

INFORSE-EUROPE
International Network for Sustainable Energy



**INFORSE-Europe Power & Place Seminar on Good Practice
in the
Transition from Fossil Fuel Dependency**

October 2-4, 2009, CAT, Wales, UK

http://www.inforse.org/europe/seminar09_CAT.htm

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zerocarbonbritain 2
an alternative energy strategy

**Power & Place Conference
October 2009**



Centre for
Alternative
Technology

framework▶

**National & International policy
frameworks**

- Descending Cap = effect
- Equity = buy-in
- Consensus = delivery

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**National & International policy
frameworks**

- Enforceable
- Include 'embodied emissions'
- Stable / predictable
- Low administrative burden
- Responsive & capable of evolution
- Capable of reaching zero
- Reform markets
- But don't expect it to do everything!!

framework▶

**National & International policy
frameworks**

- 'Command and Control' interventions
- Taxation
 - net equal
 - additional
- Quotas

framework▶

Carbon conscious market reform

- Make carbon visible to the market
- Harness the power of the market
- Lowest carbon = most economic
- A 'market-driven' race out of carbon

The ZCB Scenarios

20 year timescale - as fast as humanely possible
Including only **mature or near market** technologies
National prestige program - **100% political commitment**
Non nuclear, 100% renewable
ZCB:1 "Self-reliant Britain" (2007)
ZCB:2 "Exploring imports / exports" (2009)

powerdown powerup

powerdown

- Sector by Sector
- Built-environment
 - Industry
 - Transport
 - Agriculture & land use



(ZeroCarbonBritain:1 identified a 50% overall reduction)

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Household

- Large-scale retrofit of existing stock
- All new-build to be zero-carbon
- Replace worst performing dwellings, with exceptions
- Behaviour change
- Intelligent appliances

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Transport

- Switch to electric vehicles – huge savings
- Freight to rail
- Modal switches - "earthports"
- V2G
- Cycling & walking
- Liquid biofuels grown on-farm for farm use

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Agriculture & land use

- Switch from fossil fuel fertilisers etc.
- Re-localisation of production
- Significant land-use changes
- More biomass production e.g. wood fuel
- Reduction in stocking levels

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- Meter the UK's daily spend on imported energy
- A new index: the amount of money sucked **out of** the UK economy



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- Identify UK's 'Strategic renewable energy reserve'
- Wind, waves, tides, biomass, solar, geothermal.....
- Include *only* that energy harvestable with current technology deployed in non-sensitive locations

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Another new index:

The amount of money this would inject *into* the UK economy!



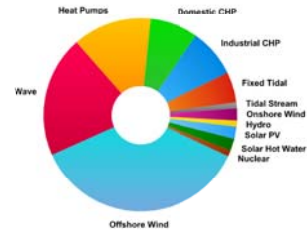
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- Electricity becomes the main way we **move energy**
- Every roof, garden, hill top, island, coast, forest becomes an energy **and** an **income** generator
- As we get better at extracting energy through increasing economies of scale and advancements in technology, **the annual yield (and annual income) increases.**

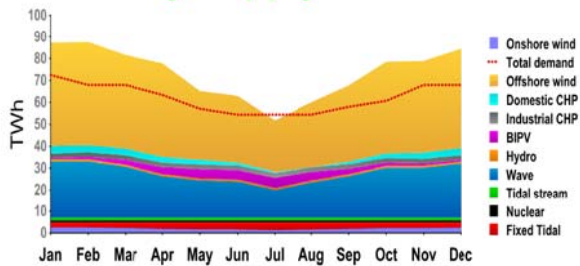
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The technologies



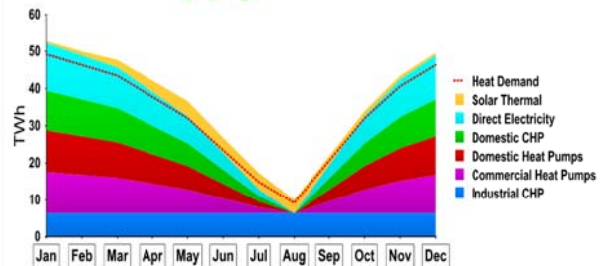
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Electricity supply & demand



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Heat supply & demand



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Dealing with variability

- Demand reduced by 50%
- Intelligent demand management
- Generation distributed by region
- Generation distributed by technology
- Storage - V2G, flow batteries, pumped storage
- International integration

Conclusions

- Scientifically **inescapable**
- Economically **unavoidable**
- ZCB scenarios explore how it can become **technically achievable** over two decades
- This helps it become **socially & politically thinkable**

ZCB:2 Economy & Employment

A large-scale **economic stimulus package** to power down demand & power-up renewables would:

- Create **employment** & stimulate the economy
- Dramatically improve future **balance of payments**
- **Inject revenue** into the economy every day
- **Repay the taxpayer** from the energy saved/generated
- Future-proof the economy against **energy price shocks & blockades**

ZCB:2 Funding the transition

- Many individuals, institutions & Governments are now seeking '**secure investments**'
- Future demand for electricity is **very secure**
- Future price paid for electricity is **very secure**
- Future costs for renewables are **predictable**
- Government backed '**eco-bonds**' as per WW2
- Releasing a wall of both **public & private capital**

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