whether they are likely to have significant environmental effects, and hence require an EIA. The threshold set for triggering the screening for onshore wind is the same for all the UK countries and set for installations of more than two turbines or the hub height of any turbine or any other structure exceeding 15 metres. These are relatively low in comparison to other EU Member States.

[13] Derived from Directive 2001/42/EC on Strategic Environmental Assessment - this is a procedural tool for assessing the impacts of plans and programmes on the environment by setting an assessment framework which enables decision-makers to identify likely impacts on the environment. An SEA is required for plans and programmes (including the energy sector), which set the framework for future development consent of projects listed in Annex I or II of the EIA Directive ie including onshore wind development.

[14] Derived from Directive 92/43/EC on the Conservation of natural habitats and of wild fauna and flora, known as the Habitats Directive – this Directive requires an Appropriate Assessment of the potential impacts of a wind farm project or strategic plan to be completed if it may have a significant effect on a Natura 2000 site.

[15] Potential impact is assessed based on 'Guidance document on the Assessment of Plans and Projects significantly affecting Natura 2000 sites (November 2001)'
http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

specifically for onshore wind, but there is a structured SEA process for offshore), an SEA can be used to evaluate the appropriateness of criteria used, assess whether proposed indicative development sites are appropriately conceived, and potentially reduce the complexity of EIAs down the line. The evaluation of the Orkney Island development plan represents an example of SEA's effective use related to onshore wind. As a consequence of the SEA, site selection criteria relating to nature conservation issues were improved (see box 3). A well conceived SEA is a valuable step within the plan development process, helping to understand the cumulative impacts of multiple developments and providing an information base, upon which EIA processes can draw. Conversely, poor or inappropriately focused SEAs can generate problems within the system, by leading to damaging decisions.

SEA has been variably implemented across the UK. In England and Wales, Sustainability Appraisals are being used by local and regional authorities to assess social, environmental and economic impacts, based on policy objectives. The Planning and Compulsory Purchase Act 2004 makes Sustainability Appraisals mandatory for Regional Spatial Strategies, Development Plan Documents and Supplementary Planning Documents in England and for Local Development Plans in Wales. The guidance by ODPM (2005) recommends that the requirements of the SEA process are incorporated within these Sustainability Appraisals. In reality, this hybrid approach is likely to lead to a focus on trade-offs between policy objectives, instead of the mitigation of impacts measured from a clear environmental baseline.

The limitations of the combined SEA and Sustainability Appraisal approach has been acknowledged by the Scottish authorities, who took the decision not to promote Sustainability Appraisals as the delivery mechanism for SEA. The guidance document on SEA by the Scottish Executive (2006) states that there is no requirement under the Scottish SEA Act to consider social or economic factors. Hence, in Scotland SEA is primarily an environmental assessment procedure. In so far as plans emerge for the roll out of wind and other renewables, well developed SEAs can provide important and detailed environmental analysis. This may not be possible using an instrument that provides a less clear focus on environmental issues, such as that implemented via Sustainability Appraisals.

With its focus upon individual project proposals, EIA forms a vital element of planning applications for any significant wind development in the UK. A quality EIA can give planning authorities, environmental groups and the public greater confidence in a development; demonstrate that alternative sites have been considered; draw conclusions about the most appropriate approach to development; set out mitigation measures needed during operation and aftercare; and set out monitoring requirements.. Moreover, EIA is also intended as a stakeholder communication and engagement tool.

High quality EIAs can lead to a more enlightened and transparent decision making process, ultimately ending in more informed decision making. Conversely, poorly completed EIAs were noted by interviewees to present a significant risk, leading to slowing in the decision making process as developers meet requests for further information. Incomplete EIAs also prevent properly informed engagement with stakeholders early in the planning of a new development, thus may increase the likelihood of opposition amongst community and environmental groups. Poor EIAs

may also ultimately lead to poor decisions. The case study in Benn an Tuirc wind farm demonstrates how, with effective assessment, and consequent well considered siting and mitigation, highly sensitive nature conservation interests can be balanced with onshore development (See Box 5.)

Whilst it is vital that EIAs are of a high quality, it must also be acknowledged that there are limitations to their use. Firstly, all interviewees noted that there are genuine limits in data availability, which should be identified and acknowledged. EIA is a tool for bringing together information on a particular development, but is unlikely to ever be able to provide 100 per cent certainty over impacts; hence its role in decision support, not decision determination. Secondly, the focus upon an individual development can ignore important environmental implications, such as cumulative impacts or the impacts of infrastructure needed to link energy production to consumers such as power cables. For onshore wind, concerns over the impact of development often stretch beyond the confines of an individual wind farm. Moreover, the nature of the resource can lead to the clustering of development in particularly favourable locations. SEA is therefore an important strategic siting tool for onshore wind decision makers.

Given the importance of locality and design in determining the impacts of onshore development, SEA and EIA represent important decision support tools, providing an information source for the consideration of impacts at both the macro and micro level. They also provide an important platform for stakeholder engagement. The quality of an assessment is key. Poor quality assessments can lead to additional effort, delays in the determination of planning applications and risk contributing to inappropriate decisions. Applying appropriate assessment at plan and project levels is central to avoiding conflicts with Natura 2000 sites.

Box 5 - Beinn an Tuirc – Integrating Protection and Development

The discovery of a pair of Golden Eagles at the site of a planned 30MW wind farm at Beinn an Tuirc, mid-Kintyre Scotland, did not prevent construction but instead inspired a considered approach to minimising the impacts of the development. Based on environmental assessment results, a means was found that accommodated the needs of the eagles without reducing the viability of the wind farm. Firstly, some adjustment was made to the planned turbine locations to remove them from the eagles' core territory. Due to the large distances covered by Golden Eagles it was not possible to reposition the turbines outside the pair's entire territory, so an alternative habitat was created for them away from the turbines, dubbed a 'mitigation area'. The mitigation area was created by the clearance of 4.5km^2 of non-native conifer plantation to allow regeneration of the traditional upland moor vegetation such as heather, blaeberry and cotton grass. This provided an attractive environment for Red Grouse – a key prey species of Golden Eagles – which, in turn, attracted the eagle pair to the new habitat. Thus the mitigation area served two purposes: the habitat loss instigated by the turbines' arrival was offset and, by attracting the eagles away from the turbines, the risk of collision with blades was far reduced. Monitoring shows that the mitigation area habitat is developing well, and in 2008 two Golden Eagle chicks were hatched at the site.

6.6 Delivering Benefits from Onshore Wind – Community Support and Ownership

Surveys of public opinion frequently identify that the majority of those consulted are in favour of renewable energy development in general, and wind energy in particular (BERR, 2008). However, the numbers of objections to wind farm proposals at the local level suggest either that this generic support does not translate into active participation in the planning system; or, that individuals feel differently when faced with developments close to their homes and amenities.

Onshore wind construction can be highly contentious. Whilst personal opinion and tolerance of different kinds of development vary greatly, significant numbers of individuals object to wind farm developments on the basis of loss of visual amenity or on grounds of protecting the quality of the local environment, including nature conservation (BWEA, 2004). Nature conservation concerns are one strand of a matrix of local environmental impacts, which may be quite different to those prioritised at a national or regional level. For example, at a national level there tends to be a focus upon rare or vulnerable species and habitats, or sites designated for nature conservation; in contrast, communities may give particular weight to the value of open spaces and local features, to the more individual experiences of the countryside and the wildlife it holds.

As demonstrated by Danish experiences (see Box 1 and section 5.1), clear community engagement and ownership of wind projects can strongly influence local public opinion, leading to greater support for the technology. As there was a shift from cooperative ownership for economic reasons, fewer local benefits were perceived to arise from wind projects, with emphasis shifting more to the power and profits generated by energy companies. Consequently, objections to new schemes have risen. There is scope for cooperative based local ownership in the UK and this can be an important mechanism for delivering local energy requirement. However, cooperatives alone are very unlikely to deliver the scale of development required in the UK over the next decade, and so other means of engaging local communities in wind development need to be considered.

Onshore wind developments do not automatically provide local benefits for communities, even though they do support wider 'public welfare' in the form of clean energy and reduced emissions. To some extent, this tension between a perceived local disadvantage and a wider public benefit is a concern for all development deemed in the national interest; however, well planned and sensitively managed wind developments can be designed to bring local benefits, both in terms of investment, and the opportunity to incorporate improved management of land for nature conservation.

The survey of practices in the UK, Germany, Denmark and Spain, conducted for this report, identified various mechanisms by which onshore wind development can contribute to the local environment or provide direct support to the community. These can be split into the following five categories.

1. ***Onsite improvement of habitat management*** **-** This encompasses the improvement or rehabilitation of habitats either on the development site itself, or

in surrounding areas controlled by the developer. Sensitive, ongoing and well planned management can remove a negative from the local environment, for example by regenerating degraded land or habitats on the wind farm site. One example of this is demonstrated in Box 6; this highlights the benefits in terms of habitat reconstruction and site remediation associated with the development of the wind farm in Black Law, Lanarkshire. Alternatively, a wind development can provide for the more focused management of existing habitats for nature conservation or the conversion of, for example, forestry plantations back to native habitats.

The need to deliver nature conservation benefits should be specified within planning consents and implemented by developers based on a clear management plan, defined and implemented in cooperation with local nature conservation experts. Effective management of the wind farm site can deliver benefits for local nature conservation, potentially delivering better quality habitats more proactively managed for local endemic species. The limitations of this approach are that it requires ongoing, considered management over the lifetime of the site (and potentially beyond) to deliver maximum benefits. The availability of expert knowledge to support this process can be limited, if not specifically resourced.

Box 6 - Case Study – Black Law – Bringing Degraded Land Back into Active Management

Black Law is a 124MW wind farm in South Lanarkshire, Scotland. Prior to development the site bore the scars of opencast mining and had been described as an eyesore. As required by a stipulation of the planning conditions the developer, ScottishPower, devised and implemented a Habitat Management Plan on this brownfield site - in consultation with Scottish Natural Heritage, RSPB Scotland, Lanarkshire Farmland and Wildlife Advisory Group and the University of Stirling.

The plan covered 14.4km^2 and involved the clearance of 4km^2 of non-native conifer plantation to allow the regeneration of blanket bog and typical upland vegetation such as cotton grass, heather, blaeberry and bog cranberry. The restoration of the Climpy mine to a shallow wetland was particularly welcomed by local communities and it is now inhabited by wading birds; a 300m stretch of the Abbey Burn was restored. For the benefit of farmland birds, nestboxes were installed and 'sacrificial crops' were planted and left unharvested to provide a winter food source. Species targeted to benefit from the habitat improvement work included: Otter, breeding waders, farmland birds, Badger, bats, Long-eared Owl, Black Grouse, Kestrel, Barn Owl, Blue Tit, Spotted Flycatcher and Merlin.

The work at Black Law aimed not only to mitigate effects of development, but to improve the site's landscape and biodiversity through restoration and enhancement; and to reverse damage done by mining.

2. ***Offsite improvement of habitats -*** Depending upon the condition of the site, or the habitat forgone to enable construction, it may be deemed appropriate to provide for offsite improvements in the management of specific habitats. For example, one interviewee cited an example in the North of England, where a wind farm was to be built on degraded bog land. As a consequence, the planning consent required the developer to allocate funds for the improved management of similar habitats in the local area. Funding was allocated for farmers to rewet areas and regenerate the habitat. Unfortunately, uptake of funding was limited, given the general reluctance of landowner to undertake rewetting and, as a consequence, funds were returned to the developer.

It is possible for developers to provide funding for offsite activities. However, the ability to control the uptake and completion of management is more limited. In order for such schemes to function effectively, there needs to be a clear architecture through which funding will be allocated and utilised. Providing money alone, in the absence of a clear strategy for its use, will lead to limited benefits. Done well, however, this could provide a resource for the improved management of a broader segment of vulnerable landscape.

3. ***Community investment in onshore wind development*** – Wind turbines can be developed as community based cooperatives. As traditionally conceived, these are relatively small scale developments owned by the local community, providing funds from the sale of electricity (normally associated with feed in tariffs) or electricity supplies directly. Community ownership has been shown to increase acceptance of development, given that impacts are offset by local benefits. Experiences from Denmark have shown that there can, however, be limits to the scale and investment possible within this style of operation. Novel approaches to cooperative and community ownership are, however, being developed. For example, Box 6 presents a new approach to public ownership via shareholdings in large developments. Traditional cooperatives offer a mechanism for increasing acceptance of onshore wind, but models such as the Middelgrunden Co-operative may offer a way of delivering large-scale development alongside community ownership.

Box 7 - The Community as a Shareholder, New Approaches to Cooperative Development

The experience of the Middelgrunden co-operative in Denmark (DTI, 2004 and Larsen et al, 2005) demonstrates how co-operative approaches, traditionally applied to small scale developments, can be applied to fund and engender support for larger wind farms. This offshore wind farm is situated 3.5km east of Copenhagen harbour and has an anticipated capacity of 40 MW, consisting of 20 turbines each with a 2 MW capacity.

In 1996 the Copenhagen Environment and Energy Office (CEEO) established a working group (consisting primarily of local people) to take the wind farm proposal forward, after the location of Middelgrunden had been identified as a potential site in the Danish Action Plan for Offshore Wind. It was recognised that local co-operation was vital for the scheme to be successful, and the working group decided to follow the traditional Danish co-operative model, and in 1997 formed the Middelgrunden Wind Turbine Co-operative. This is a partnership, and all partners have joint legal liability. In Middlegrunden's case, the partnership was divided into 40,500 shares, based on the formula that one share would generate 1,000 kWh/yr. The Co-operative, assisted by government grant and through CEEO, contacted between 50,000 and 100,000 local residents early in the planning process. Ultimately, 8,552 electricity consumers became shareholders.

The project is jointly owned by the Co-operative and Copenhagen Energy. During the development and following the construction of the wind farm, there was limited resistance to the project - despite the turbines being clearly visible from a popular beach near Copenhagen. The reason for this lack of protest is believed to be the strong public involvement, both financially and in the planning phase.

4. ***In-kind contribution to the local community, reducing energy bills or supplying energy direct*** – To enable communities to benefit from local investment in onshore wind development and feel engaged, in-kind benefits can offered to the residents. In the same way as communities can reduce energy bills or increase use

of renewable energy locally by cooperative development, a large scale wind farm could potentially offer local residents such opportunities; linking a locality's renewable energy resource, energy production and residents' energy use. This may offer the benefits of approaches such as Middelgrunden, without the complexities of developing a series of shareholders for specific projects (which may be limited by the nature of the UK market for wind). In practice, however, local residents will not all receive their electricity from the same supplier or on the same tariffs. Therefore, implementation would need to be carefully planned and government guidelines on the levels of reductions and residents eligibility developed.

5. ***Direct investment in the local community*** – Upon completion of a development, a lump sum of money (based on a proportion of profits linked to the development) could be given to the local community. This could either be untied and used to meet general community needs or alternatively proportions could be ring-fenced for specific activities, eg management of local nature sites. These mechanisms offer a potentially flexible way of providing funds at the local level. Under TAN8, there is a mechanism for allocating funds for community benefits, designed to compensate those living within the search areas identified. This is often expressed in terms of a sum of money per MW of installed generational capacity. There are, however, concerns that such mechanisms may be inefficient and open to accusations that communities have been bribed into allowing development.

   In order for funds to make a difference at the local level, a clear organisation must be in place to take receipt of funds and oversee their use in the 'community's interest'. Determining how best to spend funds in an equitable way may be highly resource intensive. Moreover, there are concerns that it is often difficult to determine the level of impact on a particular community from a given wind farm, therefore how different Parishes etc should be compensated. If such approaches are to be implemented, there needs to be careful consideration over who should receive funding, what uses funds can be put to, and procedures for managing distribution and overseeing spending.

Aid of the kinds set out above must be clearly distinguished from mitigating the impacts of onshore wind energy development via the environmental assessment and planning consent process. The options set out represent mechanisms for increasing the benefits of development for local environmental management, and have a place alongside well chosen and sited developments. In no way do they constitute a justification for promoting inappropriately sited development. Direct financial payment to local communities is considered the most unreliable mechanism, and untied funding should ideally be avoided.

There are clearly benefits that can be delivered locally, from onshore wind development. Seeing this to fruition will, however, require careful consideration, guidance, appropriate infrastructure and resources. If properly implemented these options do offer solutions that enable the delivery of locally sensitive onshore developments.

Onshore wind development, if well conceived and planned, can deliver considerable local benefits. Mechanisms for the management of habitats, community ownership

and in-kind benefits to local residents appear to offer potential for delivering locally sustainable onshore wind, and increasing local acceptance of wind developments. All these approaches, however, need to be supported by clear rules and resources ensuring that they deliver on their promises. Direct payments to communities alone, without the infrastructure to support delivery or guidelines on use, will tend to lead to failure and could damage the reputation of the wind industry.

6.7 Management and Monitoring

The siting of a wind farm in the landscape has been identified by stakeholders as fundamental to determining the impacts of onshore wind construction, during both development and operation. Once the location of a site has been identified, stakeholders pointed to the micro level location of features ie turbines, roads, substations etc and the ongoing sensitive management of the site, as vital in determining the impact on local habitats and species. Finally, the monitoring of activities on site, both to ensure compliance and understand the impact of mitigating measures was seen as essential for determining the success of delivery.

When a planning consent is ultimately issued to a developer, it represents more than simply a green light for construction; it is a blueprint for the layout and management of that site. As such, the planning conditions attached to the consent and/or planning obligations/agreements are essential tools for minimising the impacts of onshore wind farms during the construction, operation and after-use periods of a development. The final planning consents contain detailed plans and conditions specifying the location of site features based on the results of impact assessment and negotiations between the planning authorities (informed by statutory consultees and other experts) and the developer.

The construction phase, while setting the baseline for the ongoing functioning of the wind farm, represents only a small proportion of a developments life span. In contrast, the operational phase is temporally more important; sympathetic management of the site throughout this period can minimise impacts on wildlife and potentially improve the quality of habitats across the site – depending on management practices prior to construction. In both the Black Law and Benn an Tuirc case examples, habitat management plans for the sites were successfully implemented, meaning that the impacts of development could be minimised and benefits maximised. Importantly, such plans should not only specify the ongoing management of habitats on site, but should also help minimise ongoing impacts on local fauna. For example, impacts from disturbance will inevitably occur as a consequence of turbines, roads, substations etc being *in situ;* but several stakeholders identified increased human presence as exacerbating this threat, for example by impacting on breeding bird populations. Minimising the impacts of regular human presence was felt to be essential in many localities, especially in previously remote areas. Approaches proposed included, *inter alia*, the scheduling of routine maintenance outside breeding seasons or display periods for certain vulnerable species and maintenance being efficiently organised to minimise unnecessary time on site.

Quality habitat management plans and the adequate resourcing of their implementation were felt by stakeholders to be of vital importance, in determining ongoing impacts of wind development on local species. During discussions several interviewees highlighted concerns over potential resource constraints, limiting the

effective development and ongoing oversight of habitat management. This is because, rightly, developers turn to the experts (often embedded in conservation groups such as the RSPB) for advice in the development of their habitat management plan, and often to sit on steering groups overseeing management. While this is good practice, it is impossible for environmental NGOs to provide support across all developments. Given the potential expansion of wind energy across the UK landscape, there appears to be a need for more dedicated environmental management support and oversight. For other large scale infrastructure projects there is often a specific environmental regulator, who understands the nature of development, enabling them to support developers, oversee construction and ongoing management.

On the question of oversight, many stakeholders raised concerns over the lack of effective review of planning conditions and assessment of compliance with 106 agreements[16]. Without this it is impossible to identify whether requirements are being met, and if mitigation measures are being successful. This is not a problem specific to onshore wind, and was noted to be a broader concern across planning systems. Given that the ongoing management of a site is vital in determining its local impacts, many interviewed believed there is a need for better approaches to ensuring the monitoring of compliance. Moreover, it was felt important for both developers and conservation groups to have access to information that prescribed management and mitigation measures limiting impacts on the environment.

Experiences reported in Scotland demonstrate that if requested to do so, developers often hold and will provide government with information on implementation and monitoring activities. Efforts are being made in Scotland to more centrally coordinate the monitoring results for onshore wind, in order to provide a better information base for future decision making. In the past, even if information was available this was held by individual planning authorities, and failed to provide a comprehensive picture of impacts and success. Information gaps were noted as a concern on the part of all stakeholders. This demonstrates the need for more proactive and centralised coordination and collation of information on onshore wind management and monitoring, to generate an information base for improving understanding into the future. It was noted that a lack of faith in monitoring and ongoing site management may lead to precautionary objections to development by a concerned group. Therefore, there needs to be confidence that requirements for site maintenance and monitoring are being implemented and enforced, to deliver quality developments.

Wind farms must be appropriately located in the landscape, but their impact upon the local environment will also be determined by the micro level location of turbines, roads etc and the sensitive ongoing management of the site. Well written planning consents should provide a clear allocation of responsibility to developers requiring them to perform mitigation, compensation, management and monitoring activities. These conditions or obligations must be clearly codified, publicly

[16] Section 106 (S106) of the Town and Country Planning Act 1990 allows a Local Planning Authority (LPA) to enter into a legally-binding agreement or planning obligation with a land developer over a related issue. Such agreements can cover almost any relevant issue and can include sums of money.

available and adequately monitored by an environmental regulator. National governments, or their agencies, should provide oversight ensuring compliance with obligations; collating monitoring results to provide better understanding of impact, the effectiveness of different management techniques and a sense of the cumulative consequences.

6.8 Political Support for Onshore Wind Development

Political will is vital to the delivery of our renewable ambitions. Unless support for renewable energy deployment is expressed more decisively, through the different elements of the planning system, agreed targets cannot be met. A new approach, however difficult, is needed. There is a variety of possible mechanisms for ensuring that national priorities are recognised and delivered, regionally and locally. In Germany, wind projects are considered 'privileged development' in areas where they are not in conflict with other interests (including nature conservation). Thus, outside exclusion areas and areas of possible concern, there is an explicit expectation that development will be supported, unless there are clear and legitimate reasons for refusing consent to a specific development. Similarly, in Denmark, areas are allocated where projects that meet specific criteria are deemed broadly appropriate. Meanwhile, in Scotland decisions made nationally are guided by clear and detailed guidance, but also directly reflect a political context, which is supportive of renewable energy. In Wales, it is intended that areas chosen as Strategic Search Areas (SSAs) will deliver quotas of wind energy, which collectively match the ambition of an overall national target.

When considering the future of the English system in the face of this challenge, the Government should assess how national priorities can be reflected more successfully at the regional and local levels, without removing the opportunity for valid objections to be considered in relation to individual proposals. At present, renewable energy targets are set regionally, but these are self-generated, and are not necessarily taken into account in local decision making. Strengthening this system, so that regional bodies are required to agree appropriate targets with national Government, which are then disaggregated into targets for each local authority, could help to ensure an appropriate level of deployment. Regional and local targets should be developed with local stakeholders, but also through a dialogue with national government, to ensure that in combination, they reflect the scale of national ambitions.

There may be a case for disaggregating targets into technology specific components, to ensure that they reflect realistic models for delivery, and have an appropriate level of traction in the planning process. This would result in specific regional or local targets for onshore wind development, for example, based on a thorough environmental assessment of suitability for this technology. Setting targets of this kind would complement a more structured, spatially explicit approach to renewable energy planning, designed to guide development into the least environmentally sensitive locations, where developers would have reasonable confidence that their projects would be considered favourably. Ultimately, although targets and decision making would be devolved under such an arrangement, the Secretary of State would retain reserved powers, which could be used if it became clear that these local structures did not adequately reflect national policy.

Evidence from Germany and Denmark, along with Scotland, demonstrates the importance of cultivating the political will to deliver onshore wind development. Without this impetus, otherwise potentially efficient planning systems become constrained. One possible approach would be the development of specific regional and local targets for renewable energy and onshore wind development – overseen by central government – to ensure renewable energy becomes a reality across the UK.

7 RECOMMENDATIONS

Tackling dangerous climate change requires the rapid deployment of low and zero carbon forms of energy generation. The UK has abundant renewable energy resources, which it has so far been slow to exploit. As a result, a step-change in renewable technology deployment is required to meet UK emission reduction targets, as well as contribute to long term energy security.

Wind power has a critical role to play in meeting these goals. Appropriately located and designed wind farms are a largely environmentally benign form of energy generation, onshore wind is also a mature and cost competitive source of renewable electricity. As part of a wider mix of renewables, a significant increase in onshore wind will be necessary to meet the UK's obligations under the Renewable Energy Directive up to 2020, and to move towards the recommendation of a near zero carbon electricity sector in the 2030s.

Inappropriately sited wind farms can damage fragile wildlife and habitats, through habitat loss, mortality through collisions and a range of different disturbance effects. Wildlife is already under pressure in our countryside, and will be increasingly affected by climate change, mainly in a negative direction. There is a clear responsibility to prevent further damage as a result of poorly sited or designed wind energy projects.

Evidence from several European countries[17], including parts of the UK, shows that it is possible to plan onshore wind farms, without significant and unnecessary damage to wildlife. This report has identified some key elements needed to achieve this outcome. It is now up to the Government, industry and stakeholders to get these in place in time to address the imminent climate crisis. These recommendations particularly apply to England; where critical elements of the planning system have yet to be refreshed, with a view to facilitating significant, environmentally responsible, increases in the scale and pace of wind farm development.

- Governments, industry and stakeholders need to develop protocols to encourage early engagement between interested parties on all projects. There is a wealth of good practice in this area, but at present, there are no clear standards established, therefore, no minimum expectation for engagement.
- Statutory consultees and relevant stakeholders need to invest in systems to clarify nature conservation concerns about potential developments. Explicit and detailed information about the sensitivity of particular species and habitats, and their location, is a pre-requisite to appropriate site selection. Cumulative impacts need to be taken into account. Bird sensitivity data in Scotland, for example, has been used to help guide appropriate development.
- Government will need to resource the planning system to handle an increase in the number and scale of renewable energy projects both efficiently and sensitively. This will require an increase in capacity and investment in training, for local planning authorities, elected representatives, regional

[17] Specifically efforts in Germany, Spain and Denmark were reviewed in this assessment, as well as those across the countries of the UK.

planning bodies, and statutory consultees. Such training should address the need for renewable energy development in the context of climate change, as well as the technical knowledge needed to assess the quality of individual applications.

- Government, statutory consultees and other stakeholders need to come together to agree an approach to spatial planning which will give reasonable confidence to the nature conservation community that wildlife will be protected, and reasonable confidence to investors that well considered schemes in appropriate locations will be considered favourably. Such an approach should take full account of the scale of national ambition for renewable energy delivery.
- Government must ensure that the political priority given to renewable energy is reflected in the planning process, for example through the development of more binding targets at the regional and local level, based on an understanding of sustainable capacity in each locality, and an appropriate response to national needs.
- Environmental assessment tools need to be used systematically at an appropriate scale, to help ensure that the information required to make a good decision is available to policy makers and planners. This means appropriate use of Strategic Environmental Assessment to help guide policy and plan development nationally, and high quality Environmental Impact Assessments at the project level.
- Government should give higher priority to measures to ensure that local communities benefit in a consistent and transparent way from wind energy developments in their area.
- Strong systems need to be in place to ensure sufficient oversight of planning conditions and agreements delivering adequate post construction management, monitoring of sites and coordination of consequent knowledge. The role of different statutory bodies in this process must be clearly defined and they need to be resourced to carry out the task thoroughly.

Effective but sensitive planning systems can facilitate the development of onshore wind in the UK on the scale now required. The practical steps outlined above, alongside the broader policy instruments needed to drive investment in the renewable energy sector, should make this possible.

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