



The Centre for European Policy Studies  
Thinking Ahead for Europe

# Discussant to “Getting from Here to There” by Ray Kopp

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**post 2012  
climate policy:**  
architectures and participation scenarios

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Resources for the Future

# 1) Complementary remarks

# 2) Framing the technology challenge



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# Complementary remarks

## **Agree with analysis of Ray Kopp but some nuances ...**

- **Formulation of nature of commitment is key**
- **Flexible mechanisms are useful ... if they work**
- **Domestic measures (“what can be done”) initially are more important than an inflexible global agreement (“what needs to be done”)**
- **Technology approaches are central (→see further comments)**
- **Institutional framework: UN or L-20? (L-20 as negotiation platform and UNFCCC institutions as co-ordination body for implementation)**
- **Adaptation (and adaptation technologies)**
- **Fair degree of continuity with KP (“nothing is more permanent than the provisional”)**

## Specific EU comments

- **Implicit assumption that EU places lower priority on economic growth?**
- **EU going it alone ...?**
- **EU married to targets and timetables (Kyoto plus)?**

## **EU going it alone ?**

**In 2050 EU's contribution to global greenhouse gas emissions is most likely to be less than 8% (current 14%)**

**Japan: 2%**

**US & Canada: 12%**

**Southeast and East Asia: 27%**

## **Illustration of possible combination of options to achieve 20% CO<sub>2</sub> reduction by 2025 in the EU (European Council, March 2005)**

**Coal.** A **third of coal-fired generation must use sequestration** to keep coal consumption constant. (Condition: zero emissions technology from coal-fired generation available ‘off-the-shelf’)

**Mobility.** **Vehicle efficiency improves by over 50%:** (Vehicle kms increase by 20%, but oil consumption falls by 30% for the on-road fleet + bio-fuels = 8% of the vehicle fuel mix).

**Natural gas consumption to increase by 50%,** mainly for power generation (to cover incremental increase).

**Electricity consumption to double.** To minimise end-user emissions,

- **10-fold increase in wind-power** (80,000 units of 5 MW turbines in place)
- **No decline in nuclear, but growth of 10%** (over whole period)
- **Distributed solar power provides 5%** of electricity needs

Assumption: 6% economic growth over whole period.

## **EU married to Kyoto plus ?**

- **Some Member States are**
  - **Kyoto Protocol has been major EU *diplomatic* success**
  - **But things can change ...**
- “We must accept the future may not be like the past and repeat a target and trading approach” (Henry Derwent at Third CEPS Annual Brussels Climate Change Conference quoted in the *EU Observer*, April 20, 2005).**

## **Why so pessimistic about (at least partial) global regime ?**

- **Nobody would disagree that there is no magic formula for a global regime but some possible roads for progress exist:**
  - **Regional or sub-global agreements (including emissions markets)**
  - **Sector-specific targets (e.g. for industries)**
  - **Issues-specific commitments (e.g. technology; adaptation)**
  - **And/or combinations**

## What about simplicity?

- **Pledge and review vs. institutional complexity (transaction costs; effectiveness)**
- **Too early to give up on simplicity**



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# Framing the technology challenge

# Growth, Development and Energy Demand (until 2030/2050)

## Depending on:

### Population increase

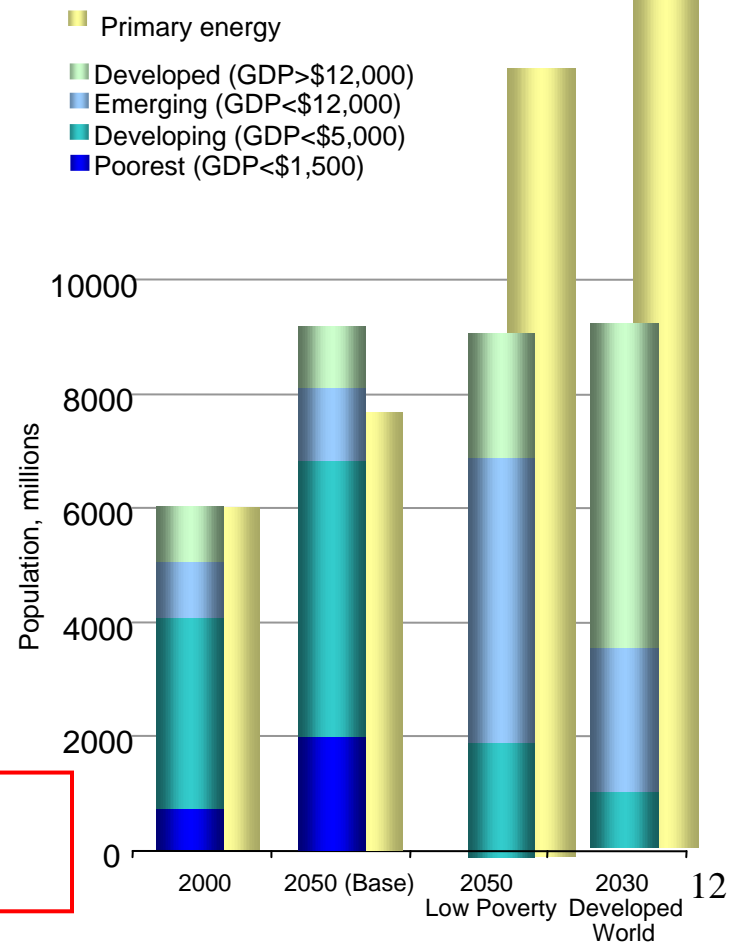
9 billion possible (mainly in less developed countries)

### Economic development:

Energy needs could double for “low poverty” profile

Energy needs could triple for “developed world” profile

**60% of all greenhouse gases relate to energy**



## The challenge (until 2050)

- **50% greenhouse gas emissions reductions**
- **Plus rapid economic growth (mainly in developing countries)**

**= Need for decoupling energy use and economic growth**

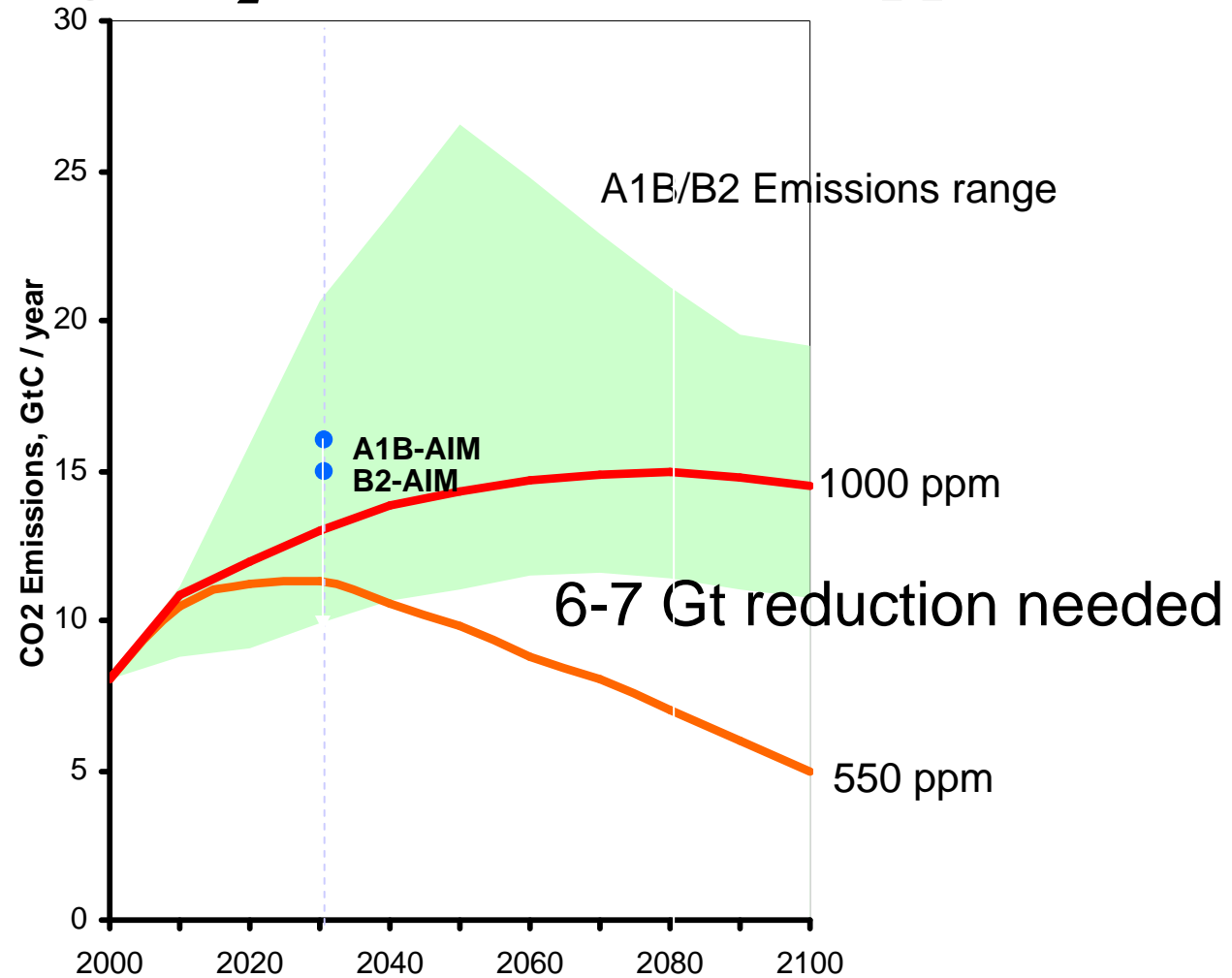
**Climate policy that is perceived as undermining economic development will fail.**

## Achieving CO<sub>2</sub> stabilization at 550 ppm

At concentration of 550ppm CO<sub>2</sub>, climate change is still likely to happen but possibly can be “managed”.

→ **adaptation measures needed!**

Current level of CO<sub>2</sub> concentrations: 370 ppm



**One billion tonnes carbon reduction per year requires ...**

<b>Technology</b>	<b>Required for 1 Gt carbon (=3.3 Gt CO<sub>2</sub>/yr)</b>
<b>Coal-fired power plant with CO<sub>2</sub> capture/ storage</b>	<b>700 x 1 GW plants</b>
<b>Nuclear power plants replace average plant</b>	<b>1500 x 1 GW (5 x current)</b>
<b>Wind power replaces average plant</b>	<b>150 x current</b>
<b>Solar PV displace average plant</b>	<b>5 x 10<sup>6</sup> ha (2000x current)</b>
<b>Hydrogen fuel</b>	<b>1 billion H<sub>2</sub> cars (CO<sub>2</sub>-free H<sub>2</sub>) displacing 1 billion conventional 30 mpg (7.84 litres per 100 kms) cars</b>
<b>Geological storage of CO<sub>2</sub></b>	<b>Inject 100 mb/d fluid at reservoir conditions</b>
<b>Biomass fuels from plantations</b>	<b>100 x 10<sup>6</sup> ha (half of US agricultural area)</b>

## Conclusions

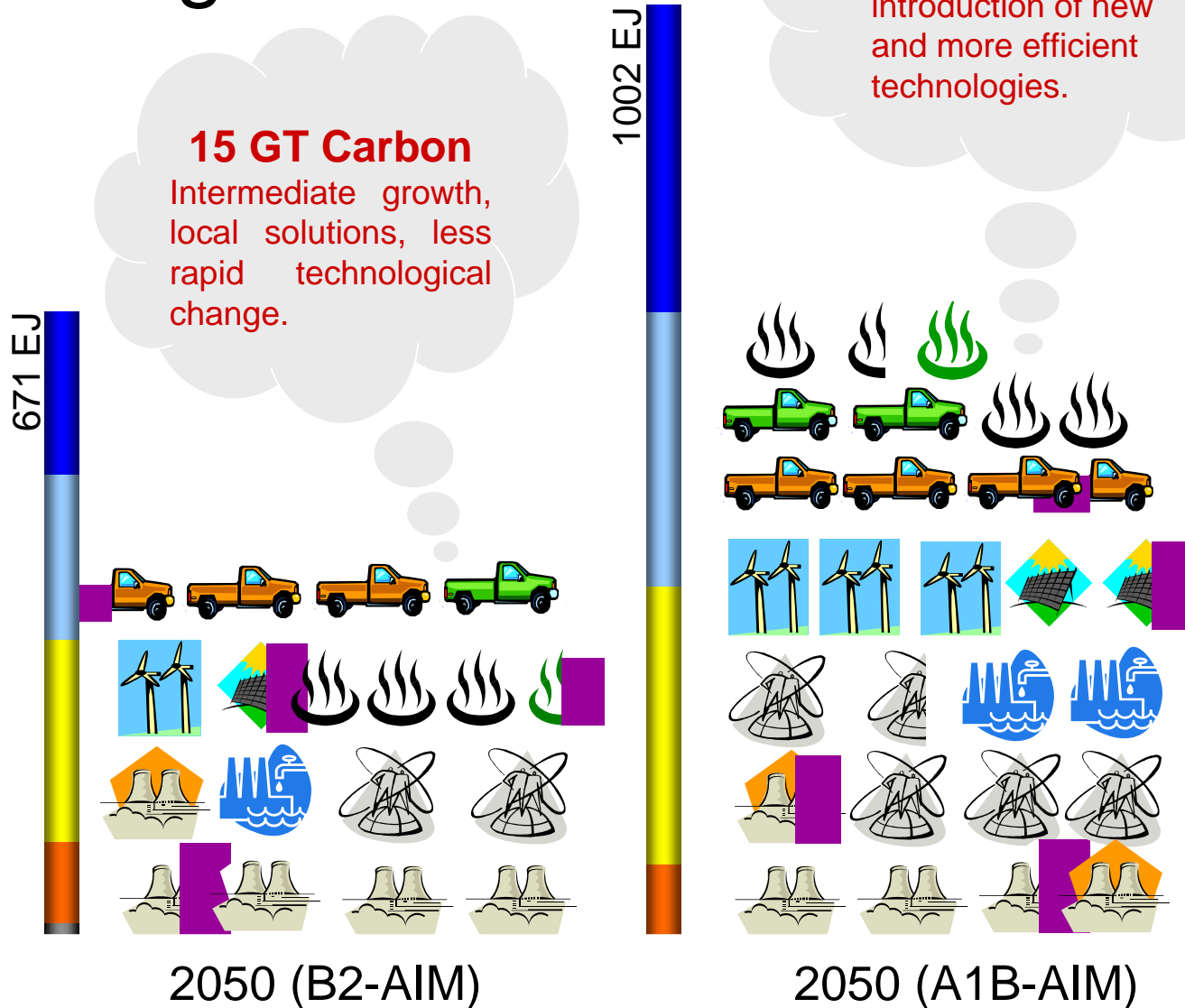
- Need to develop **new and technically unproven** (i.e. breakthrough) technologies for the long-term
- Accelerated **diffusion** of existing technology (beyond marginal improvement as part of investment cycle)

# Some good news

## IPCC Scenarios Final Energy

Non-commercial

- Solids
- Liquids
- Gas
- Electricity



Source: WBCSD

# The answer lies in the 16 trillion \$\* question

**How do we get new technologies (e.g. renewables, carbon capture & storage, fusion, hydrogen) deployed in **developing countries**?**

\* IEA (2004) figure on global investment needs until 2030 in energy sector.

## Elements of the 16 trillion \$ question

- **Market functioning: investment conditions & governance (financial markets, patent protection, etc.)**
- **Some impacts by policy support**
  - **Capacity building and financial support (“development policy”),**
  - **International Finance Institutions,**
  - **Export credit agencies ,**
  - **CDM,**
  - **etc.**

# Where is the development model for technological leapfrogging?



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