

Can it be Solved by International Agreements and Government Regulation?



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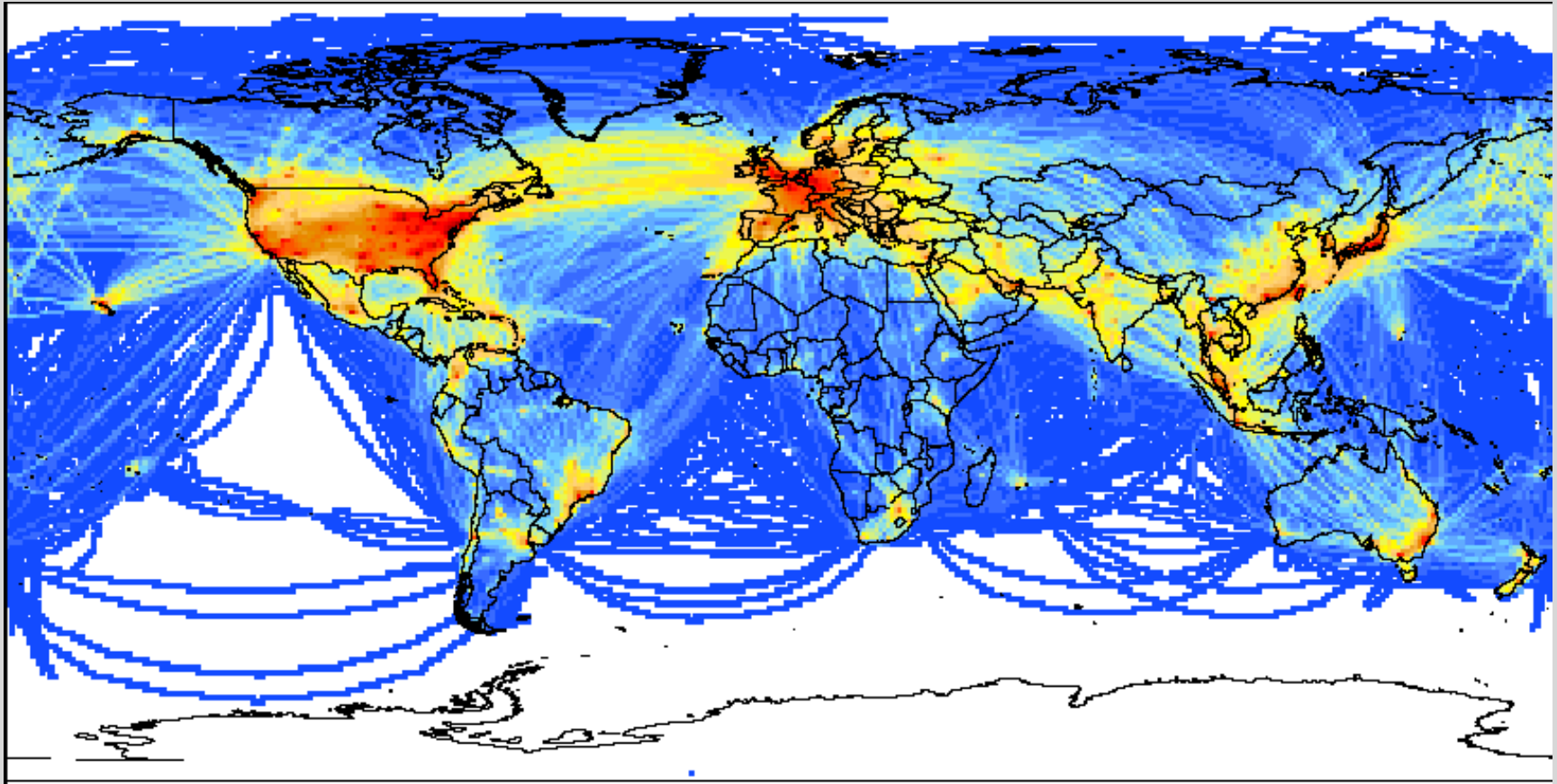
Aviation has its Acronyms

- ICAO
- IFR/VFR
- ILS
- VOR/DME
- ADF/NDB
- TACAN
- GPS/WAAS
- PPL/CPL/ATPL/MPL
- nm/km
- ASA
- MoU
- MALIAT/PIASA
- APEC
- AKL/WLG/CHC
- SQ/EK/SQ
- IATA/ACI/CANSO
- CAA/CASA
- RNZAF/RAAF
- MoT
- ATC
- CNS/ATM
- AFTN
- ADS-B
- SSR – Mode B

BA at HKG



SAGE



Aviation needs more Acronyms – Yeah Right!

- UNFCCC
- IPCC
- SBSTA
- LULUCF
- CAEP
- MFAT/MfE
- AWG
- IEA
- EU/EC
- NGGIP
- QELRC
- MEPC
- COP14/COP15
- IMO
- GHG
- ETS
- JI
- CDM
- AAU
- CER
- OMEGA
- AERO/PRIMES/TREMOVE

Introduction

- **Policy Analysis and Process**
 - problem
 - options – tools or levers
- **What is happening?**
 - **New Zealand – Emissions Trading Scheme (ETS)**
 - **Globally**
 - UNFCCC – international “bunker” fuels
 - ICAO
 - **European Union – ETS**
- **The future?**

Policy Analysis

- What is the problem?
- Levers for government intervention
 - Raise awareness/educate
 - Provide
 - Regulate and enforce
 - Charge/economic instruments
- Best options?

Policy Process

- Inter-departmental effort
- Transparency – web sites
- Input from Stakeholders – organisations setup to focus on the issue
- International
 - Fora – ICAO/UNFCCC
 - Agreements/Treaties
- Decisions made by Ministers and Parliament

The Problem

- Science
 - CO₂
 - Quantification
 - Radiative forcing?
 - Sceptics (<http://climatedebatedaily.com/>)
- Economics
 - Forecast global growth +5%pa (Airbus/Boeing)
 - LCCs
 - China/SE Asia/India/Middle East
 - Oil price
- Technology
 - Forecast progress -1.5%pa (IPCC)

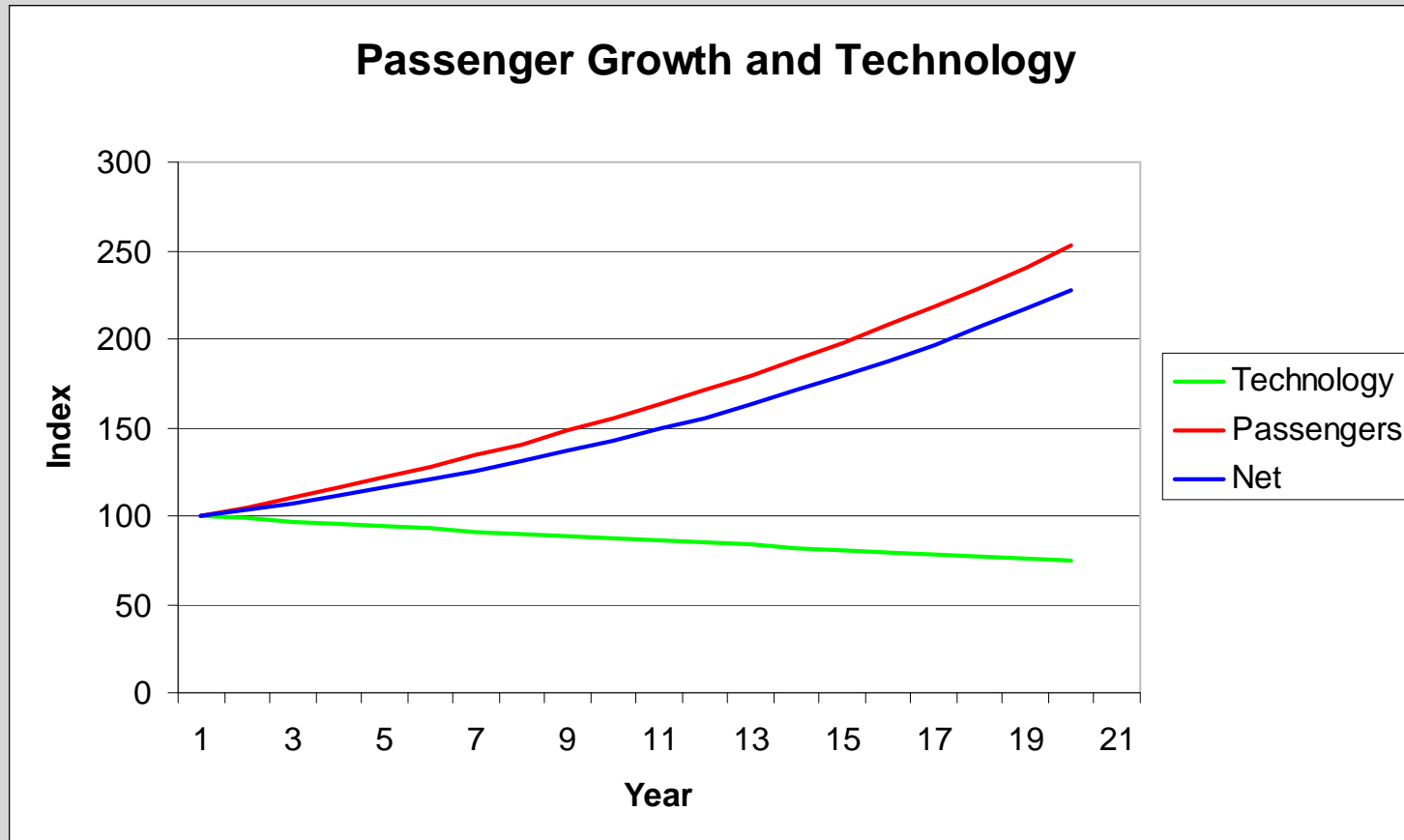
The Problem (cont.)

- Allocation
 - International? – maritime and aviation “bunker” fuel
- New Zealand
 - Emissions profile – cows and cars cf coal-fired power stations
 - Target from NZ Energy Strategy – halve per capita transport sector emissions by 2040
 - Geographic isolation – “travel miles”
 - Dependence on aviation
 - Tourism/trade – inbound and outbound
 - 100% Pure New Zealand
 - NZ Tourism Strategy refocusing on value rather than numbers

IATA's "Four Pillars"

- **Technology**
 - Airframe, engine
 - Cleaner bio-fuels, new energy sources
- **Infrastructure**
 - Improve air routes, air traffic managements (ATM) & airport procedures
- **Aircraft operations**
 - Drive for maximum efficiency & minimum weight
- **Economic instruments**
 - Incentives to finance technology R & D
 - Carbon offsets & trading

New Technology alone will not Solve the Problem



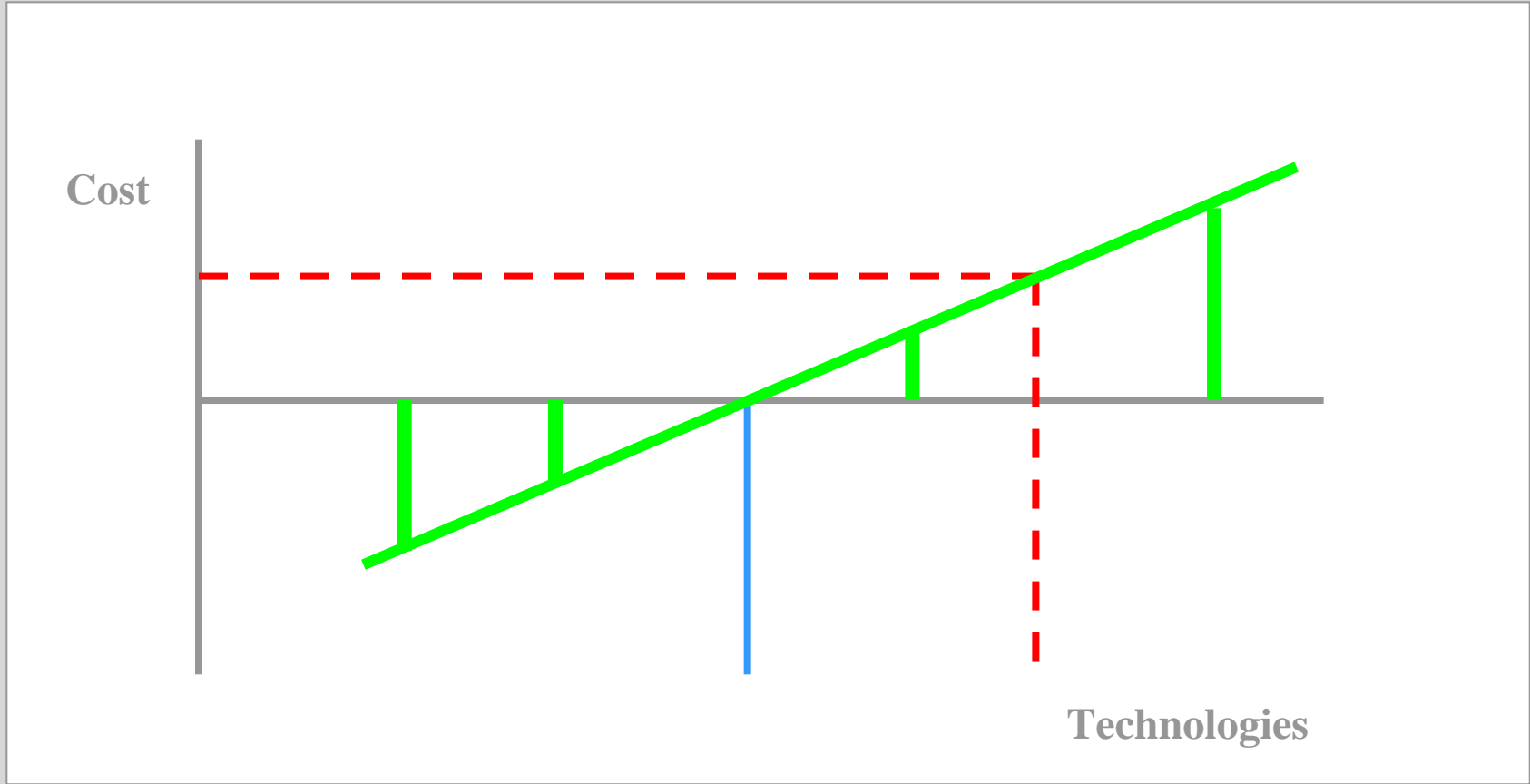
Economic Instruments

- Rationing??
 - Wartime measure
- Voluntary offsetting
 - Travel calculators – results vary
- Carbon Tax?
- Emissions Trading Scheme?

Carbon Tax?

- Suppresses demand by making emitting GHGs relatively more expensive
- Provides a degree of certainty
- Encourages adoption of new technology
- Use of the revenue?
- Aviation-specific issues
 - Chicago Convention 1944
 - Air Services Agreements
 - Cabotage?
- Considered and rejected for New Zealand in 2005

Marginal Abatement Cost Curve for GHG Reduction



Emissions Trading Schemes (ETS) 1

- Issue capped amount of permits to emit green house gases (1t/year CO₂ equivalent)
- Allow trading of permits between industry sectors
- May be cheaper to reduce emissions in another sector ...
 - For example, instead of buying a more fuel-efficient aircraft help pay for a new wind farm
- ... or in another country

Emissions Trading Schemes 2

- Design Aspects
 - Timing?
 - Cap emissions? – or completely offset emissions?
 - Some free allocation to GHG emitters?
 - Point of obligation?
 - Allocation to new industry entrants?
 - Trade between industry sectors or sector specific?
 - Trade between countries?
- For an international ETS
 - Developing world? – Kyoto Protocol
 - Allocation to countries?

New Zealand Domestic ETS

- All gases – CO₂W!
- All sectors, including domestic aviation
- No free allocation
- Puts price of carbon into the economy (internalising an externality)
- Trade permits between countries (Kyoto units)
 - Quality issue
- Point of obligation
 - Oil companies for liquid fossil fuels from 2009
 - Option for major domestic airlines
- Bill being considered by Select Committee

Allocation of international bunker fuel emissions?

- Eight Options
 1. No allocation
 2. **Allocation of global bunker sales and associated emissions to parties in proportion to their national emissions**
 3. Allocation according to the country where the bunker fuel is sold
 4. Allocation according to the nationality of the transporting company, or to the country where an aircraft or ship is registered, or to the country of the operator
 5. **Allocation according to the country of departure or destination of an aircraft or vessel; alternatively, emissions related to the journey of an aircraft or vessel shared by the country of departure and the country of arrival**
 6. Allocation according to the country of departure or destination of passengers or cargo; alternatively, emissions related to the journey of passengers or cargo shared by the country of departure and the country of arrival
 7. **Allocation according to the country of origin of passengers or owner of cargo**
 8. **Allocation to a party of all emissions generated in its national space**
- Danish report

UN Framework Convention on Climate Change (UNFCCC)

- Signed in 1992
- Kyoto Protocol – adopted 1997 – entry into force 2005 (Russia)
 - Developed countries have targets 2008-2012
 - Work through ICAO re international bunker fuels (Art. 2.2)
- Bali 2007
 - Australia had just joined Kyoto
 - Commitment to start work on post-2012
- Discussing obligations for post 2012
- Involvement of developing countries?
- International bunker fuels allocation?

International Civil Aviation Organization (ICAO)

- Tries to work by consensus
- CAEP – technical level – also works on noise issues
- 2007 triennial Assembly
 - Further development of an open ETS endorsed
 - High-level group – has since met once
- EU frustration

European Union

- Include aviation in its ETS (but not yet other transport sectors)
 - European Commission proposal
 - Not only within but also to and from EU
- Co-decision process – European Parliament (EP) and European Council of Ministers
 - Details differ
 - EP – sector specific – greater auctioning
 - Ministers – *de minimis* – over 14 flights per week
- Unilateral – Legality? – USA

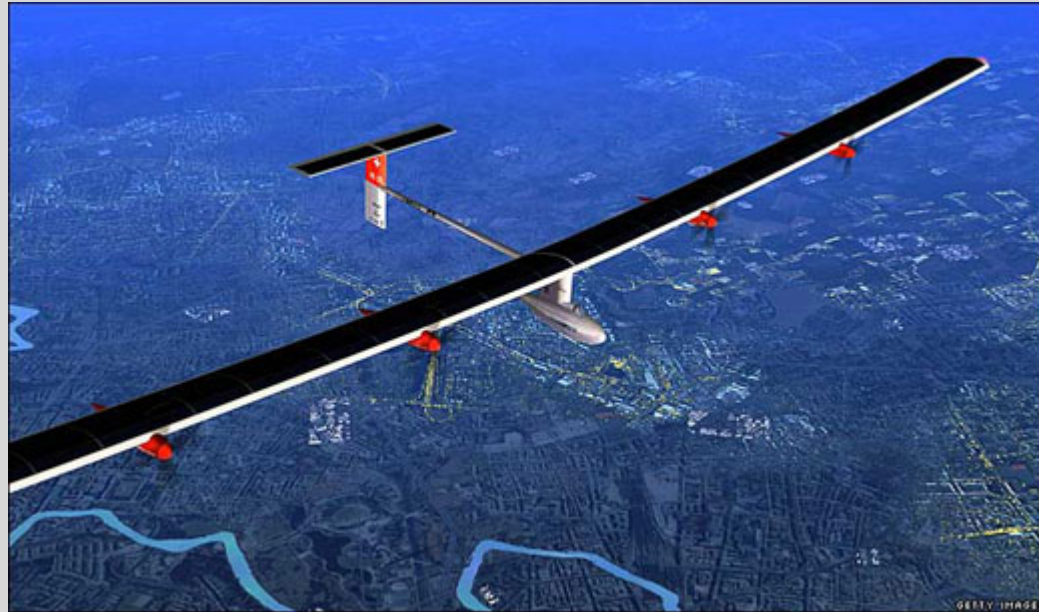
New Zealand's international position

- Support role of ICAO working on post-2012 framework
- ICAO may need assistance on political issues
- ETS coverage of international bunker fuels supported in principle
- Any ETS should be:
 - Non-discriminatory
 - Equitable
 - Fair
- Still need to develop thinking on allocation

The Future?

- This issue will continue to be the focus of considerable public attention and at international fora
 - An increasing proportion of GHG emissions will come from aviation
- It will be challenging for aviation but it is possible to be optimistic about the future
- Aviation will continue to see technological progress

Solar Impulse – Around the World in 2011?



LAPCAT – LHR to AKL in 4 hours on Liquid Hydrogen?

