

***IPCC WG3 2007:  
achievements, revealed gaps and opportunities***

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***Introduction to the workshop on  
“Mitigation of Climate Change:  
filling the knowledge gaps revealed by AR4”  
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# Achievements of AR4 WG3

## – a personal view

- The Establishment of the concepts of mitigation potentials and the price of carbon
- Assessment of economic potentials for mitigation to 2030
- Review of literature on induced technological change and the costs of climate stabilization (and benefits)

### **Acknowledgements**

The text and figures in the presentation come from the WG III Summary for Policy Makers, unless otherwise stated. The comments are my own.

# Establishing the concept of mitigation potential

- There was a need to have a set of definitions
  - acceptable to lead authors across the WG III chapters (“bottom-up” and “top-down” approaches)
  - encompassing different economic modeling approaches (equilibrium, institutional)
  - applicable to mitigation in all countries & sectors and from one IPCC report to the next
- IPCC Third Assessment Report definitions were unclear
- AR4 consensus: “market”, “economic”, “technical” and “physical” mitigation potentials and associated “carbon prices”

# Economic potential is substantial for the mitigation of global GHG emissions over the coming decades

- Estimates are from both bottom-up and top-down studies

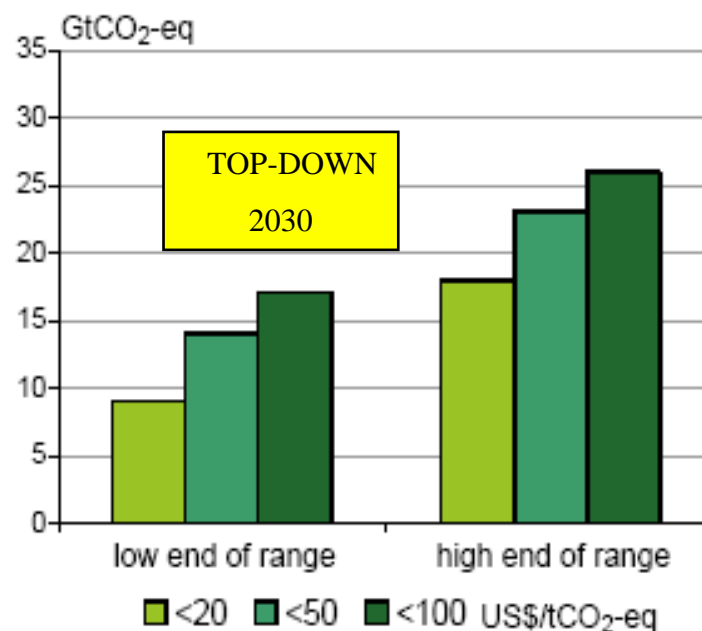
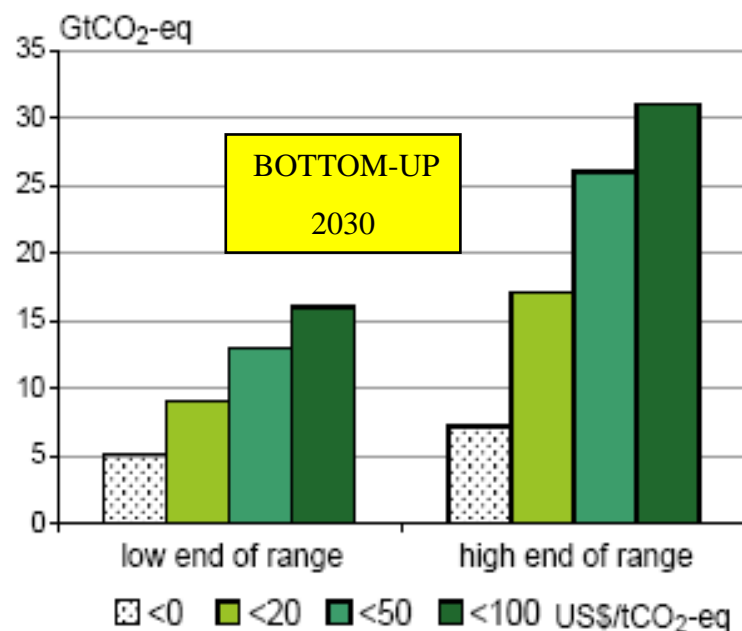


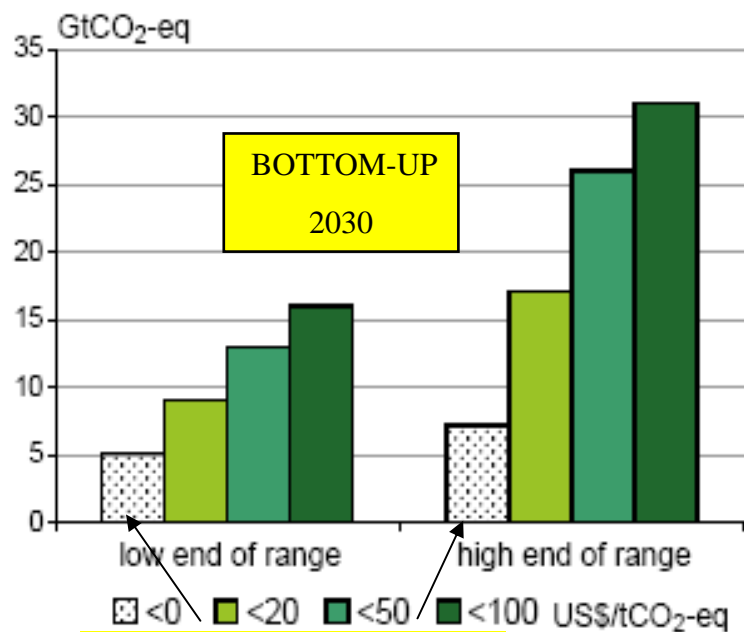
Figure SPM 5A: Global economic potential in 2030 estimated. Cost categories in US\$/tCO<sub>2</sub>eq.

Figure SPM 5B: Global economic potential in 2030. Cost categories in US\$/tCO<sub>2</sub>eq..

Note: estimates do not include non-technical options such as lifestyle changes

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No-regrets options

Figure SPM 5A: Global economic potential in 2030 estimated. Cost categories in US\$/tCO<sub>2</sub>eq.

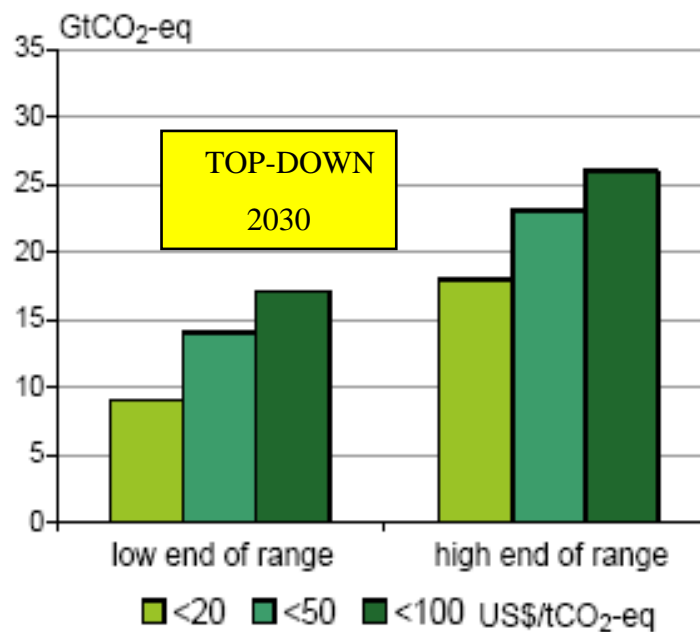
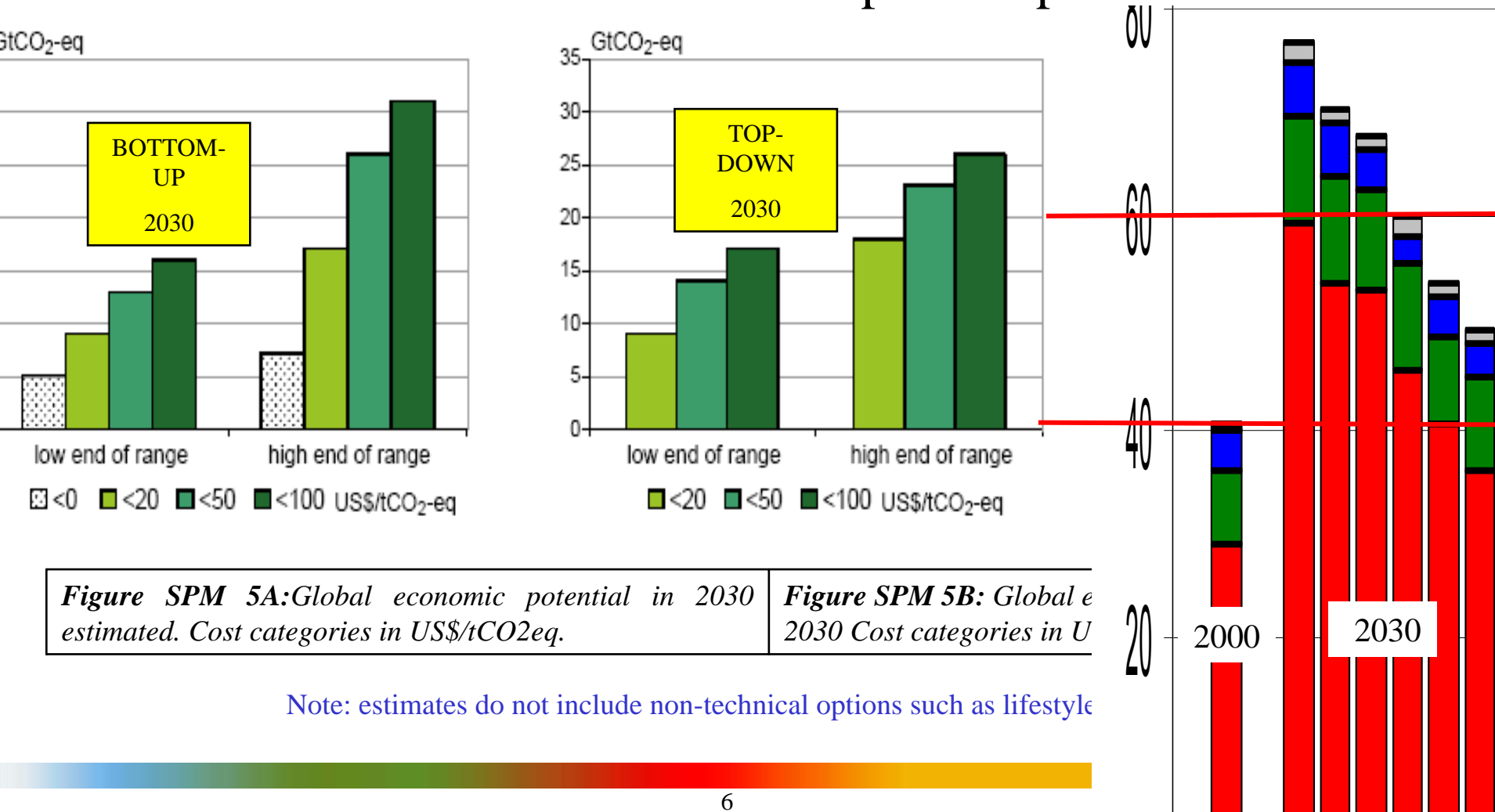


Figure SPM 5B: Global economic potential in 2030. Cost categories in US\$/tCO<sub>2</sub>eq.

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# Conclusions:

## an interpretation of the outcome

- We, collectively, may be able to reduce the risks of warming, but action is urgent for low-cost options avoiding “dangerous” global warming of more than 2°C
- There are uncertainties, particularly of the costs and means of effective action, but the way forward is clear
- The 3% overall economic cost is the top end of a wide range that includes substantial benefits
- The Fourth IPCC assessment report marks a turning point in understanding about technology-economy interaction by both the scientific community and governments

# AR4 WG3: revealed research gaps

- No integration of large-scale or even intermediate-scale climate models and E3 models
- Insufficient studies of stringent mitigation (<450ppmv CO<sub>2</sub>-eq) to draw reliable conclusions
- Inadequate treatment of the risks of climate change, adaptation and mitigation
  - Conversion of risk to certainty-equivalence in many models
- Lack of treatment of robustness in results to changes in the baseline, e.g. for a global depression
- No integration of air-pollution-reduction and other co-benefits, such as energy security and employment-creation, into the integrated modelling of mitigation policies

# Post-AR4 WG3: current research opportunities

- Employment-creation via a global “Green New Deal” aimed at defossilizing the global economy

# The Big Crunch and Global Warming

- Similarities
  - Both arise out of the pursuit of self-interest
  - Both are market failures associated with systemic risk and, arguably, both are the greatest market failures the world has ever seen
  - Both are highly nonlinear systems' failures leading to extreme events (economic and climatic)
  - Both threaten the economy with catastrophic collapses
  - Both require strong regulation for efficient economic outcomes
- Differences
  - **Timing:** big crunch happened in a day, arguable a week, year, or even two decades; global warming is a four-century process
  - **Risks:** big crunch risks are to trust in money and global deflation; global warming risks are wild weather and floods/droughts
  - **Solutions:** big crunch requires and supports immediate solution (banks reputations destroyed); global warming solutions can be delayed and subverted more easily by special interests

# The Big Crunch: implications for climate policy

- The period of the creation of the bad money has seen a massive mis-allocation of investment funds towards the financial services
- The real investments supported by these services and the incomes from them (buildings, luxury goods etc) will stop and engender a global recession
- The gap in global effective demand could be closed by a massive effort to invest in decarbonising the real economy, but requires
  - Recognition of the opportunity
  - Rapid development and deployment of mitigation policies aimed at raising investment especially where real resources are becoming unemployed (construction, vehicle manufacture)

The Summary for Policy Makers , the  
Technical Summary and the full Report  
(subject to editing) can be downloaded  
from

[www.mnp.nl/ipcc](http://www.mnp.nl/ipcc)

Further information:

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