

Carbon neutral electricity – some policy issues for NZ

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“China and India are transforming our energy markets. We have a window of opportunity of 5 to 10 years before [the current track] becomes unsustainable and irreversible.”

- IEA chief economist Fatih Birol (Nov 07)

Plan

- Policy needs goals: what should we pitch at?
- Key features of the policy environment influencing carbon neutral electricity in NZ
- Some missing elements

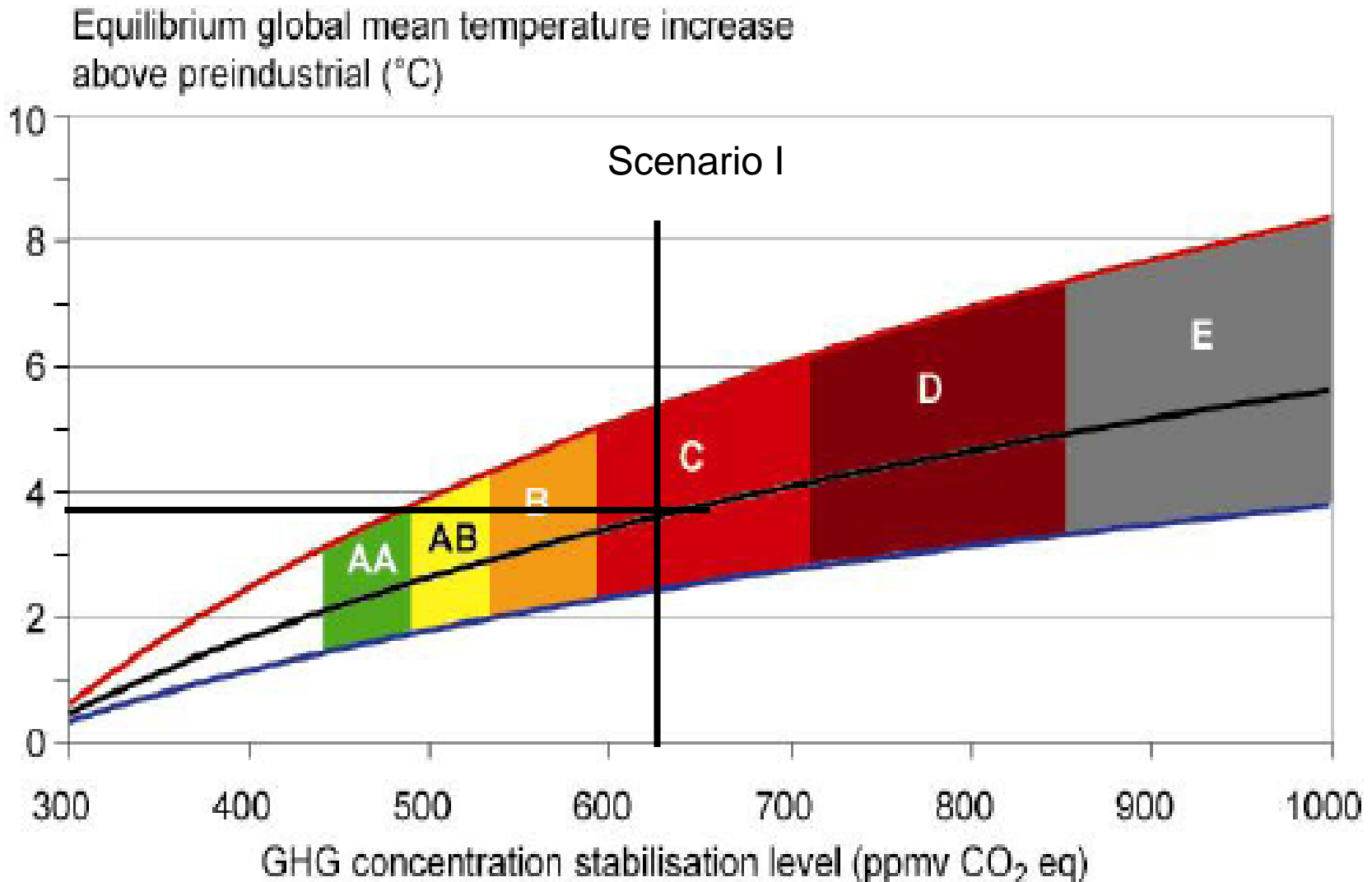
Suggested high level goals & their implications

- Goal of cutting overall GHG emissions by 90% by 2050
 - Link to post-Kyoto likely targets e.g. 25-40% cuts by 2020
 - Firm signal to global community that NZ is acting
 - Implications for all sectors – energy, transport, cities, agriculture,...
- Reduce energy import risk and insecurity (availability, price)...

Suggested high level goals & their implications (cont'd)

- Align energy goals with social, environmental and economic goals ('Sustainability'), e.g.
 - Air quality goal (NES standard and beyond)
 - Urban development goals; healthy housing goals
- Ensure electricity policy framework fully aligned with goals above
- Hence carbon neutral electricity by 2030

Goal 1: Let us cut GHG emissions to *avoid* this sort of temperature increase ... over 3°C, perhaps 4°C



If we cut by only around 50% by 2050... we get...

- A physical “commitment” to large global temperature increase:
~3.5 - 4°C
- Greenland ice sheet and WAIS pass tipping points and we become committed to a more than 12 metre rise in sea levels (slow, but inexorable)



Civilisation says goodbye to many low-lying world cities, or parts of them



Photograph: Martin Argles



Photograph: AP

Impacts on sinks & species

- Net carbon uptake by terrestrial ecosystems peaks by 2050 falls to zero, and forest fires **amplify** climate change
- Approximately 30% of plant and animal species assessed so far move steadily **closer to extinction**



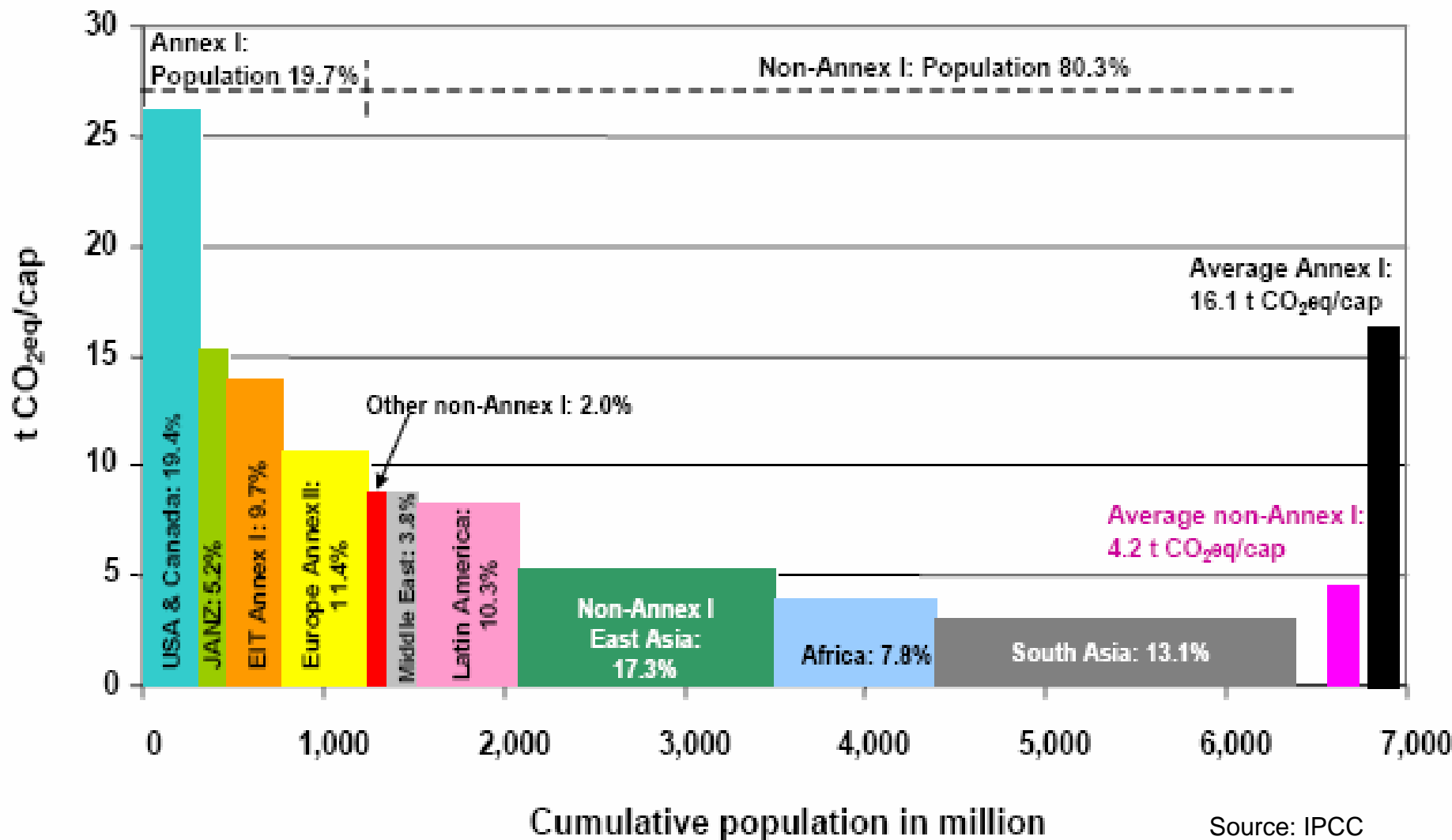
Tony Karumba/AFP



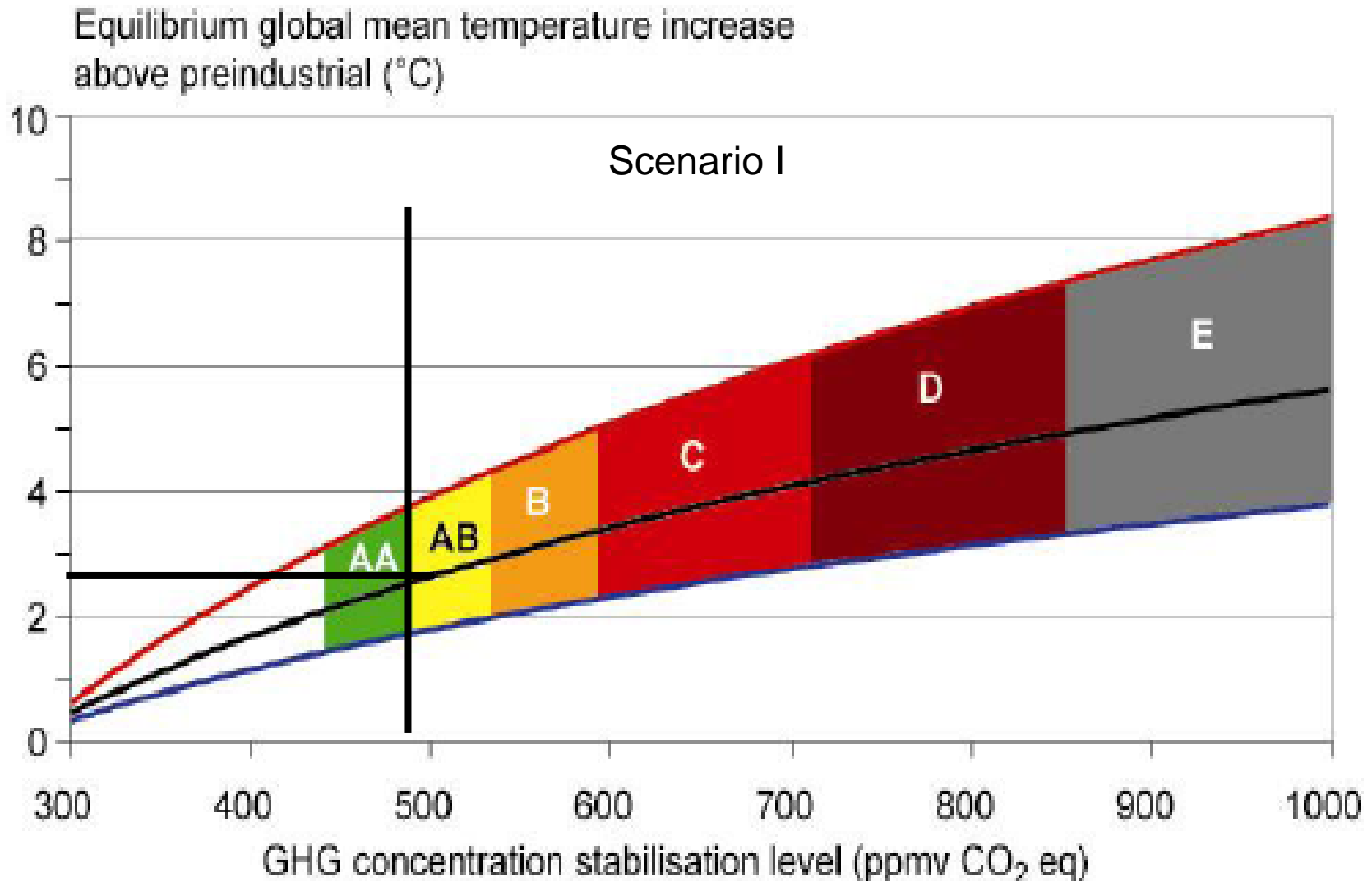
Or we adopt Goal 1 – a 90% cut by 2050... a more positive story

- ‘Peak oil’ helps push a transformation in the energy sector
- We and other countries pull out all stops to cut CO₂ emissions: 90% cuts in NZ emissions by 2050, and ~same elsewhere in developed world
- Carbon capture & storage (CCS) is used successfully (from late 2020s?) to minimise impacts of coal use

Ethics in action: emissions are cut to <2 tonnes per capita across the board



Temp. increases if we succeed with Goal 1... $<3^{\circ}\text{C}$ we hope (note risks)



Cutting GHGs around 90%...

- Cost of emission cuts turns out to be in line with current models, i.e. around **3% of GDP** in 2030
- High co-benefits in range of areas provide offsetting savings
 - E.g. About 30% of projected GHG emissions in the building sector are avoided with net economic **benefit**

A 90% cuts scenario... example implications



Source: Origin

- Big push to insulate housing and buildings
- Zero net energy new buildings become economic, as price of solar PV and SWH fall
- Innovation in heating systems improves efficiency, sustainability, occupant comfort and health



The current NZ policy framework: does it get us close to carbon neutral electricity?

The current policy framework



- Price signals: the ETS [and post -2012 commitments]
- Regulation: the RMA [and changes to it]
- Subsidies / R&D / tech support
- Information and education

The current policy framework: price



- The ETS is a central part of the policy framework for the transition to carbon neutral electricity
- Unlikely to push us far towards carbon electricity in near term, since Kyoto price likely low
- Kyoto regime only applies until 2012
- Post-2012 global regime ('son of Kyoto') is not yet negotiated
- Likely to involve 25 - 40% cuts (in NZ overall emissions) by 2020 for countries like NZ

The current policy framework: regulation



- RMA is the main regulatory framework affecting renewables investment (in absence of regulation such as MRET / portfolio standards), through effect on:
 - Consents (e.g. for wind)
 - use of solar energy for heating in buildings
 - grid upgrades
- The purpose of the RMA (section 5) is to promote the sustainable management of natural and physical resources. Councils, through controlling the effects of activities on land and controlling discharges, test proposed activities against this purpose.

The current policy framework: regulation...



- s6 (RMA) covers matters of national importance: s7 lists other matters that persons exercising their functions and powers under the RMA “shall have particular regard to”. Neither section explicitly *provided* for energy efficiency or renewable energy, although section 7(b) generically refers to efficient use of natural and physical resources
- Renewable energy *had* no explicit recognition in contrast to landscape and amenity values (explicitly mentioned in sections 6 and 7 respectively)

The current policy framework: regulation...



- s7 amended in 2004 to give appropriate weight to national benefits of renewables
- ‘Have particular regard to’:
 - Efficiency of end use of energy
 - Effects of climate change
 - Benefits of renewable energy
- 2005 amendments: e.g. extended call-in
- 2008 changes to Electricity Act to exclude new fossil fuel power stations for baseload
- [Biofuels Sales Obligation, requiring 3.4 per cent of the total fuel sold by oil companies to be biofuel by 2012.]

The current policy framework: tech support and information



- EECA / MED programmes – e.g. bioenergy, marine energy, wind mapping [not covered here]
- FRST: Low Carbon Energy Technologies (LCET) Fund - \$4m pa for 3 yrs
- DBH programmes for energy efficiency in buildings – e.g. Building Act [not covered here]

Other elements of the policy framework



Potentially effective policy measures include:

- More insulation for housing
- Improved building code
- Energy efficiency standards e.g. appliances
- Training programme for SWH installers
- Going carbon-neutral in the public sector (includes incentive to buy C-N electricity)

Future / missing elements of the policy framework



- An NPS on renewable energy [end 08?]
 - Response to patchiness of district and regional plans on energy and esp. renewables
 - LA plans would have to be ‘not inconsistent with’ an NPS
 - Could reinforce RMA changes to date – e.g. give direction on s7
 - But will it be effective rapidly enough?
- Speed the Environment Court up further?
- Does council practice need to be further addressed?
- Would an MRET be more cost-effective and quicker? Or would it conflict with an ETS price?

Future / missing elements of the policy framework, contd



- Further simple regulatory provisions such as standards e.g. for wood pellets
- Further informational initiatives, e.g. information on suppliers of wind turbines; suppliers of sustainable heating systems, etc.

How do we allow for the **risk** of the climate 'science' being 'worse than expected' **and/or** energy security



'worsening'?

- Plan on more action, sooner: beat rising cost curve / reducing ability to pay
- Take individual and community action
- Strengthen regulatory framework for distributed energy, incl. DG electricity
- Seize opportunities and innovate
- Personal carbon allowances?

