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Energy Policy & Society

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Energy at Birmingham

July 8<sup>th</sup> 2011

# What makes science and engineering solutions successful?

- Are they socially desirable, economically affordable and environmentally acceptable?
- Do effective government policies support innovation and the deployment of new and advanced energy technologies?
- Will they maintain the reliability of supplies?
- Will they promote a competitive energy market?
- Will homes be adequately and affordably heated?

# Energy, people, environment: towards an integrated research agenda

- One of the UK's **largest groups** of geographers, sociologists, environmental/political scientists and economists working on energy topics in a single University
- Expertise in a range of diverse thematic areas, including:
  - energy regulation and climate change adaptation
  - energy security and poverty
  - renewable energy acceptance
  - behavioural change and collective action
- Maintaining an active presence in the business sector, and **UK and EU policy arenas**



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# Key research themes

- Economic and social aspects of climate change adaptation
- Energy sector governance and regulation
- Innovation and adoption of energy technologies
- Justice, equity and poverty

# Our aims

To maintain and grow research excellence in:

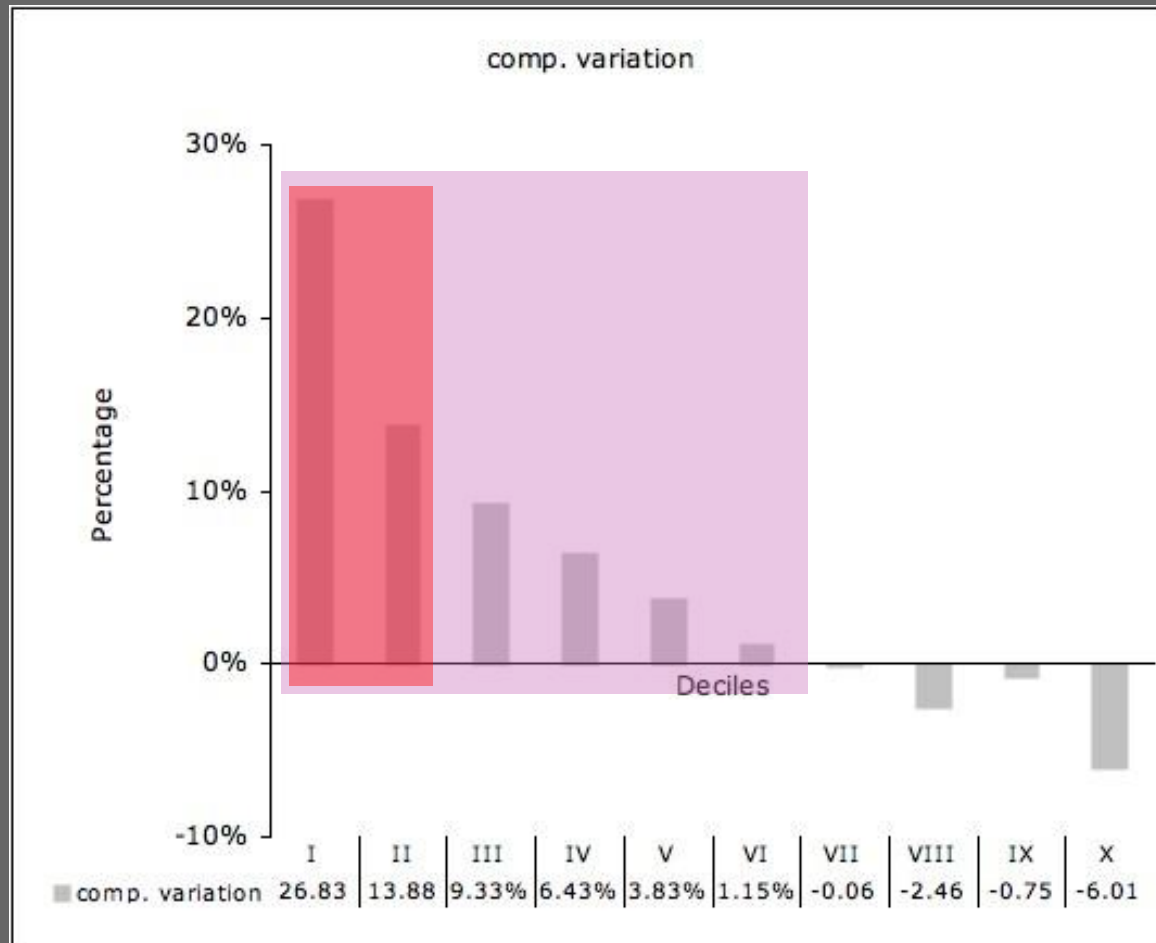
- Uncovering the **political, economic and behavioural barriers** towards the adoption of more innovative and/or efficient energy technologies
- **Effective government regulation** of energy industries, operations and trade
- The diverse ways in which **infrastructures, practices and attitudes are enmeshed the implementation of sustainable and efficient energy production** and consumption
- The **implications of climate change** for households, communities, places, and economies

# GEES energy research cluster

- Six full time academic staff (Stefan Bouzarovski, Rosie Day, Oleg Golubchikov, Dan van der Horst, Peter Lee, John Walls)
- Two research fellows and six doctoral students
- More than 30 research projects to date, funded by UK research councils, EU FPs, and a range of governments, companies and charities
- Several research monographs and more than 100 peer-reviewed journal articles on issues of energy policy, urban resilience, energy efficiency, household practices and energy deprivation



# Fuel and income poverty: the difference



Source: Buzar 2007

# Energy, older age and vulnerability

- Dr Rosie Day (Geography, Earth & Env. Sciences)
- Vulnerability is more than just fuel poverty!
- Empirical work with older person households in this region on their winter warmth and heating practices
- Personal and social identities and place identities (regarding the home) affect what practices are acceptable and what interventions will be successful.
- Policy makers need to examine the assumptions about age which underpin policy: **ageing is both a biomedical and a social process**



# Globalisation and the environment

- Prof Matt Cole, Prof Rob Elliott (Economics)
- Do low-regulation countries attract “dirty” industries?
- Are free trade and economic growth good for the environment?
- Why are some firms particularly pollution-intensive?
- How will climate change affect Africa’s hydro-electric production and trade?



# Law and energy

- Dr Djakhongir Saidov, Dr Luca Rubini (Law)
- International Law of Oil and Gas
- Law of Damages in international contracts
- Legal implications of the EU ETS
- What subsidies are legal under World Trade Organisation rules?
- Is allocating permits to firms without charge a subsidy?

# The EU ETS, energy efficiency and innovation

- Dr Corrado Di Maria (Economics)
- Will pricing carbon lead to gains in environmental efficiency in power generation?
- What about competitiveness?
- What about investment in new technology (innovation and adoption)?
- How does CCS innovation respond to environmental policy?

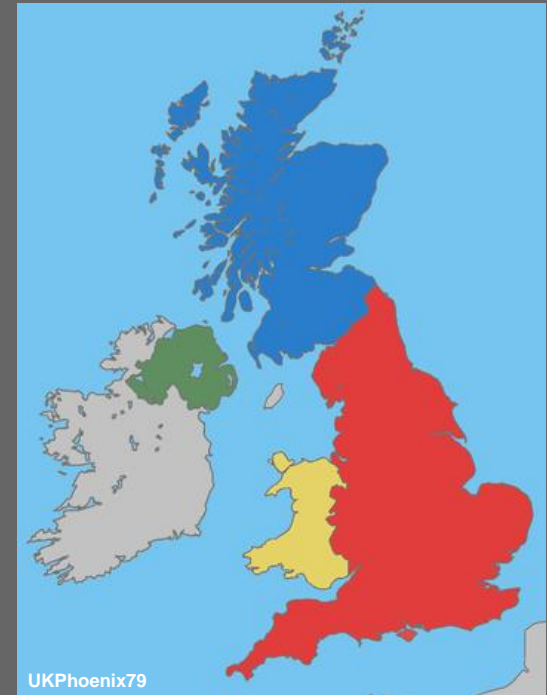
# Valuing the environment

- Prof David Maddison (Economics)
- How costly are the health impacts of particulates?
- What is the economic impact of climate change on (e.g.) African Agriculture?
- Lead author of the National Ecological Assessment for the section on climate



# Delivering renewable energy through devolution

- Dr David Toke (POLSIS) and collaborators
- A “natural laboratory” for the effects of policy
- How have governments used their powers?
- With what impacts?
- What are the lessons for policy and institutions?



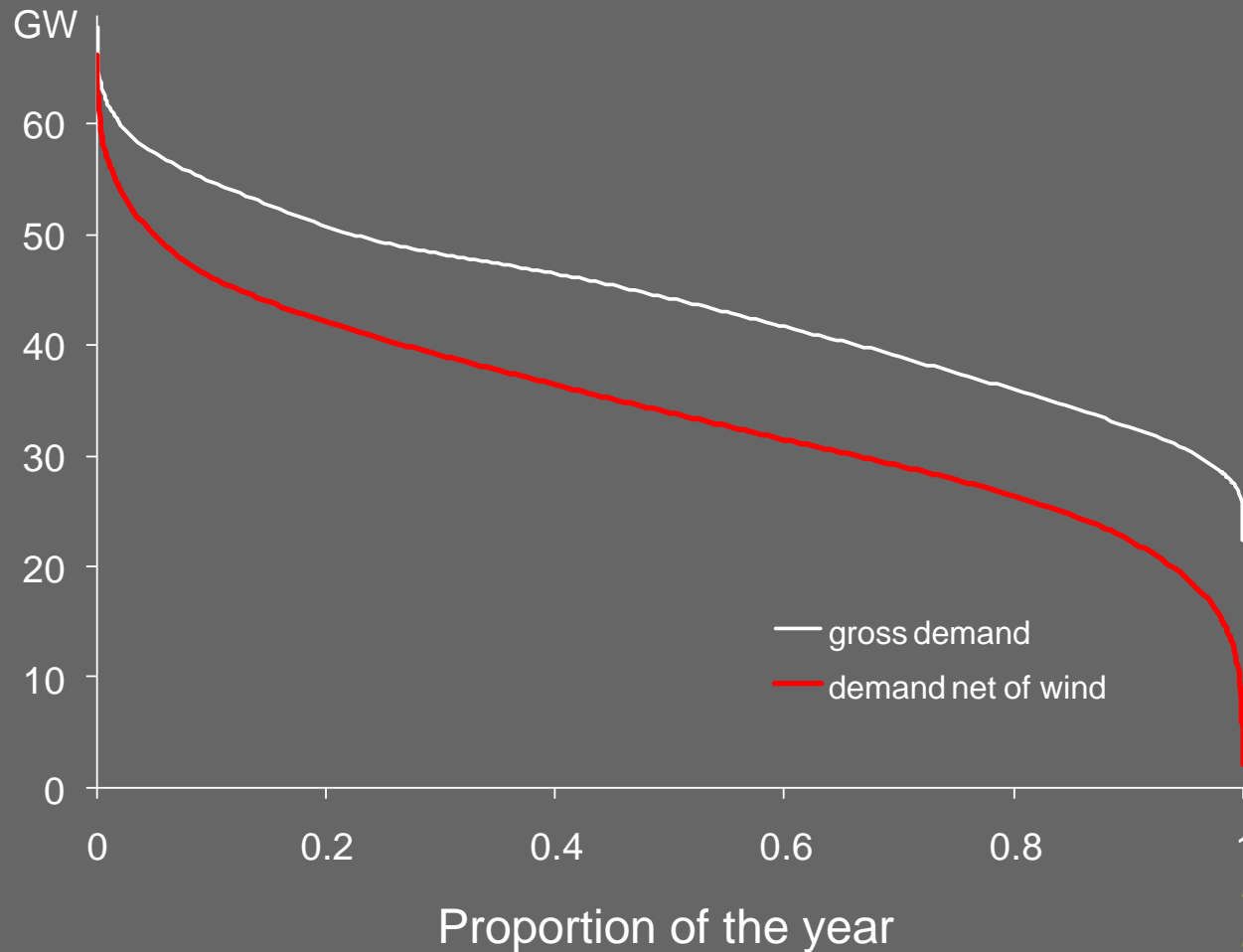
# International environmental governance

- Dr Sevasti-Eleni Vezirgiannidou, POLSIS
- How do nations come to cooperate in environmental issues?
- Does this cooperation lead to environmentally beneficial outcomes?
- What are the links between environment and other areas of global governance and what are the consequences of those links?

# Electricity economics

- Professor Richard Green (Economics)
- What are the implications of moving to a high share of intermittent renewable generators?
- What government policies give the best incentives to companies and to consumers?
- What is the best way to organise the industry and its trading?

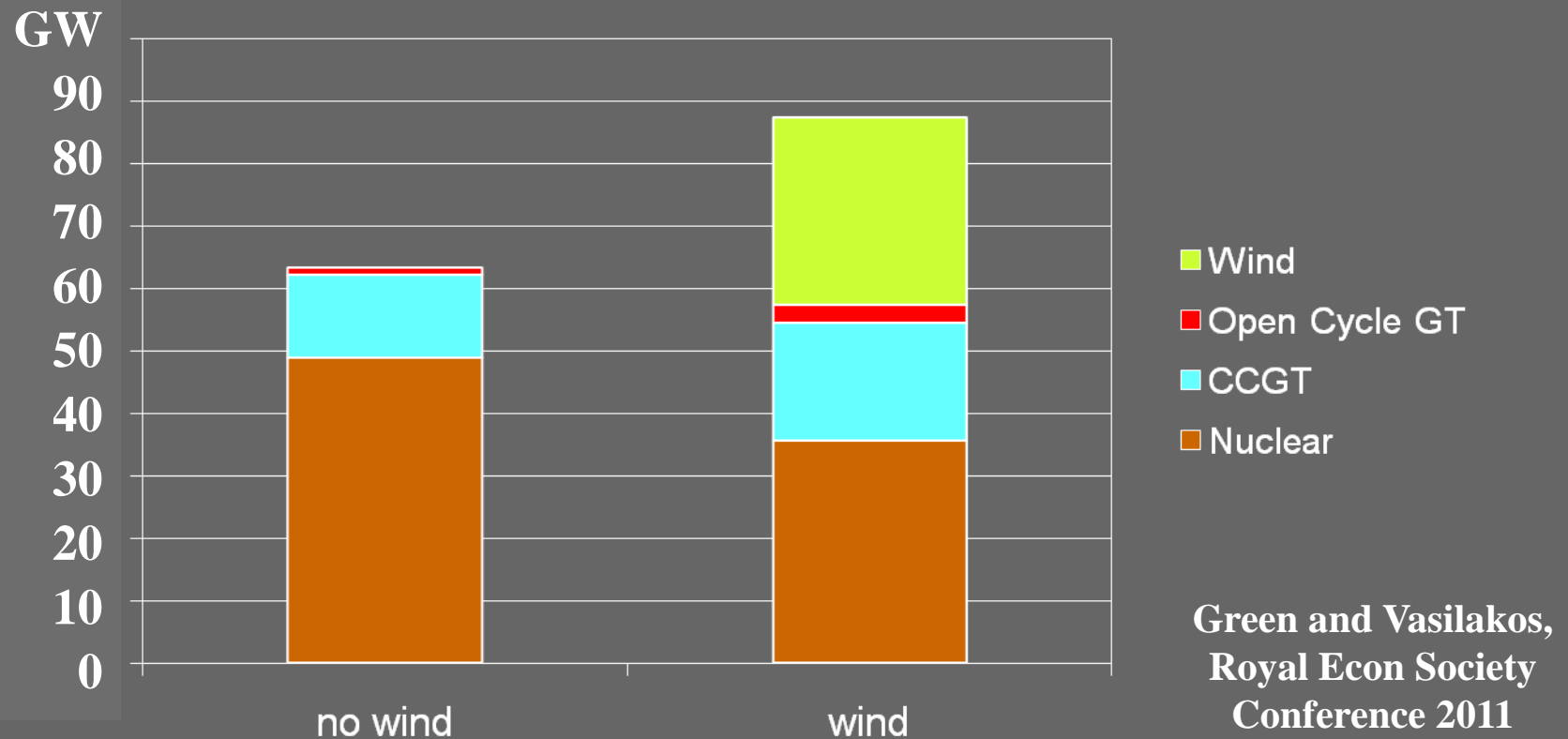
# Load-duration curves (GB prediction for 2020)



Source: Green,  
*Utilities Policy*,  
2010



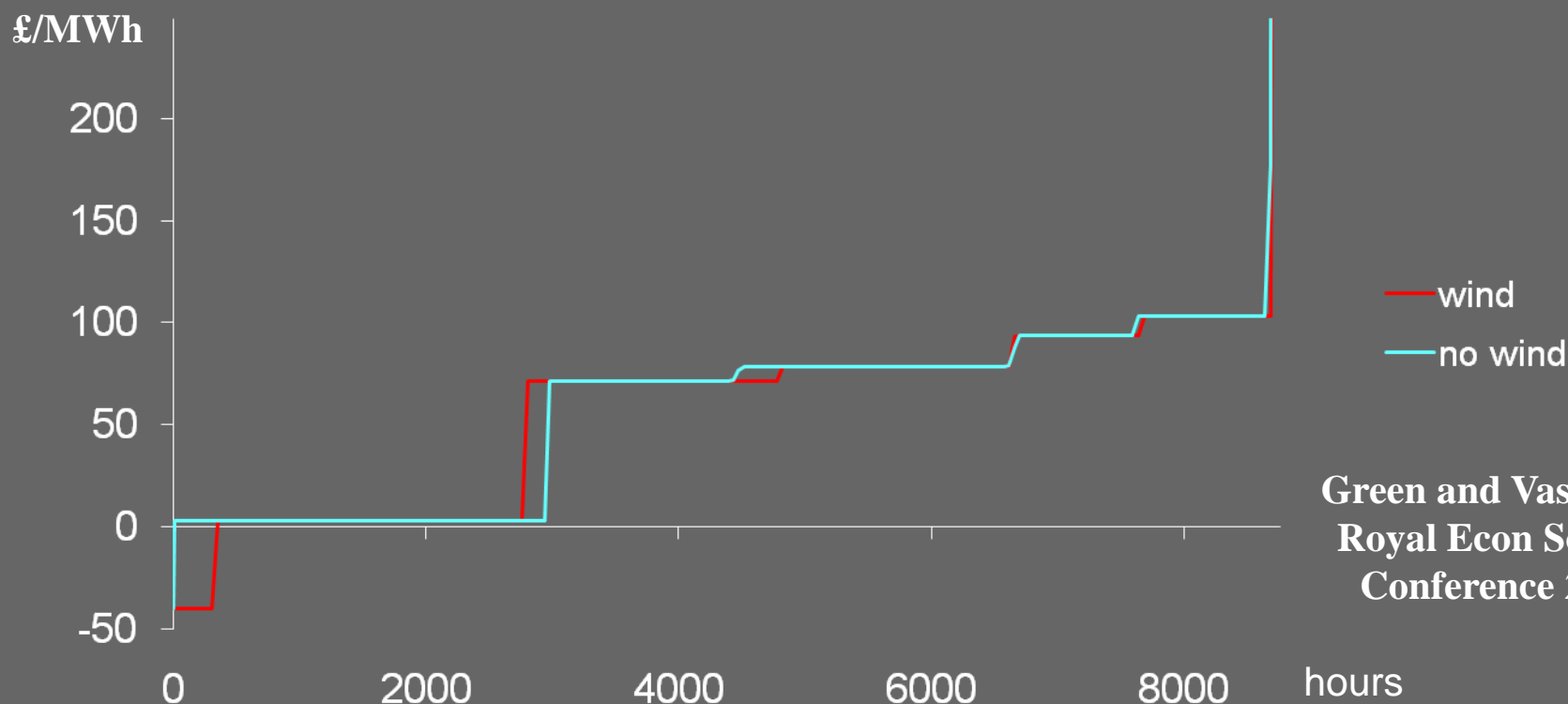
# Long-run equilibrium capacity mix



n.b. the particular numbers depend on cost assumptions;  
here taken from the Mott Macdonald 2010 report to DECC

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# Price duration curves with long-run equilibrium capacity



Green and Vasilakos,  
Royal Econ Society  
Conference 2011

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