20th World Energy Congress, Enel Special Session
Architectures for Agreement: Climate change policy post 2012
Rome, November 15, 2007

Climate Policy in the Post-Kyoto World. Incentives, Institutions and Equity

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Consensus

- The cost-effectiveness of the Kyoto Protocol (or any similar non-global climate treaty) would be enhanced by attracting as many new countries as possible among the signatories, and by achieving these additions as soon as possible.
- In particular, the participation of the US and of the main developing countries in a co-operative effort to reduce GHG emissions is crucial to effectively control climate change.
- Any real progress in stabilizing emissions below 550 ppm can be achieved mostly through technological advances and drastic changes in the energy sector.

Basic ingredients for an effective climate strategy

1. Ambitious long term targets
2. Development of new energy technologies
3. Participation of developing countries

How and when?

What legal and institutional framework?

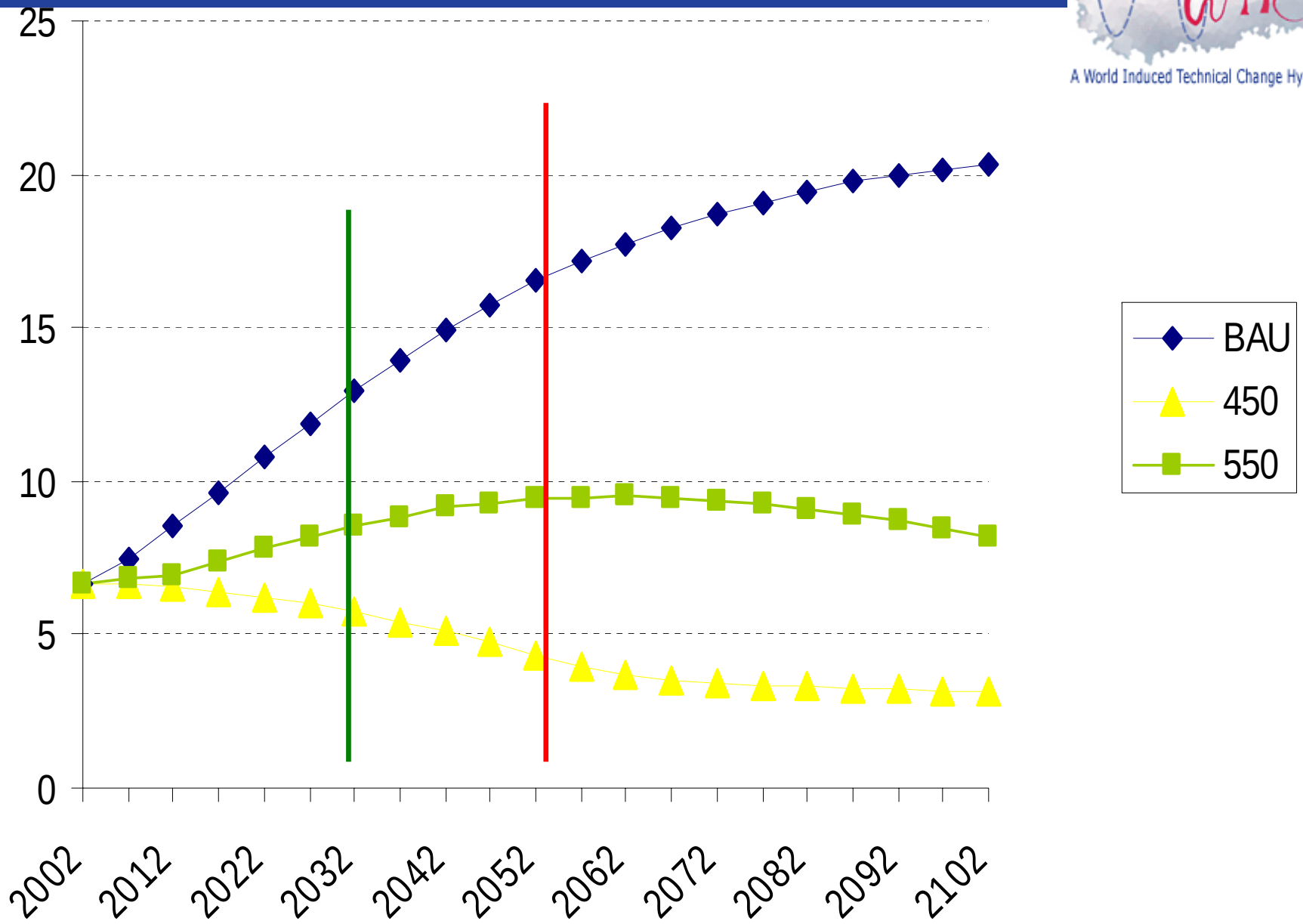
What policy instruments?

1. Long-term target

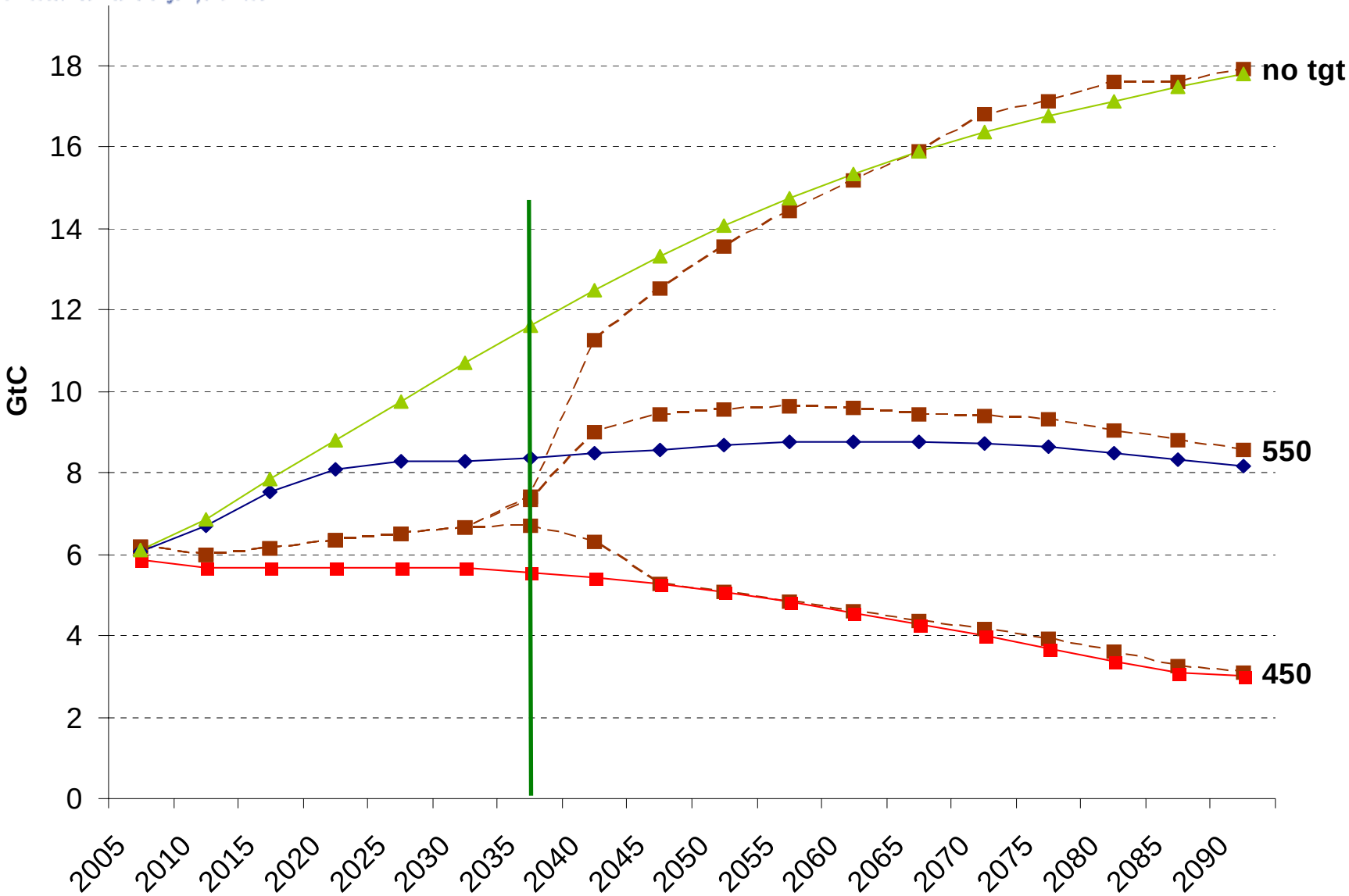
- European proposal:
  - max 2 degrees by end of the century
  - -20% by 2020 (possibly -30%) wrt 1990
  - -50% by 2050 (wrt 1990?)
  - Global carbon market (through linking and CDM)
  - Equal per capital allocation of allowances

- Likely to be consistent with stabilization at 450 ppm (CO_2 only, i.e. 550 ppm all GHGs included).

World Industrial Carbon Emissions (GtC)



Uncertainty on Future Targets



Ambitious Target

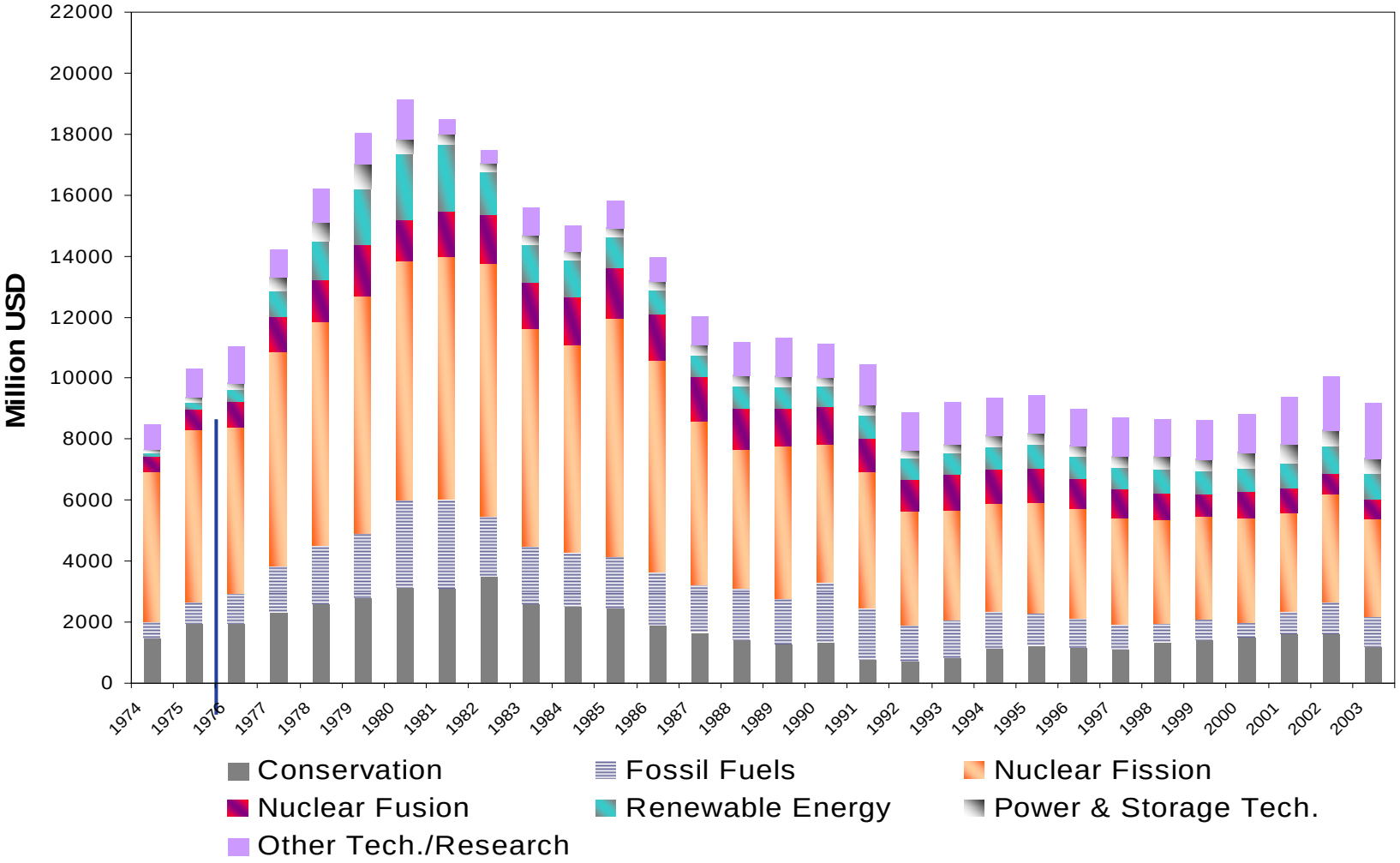
- Uncertainty about future target motivates precautionary emission path.
- 450 ppm CO2 target (550 all GHG) is hedging strategy.

2. Drastic changes in the energy sector

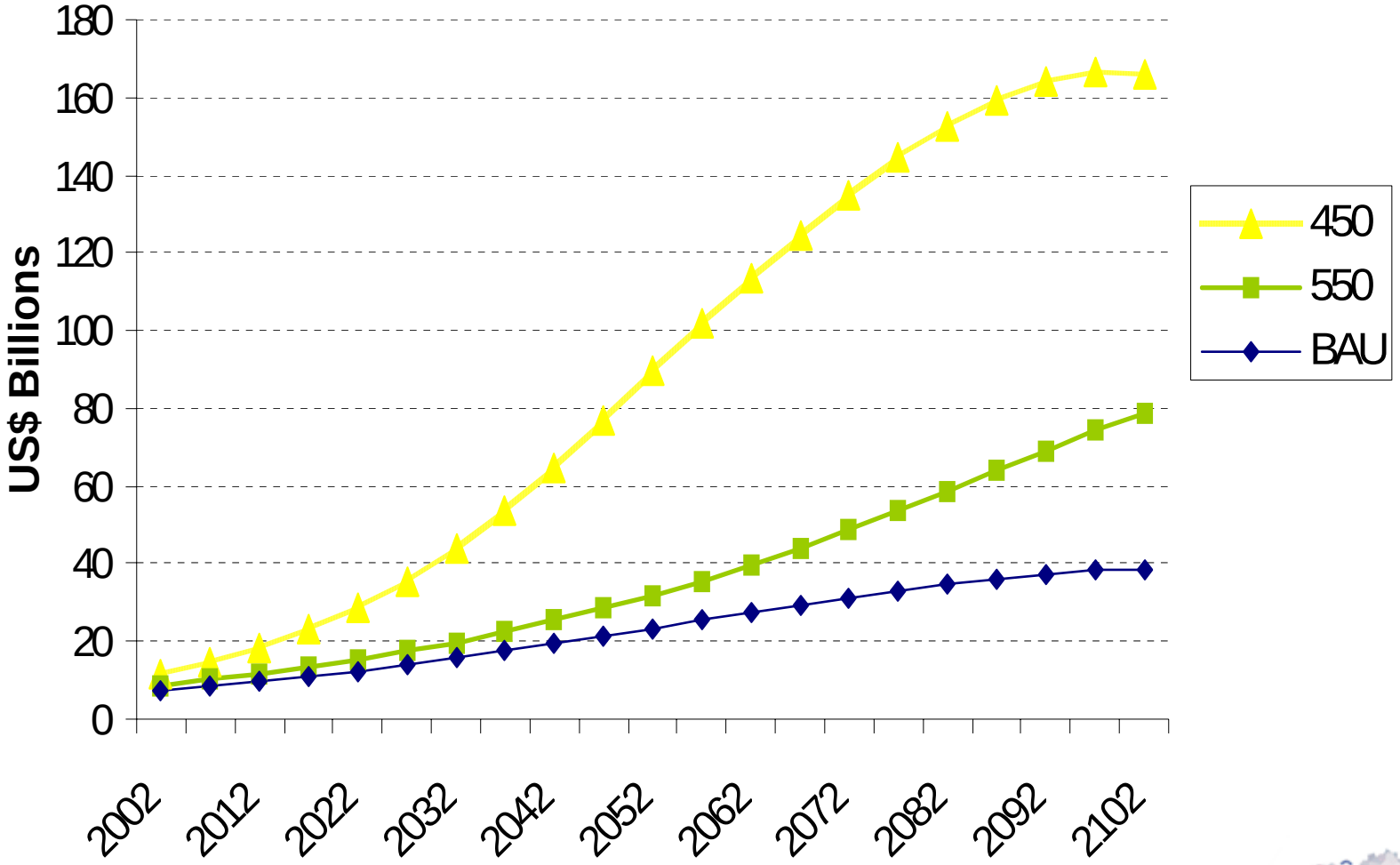
- Progressive phase out of fossil fuels by mid century
- Development of zero carbon energy technology
- Carbon capture and sequestration as bridge technology
- Large investments in energy R&D are necessary

See Bosetti, Carraro, Massetti and Tavoni, Optimal Energy Investment and R&D Strategies to Stabilise Greenhouse Gas Atmospheric Concentrations", FEEM Nota di Lavoro 95.07, CEPR Discussion Paper 6549 and CESifo Working Paper N. 2133

Historic Energy R&D

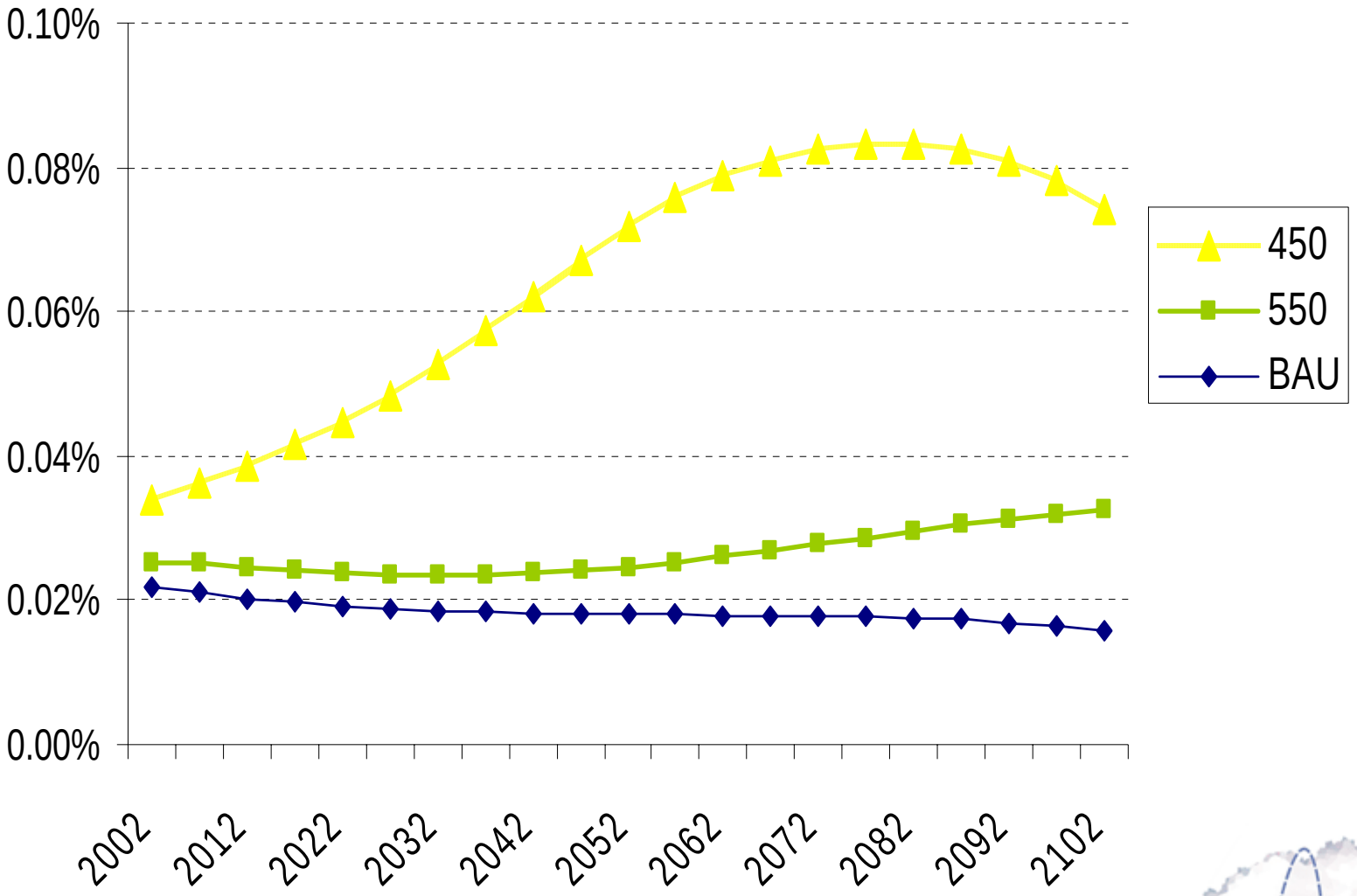


Energy R&D investments



A World Induced Technical Change Hybrid Model

Energy R&D investments/GDP

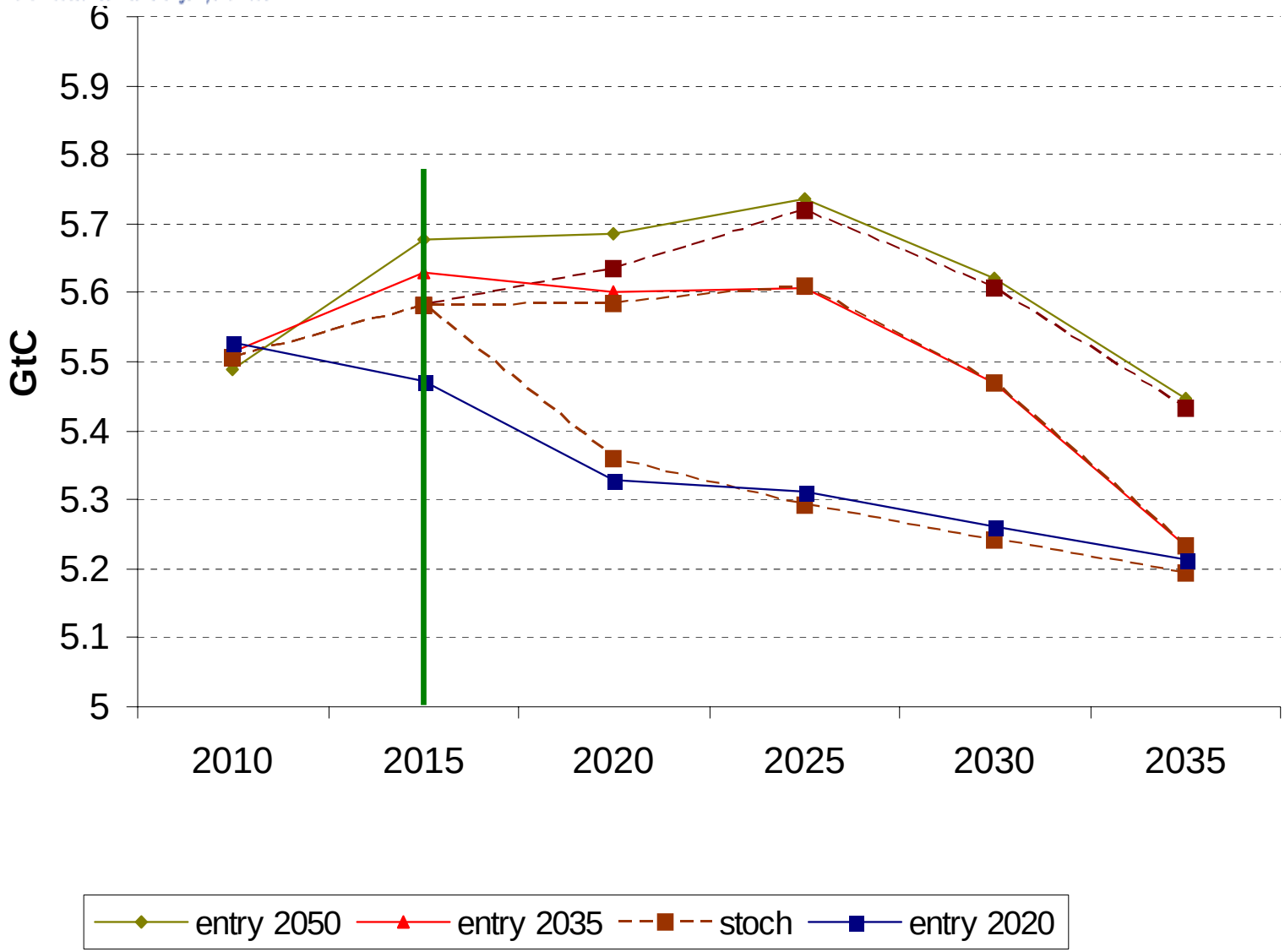


A World Induced Technical Change Hybrid Model

3. Enlarging Participation

- ❑ Participation of all major GHG emitters is crucial (min 20 countries?)
- ❑ What future agreement is likely to provide the right incentives for participation?
- ❑ When should developing countries adopt binding commitments to reduce their GHG emissions?
- ❑ What strategy in developed countries if major developing countries (China, India, Brasil, etc) delay their emission reduction strategies?

Uncertainty on time of LDC participation



Participation

- Non-Annex 1 outside the carbon market: more emissions, higher costs. Therefore it is optimal to keep them in the market even without early commitments.

- Uncertainty about timing of participation of Non-Annex 1 does not modify optimal strategy for Annex 1. Late participation of Non-Annex 1 is no excuse for delayed abatement in Annex 1 countries.

→ **Support to EU proposal**

Kyoto's weaknesses:

The Kyoto Protocol's architecture has been criticised on a variety of grounds, including:

- → it imposes high costs and unfair burdens on some industrialised countries;
- → it effectively forbids developing countries from taking on emissions commitments;
- → it provides ineffective incentives for participation;
- → it generates modest short-term climate benefits while failing to provide a long-term solution.

Building on Kyoto

Proposals based on the Kyoto framework address the above issues by introducing:

- → limits on costs or relative targets;
- → more ambitious reductions targets beyond 2012;
- → technology cooperation and transfers in particular with developing countries;
- → broader permit market with longer time horizon to provide incentives to innovation.

Departing from Kyoto

Proposals with a different policy architecture may:

- → replace targets and markets with taxes;
- → focus on issue linkage (trade tariffs, technology transfers);
- → give up with large conventions and global negotiations (G12 or G20)
- → insists on domestic or regional policies rather than on global ones.

Main message

The real issue is not Kyoto vs. non-Kyoto, or cap and trade vs. other policy instruments.

We need a **basket of instruments** anyway (including technological cooperation, adaptation funds, etc).

The real issue is whether the proposed policy framework contains **incentives** for broad participation and **institutions** that guarantee compliance.

Global agreement is unlikely

- “Real world” incentives and institutions cannot lead to a global permit market. Markets are going to be **fragmented.**

- “Economic theory” also concludes that incentives and institutions are unlikely to lead to global agreements on emission reduction targets. Climate agreements based on emission targets are going to be **partial** and **multiple** (fragmented).

- Fragmentation because of **diversity** of interests and institutions

Bottom-up approach:

- A bottom-up, country-driven approach to defining national commitments should be adopted.
- Instead of top-down, global negotiations on national emission targets, each country or group of countries would determine its contribution to a cooperative effort to curb GHGs and choose the partners with whom it intends to cooperate.
- In a process analogous to trade negotiations, each country would put its offer of commitments on the negotiating table and invite proposals from other countries for similar commitments.

Regional Trade Agreements

- Strong increase in the number of trade bloc agreements registered with the World Trade Organisation.
- Some 250 regional trade agreements (RTAs) have been notified to the GATT/WTO up to December 2002, of which 130 were notified after January 1995.
- About 200 RTAs are currently in force. An additional 70 to 100 are estimated to be operational although not yet notified.
- All but one WTO members are now parties to one or more RTAs. As of August 2006, all 146 WTO Members, with the exception of Mongolia, participate in or are actively negotiating regional trade agreements.

Variety and Variability

Basic ingredients of a bottom up policy architecture:

- The coordination of a variety of efforts. Countries would agree on things to do rather than on emission reduction targets.
- A variable geometry of participation. Some countries would agree on more efforts than others.
- A sufficient accountability system to ensure that commitments become connected to action.

Tools

How can this be achieved?

- Limit on the number of negotiating countries (e.g. the 20 top polluters)
- Issue linkage: trade (e.g. Stiglitz's proposal), energy security, migrations,…
- Transfers, e.g. through economic cooperation (e.g. Victor on energy infrastructure, use of ODA, …)
- Review and scrutiny

Focus on Institutions:

A bottom up approach is to be favored because:

- the underlying participation incentives inevitably leads to a fragmented climate policy regime
- the institutions which are capable to implement an effective climate policy do not yet exist at the international level, but sometimes exist at the domestic and regional level.

i.e. a club approach, in which cooperation takes place on specific dimensions where (a few) participating countries have institutions that guarantee compliance and effectiveness.

Environmental effectiveness

- In terms of incentives and institutions, a bottom-up approach is the only one with chances to succeed in curbing GHG emissions.
- A set of coordinated efforts with a variable participation geometry is likely to be the future of climate policy.
- However, there must be consensus on a global long term target.

Equity and burden sharing

- Burden sharing need to be defined.
- If countries agree on different sets of efforts, how can the costs of these efforts be assessed and compared?
- For example, is there a way to claim that the effort to develop new energy technologies (e.g. in the US) is larger or costs more than the effort to replace coal power plants (e.g. in Germany or China) or the effort to accept higher temperatures at home and at work in the summer (as recently suggested by the Japanese Minister of the Environment)? Is there a metric of efforts?

Adaptation

- Whatever we do to reduce GHG emissions and whatever the anthropic influence on climate change, adaptation will be needed.
- Can a bottom up approach also include adaptation to climate change?
- Given the policymakers' discount rate, the costs of adaptation (to be paid far in the future) is likely to be smaller than the costs of mitigation (to be paid in the coming years), unless some catastrophic impacts of climate change are expected. Does this mean that a coordination of efforts to adapt our economic systems and lifestyles to climate change will crowd out most efforts to reduce GHG emissions?

Summing up (1)

A bottom up framework to climate policy:

Number of negotiating countries:

As recently proposed by the Canadian Prime Minister, 20 is probably the right number, but a slightly smaller number (12?) would also be appropriate.

Issues on which these countries will negotiate:

Technological cooperation, climate relate trade rules, carbon taxation, carbon sinks, contribution to a global adaptation fund, forestry preservation, biofuels, development aid, energy infrastructures, are some examples.

Summing up (2)

Rules

For each issue a number of countries, not necessarily the same countries, not necessarily the same number, decide to cooperate.

Verification

A regular verification process of how different measures are implemented in each country or group of countries (and of their impacts and costs) is also agreed upon.

Given that all measures are implemented domestically or within a bilateral or regional cooperative setting (e.g. the European Union or Mercosur), the establishment of new global or supra-national institutions would not be necessary.

Summing up (3)

Update

Regular meetings can be organised to update the set of countries cooperating on each issue. Whenever the verification process identifies an insufficient effectiveness of the adopted measures or an unequal sharing of the burden of controlling climate change, new measures or a new distribution of existing measures have to be negotiated.

This framework implies that climate change is no longer an environmental problem to be dealt with specific environmental policy measures. It is a global economic problem to be dealt with global economic policy measures.

Thank you!

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