

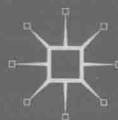
Energy, Climate and the Environment Series



# Learning from Wind Power

Governance, Societal and Policy Perspectives  
on Sustainable Energy

Edited by Joseph Szarka, Richard Cowell,  
Geraint Ellis, Peter A. Strachan and Charles Warren



# Learning from Wind Power

## Governance, Societal and Policy Perspectives on Sustainable Energy

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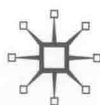
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# Abbreviations

ADEME	Agence de l'Environnement et de la Maîtrise de l'Energie (French Environment and Energy Efficiency Agency)
AEP	Association of Electricity Producers
ANT	Actor Network Theory
BERR	(UK Department of) Business, Enterprise and Regulatory Reform
BWEA	British Wind Energy Association
CCS	Carbon Capture and Storage
CEC	Commission of the European Communities
DDE	Direction Départementale de l'Équipement (French 'roads and infrastructures' administration)
DECC	Department of Energy and Climate Change (UK)
Defra	Department for Environment, Food & Rural Affairs (UK)
DIREN	Direction régionale de l'environnement (French Regional Environmental Administration)
DoEHLG	Department of Environment, Heritage and Local Government (Republic of Ireland)
DTI	Department of Trade and Industry (UK)
EEA	European Environment Agency
EEG	Erneuerbare-Energien-Gesetz (German Renewable Energy Sources Act of 2000)
EIA	Environmental Impact Assessment
ETSU	Energy Technology Support Unit
EWEA	European Wind Energy Association
FiT	Feed-in Tariff
FOE	Friends of the Earth
FTE	full time equivalent
GHG	greenhouse gas
GW	gigawatt (1000 megawatts)
HMG	Her Majesty's Government
HVDC	High Voltage Direct Current
IEA	International Energy Agency
IEEP	Institute of European Environmental Policy
LPO	Ligue pour la Protection des Oiseaux (French Bird Protection Organisation)
MS	Marine Scotland

MW	megawatt
MWh	megawatt-hour
NFFO	Non-Fossil Fuel Obligation
NGO	Non-Governmental Organisation
NIMBY	not in my back yard
NWCC	National Wind Coordinating Committee (USA)
ODPM	Office of the Deputy Prime Minister (UK)
OFGEM	Office of the Gas and Electricity Markets (UK)
PIU	Performance and Innovation Unit (UK)
PNR	Parc Naturel Régional (French 'Regional Nature Park')
PNRGC	Parc Naturel Régional des Grands Causses
PNRNM	Parc Naturel Régional de la Narbonnaise en Méditerranée
PV	photovoltaic
RD&D	Research, Development and Demonstration
RE	renewable energy
REA	Renewable Energy Association
RES	renewable energy sources
RES-E	renewable energy sourced electricity generation
RET	renewable energy technology
REZ	Renewable Energy Zone
RO	Renewables Obligation
ROC	Renewable Obligation Certificate
RSPB	Royal Society for the Protection of Birds
RTE	Réseau de Transport d'Electricité (French National Grid Operator)
SEA	strategic environmental assessment
SEAI	Sustainable Energy Agency Ireland
SEDD	Scottish Executive Development Department
SNH	Scottish Natural Heritage
SPEC	Species of European Conservation Concern
SSA	strategic search area
SSE	Scottish and Southern Energy
STW	Scottish Territorial Waters
TAN8	Technical Advice Note 8 (Wales)
TCE	The Crown Estate
VDMA	Verband Deutscher Maschinen- und Anlagenbau (The German Association of Equipment Producers)
WAG	Welsh Assembly Government
WPDZ	wind power development zones
WWF	World Wildlife Fund

# Acknowledgements

This book had its origins in a United Kingdom based seminar series in 2008–2009 entitled ‘Where Next for Wind? Explaining National Variations in Wind Power Deployment’. The series was sponsored by the UK Economic and Social Research Council – Grant Number RES-451-26-0386 – and the energy company Scottish and Southern Energy (SSE), to whom we wish to express our thanks.

The additional support provided by SSE allowed us to expand the focus of the seminar series to include a number of international experts who might not otherwise have been able to deliver papers and share their wealth of experience. The seminar series consisted of five events, each of which were led by the editors of this book, with the overarching aim of the series being to critically investigate the key political, institutional, social and economic factors affecting the deployment of wind power within Europe and North America. The series brought together more than 150 participants, with invited speakers and participants representing industry, NGOs, government and academic organisations. Full details of the seminar series can be found at <http://www4.rgu.ac.uk/abs/research/page.cfm?pge=75071>.

Many of the chapters in this book build on papers presented in those seminars, and we would like to thank all of the presenters and participants for their valuable insights. In this volume, the contributors have reflected on their findings in the light of international experience, and recent shifts in energy policy and politics, in order to draw out key lessons for the wider agenda of transitions to sustainable energy.

We express our gratitude to everyone involved in the seminar series and the book, but, as with any such major undertaking, it is not possible to name everyone. We would like to thank our own host universities for the additional time and financial support that they provided. In particular we would like to thank: Professor Rita Marcella, Dean of the Aberdeen Business School, Robert Gordon University; Professor Peter Robertson, Vice Principal of Research and Commercialisation, Robert Gordon University; and Dr Brian Lockhart Smith, Head of Projects, SSE. We would also like to acknowledge that Geraint Ellis received funds for a teaching buy-out from the Irish Social Science Platform during the preparation of the book.



The book would not have been possible without the hard work of our contributors, and we acknowledge their significant efforts in bringing the book to a timely conclusion. We particularly want to thank Professor David Elliott, the editor of the *Energy, Climate and the Environment* series, for commissioning this book and contributing to it, and to the Palgrave editorial team for bringing it to the public.

# Series Editor's Preface

## Energy, Climate and the Environment

Concerns about the potential environmental, social and economic impacts of climate change have led to a major international debate over what could and should be done to reduce emissions of greenhouse gases, which are claimed to be the main cause. There is still a scientific debate over the likely scale of climate change, and the complex interactions between human activities and climate systems, but, in the words of no less than the (then) Governor of California, Arnold Schwarzenegger, *'I say the debate is over. We know the science, we see the threat, and the time for action is now.'*

Whatever we now do, there will have to be a lot of social and economic adaptation to climate change – preparing for increased flooding and other climate related problems. However, the more fundamental response is to try to reduce or avoid those human activities that are seen as causing climate change. That means, primarily, trying to reduce or eliminate emission of greenhouse gases from the combustion of fossil fuels in vehicles, houses and power stations. Given that around 80 per cent of the energy used in the world at present comes from these sources, this will be a major technological, economic and political undertaking. It will involve reducing demand for energy (via lifestyle choice changes), producing and using whatever energy we still need more efficiently (getting more from less), and supplying the reduced amount of energy from non-fossil sources (basically switching over to renewables and/or nuclear power).

Each of these options opens up a range of social, economic and environmental issues. Industrial society and modern consumer cultures have been based on the ever-expanding use of fossil fuels, so the changes required will inevitably be challenging. Perhaps equally inevitable are disagreements and conflicts over the merits and demerits of the various options and in relation to strategies and policies for pursuing them. These conflicts and associated debates sometimes concern technical issues, but there are usually also underlying political and ideological commitments and agendas which shape, or at least colour, the ostensibly technical debates. In particular, at times, technical assertions can be

used to buttress specific policy frameworks in ways which subsequently prove to be flawed

The aim of this series is to provide texts which lay out the technical, environmental and political issues relating to the various proposed policies for responding to climate change. The focus is not primarily on the science of climate change, or on the technological detail, although there will be accounts of the state of the art, to aid assessment of the viability of the various options. However, the main focus is the policy conflicts over which strategy to pursue. The series adopts a critical approach and attempts to identify flaws in emerging policies, propositions and assertions. In particular, it seeks to illuminate counter-intuitive assessments, conclusions and new perspectives. The aim is not simply to map the debates, but to explore their structure, their underlying assumptions and their limitations. Texts are incisive and authoritative sources of critical analysis and commentary, indicating clearly the divergent views that have emerged and also identifying the shortcomings of these views.

The development of wind power has certainly provided many examples of divergent views and conflicts. For some it is the best way forward for dealing with climate change, while for others it is an environmental disaster. Some wind supporters see objectors as retrogressive NIMBYs, while some objectors see developers as despoilers of scenic views and natural heritage. Aesthetic issues and landscape preservation are important, but perhaps, more substantially, some objectors claim the wind power cannot make a significant contribution to dealing with climate change or energy security.

With wind power heading soon for 200GW globally, it is good time to take stock and see how (and whether) some of these issues have impacted on its development and how wind power might be expected to develop in future. The technology seems basically unproblematic, apart from the issue of intermittency, which is really just an operational and economic problem – it costs money to provide balancing services, and as the proportion of wind on the grid expands, more balancing has to be arranged. Less tractable are some of the institutional issues. As this book illustrates, in the UK, the planning permission processes and local objections have led to major delays, and the financial support system has arguably not been effective at creating the right investment climate, compared to that in other countries.

Nevertheless wind power is moving ahead in the UK, offshore especially, and as I indicate in my own contribution, it is likely to remain the dominant renewable source for some while in the UK and elsewhere.

Focussing on the developed world, with particular emphasis on Europe and the UK, the book looks at some of the problems that will have to be overcome if ambitious targets for wind power are to be met. Although the focus is mainly on wind, it argues that many of the lessons that emerge from the wind power field are also likely to be relevant to other renewables as they seek to move into wide scale use.

# Contributors

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**David Elliott** is Emeritus Professor in Technology Policy at the Open University, where he has carried out research and developed courses on renewable energy policy. He has worked previously for the UK Atomic Energy Authority and the Central Electricity Generating Board. He is the editor of the journal *Renew* and writes a weekly 'Renew Your Energy' blog for the Institute of Physics' Environmental Research Web.

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