UNIVERSITY OF CAMBRIDGE | Energy Policy Research Group

Energy @Cambridge

In Search of 'Good' Energy Policy: why multi-disciplinary approaches to to Energy and Climate problems are so important

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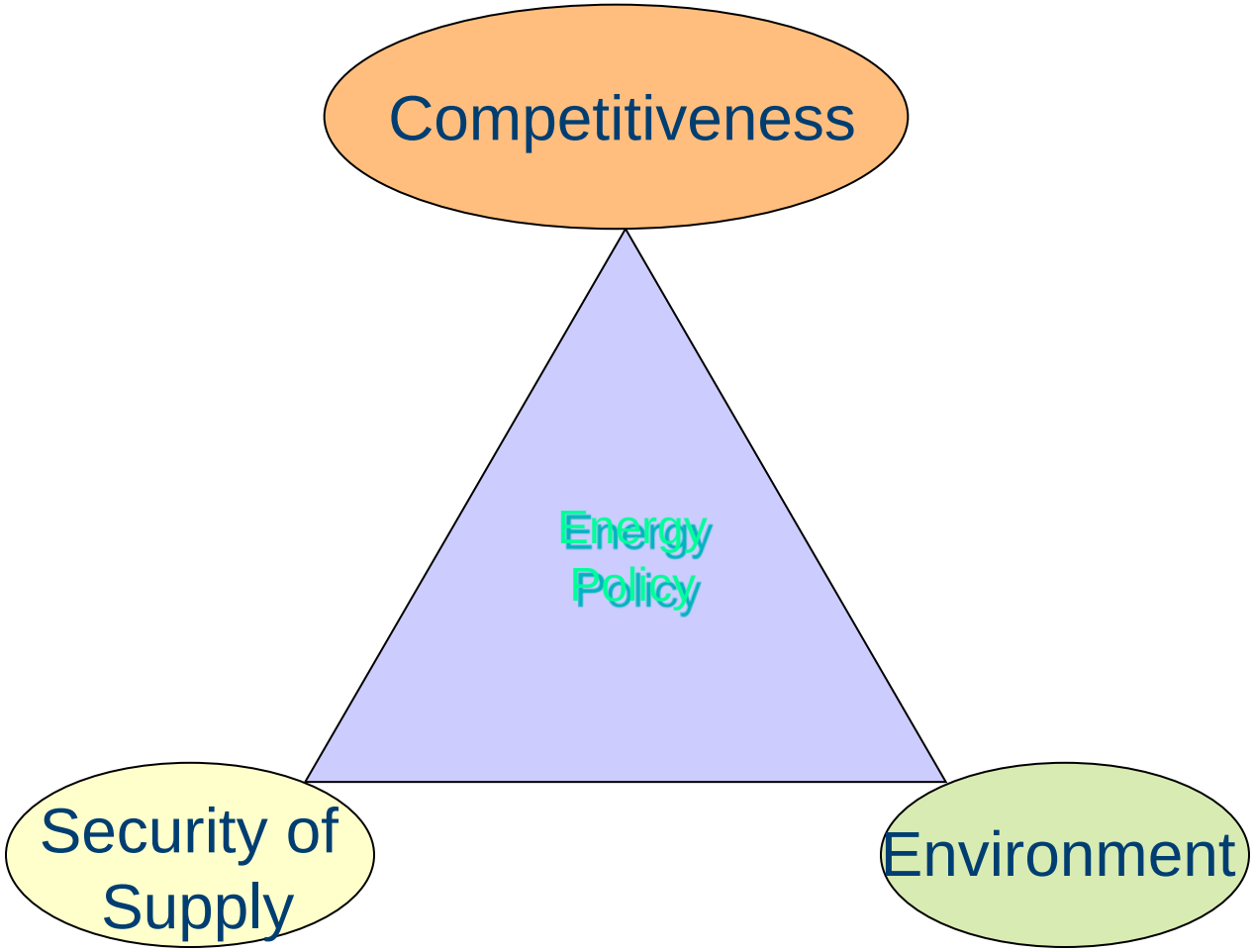
Plan

- With thanks to the In Search of ‘Good’ Energy Policy initiative at Cambridge which brings together 20 scholars from 12 faculties: http://www.energy.cam.ac.uk/good-energy-policy/good-energy-policy-video-media
- Why is ‘Good’ Energy Policy so difficult?
- Technology, Technologists and Energy
- Themes for ‘Good’ Energy Policy
- Some examples
- An Interdisciplinary approach

The Energy Policy 'Trilemma'



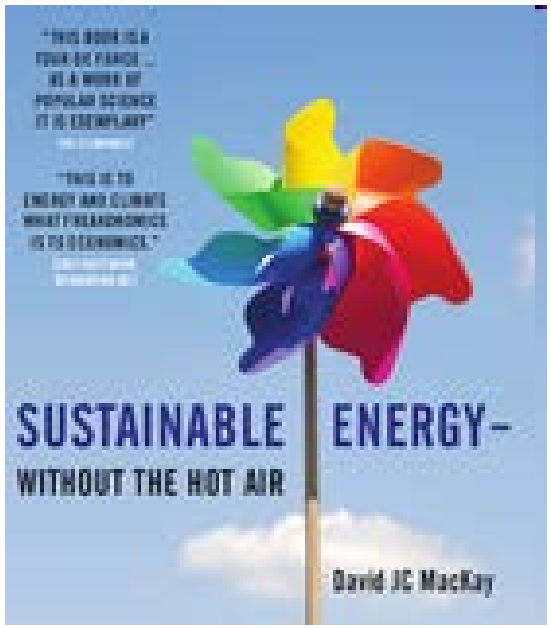
In Search of ‘Good’ Energy Policy

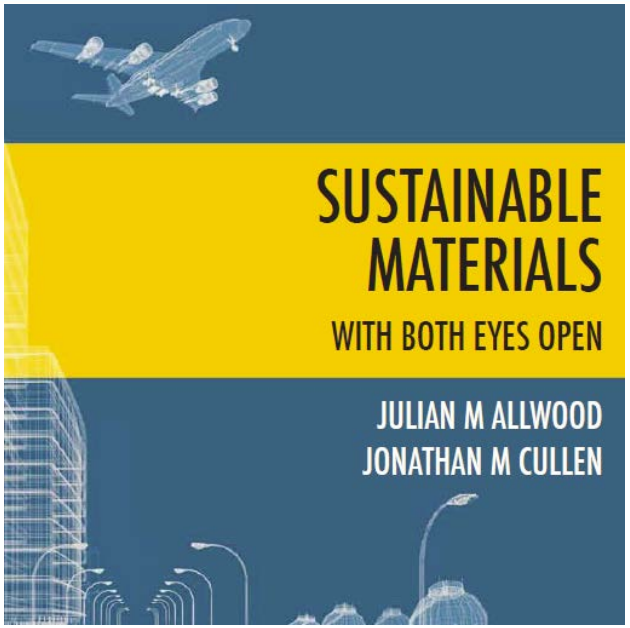
- Affordable, clean, efficient and secure provision of electricity, heating and transport fuel difficult to reconcile.
- Many developing countries have clearly disastrous policies with expensive, dirty, inefficient and insecure energy.
- Many developed countries just have ‘mess’ of policies (f.Rhodes, 1988).
- Difficult to move from current reality to the clearly better, especially given trade-offs with non-energy policies.

What do we mean by ‘policy’?

- ‘Policy’ definition (from Dictionary.com)
- *‘a definite course of action adopted for the sake of expediency, facility etc.’*
- *‘a course of action adopted by a government, ruler, political party etc…’*
- From the middle English *policie* meaning government or civil administration.
- *Examples of (national) energy policies:*
- UK Clean Air Act 1956
- French nuclear power expansion 1975-99
- European Emissions Trading Scheme 2005
- Subsidies to renewable energy
- Taxes on diesel fuel

The ‘right’ technology can ‘save’ us





What technologists often forget…

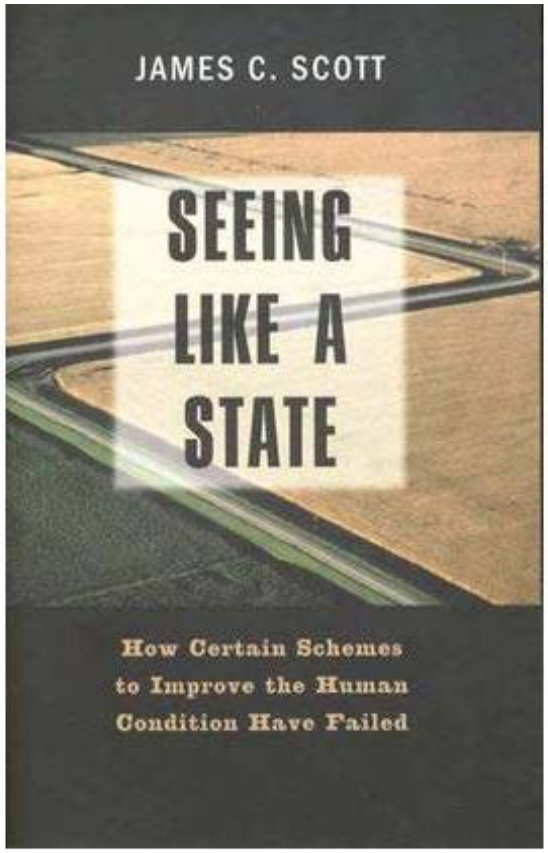
1. Opportunity costs of energy in terms of education, healthcare…

2. Initial distributions of wealth, income, tax revenues, jobs etc. matter…

3. Not everyone is as keen to engage with energy technology as they are…

4. The history of optimism bias and hubris in delivery…

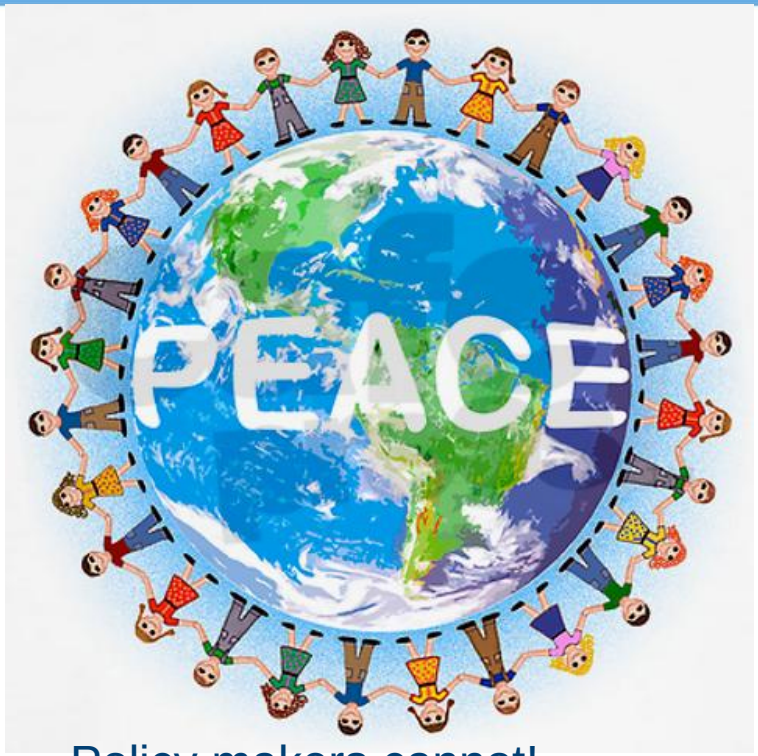
5. Policy development is a process, which has been extensively studied by other disciplines, and they are one lobby group within that process! (As are economists!)



…not just about technology…

Scientists and Engineers can do anything!

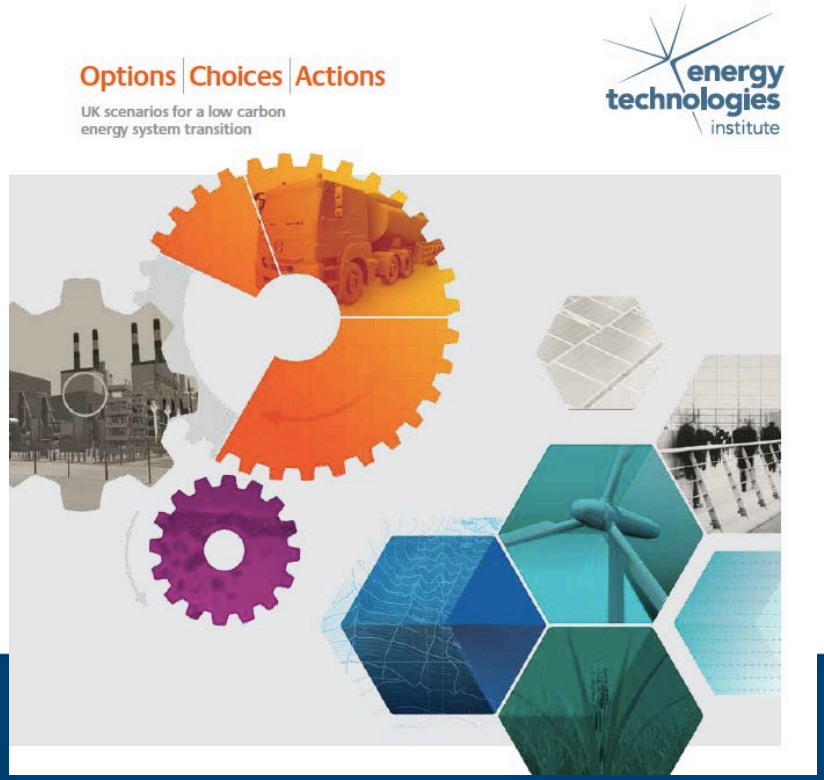
[Cost of Apollo Programme from 1961-72 = $170bn (2005), to put 12 men on the moon]



Policy makers cannot!
Excess Defence expenditure in UK,
c.1% of GDP p.a.

The technology plan to 2050 in the UK

- Decarbonise Power (completely by 2035)
- Decarbonise Heat (completely by 2050)
- Decarbonise Transport (by 50% by 2050)



Starting point:
What is ‘good’ and ‘just’?

‘The Good Life’ for us

Oil spill in Niger Delta

Starting point: Legacy investments

Anti-Fracking protests

bp

Support for miners strike

SIEMENS

ABB

SSE

npower

British Gas
Looking after your world

EDF ENERGY

e·on

SCOTTISHPOWER
The Energy People

Starting Point: Failure of Prediction

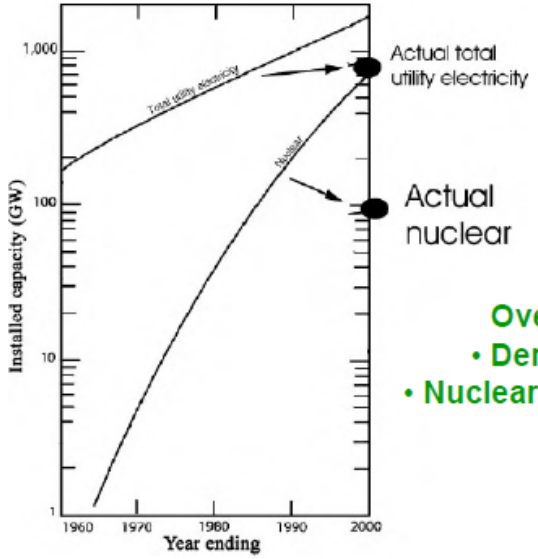
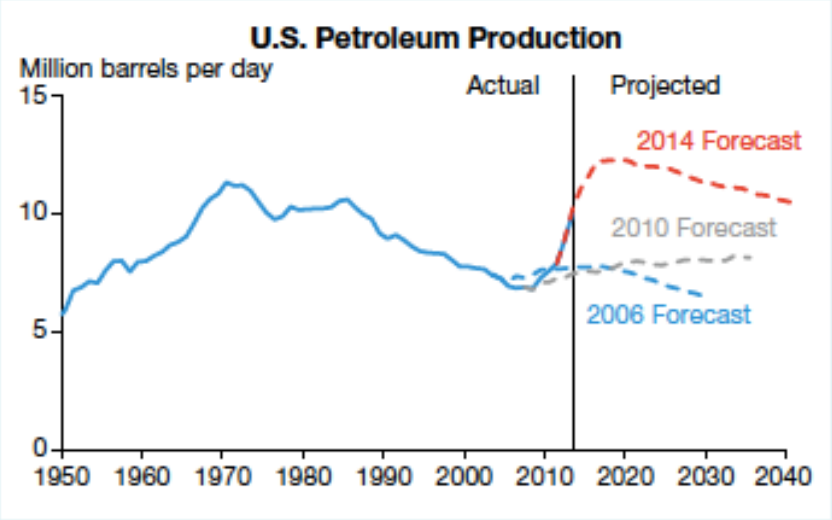


Figure 3 An Atomic Energy Commission forecast from 1962, designed to show demand for nuclear power plants. The curve of interest here shows electricity demand. The authors judgmentally assumed a growing nuclear market share. Actual electricity and nuclear electricity in 2000 is indicated (10).

Overestimation:
- **Demand by 150%**
- **Nuclear capacity by 800%**



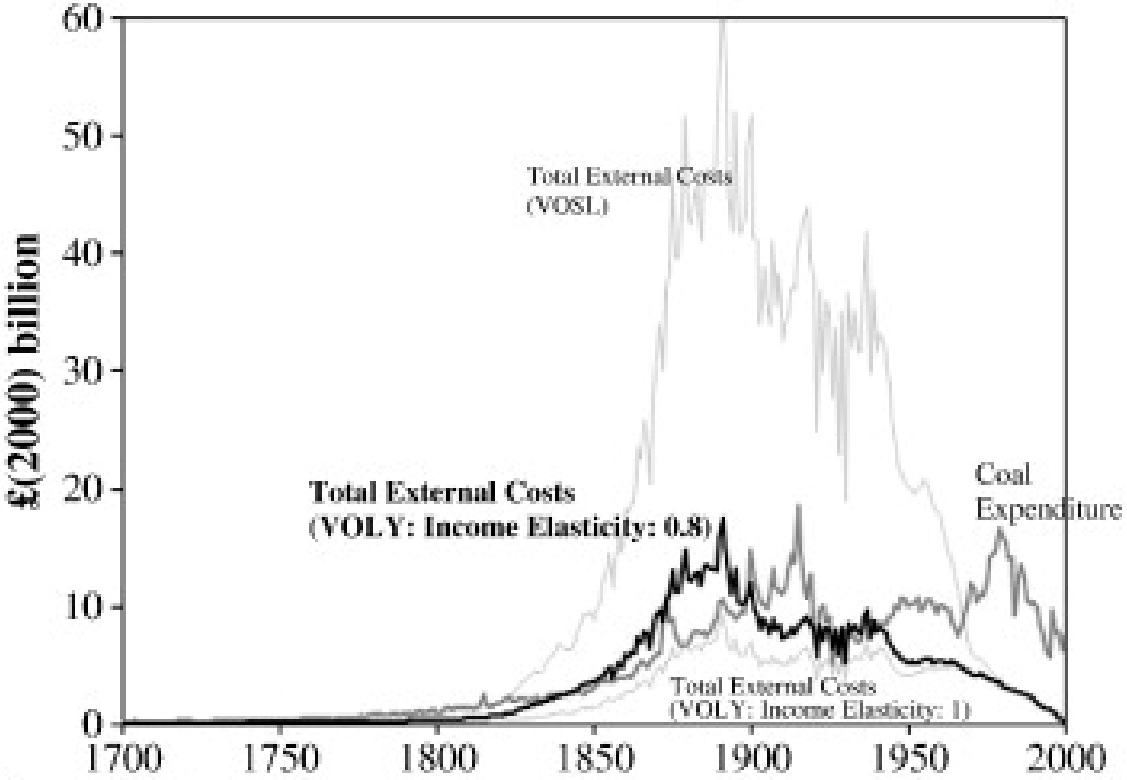
Source: EOP (2014)

Source: P.P. Craig, A. Gadgil, and J.G. Koomey, "What Can History Teach Us? A Retrospective Examination of Long-Term Energy Forecasts for the United States," *Annual Review of Energy and the Environment, 27: 83-118*

Floating nuclear power plant

Source: International Risk Governance Council (2015), *CONCEPT NOTE ASSESSMENT OF FUTURE ENERGY DEMAND A methodological review providing guidance to developers and users of energy models and scenarios*, Lausanne: IRGC, p.15.

Starting point: Persistence of ‘bad’ policies



Source: See text

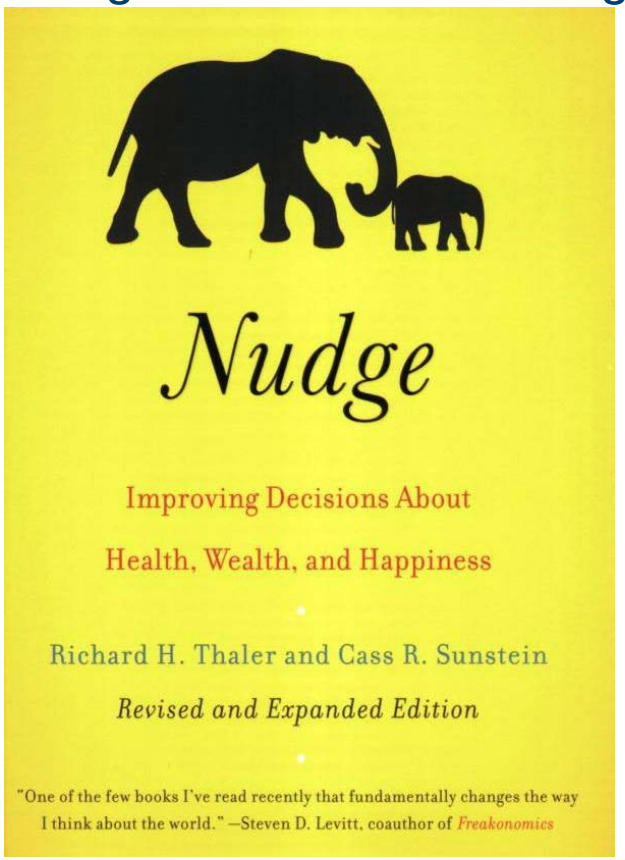
Peak (VOLY): 17.3% of GDP in 1891; VOLY = Value of Life Year; VOSL = Value of Statistical Life

Source: Fouquet, 2011, *Ecological Economics*, p.2385. http://dx.doi.org/10.1016/j.ecolecon.2011.07.020

Starting Point:
Public consultation *is* messy

Research theme: Perception

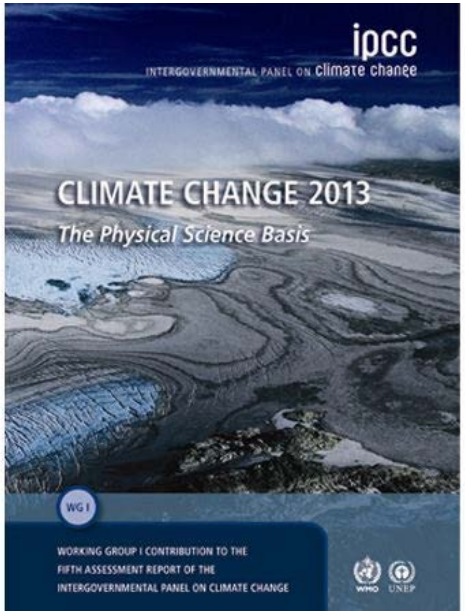
- Theory of planned behaviour, nudge and mindset change



- Perception of the problem and object

Research theme:
Quantification and use of scientific argument…

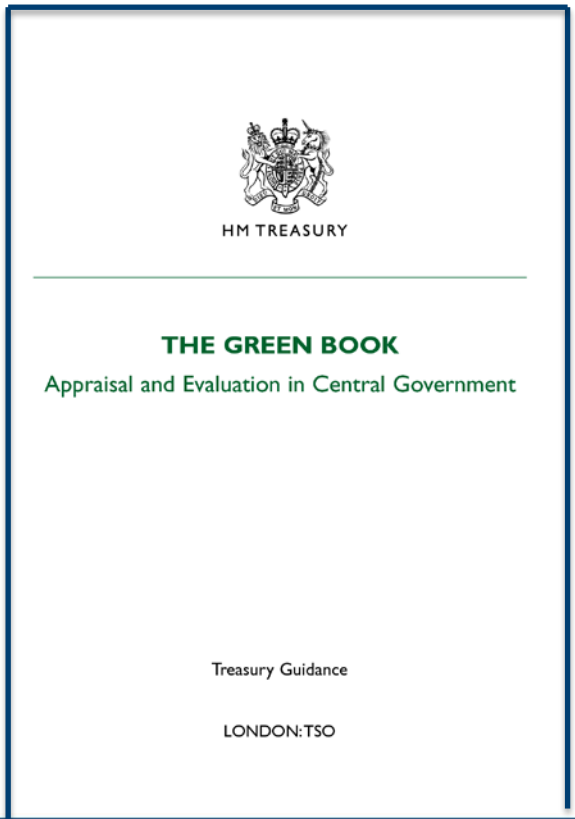
- Demand for quantitative evidence and prediction
- Allocation of burden of proof to whom?
- Role of scientists and ‘scientific’ argument
- Why can’t public just be more sensible / better educated about science?



Sir David King: "*Climate change is not….the biggest challenge of our time, it's the biggest challenge of all time*” 29 April 2014

Research theme: Well-being

- Quality of life and energy
- Rational choice, risk and fairness and the future of energy policy
- Is there a quantitative basis for assessing well being? (e.g. government assessment tools)


HM TREASURY

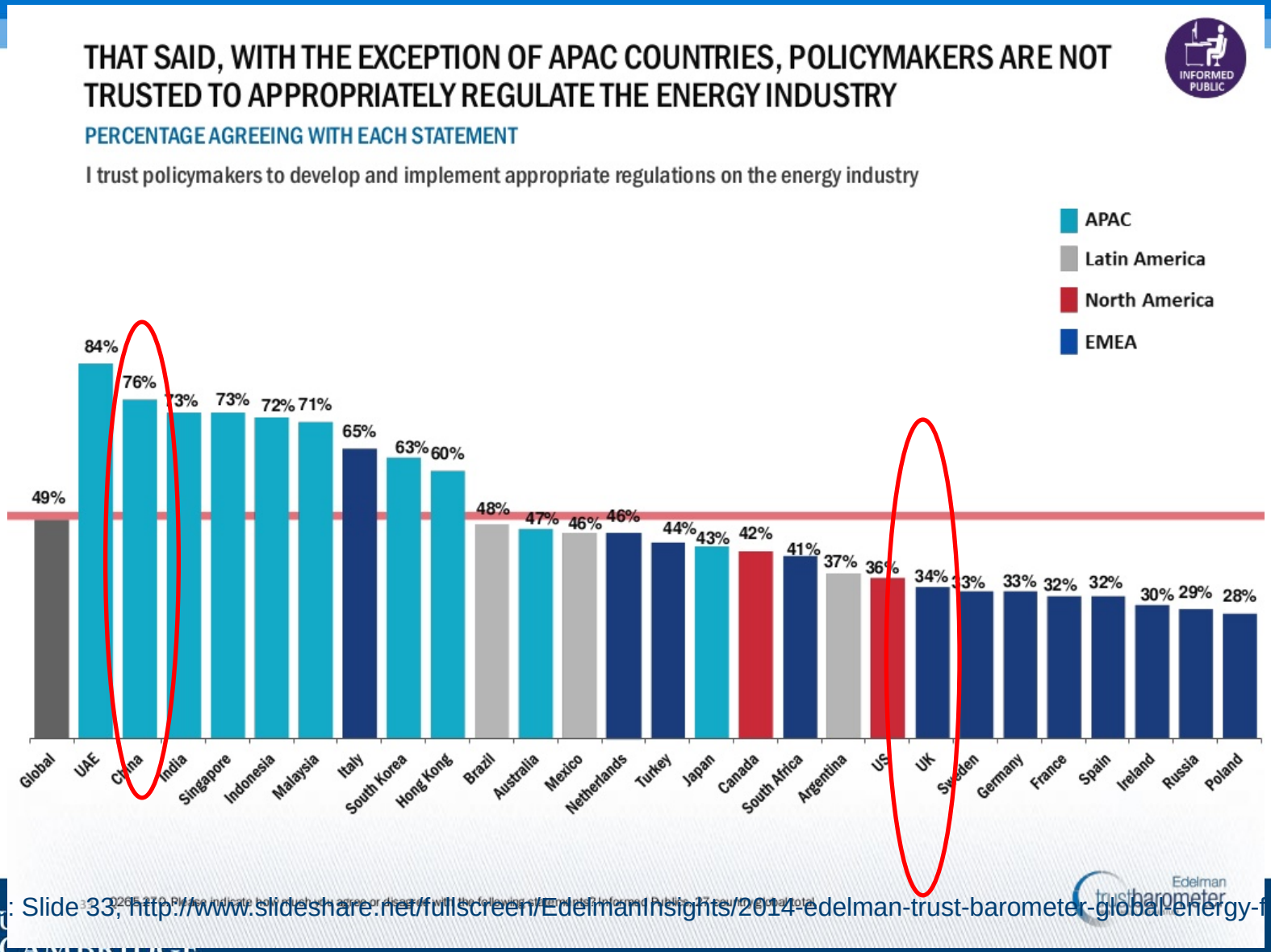
THE GREEN BOOK

Appraisal and Evaluation in Central Government

Treasury Guidance

LONDON:TSO

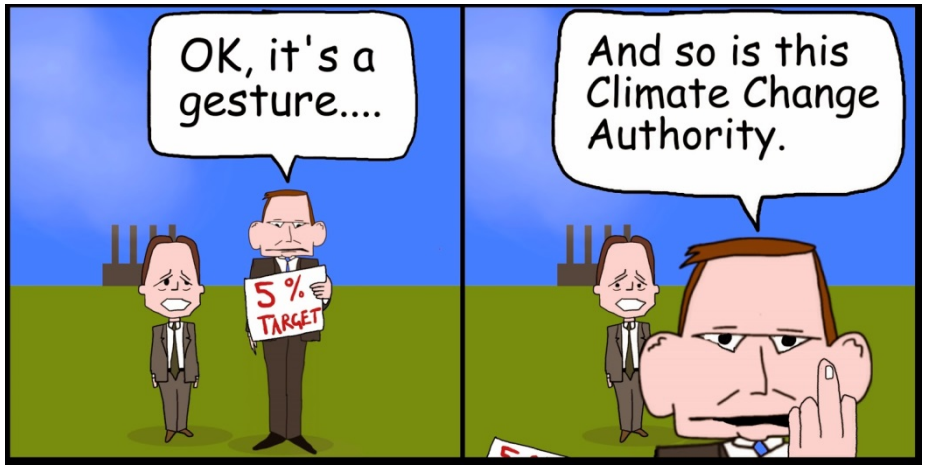
Research theme:
Public Trust in Policy

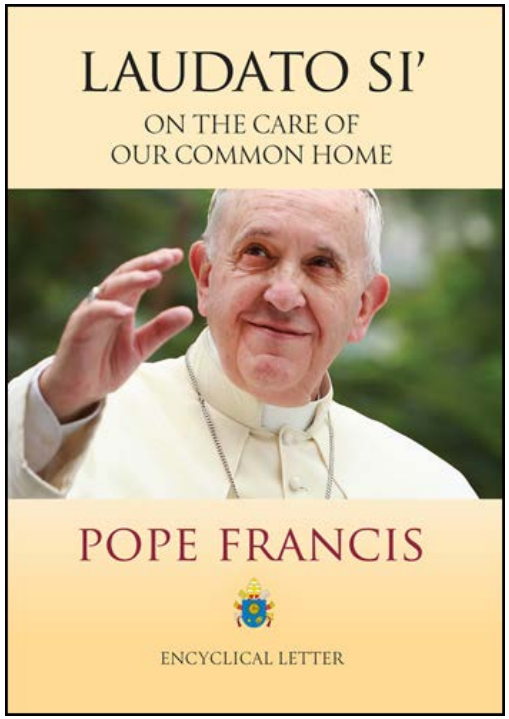


: Slide 33, http://www.slideshare.net/fullscreen/EdelmanInsights/2014-edelman-trust-barometer-global-energy-f

Research theme:
The Role of the State

- Personal responsibility vs centralised policy
- Stewardship and public theology and role of beliefs and culture
- Appropriate level of governance and process
- Necessary policy incoherence and a restrained role?





Research theme:
Competence and hubris in delivery

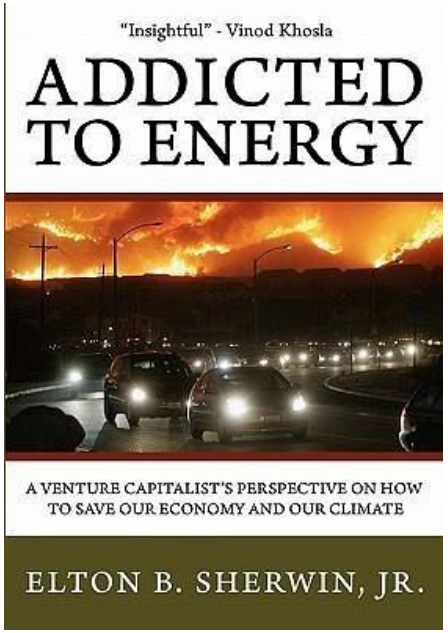
- Long term commitment to building / exploiting competence is important
- Competence in delivery required for success
- Desire to work on big, exciting projects and over-promise

Flamanville 3 – France
Est. 6 years late; Cost E10.5bn vs E3.3bn

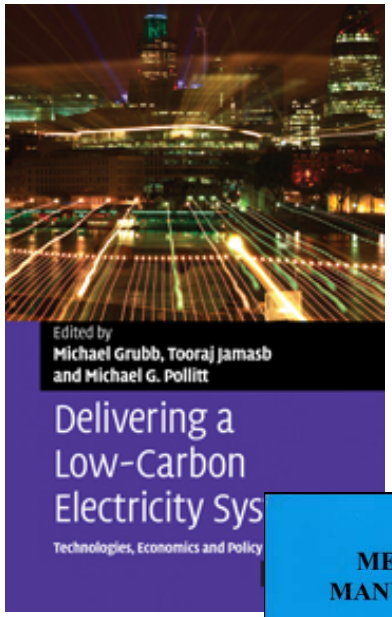
Okiluoto 3 – Finland
Est. 8 years late; Cost E8.5bn+ vs E3bn

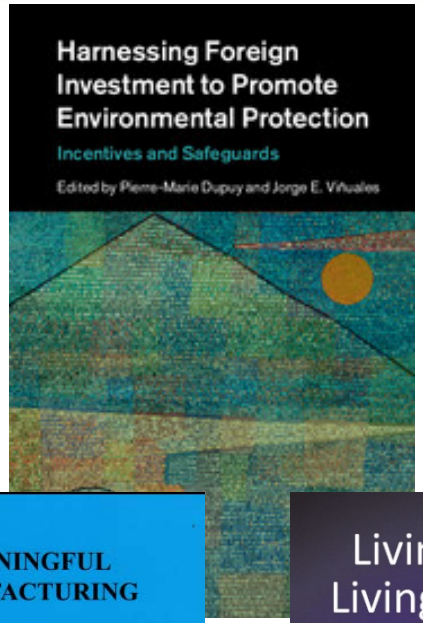
Research theme:
Parallels to other ‘messy’ policy areas

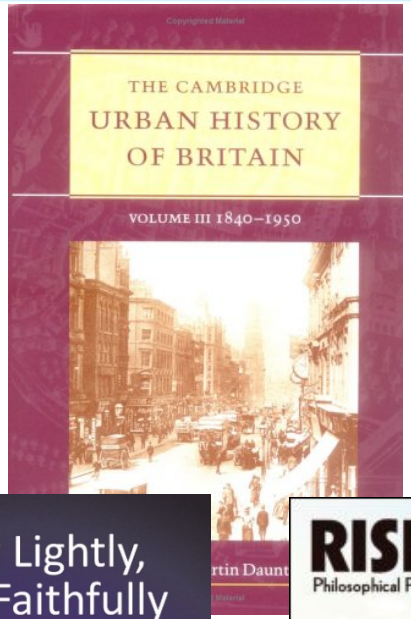
- Parallel between energy and sugar/fat consumption
- Similarly messy policy area
- Good policies can be found, e.g. right to second opinion in Netherlands

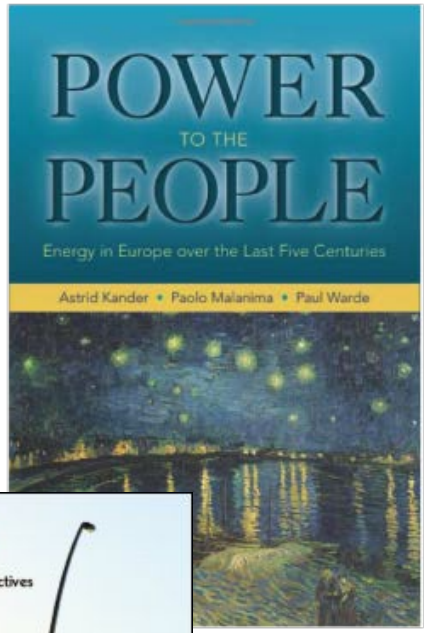


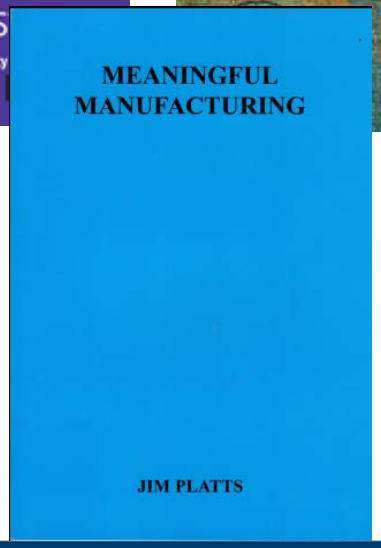
Some starting points…

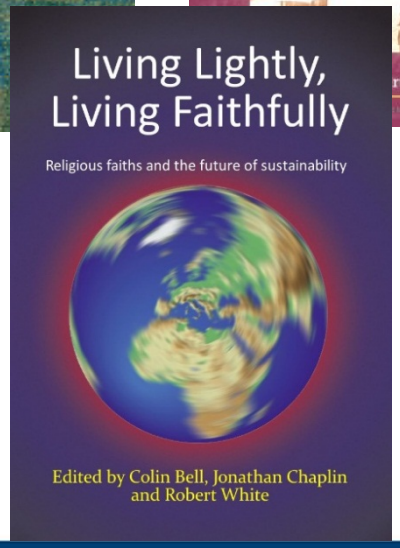


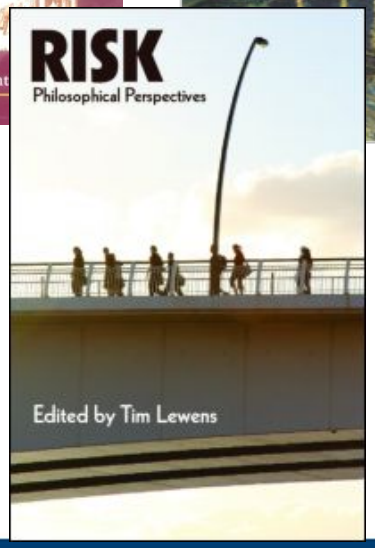










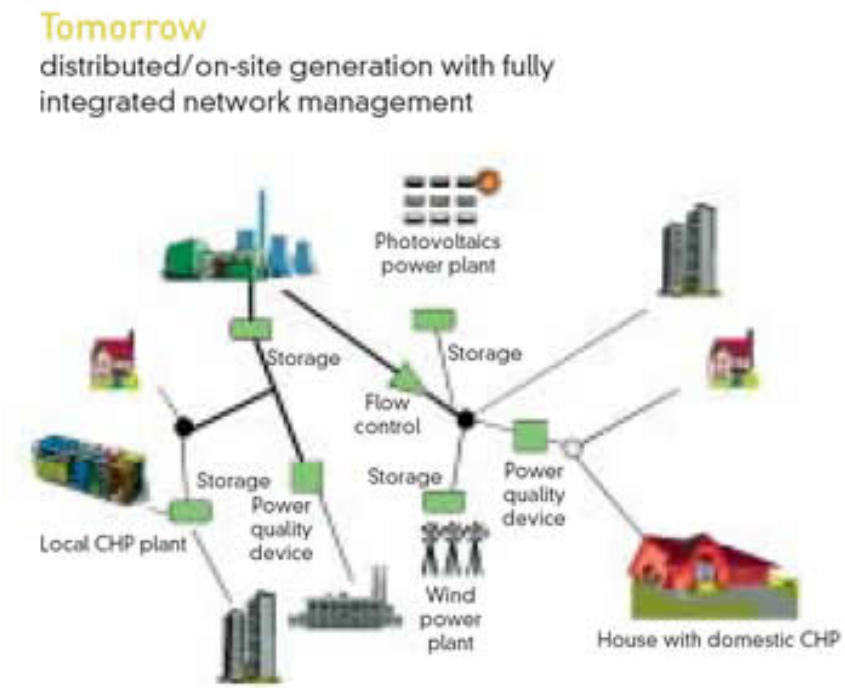


Policy application: Smart Meter roll outs..

Themes:

- Perception
- Quantification
- Well-being
- Public Trust
- Role of the State
- Competence
- Parallels with Healthcare

Policy application: Promotion of Distributed Generation



Themes:

- Perception
- Quantification
- Well-being
- Public Trust
- Role of the State
- Competence
- Parallels with Healthcare

Policy application:
Taxation of diesel fuel in Europe vs USA

DIESEL

Themes:

- Perception
- Quantification
- Well-being
- Public Trust
- Role of the State
- Competence
- Parallels with Healthcare

Example of Multi-disciplinary approach: UK Clean Air Act 1956

See Chaplin et al. (2016)

Illustration of community action before Clean Air Act titled, 'We Want Clean Air protest banner at Paddington: 1956,' courtesy of th Museum of London/Grant

A multi-disciplinary perspective on policy:

- *Politics* and windows of opportunity for action
- *Economics* and the proper valuation of the pollution externality
- *Philosophy* and energy justice, emotions and the non-neutrality of expert advice
- *Public Theology* and the need for resource stewardship and sustainable living
- *History* and the importance of 'the long view' of energy transitions
- *Law* and the importance of legal form

Concluding thoughts on good policy

- *Examples of good policy in UK:*
  - Successive raising of pension age
  - Improvement in primary school performance
  - Drink driving campaign and Smoking bans
  - Inheritance taxes in C19th
  - Etc…
- *Common characteristics of good policy:*
  - Good use of quantitative evidence
  - High engagement and positive public support
  - Fairness and distributional issues addressed
  - Takes time…
  - Etc…

Key readings

- Allwood, J.M. and Cullen, J.M. (2011), *Sustainable Materials: With Both Eyes Open*, UIT.
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