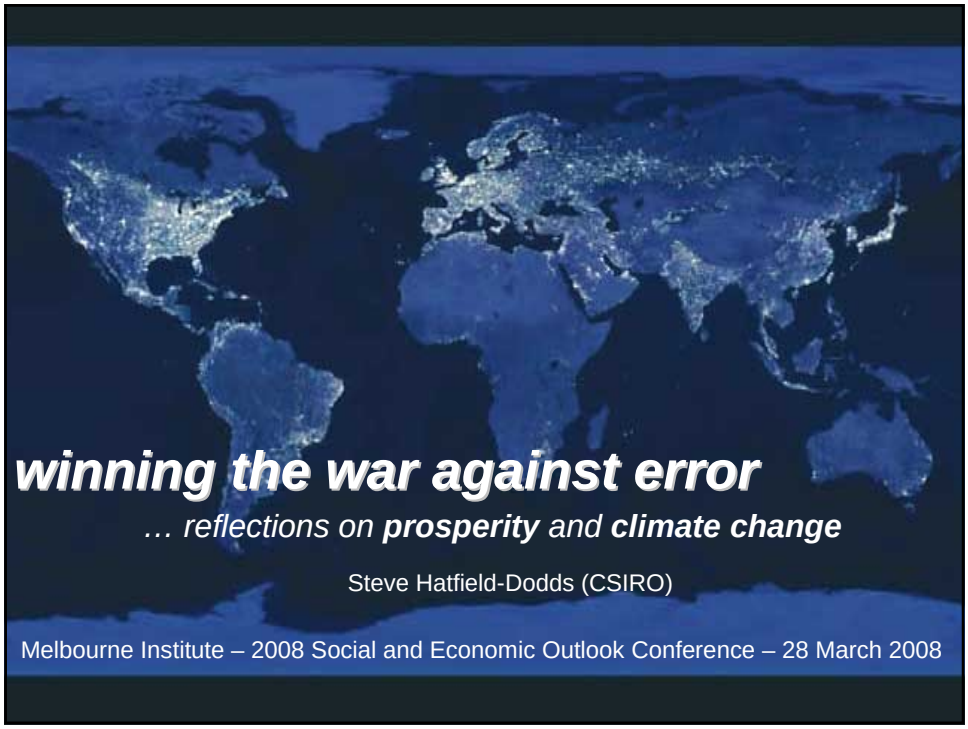

winning the war against error

*… reflections on **prosperity** and **climate change***

Steve Hatfield-Dodds (CSIRO)

Melbourne Institute – 2008 Social and Economic Outlook Conference – 28 March 2008

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Winning the war against error …

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1. **Can we manage the impacts of climate change, and climate policy?**
2. **Is worthwhile global action politically feasible?**
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climate impacts: *temperature increase*

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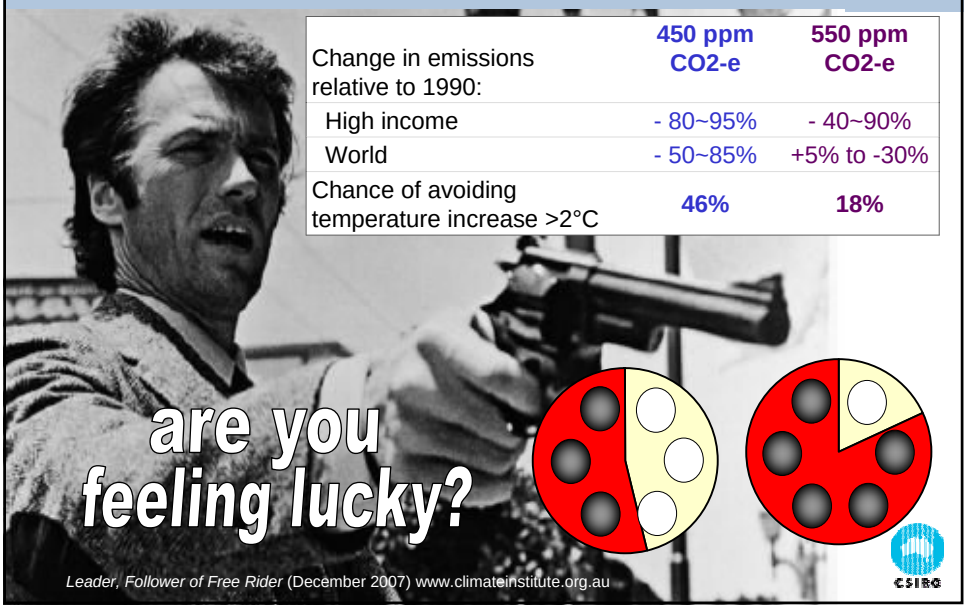
Change in emissions relative to 1990:	450 ppm CO2-e	550 ppm CO2-e
High income	- 80~95%	- 40~90%
World	- 50~85%	+5% to -30%
Chance of avoiding temperature increase >2°C	46%	18%



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climate impacts: *reasons for concern*

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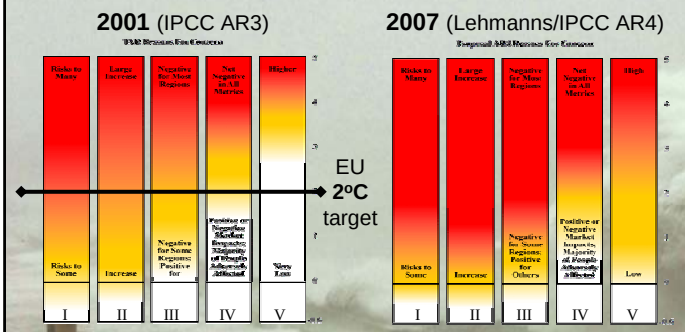

Recent science …

- thresholds for many impacts now appear lower than expected
- emerging feedback loops and possible 'surprises' …

I Risks to Unique and Threatened | II Risk of Extreme Weather Events | III Distribution of Impacts | IV Aggregate Impacts | V Risks of Large Scale Discontinuities

Rik Lehmanns, lead author IPCC AR4 WGII ecosystem impacts

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policy impacts: *emissions and energy use*

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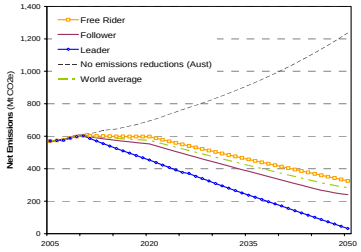
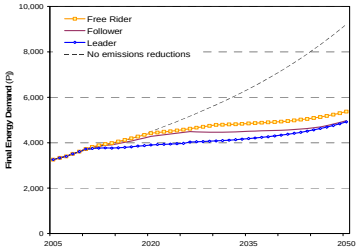
net greenhouse emissions



final energy demand



Deep cuts in emissions are feasible

- reduced by 40-100% from 2000 levels by 2050, rather than increasing more than 100%

Energy use is decoupled from greenhouse emissions

- Modest growth in total energy use (50-65% rather than >180%)

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policy impacts: *income and economic activity*

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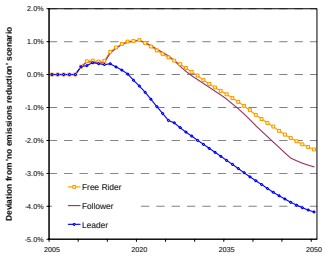
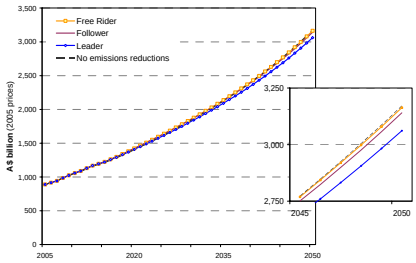
GDP impact relative to base case



GDP growth
with and without policy action



There is an opportunity cost

- Gap of 2-4% (follower) or 4-5% (leader) in GDP and GNP by 2050
- GDP growth is 2.8% pa rather than 2.9% pa (a 0.01~0.10% pa gap)

Real income grows strongly

- Real GDP trebles to over $3 trillion
- Income per person increases 2.5 times (148-158%) by 2050

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policy impacts: *price and affordability*

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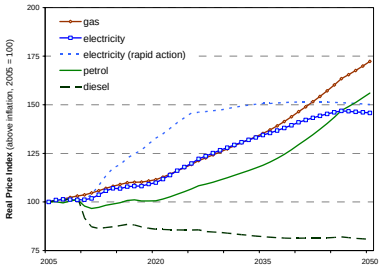
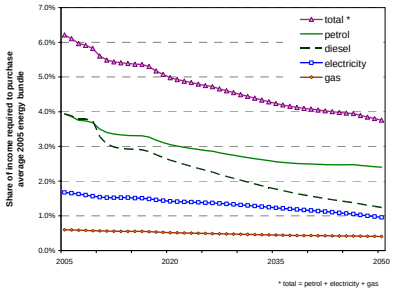
real energy prices



affordability of 2005 energy bundle



Energy prices rise

- Electricity up 50-100% above inflation
- Petrol up 20-60% (rather than -5%)
- Natural gas up 175%

Affordability improves

- Income required to purchase current bundle falls from over 6% to below 4%
- Would fall to around 2.5% without policy action

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is worthwhile global action ***politically feasible***?

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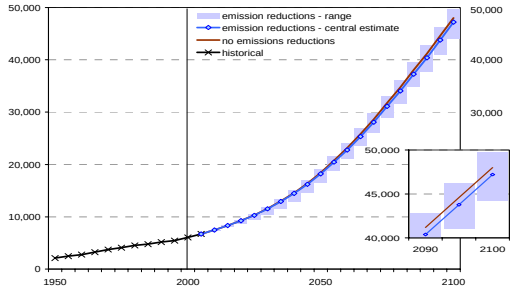
World Economic Growth
with GHG stabilisation at with 450ppm CO_2
World Gross Product (WGP), 1950 – 2100, A$2005



Hybrid SUV's and sports cars

Impacts of rapid action manageable

- WGP trebles by 2050, impact <1% below base in 11 of 13 global models, disregarding avoided climate impacts
  - may boost economic growth
  - <1.5% for high income nations if they accept full burden
- provides net benefits to world, key nations, and key groups
  - does not threaten lifestyles
  - assists risk management
- high income nations could bear full burden to 2030 or 2050
  - accelerate agreement and action
  - structure international arrangements as purchasing cost effective abatement

Grubb, Carraro and Schellnhuber (2006), Edenhofer et al (2006), Hatfield-Dodds (2007)

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is worthwhile global action ***politically feasible***?

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climate change is a security issue
for developing nations (not an amenity issue)

- **food**: declining snowpack and summer irrigation water, declining coastal and freshwater fisheries, more frequent and severe droughts, crop damage
- **settlements and infrastructure**: floods, storms, coastal innundation, disruption of transport and energy
- **people movements and political unrest**
- **health**: disease, pests, disasters

strong incentive for low income nations to support rapid and effective global action

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can we avoid ***corporate welfare***?

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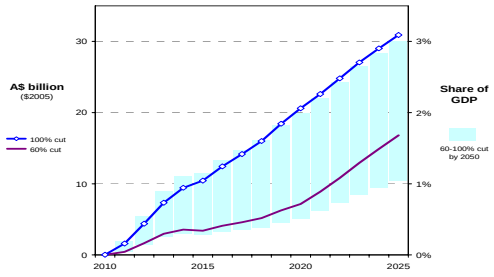
potential emissions permit revenue
(60-100% reductions in emissions by 2050)



ETS creates new wealth and revenue

- $7-20 billion in 2020, $17-31b in 2025; (0.5 ~ 3.0% of GDP)

Free allocation

- does not prevent price increases
  - EU ETS: 60% ~ >100% of value passed through (with €5-10b windfall gains)
  - US modelling: 75% ~ 100%
- reduces efficiency of ETS and wider economy

Policy priorities

- Income support and energy efficiency for households
- Employment and training for displaced workers and regions
- Tax reform and investment to enhance participation and productivity

Source - revenue: unpublished data from *Leader, Follower of Free Rider* (2007);
carbon price pass through: Grubb and Neuhoff 2006, Betz and Sato 2006

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can we avoid ***corporate welfare***?

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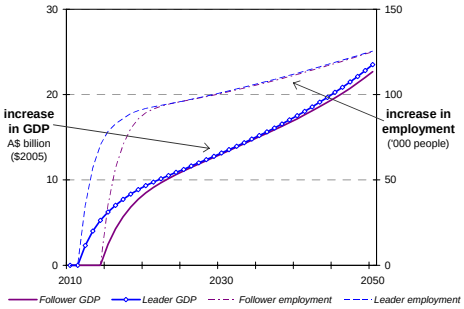
indicative tax reform 'double dividend'
(enhancing work incentives)



Permit allocation is not just about distribution!

… impacts on efficiency and equity

- household energy efficiency
  - assists emissions reductions
  - reduces social impacts
- tax reform
  - boosts GDP, consumption and employment by around 0.75%
    - = $8-10 billion GDP in 2020
    - = 90,000 extra jobs
  - reduces impacts of ETS by up to half in early stages (when international uncertainty greatest), long run impacts by 20%
- **important to avoid corporate welfare**

Source: Hatfield-Dodds 2007, and unpublished data from *Leader, Follower of Free Rider* (2007)

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constraint or **catalyst** to progress?

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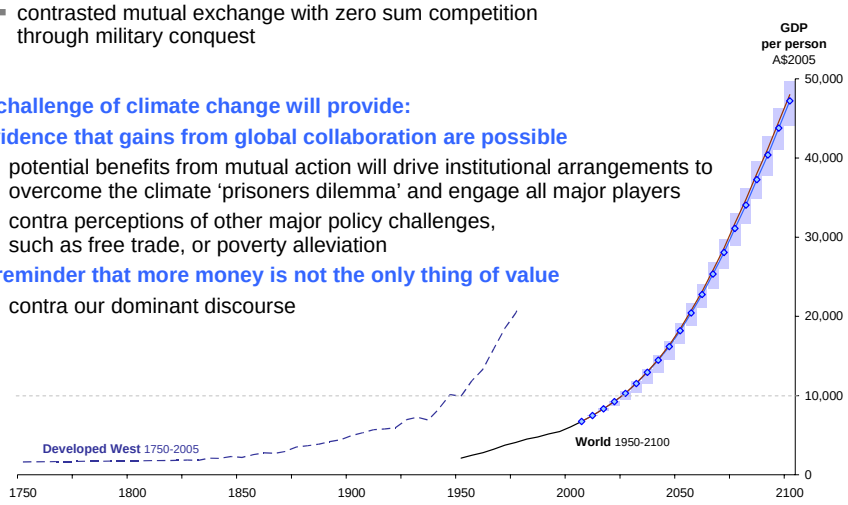
Adam Smith (1776): progress driven by innovation and collaboration

- contrasted mutual exchange with zero sum competition through military conquest

The challenge of climate change will provide:

- **evidence that gains from global collaboration are possible**
  - potential benefits from mutual action will drive institutional arrangements to overcome the climate 'prisoners dilemma' and engage all major players
  - contra perceptions of other major policy challenges, such as free trade, or poverty alleviation
- **a reminder that more money is not the only thing of value**
  - contra our dominant discourse



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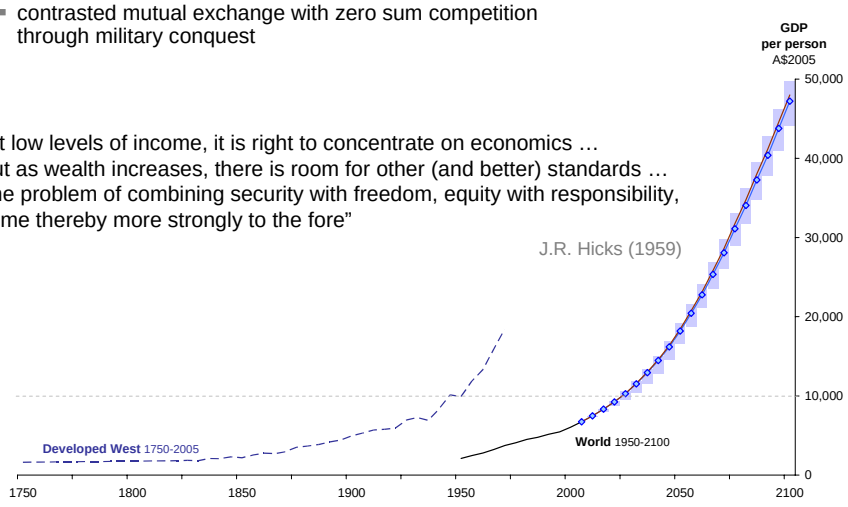
"At low levels of income, it is right to concentrate on economics …
But as wealth increases, there is room for other (and better) standards …
The problem of combining security with freedom, equity with responsibility, come thereby more strongly to the fore"

J.R. Hicks (1959)



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1

We can manage the impacts of climate policy, but may not cope with uncontrolled climate change

2

Worthwhile global action is politically feasible

3

We can avoid corporate welfare

4

Climate change may be a catalyst rather than a constraint on progress

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