“Unpacking the Bali Box”
IPCC WG 3-Table 13.7

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Setting a Global Emissions Goal Requires Considerations of:

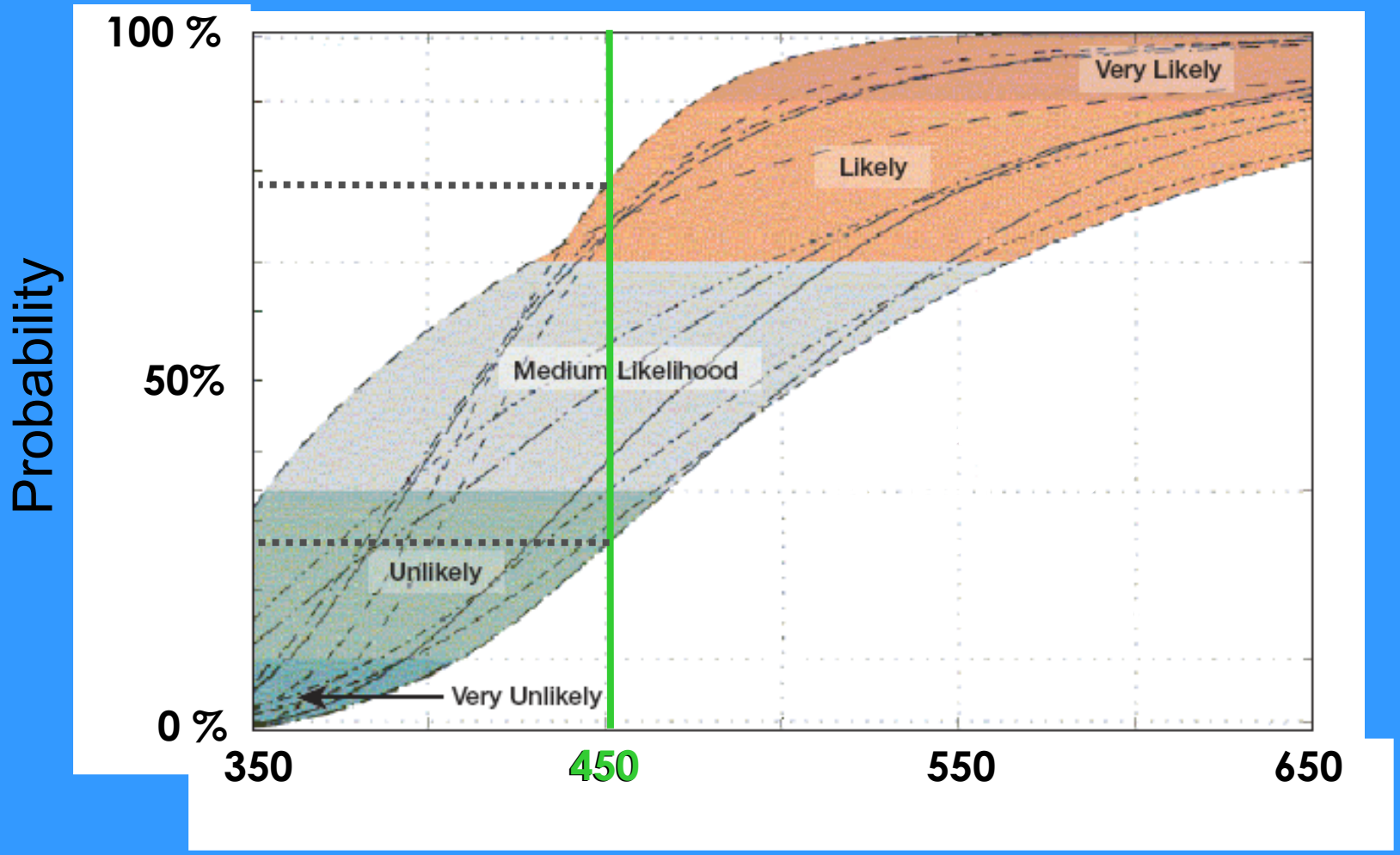
- The sensitivity of the systems to be protected and climate indicators
- The relationship between atmospheric concentration levels and climate indicators, e.g. temperature
- The relationship between atmospheric concentration levels and GHG emissions

Determining a Level of Effort Requires consideration of:

- What's technically and economically feasible;
- What's equitable;
- What's "precautionary" – maintaining options if there is future evidence of greater than anticipated climate risk; and
- What limits "lock-in" of fossil-intensive technologies and avoids a "crash finish".

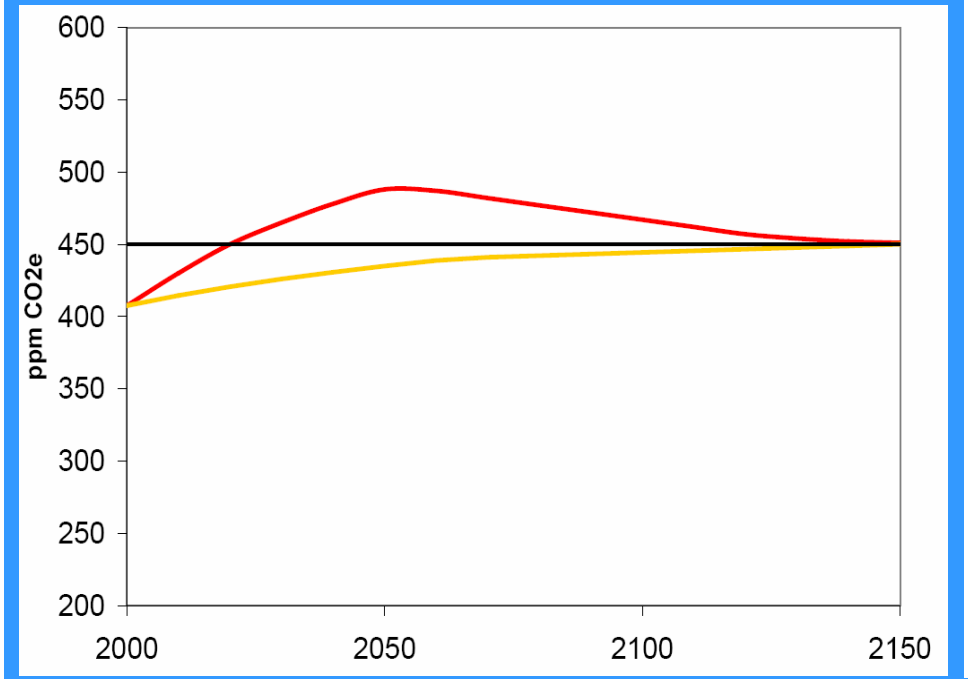
Relationship between concentration levels and the probability of staying below 2 C

450 $C0_2$eq provides a ~50% chance of staying <2 C

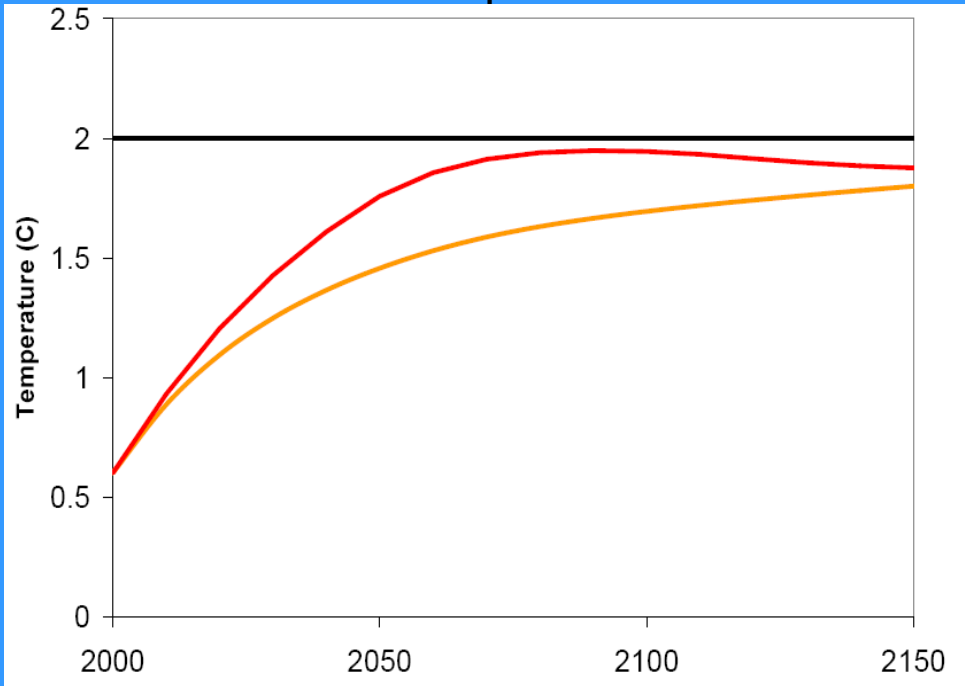


Temporary overshoot of a concentration target is possible without exceeding temperature threshold

Concentrations



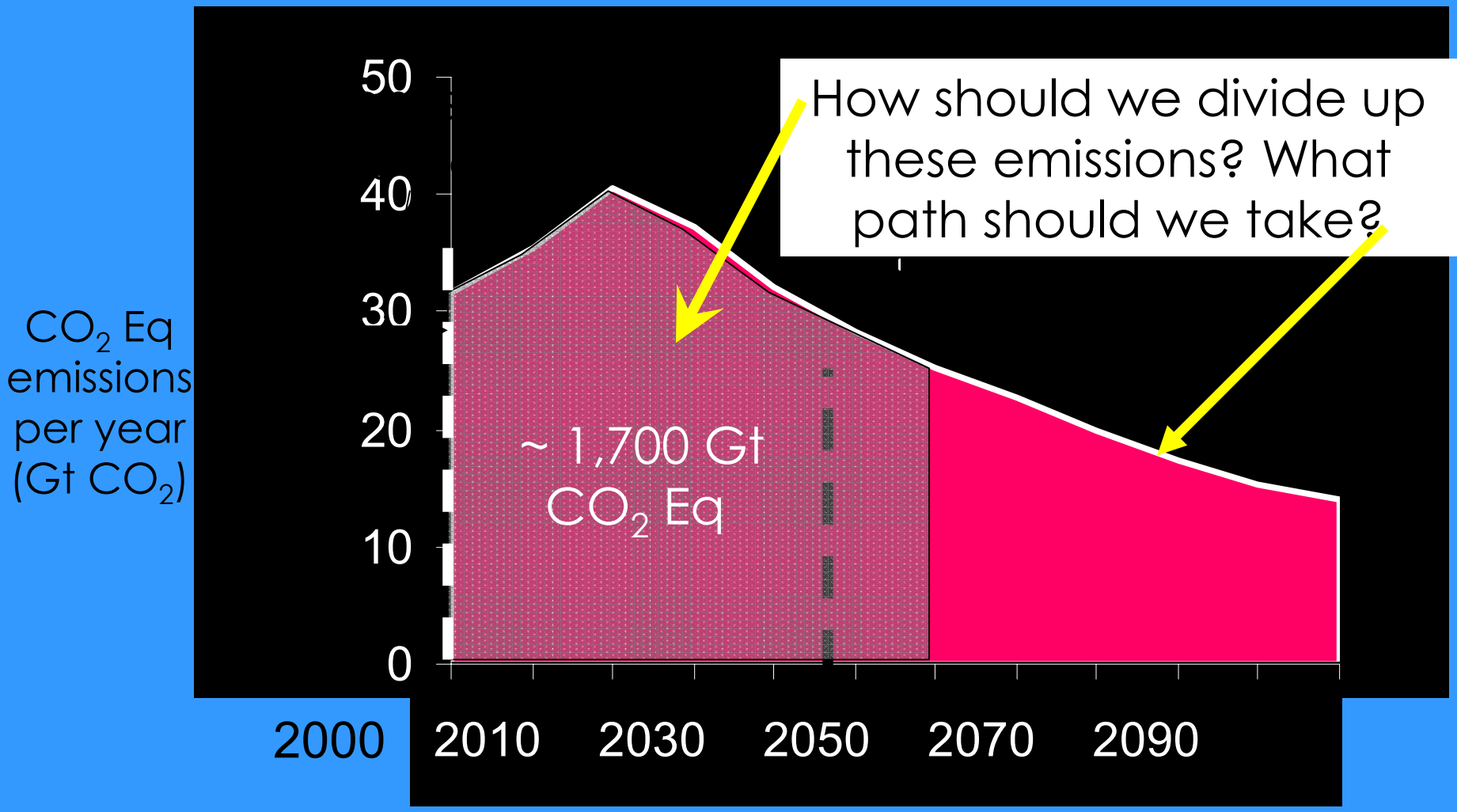
Temperature



But larger and longer overshoot increases the risk of exceeding temperature threshold for centuries

Determining a level of effort:The challenge

Example: 450 ppm C02 eq stabilization w/500 ppm overshoot



Source: UCS, 2007

Unpacking the “Table 13.7”

What did the IPCC literature review suggest about emissions reductions needed to achieve different concentration levels?

The range of emissions in 1990 and in 2020/2050 for various GHG concentration levels for Annex I and non-Annex I countries - Table 13.7

Scenario category	Region	2020	2050
A-450 ppm CO_2 –eq[b]	Annex I	**–25% to –40%**	**–80% to –95%**
	Non-Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia and Centrally-Planned Asia	**Substantial deviation from baseline in all regions**
B-550 ppm CO_2 -eq	Annex I	–10% to –30%	–40% to –90%
	Non-Annex I	Deviation from baseline in Latin America and Middle East, East Asia	Deviation from baseline in most regions, especially in Latin America and Middle East
C-650 ppm CO_2 -eq	Annex I	0% to –25%	–30% to –80%
	Non-Annex I	Baseline	Deviation from baseline in Latin America and Middle East, East Asia

[a]The aggregate range is based on multiple approaches to apportion emissions between regions (contraction and convergence, multistage, Triptych and intensity targets, among others). Each approach makes different assumptions about the pathway, specific national efforts and other variables. Additional extreme cases – in which Annex I undertakes all reductions, or non-Annex I undertakes all reductions – are not included. The ranges presented here do not imply political feasibility, nor do the results reflect cost variances.

[b]Only the studies aiming at stabilization at 450 ppm CO_2-eq assume a (temporary) overshoot of about 50 ppm (See Den Elzen and Meinshausen, 2006).

Factors to Consider When considering Table 13.7

- *Baseline:* Different IPCC baseline emissions scenarios and assumptions about whether countries will meet their KP targets are an important determinant of the results.
- *Analytical Approaches* for assessing needed reductions can have a significant effect. For example:
  - Are historical emissions included?
  - Should all countries converge to the same emissions per capita level?
  - What levels of GNP should trigger the participation of various countries?
  - Which future year is the basis for the calculation?

Factors to Consider When considering Table 13.7

- *Deforestation*: Some studies exclude emissions from land-use change and forestry; others follow baseline emission pathways
- *Gas coverage*: Some calculations use all six GHGs; others are based on CO2 only
- *Data range*: The IPCC left off outliers. The full range of results from the studies assessed (including the outliers) is +15 to -50% below 1990 levels for Annex I countries.

Eight additional studies have been analyzed recently by den Elzen and Hohne (2008). The authors conclude that there is no basis for changing the range of the IPCC 2007. However, none of the studies have considered the current economic down turn.

Unpacking the Bali Box: Science and Efforts to Determine Emission Reductions

- Science can tell us the cumulative global emissions that drive atmospheric concentration levels - not the emissions reductions by any one country or group of countries in any given year.
- The '25-40% below 1990 levels by 2020' is not an IPCC conclusion or recommendation. It's a summary of the findings of papers in the literature.
- The studies behind Table 13.7 do not consider political feasibility or economic consequences; other IPCC material does address the later in particular.
- Other reasonable assumptions can produce emission reduction pathways outside of the "IPCC range", but with near and long-term consequences.
- 2020 is a politically important, but scientifically arbitrary date. What's critical is staying within the long-term cumulative budget, and making near-term reductions that are as swift and deep as possible.

But the case for swift and deep near-term reductions is very strong

- Mounting evidence of climate risk at increasingly lower temperatures.

- The costs of delay are high:
  - lock-in of carbon intensive technologies
  - high cost of “crash finish;
  - reduced capacity to take precautionary action;

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