

zerocarbonbritain
an alternative energy strategy



EUSEW 2009
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EC Charlemagne Building, Brussels

http://www.inforse.org/europe/conf_EUSEW_09_INFORSE.htm

introduction

globalcontext

framework

powerdown

introduction

- Evidence-based scenario development
- Creating a common, coherent vision
- Endorsing, supporting and connecting actions from all sectors of civil society
- Identifying areas for urgent research

introduction

An integrated solution to 4 key challenges

- Climate security
- Energy security
- International security
- Economic security

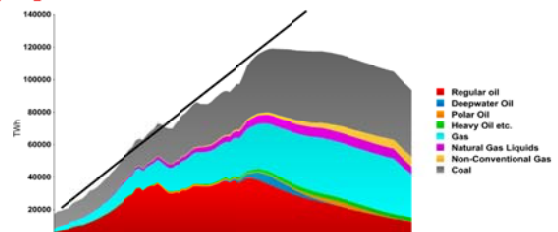
globalcontext

Hard truths for society (1)



globalcontext

Hard truths for society (2)



Energy Security

There are currently 98 oil producing countries in the world, of which 64 are thought to have passed their geologically imposed production peak, and of those 60 are in terminal production decline.

(David Srahan www.energybulletin.net)

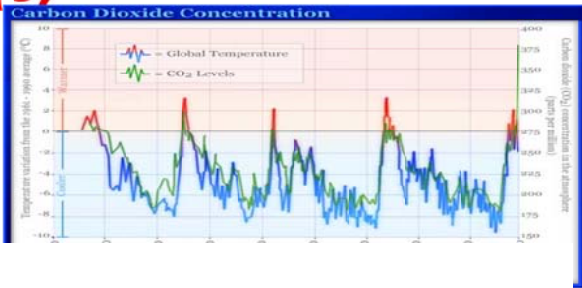


Energy Security

- For the first time in our history, just as demand is exploding across the globe, humanity will no longer be able to increase



Hard truths for society (3)



Lessons from Arctic ice in 2007

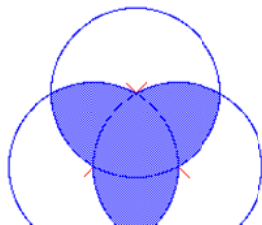
“Targets of 550ppm must become 350 ppm if humanity wishes to preserve a planet similar to that on which civilisation developed”

James Hanson

QuickTime™ and a TIFF (LZW) decompressor are needed to see this picture.



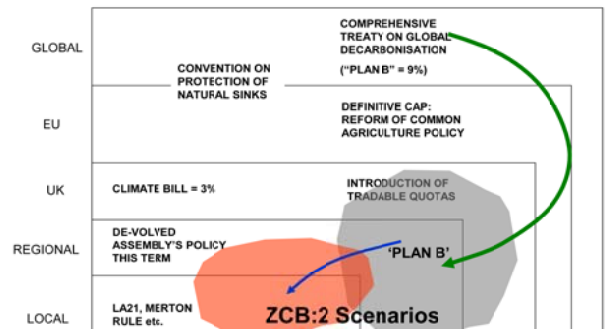
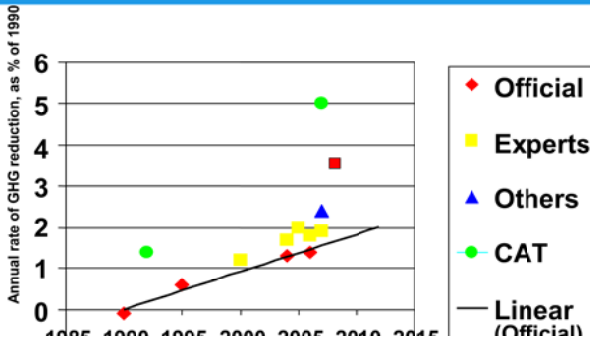
A common solution



framework

- *Evolving policy*



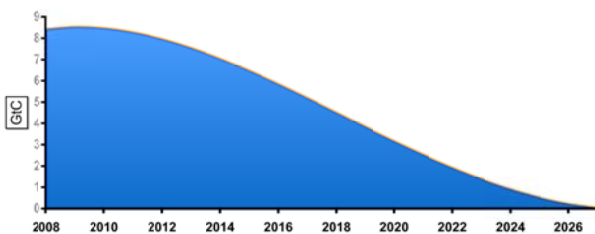


Evidence-based Scenarios

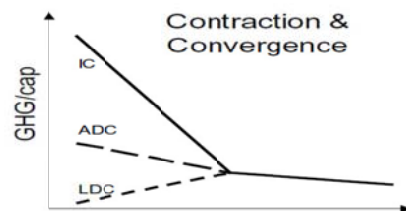
- 3% de-carbonisation targets are 'political targets'
- Science demands targets are more like 9%
- Evidence-based scenario work is urgently required to give some indication of what such a transition would look like
- Are current actions to achieve 3% on the road to 9%?

- **International**
– **Contraction & Convergence**

Carbon Budget: Global

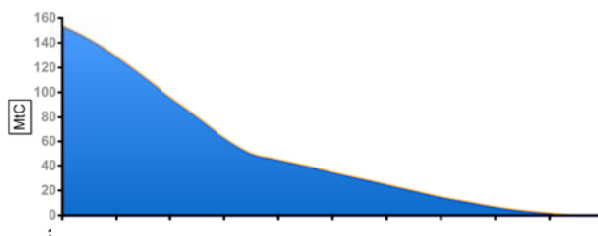


International: Contraction & Convergence



framework▶

- **National**
– **Tradable Energy Quotas (TEQs)**

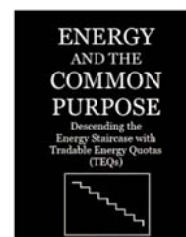
Carbon Budget: **Britain**

De-carbonisation options:

- Widespread re-nationalisation?
- A command & control economy?
- To be directed by Government?
- Carbon-conscious market reform?

Tradable Energy Quotas (TEQs)

- Motivation for change across all sectors
- 40/60 split
 - 40% given free to individuals
 - 60% to auctioned to industry

TEQs for **Individuals**

- Only for fuel
- Receive a year's worth at the start
- Topped up weekly
- Tradable!
- Safety net

TEQs for **Business**

- Initially a year's worth put up for tender
- Weekly tender follows
- Bought through banks
- Budget looks ahead, provides certainty
- Other taxation reduced
- Stimulates zero-carbon business practices...

Carbon Blind Markets

- Market rules were set before we recognised climate change, and when the industrial world was awash with fossil fuels
- The market is driven by the lowest cost option – it is carbon-blind
- So, in delivering our needs, it releases far more carbon than is actually necessary

Carbon Blind Markets



Or carbon conscious markets

- Use the power of the market
- Make carbon visible
- Lowest carbon = most economic
- A 'market-driven' race out of carbon
- Driving technology innovation

A technology roll-out scenario



powerdown

- Sector by Sector
 - Built-environment
 - Industry
 - Transport
 - Agriculture & Services
- 50% overall reduction



Built-environment

- Mass retro-fit of existing stock
- Zero-carbon new-build
- Replace worst performing dwellings
- Intelligent appliances
- Behaviour change

Transport

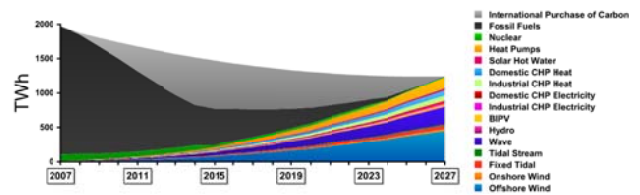
- Transition to electric vehicles – huge savings
- Freight to rail
- Modal switches - “earthports”
- V2G

Agriculture

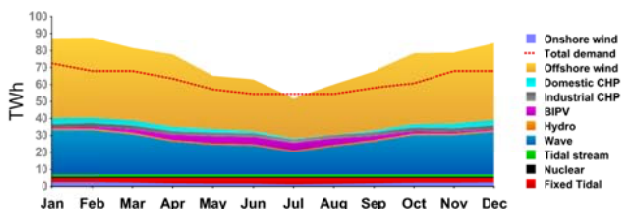
- Re-localisation
- Reduction in livestock
- Switch to “organic”
- Increased biomass
- Significant land-use changes

- 100% Renewable!
- Electric Britain
- Diverse mix

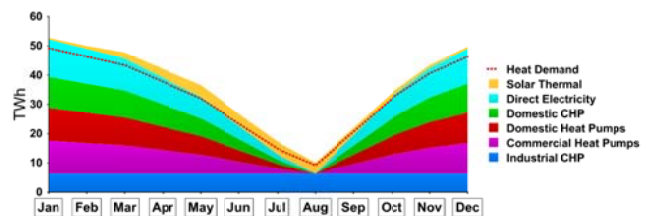
The resources are out there



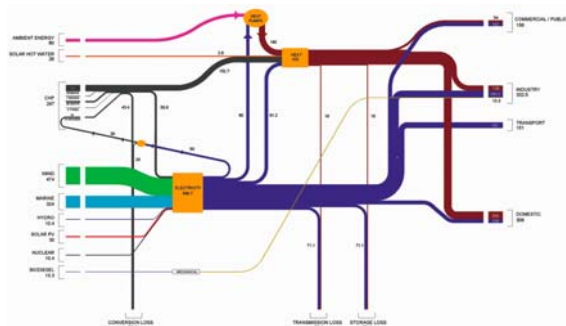
Electricity supply & demand



Heat supply & demand



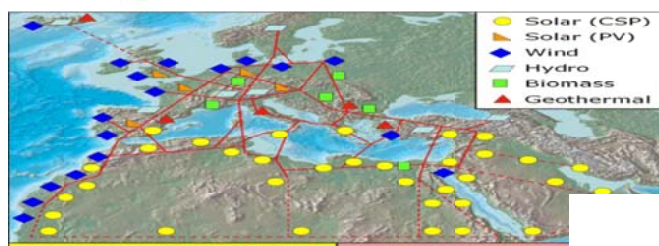
UK Potential Energy Flows 2027 (terawatt hours)



Variability

- Demand
 - Reduced overall by 50%
 - Intelligent demand management
- Generation distributed by region & by technology
- Storage - V2G, flow batteries, pumped storage
- **European Integration in next scenario...**

Integrated EU scenario



Economic Investments

- Massive economic interventions are on the table, but for very different economic reasons
- Should we subsidise production of more cars which no one wants to buy?
- Or should we do something very much more creative?
- If so, what would be the dividend?

Economic dividends

- Investments which reduce the energy needed to deliver wellbeing will create employment and pay a dividend on the price of the energy we don't have to import
- This will also improve the stability of the EU economy to energy import price hikes

Turn the weather into cash

- Investments which generate energy from UK renewable sources will create employment and pay back a dividend on the price of the energy they sell.
- Estimate the value to our economy of the 'total harvestable energy' falling on European coastal waters and lands area.....

It just gets better & better

- Developing the means to harvest it will create jobs and stimulate the economy - in a way which pays the money back to the taxpayers!
- As we get better at extracting it through increasing economies of scale and developments in technology, the annual energy yield (and annual income) increases every year, forever.
- Every island, coast, forest, hill top, south facing roof can become an energy and economic generator

Conclusions

- Scientifically inescapable
- Economically unavoidable
- New ZCB:2 scenarios will explore how it can become technically achievable
- It must rapidly become *socially & politically thinkable*

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TIFF (LZW) decompressor
are needed to see this picture.

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www.cat.org.uk

www.zerocarbonbritain.com

www.inforse.org/europe/Vision2050.htm

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