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Global warming: Energy Security or Energy Sovereignty

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The Politics of Renewables

Dr Iain MacGill

Research Coordinator, CEEM

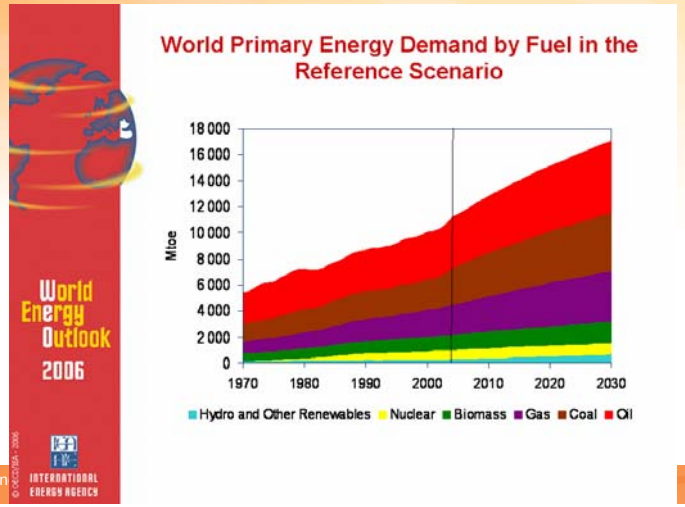
Outline

Three key factors in the politics of renewables

- Challenging Incumbency
- The sustainability of renewables
- The policy + hence political challenge

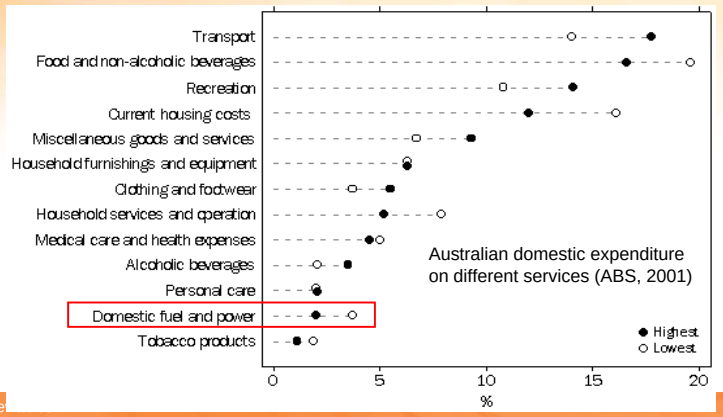
The current incumbents…

- **Fossil fuels dominate the global energy mix although renewables have key role in some, usually developing, countries**



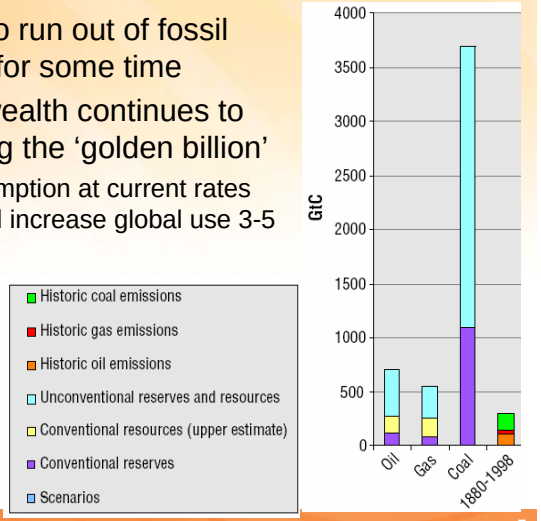
…dominate for a reason

- **For the 'golden billion(s)', never have so many had so much energy so cheaply**
  finding fossil fuels equivalent to winning the 'energy' lottery



Energy security concerns grow…

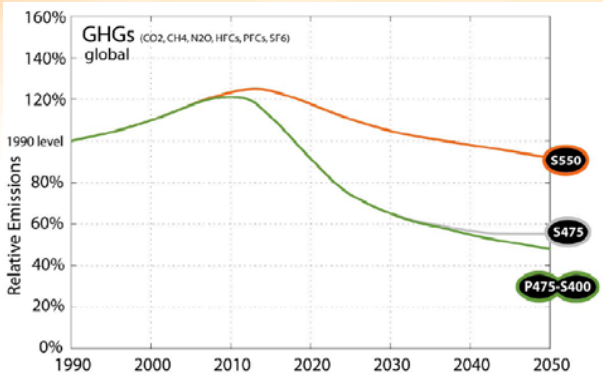
- …but we are unlikely to run out of fossil fuels in global context for some time
- at least while energy wealth continues to be concentrated among the 'golden billion'
  - universal energy consumption at current rates of the energy rich would increase global use 3-5 times
- and Australia is an "energy superpower"



…but climate change the real driver away from BAU

(Meinshausen, Avoiding Dangerous Climate Change, 2005)

- A reasonable chance of keeping warming less than 2 deg.C may require stabilisation at 400-475ppm
- … requiring major global reductions by 2050
- while any delays in taking action greatly increase necessary rate of reduction
  - 20 year delay means 3-7 x faster fall required



Our options include renewables

eg. A range of power generation options of varied status and promise for reducing greenhouse emissions

- Current coal-fired base-load and gas-fired peak-load
- Improved end-use energy efficiency
  - Wide range of end-use technologies + hence opportunities
- Lower emission and distributed fossil fuel technologies
  - eg. CCGT, CHP
- **Range of renewable technologies**
- Nuclear power
- Emerging lower emission fossil fuel techs through Carbon Capture and Storage (CCS)
- Other emerging technologies - eg. fuel cells

Q. How do we assess the potential role of our options?
A. With risk-based, sustainability focussed, assessment

- *Technical status*
  - unproven => mature, emerging => widespread
- *Delivered energy services and benefits*
  - **GHG emission reductions**, flexibility, integration
- *Present costs* where known + possible future costs
  - Often wide disagreement on costs of established technologies, let alone emerging technologies
- *Potential scale of deployment*
  - possible physical, technical + cost constraints
- *Potential speed of deployment*
  - time and effort required to achieve scale
- *Other possible societal outcomes*
  - eg. other environmental impacts, energy security

Assessing renewables

A wide range of technologies of varied status and promise

- *Technical status*
  - Well proven (eg. SHW, wind, PV) to emerging (eg. Hot Rock)
- *Delivered energy services and benefits*
  - Low emission although life-cycle q's, integration challenges for some
- *Present costs* where known + possible future costs
  - Wide variation, higher direct costs than fossil fuels, potential for major cost reductions with some techs
    A range of externalities – good and bad
- *Potential scale of deployment*
  - large but various technical + economic constraints
- *Potential speed of deployment*
  - Relatively fast for proven techs but new industries take time to build
- *Other possible societal outcomes*
  - energy security potential, regional development, low env. impacts

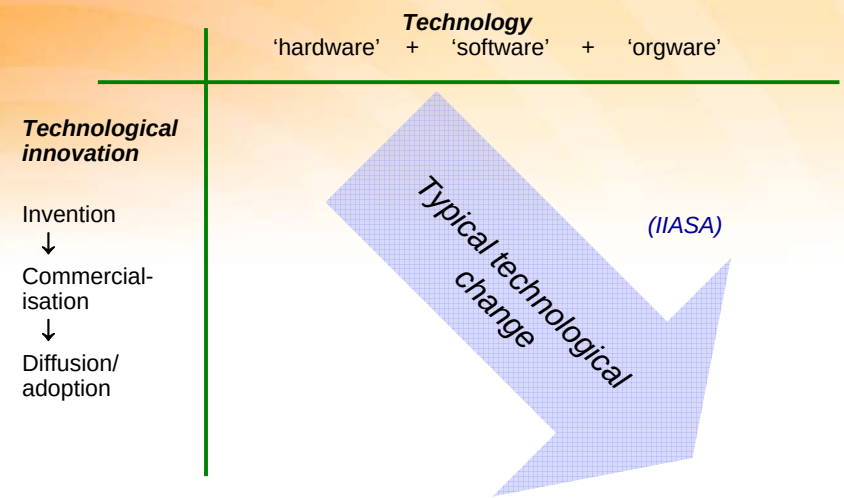
Renewables have to be made sustainable

- Australia's Federal Treasury view
  "Even though renewable energy is renewable, it does not necessarily mean it is environmentally benign. Like fossil fuels, renewable energy can also impose external costs on the community… the large-scale use of wind turbines may adversely affect landscapes, migrating bird species, and pristine wilderness areas. Additionally, it may result in noise and aesthetic pollution…"
  Treasury (2002) "Renewable energy – a clean alternative?" *Economic Roundup,* 2002

⇒ renewable technologies aren't inherently sustainable but *appropriate* renewable energy systems can be
  ⇒ Key decisions are in the planning phase

Of course, our other options, and the energy markets that drive decision-making have to be made sustainable too!

… and technology innovation involves uncertainties and hence risks – *Key Government roles*



Deployment and institutional 'orgware' are the keys for socio-technical transformation

- Energy industry incumbents
  - Have economies of scale
  - Generally dominate institutions + strongly influence policy process
- Energy markets
  - Are 'designer' markets: governments make + can change rules
  - Currently don't price many of the enormous externalities – good and bad – of our energy sytems
  - Are only ever a part of energy policy framework

=> Policy priorities

- Drive deployment of sustainable energy technologies through appropriate regulatory + market-based mechanisms
- Strengthen institutional capacity to facilitate these technologies, and those new entrants deploying them

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The policy challenge for Australia

- Possible sustainable energy futures all need greater renewables *but* not a matter for speculation but action
- Government policy roles in invention, commercialisation and, by far most importantly, **diffusion**
  - Risks in trying to pick winners but need to establish priorities
  - Start now with primary focus on greater diffusion of existing options
- Current Australian policy framework appears unbalanced
  - Major focus on R&D and demonstration of emerging technologies, particularly CCS
  - However, ".. there is no certainty when and to what extent the necessary technologies will be developed." (IEA, 2005)
  - *More support required for existing and possible future options by carbon price, regulation and targeted 'niche' markets for renewables*

  BUT we need careful rigorous policy design processes for these

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