

# How to design effective and feasible International Agreement

A Balanced Approach  
(vertically and horizontally)

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# Paradigm Shift

Why top down approach has failed at Copenhagen

- Lack of cool-headed discussion (religion)
- International community was **not really convinced at 2 degree target**  
(Vertical balance --- focusing on climate change)
- **Different priorities** by countries  
(Horizontal balance --- in relation to other urgent issues)

# Ultimate objective of response measures

- Article 2

  - **Stabilization at the level not dangerous**

    - Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to **enable economic development to proceed in a sustainable manner**

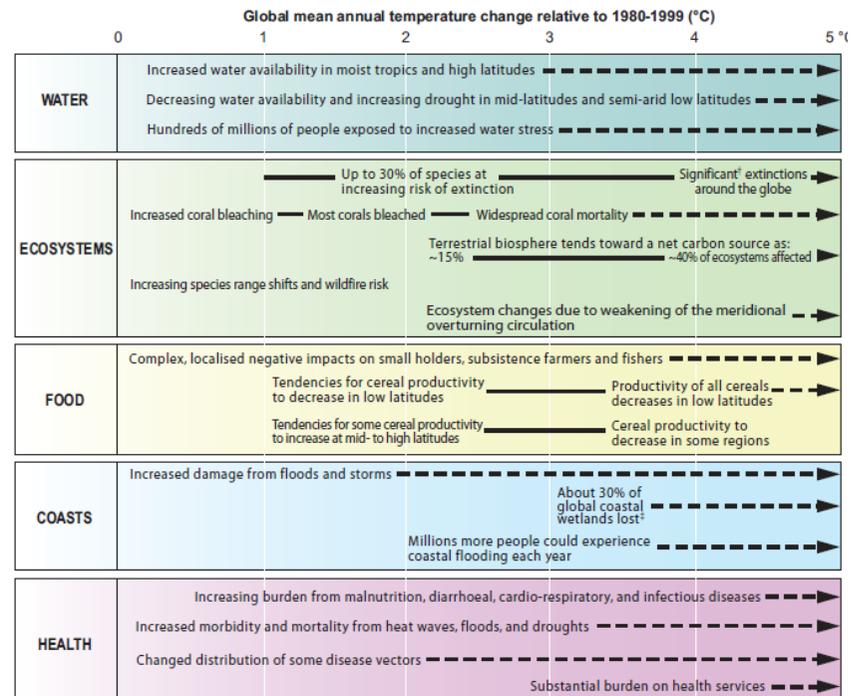
- IPCC AR4 WG3 Ch.1

  - -- **the balancing of the risks of climate change** (risks of gradual change and of extreme events, risk of irreversible change of the climate, including risks for food security, ecosystems and sustainable development) **against the risk of response measures** that may threaten economic sustainability.

→ Sustainable Economic Growth

# Is 2 degree increase dangerous?

- It is very likely that all regions will experience either declines in net benefits or increases in net costs for increases in temperature greater than 2-3 °C (above 1990 levels) (IPCC AR4 WG2 p.17)
- Corresponds to 2.6 to 3.6 degree since pre-industrialization
- No adaptation considered  
Unrealistic
- 2 degree may not be the dangerous level

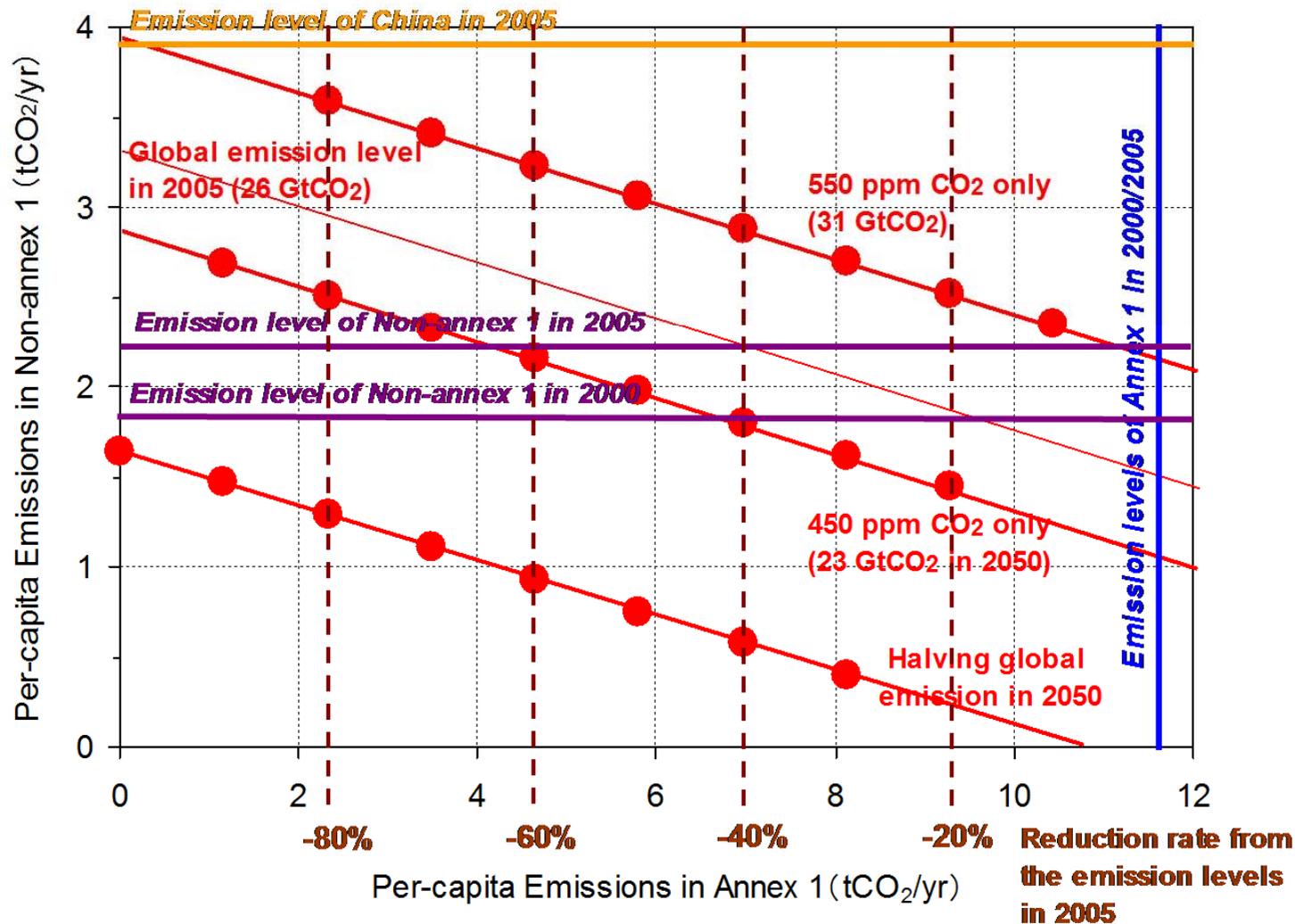


Temperature increase since 1990,  
Source: IPCC /AR4/Synthesis

# Feasibility of 2 degree (50% reduction by 2050)

## Per-capita Emissions for Global Targets

Source: RITE



Developing countries **2.3t (2005) → 1.1t** (80% reduction for Annex 1)

# Technology is the key (kaya identity)

## Feasibility of 50% reductions (2050/2000)

- $\text{CO2 emissions} = \frac{\text{CO2 emissions}}{\text{GDP}} \times \text{GDP}$

- $\Delta \text{CO2}/\text{CO2}$

$$= \frac{\Delta(\text{CO2 emissions}/\text{GDP})}{\text{CO2 emissions}/\text{GDP}} + \frac{\Delta \text{GDP}}{\text{GDP}}$$

= Technology improvement ratio + GDP growth ratio

**Global BAU GDP in 2050 will be \$122 Trillion. 80% reduction corresponds to \$24.4 trillion, that is 23% less than that in 2000.** Source: WB, UN and IPCC B2 scenario

To achieve 50% reduction	
GDP loss(%)	Tech. imp. ratio(%)
0	3.856
10	3.681
20	3.485
30	3.262
40	3.005
50	2.701
80	1.174

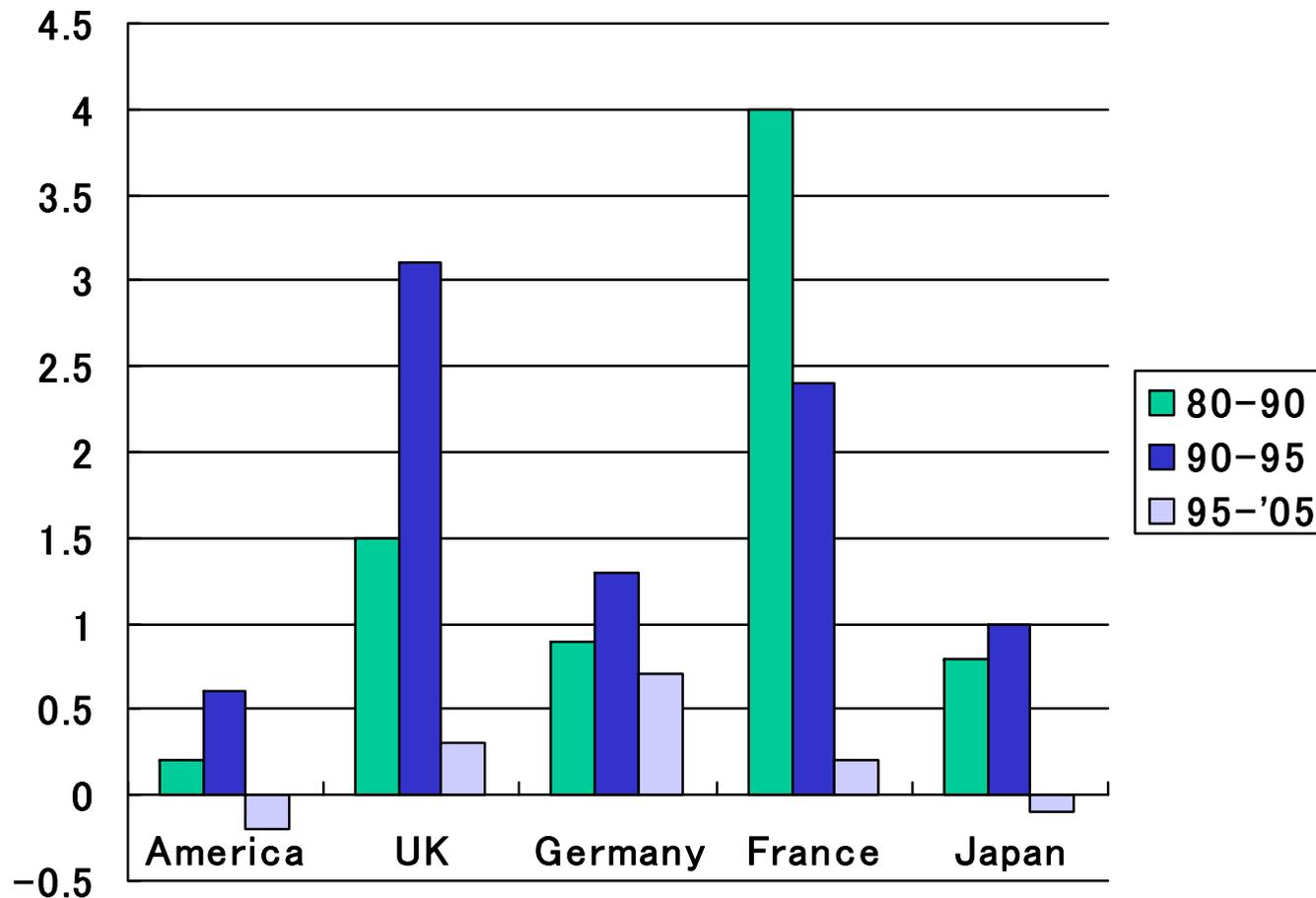
Tech. imp. ratio of 1.227%	
CO2 reduction(%)	GDP loss (%)
0	58.710
10	62.839
20	66.968
30	71.097
40	75.226
50	79.355

Average annual technology improvement ratio since 1970 is 1.227%.

BAU GDP growth ratio up to 2050 is 2.76%/yr (RITE estimate based on World Bank and IPCC SRES B2 Marker scenario).

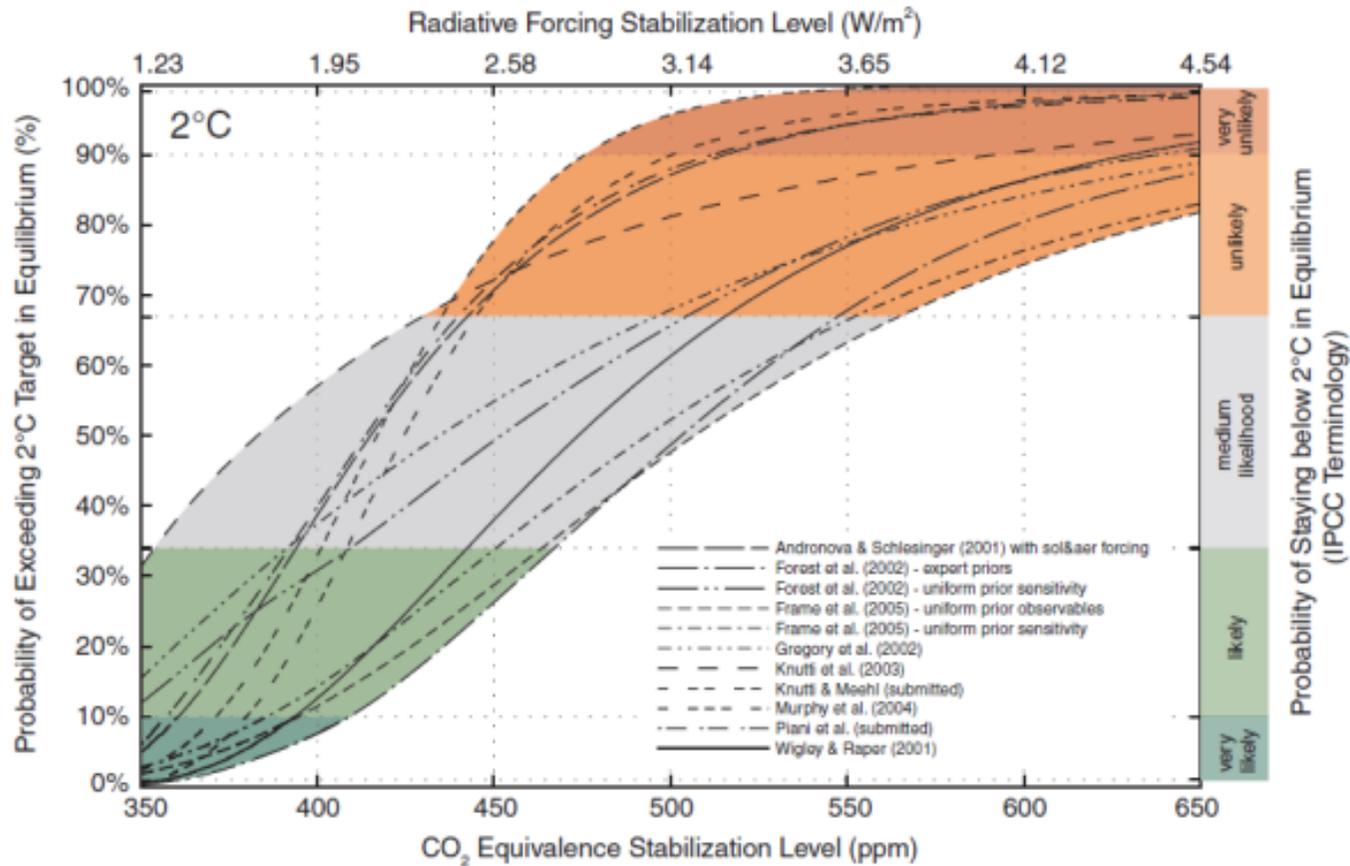
# Annual De-carbonization Ratios

(Developed Countries, 1980—2005)



UK (90-95): increase of gas portion thanks to the North Sea Gas and expansion of nuclear powers  
France (80-95): Nuclear generation increased by 6 times

# 2 degree and uncertainty



M. Meinshausen, "What Does 2° C Target Mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Estimates," H-J. Schellnhuber ed., *Avoiding Dangerous Climate Change*, Chapter 28

# 2010 Blue Planet Prize Commemorative Lecture by Robert Watson (former IPCC chair)

October 27, 2010, Tokyo

-- it (2 degree target) must be recognized to be a stretch target and, unless political will changes drastically in the near future, it will not be met. Therefore, we should be prepared to adapt to global temperature changes of 4-5° C.

The current level of greenhouse gases in the atmosphere, accounting for the offsetting effect of aerosols, is approximately 385 ppm CO<sub>2</sub>eq\*. If we succeed at stabilizing between 400 and 450ppm CO<sub>2</sub>eq, there is a 50% chance that global temperature changes will be limited to 2° C above pre-industrial levels, with a 5% probability of 2.8° C. However, the likelihood of stabilizing at this level is low. If we stabilize at 550ppm CO<sub>2</sub>eq, there is a 50% chance that global temperature changes will be limited to 3° C above pre-industrial levels, with a 5% chance of a 4.8° C, and if we allow the atmosphere to reach 650ppm CO<sub>2</sub>eq then there is a 50% chance that global temperature changes will be limited to 4° C above pre-industrial levels, with a 5% chance of a 6.0° C.

- Robert Watson's another Lecture at the National Institute for Environmental Studies, October 28, 2010, Tsukuba, Japan
- But I will argue that we are going to be lucky to stabilize at 4. And the reason is that to stabilize at 2, you only have a 50-50 chance of stabilizing at 2 or 400 ppm of carbon dioxide equivalent. --- But I honestly don't believe we are going to stabilize at 400 ppm, I think we are going to stabilize at 550-650. --- The USA is not going to stabilize its emissions before 2020, China probably won't until 2030 ---

# Balance between global urgent matters

## Efficient allocation of scarce resources among urgent issues

- Economic growth (though not necessarily the same as economic welfare), employment
- International Competitiveness
- Energy/food security
- Health care, pension
- Millennium Development Goals, in particular for least developed countries

## Democracy and policy makers

## Ethical responsibility to AOSIS

# In search of effective and feasible international framework

## A Balanced Approach

(vertical and horizontal)

- Alternative target to 2 degree for which major economies can agree
- Take into consideration of adaptation in doing so
- Pledge and review of each country' target
- Ensure comparability of efforts among developed countries
- Review of classification of Annex 1 and non-Annex 1
- Funding for adaptation and technology transfer to (in particular) least developing countries
- New scheme to take all efforts into consideration

not only mitigation but also adaptation, technology transfer, funding

**“Better a strong weak agreement that has  
a good chance of being honored  
than a weak strong agreement  
that is likely to collapse”**

The Economist November 29, 1997

**“Democracies can proceed only as voters  
will permit”**

Financial Times August 21, 2000

Thank you for your attention