

# Optimisation under Uncertainty

*Comments on Jürgen Scheffran:*

*“Adaptive Management & Multi-Region  
Cooperation for Low-Carbon Stabilization”*

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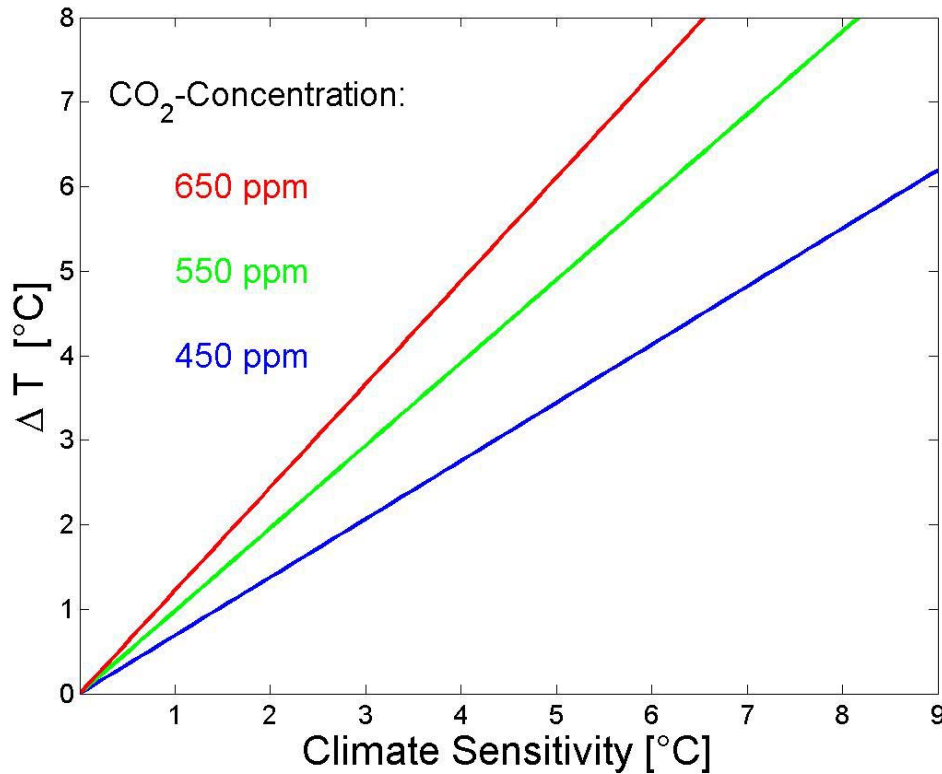


# Key Ingredients

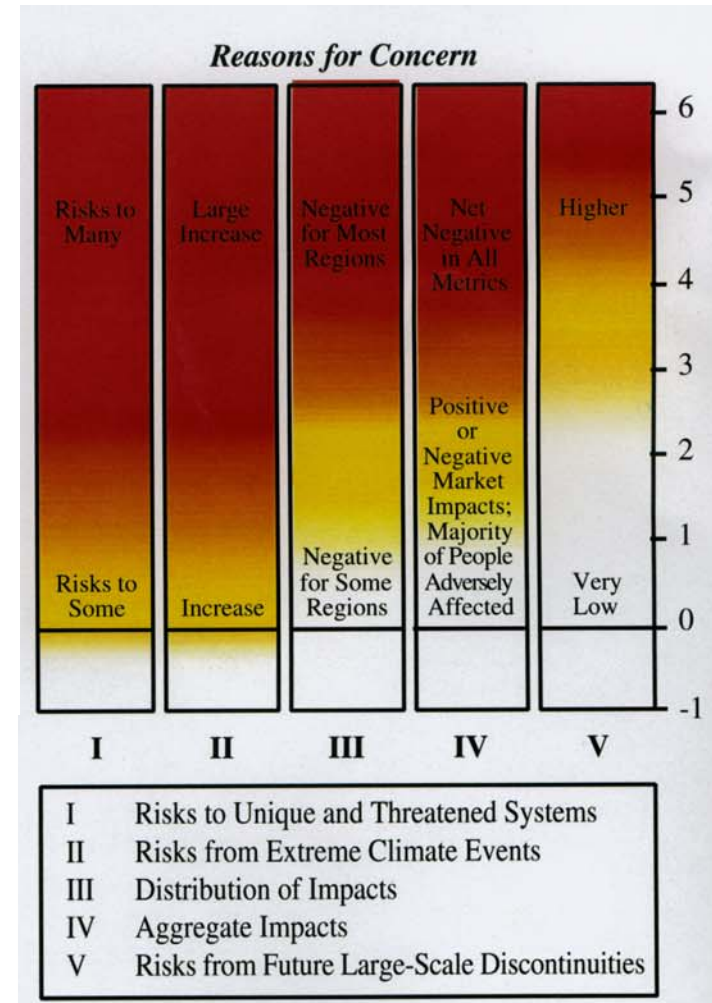
- Climate thresholds
- Guardrail approach
- Costs and damages
- Uncertainty on system properties
- Bayesian learning & imprecise measures
- Optimisation
- Adaptive Control
- Induced technological change
- Adjust current actions to future targets.
- Cooperation / Coalition formation
- Nash equilibrium



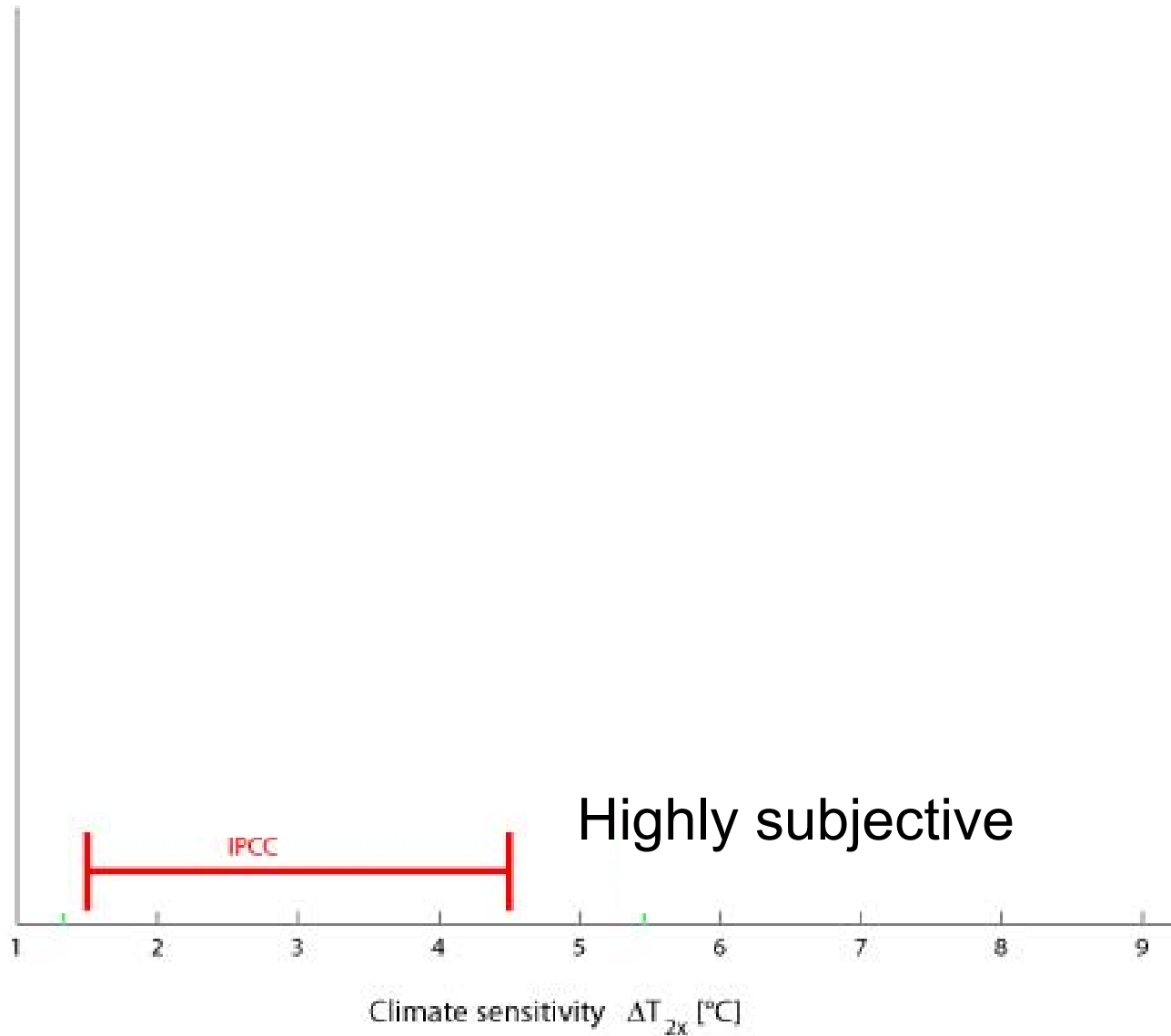
# Climate Sensitivity → Impacts



IPCC  
WG II  
(2001)



2001

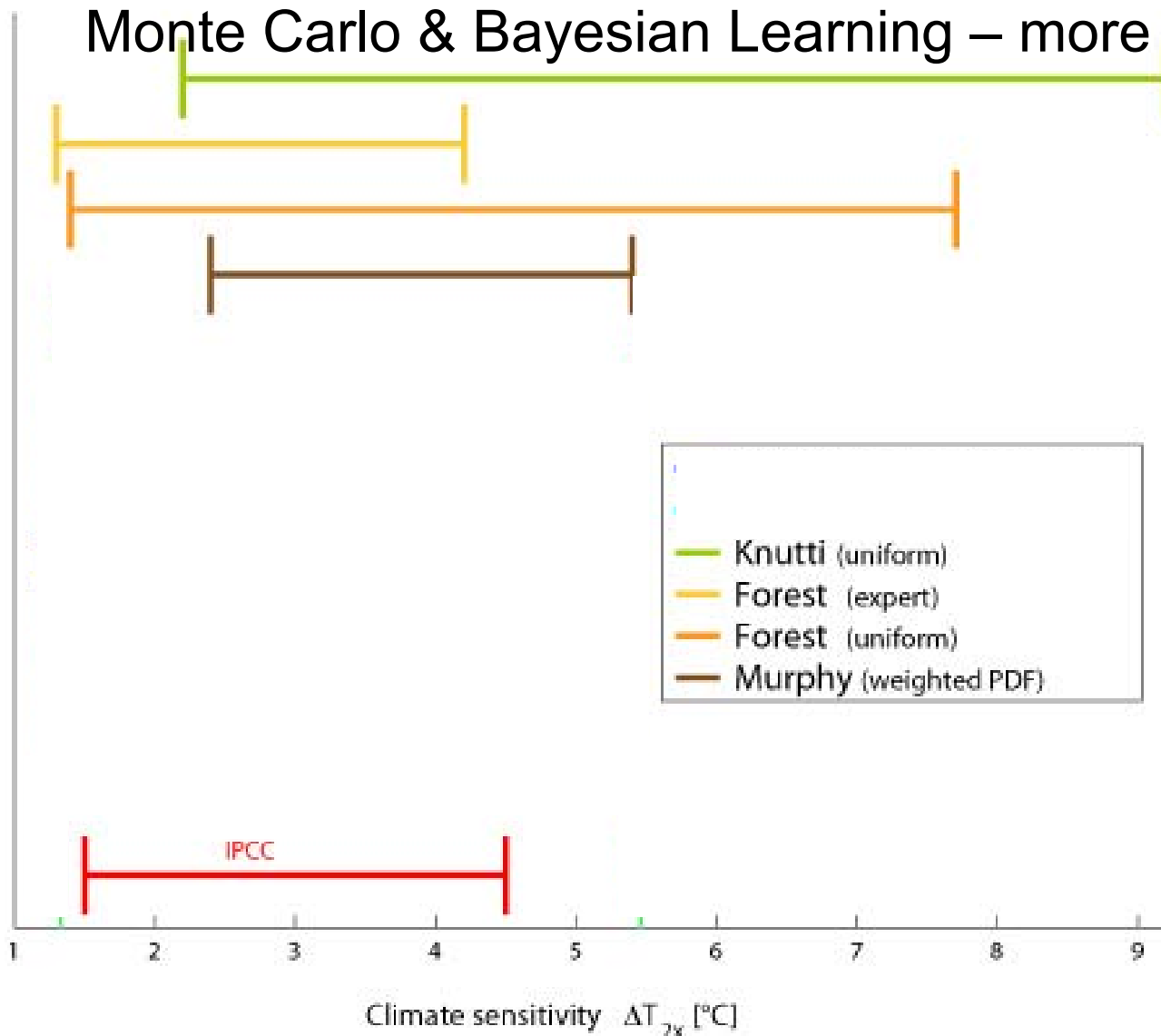


Highly subjective

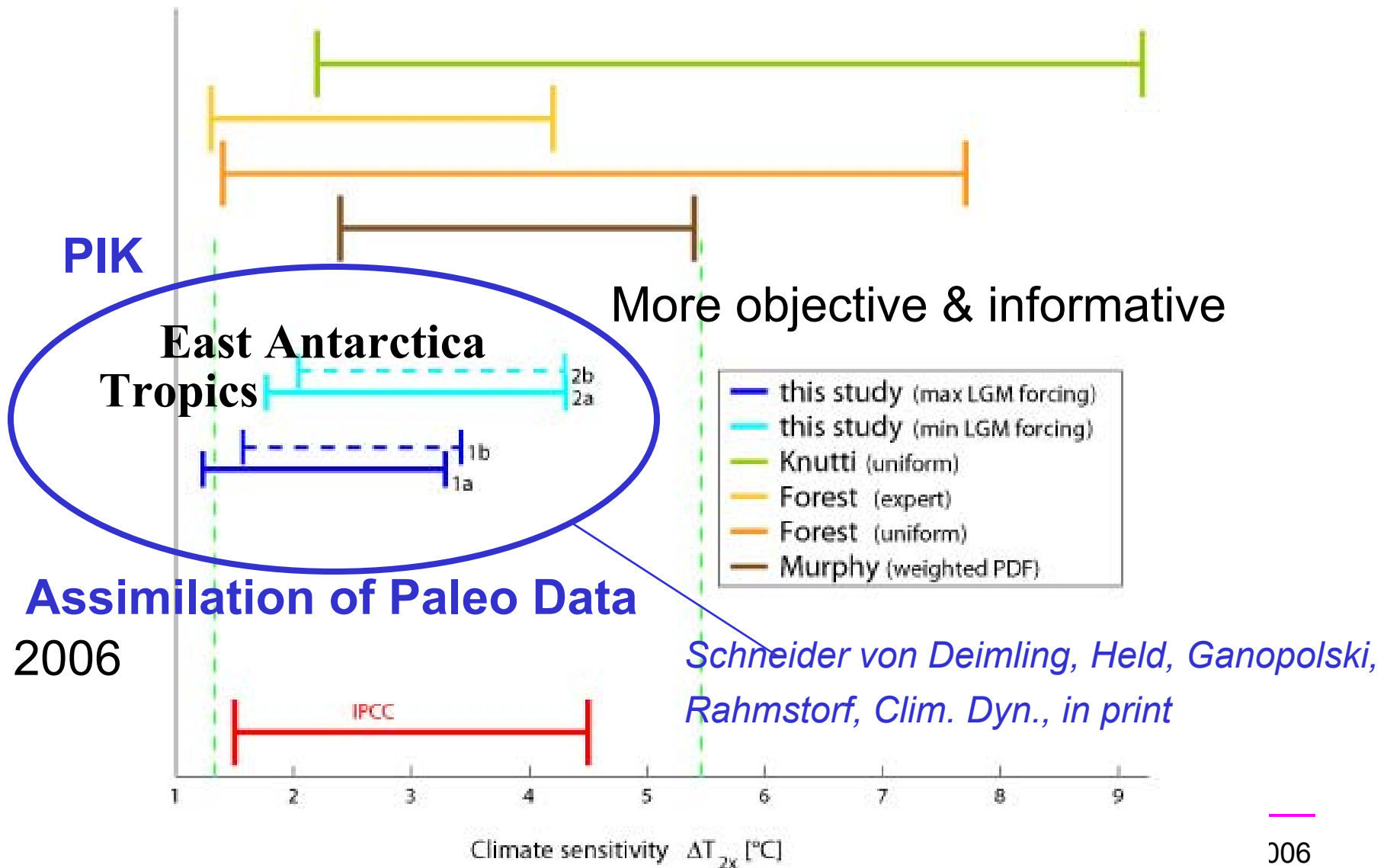
# 5...95% Quantiles

Monte Carlo & Bayesian Learning – more objective

2001-  
2005



# 5...95% Quantiles



# CCS Bonds as Incentive for Secure Formations

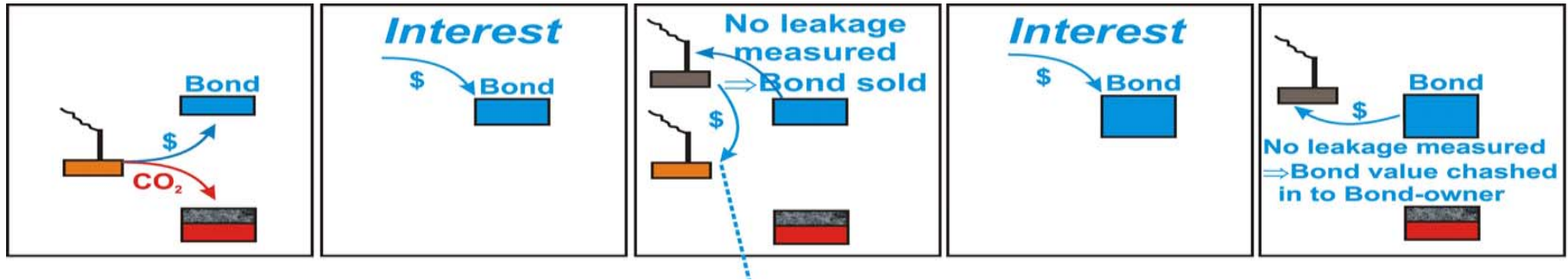
2010

...

2015

... ..

2030



*(After Edenhofer, Held, Bauer, 2006)*

Hermann Held – Low Stabilisation Scenarios, Comments on J Scheffran, Potsdam, 2006

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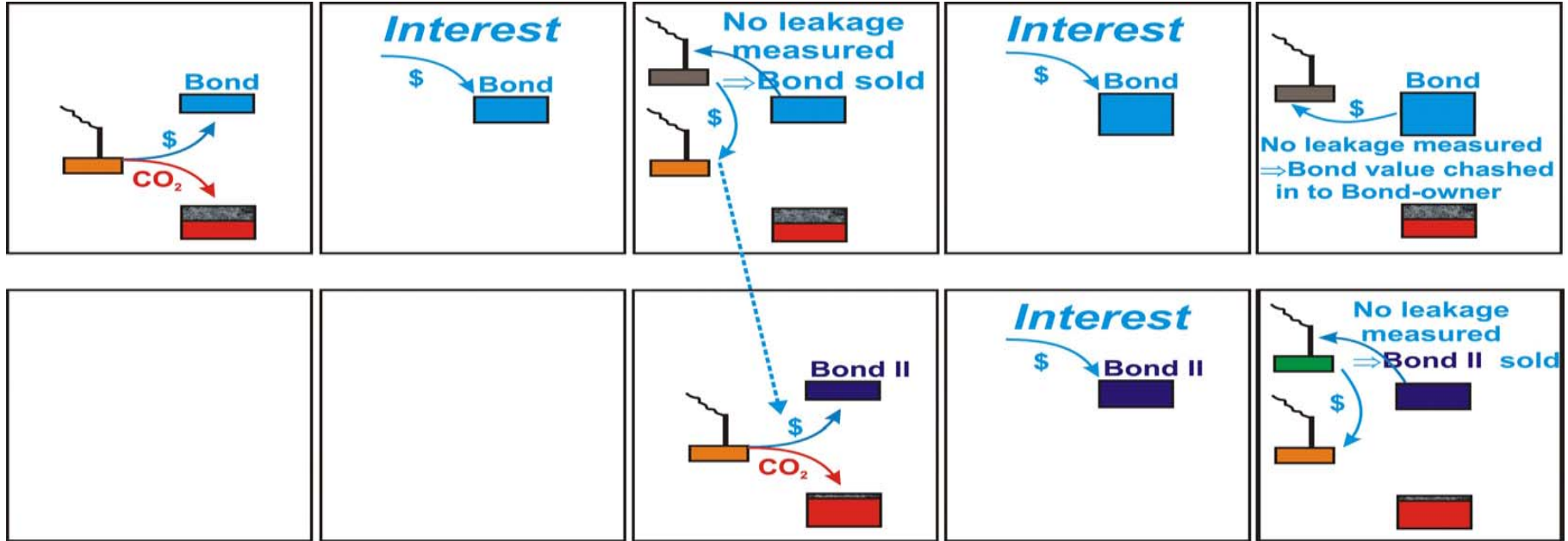
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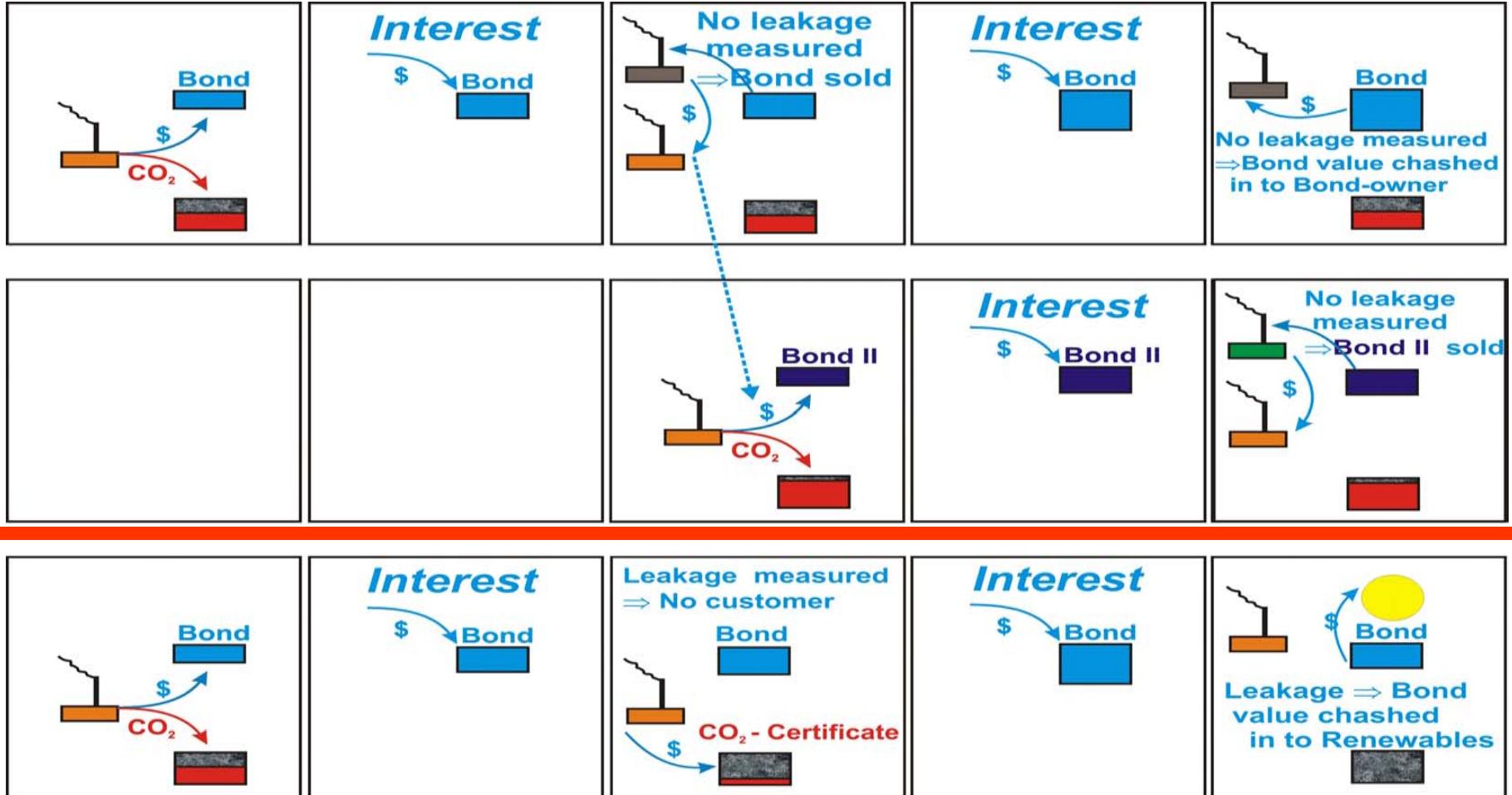
2010

...

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# Version II: Use Emission Certificates as Bonds

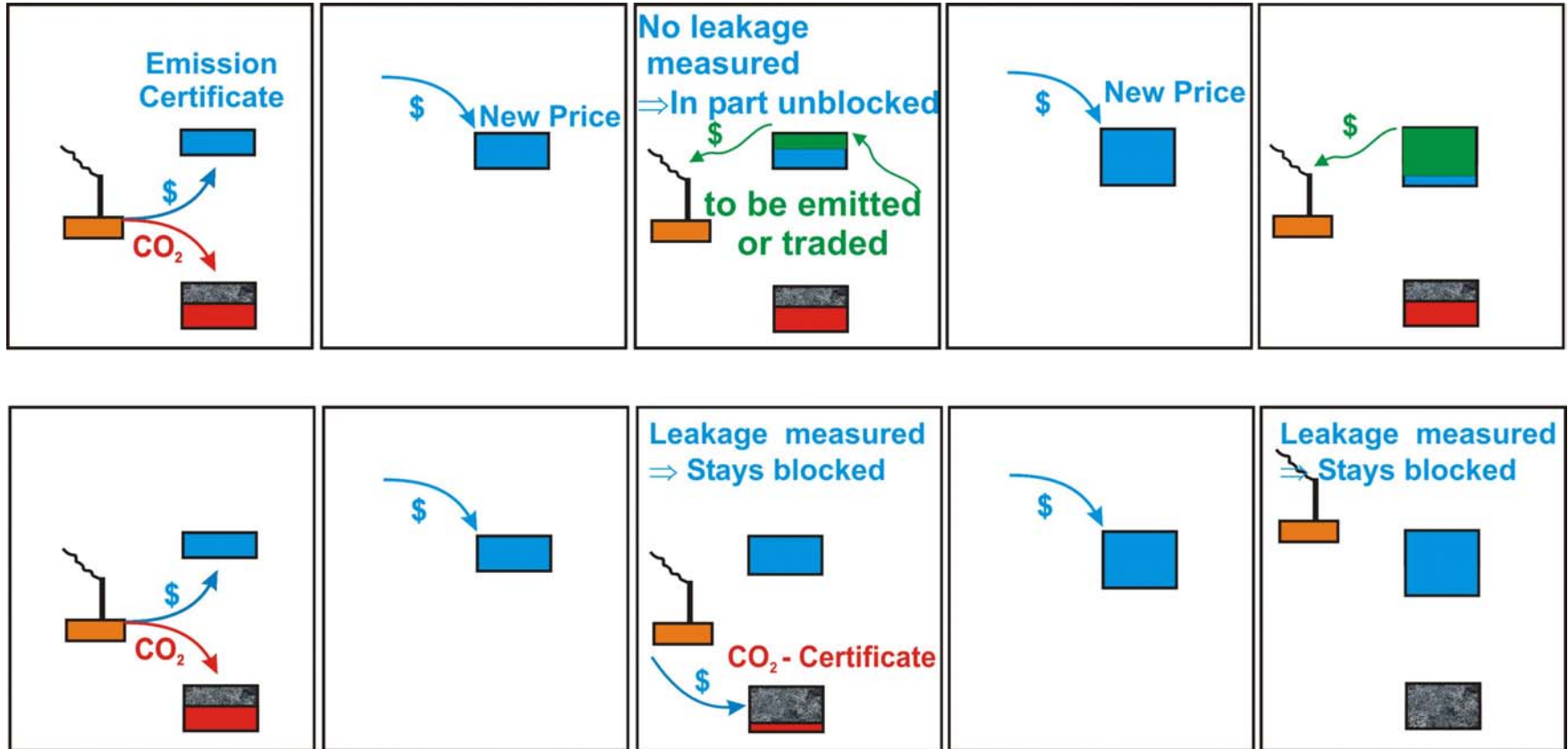
2010

...

2015

... ..

2030



*(After Edenhofer, Held, Bauer, 2006)*



# Questions

- *Specific consequences of your agent-based model assumptions?*
- Why fix total amount of investments?
- Why equity principle = Emissions (and not GDP) Conversion?
- Can we substantiate / rule out potential lock-in effects due to CCS?
- Incentive schemes for India & China?

