

Presentation

by Post-Kyoto Part

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1.Targeting 550ppm

Targeting 550ppm

The ultimate goal of Climate Change policy

“stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (Article 2.1 UNFCCC)

But at what level?

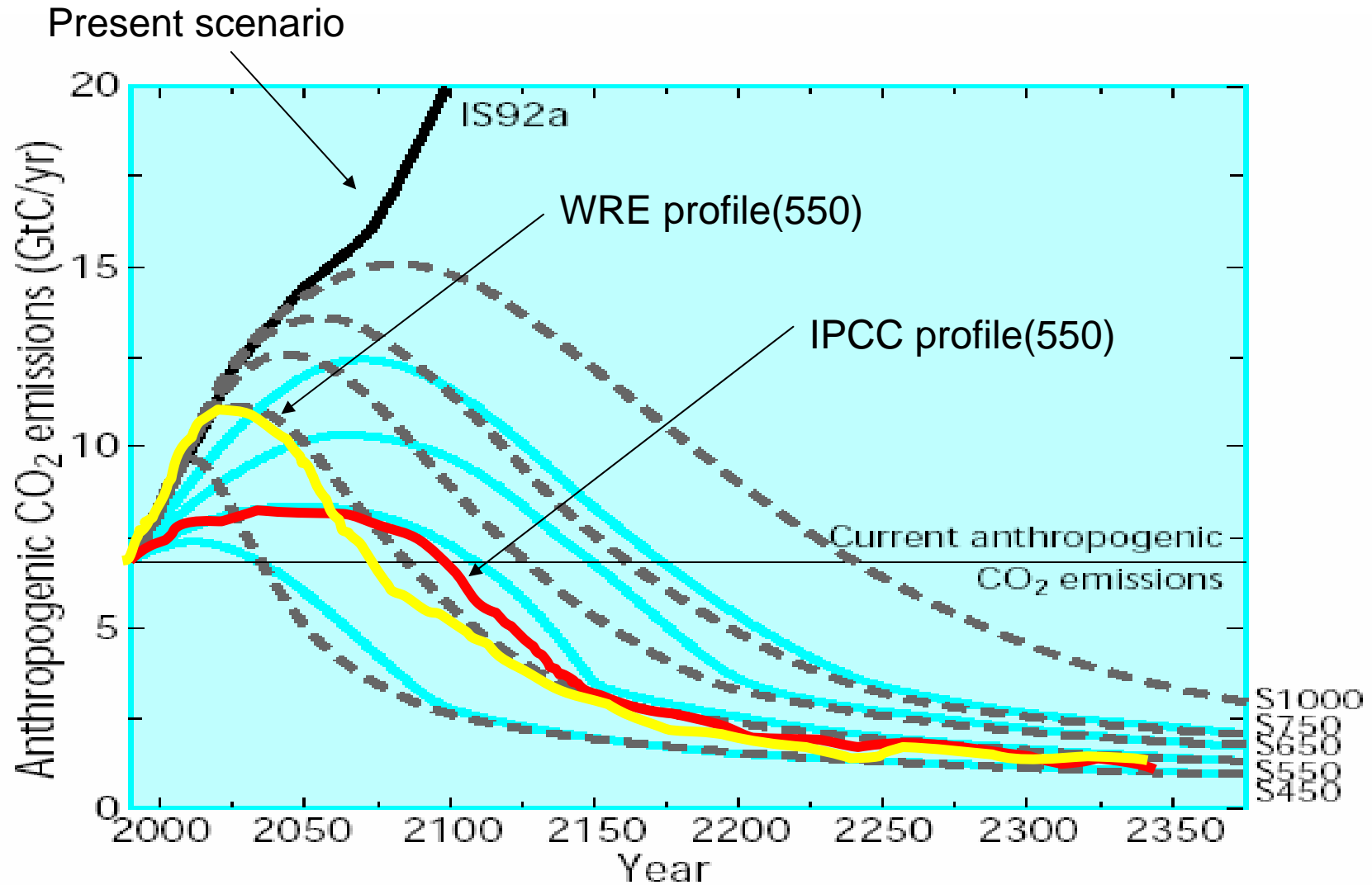
550ppm

Targeting 550ppm

Why 550ppm?

- I. 550 ppm is the lowest possible GHG concentration level considered to be attainable.
- II. Targeting the lowest possible level leaves us more options for the future GHG concentrations level than otherwise

Projecting the world CO₂ emissions



Targeting 550ppm

- GHG stabilization at 550 ppm requires substantial emission reduction.

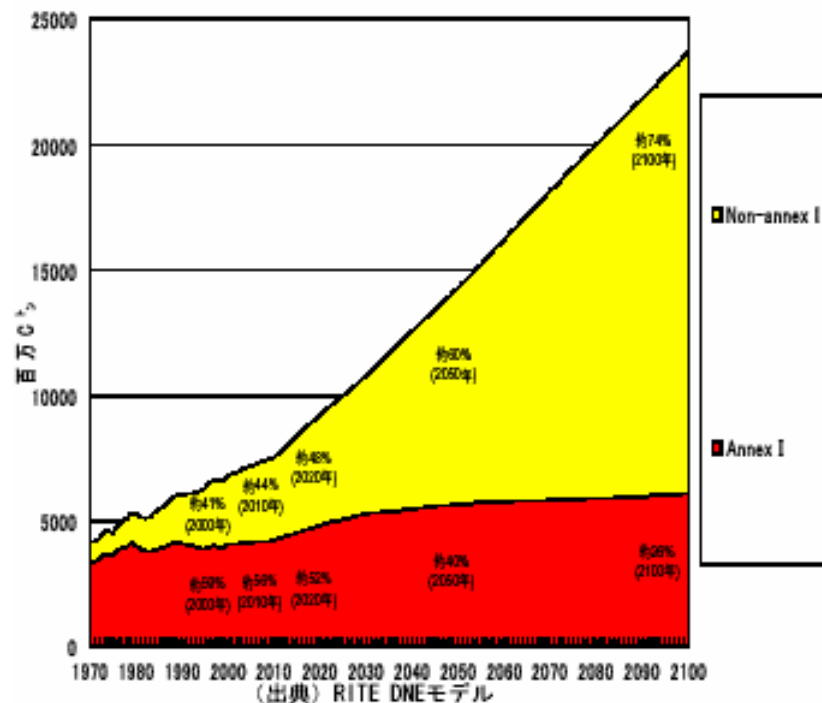
Therefore...

- Global participation is essential.
- The practical participations of developing countries are needed from the early stage.

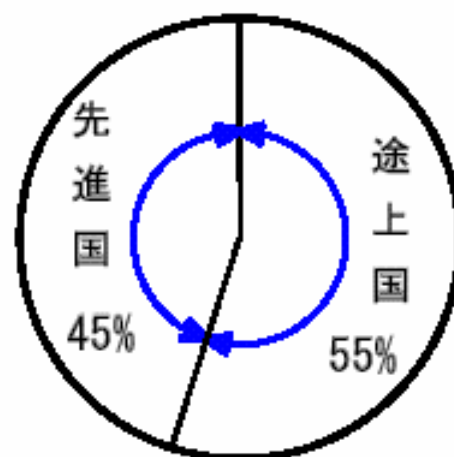
However, for developing countries' participation...

- The issue of equity needs to be resolved.

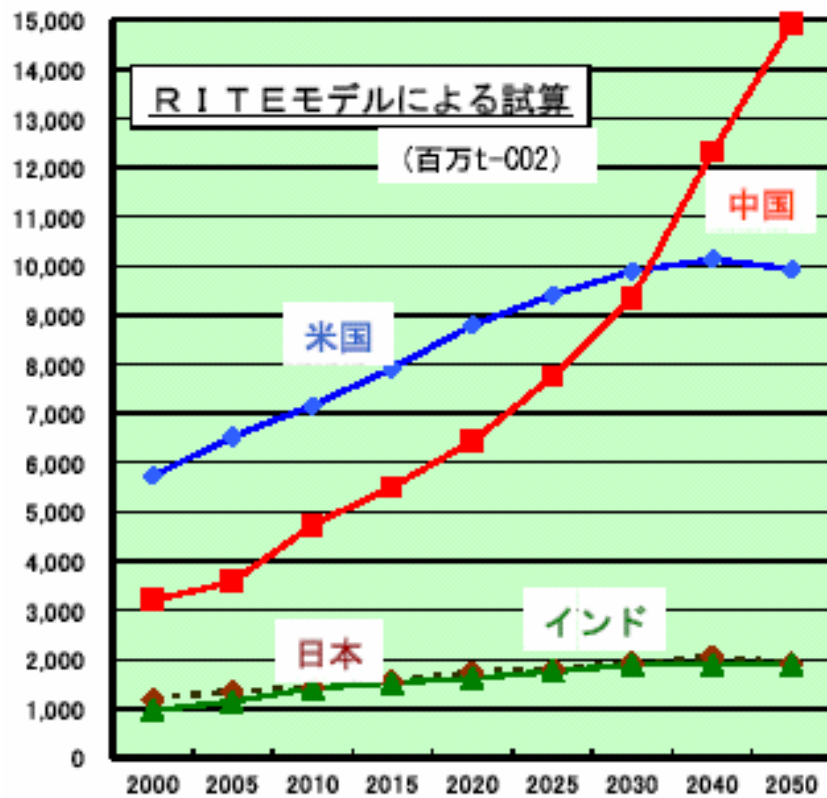
CO₂ 排出量の見通し



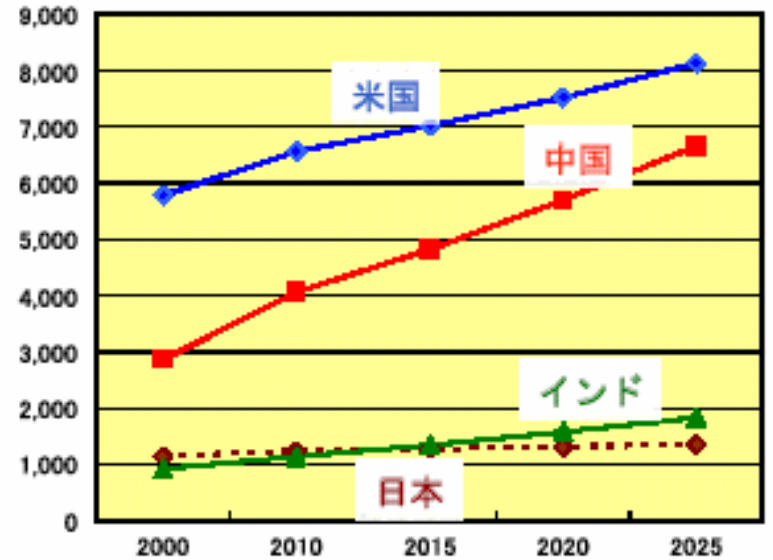
世界の温室効果ガス（GHG）排出量構成比 (1995年)



(出典) IEA, EDGARデータベース(オランダ), EPA(米国), Houghton(米国)のデータを参照し、経済産業省試算



DOEモデルによる試算
(百万t-CO2)



主要国のCO2排出量の推移

2. Equity and the post-Kyoto regime

- Why is equity important?

What is Equity?

5 dimensions

- Responsibility
- Equal Entitlements
- Capability
- Basic Need
- Comparable Effort

Implications of basic equity principles for the future agreement

Equal entitlement

- Convergence of per capita emissions across countries

Responsibility, Capability and Basic Need

- Differentiation of participation timing and the degrees of commitments across countries according to their past emissions as well as their economic and institutional capabilities to act

3. Multi-stage approach

Multi-stage approach and Equity

- Originally invented by Den Elzen
- Aims at the stabilization of GHG concentration at a given year, say 2100
- Aims at convergence of per capita emissions across countries at a given year, say 2100

satisfying equal entitlements

- Consists of three stages with the different degrees of commitments, to which countries belong according to their emission levels and economic capacities

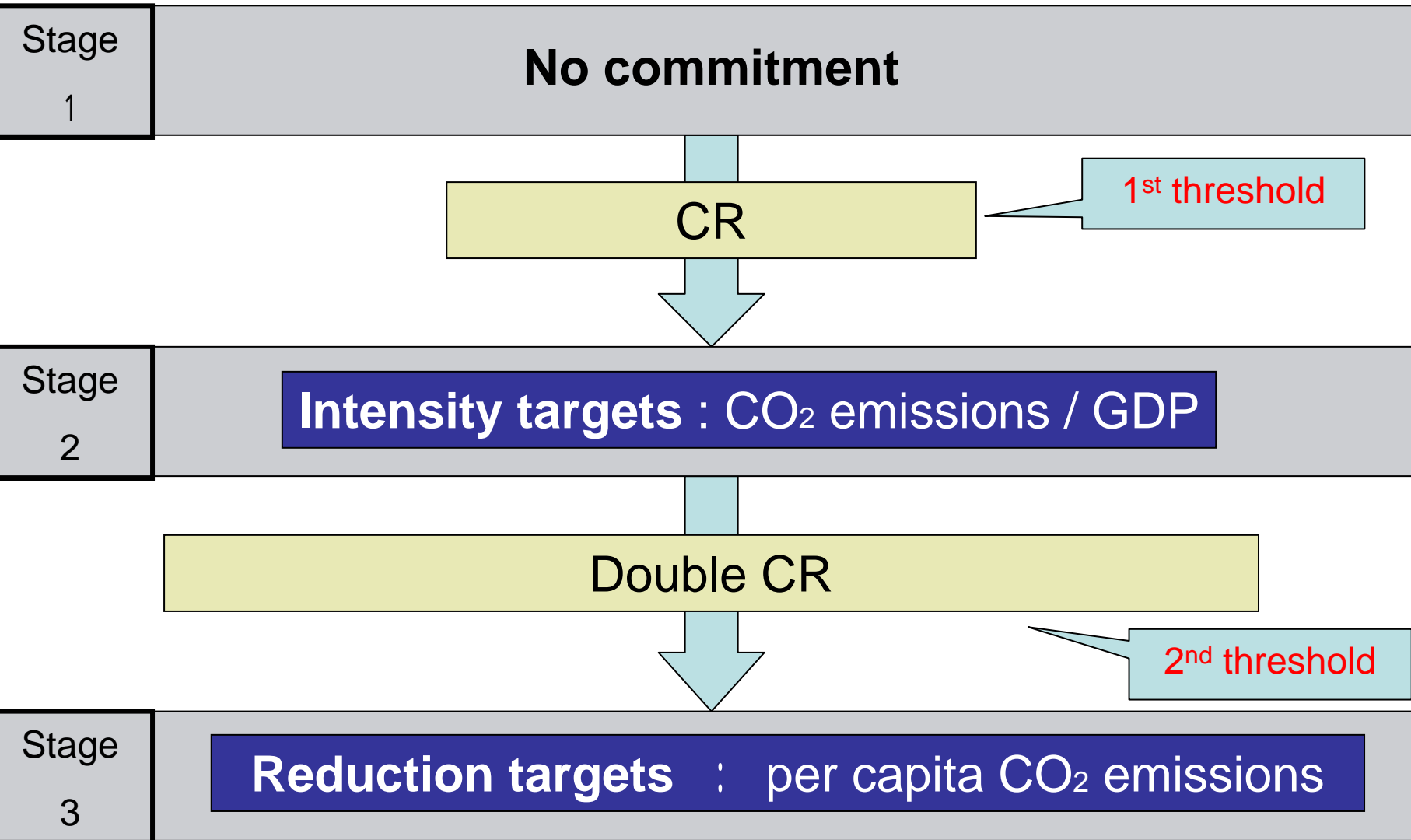
satisfying responsibility, capability and basic need

What is MS?

Non-Annex

- Stage1 No commitment
- Stage2 Limitation targets (e.g. intensity targets)
- Stage3 Reduction targets
- Per capita emissions will eventually converge across countries.

What is MS?



CR-index

- Article 3.1 of UNFCCC

“Common but differentiated **responsibilities** and respective **capabilities**”

Per capita GDP : A

Per capita CO₂ emissions : B

- $CR = A + B$

CR-index

	1995			2025		
	Per capita GDP	Per capita emissions	CR-index	Per capita GDP	Per capita emissions	CR-index
	1000 PPP\$	tCO2-eq		1000 PPP\$	tCO2-eq	
USA	28	26	54	47	27	73
Canada	24	21	45	39	21	60
Oceania	17	19	36	30	20	51
Japan	24	11	35	39	13	52
OECD Europe	20	11	31	37	12	50
Former USSR	5	12	18	13	17	30
Eastern Europe	7	9	15	17	11	28
Middle East	5	7	12	9	11	20
South America	7	5	12	12	8	19
Central America	5	5	10	10	6	17
Southern Africa	2	4	7	3	6	9
East Asia (China)	3	4	7	11	7	18
Northern Africa	3	3	6	6	5	11
South East Asia	3	3	6	8	5	14
South Asia (India)	2	2	4	5	3	8
Western Africa	1	1	2	1	2	4
Eastern Africa	1	1	2	1	2	3

Source : Elzen et al (2004)

The reference scenario made by Elzen

1st threshold = 5

2nd threshold = 12

エルゼンの写真 here!

MS (Stage 1 2)

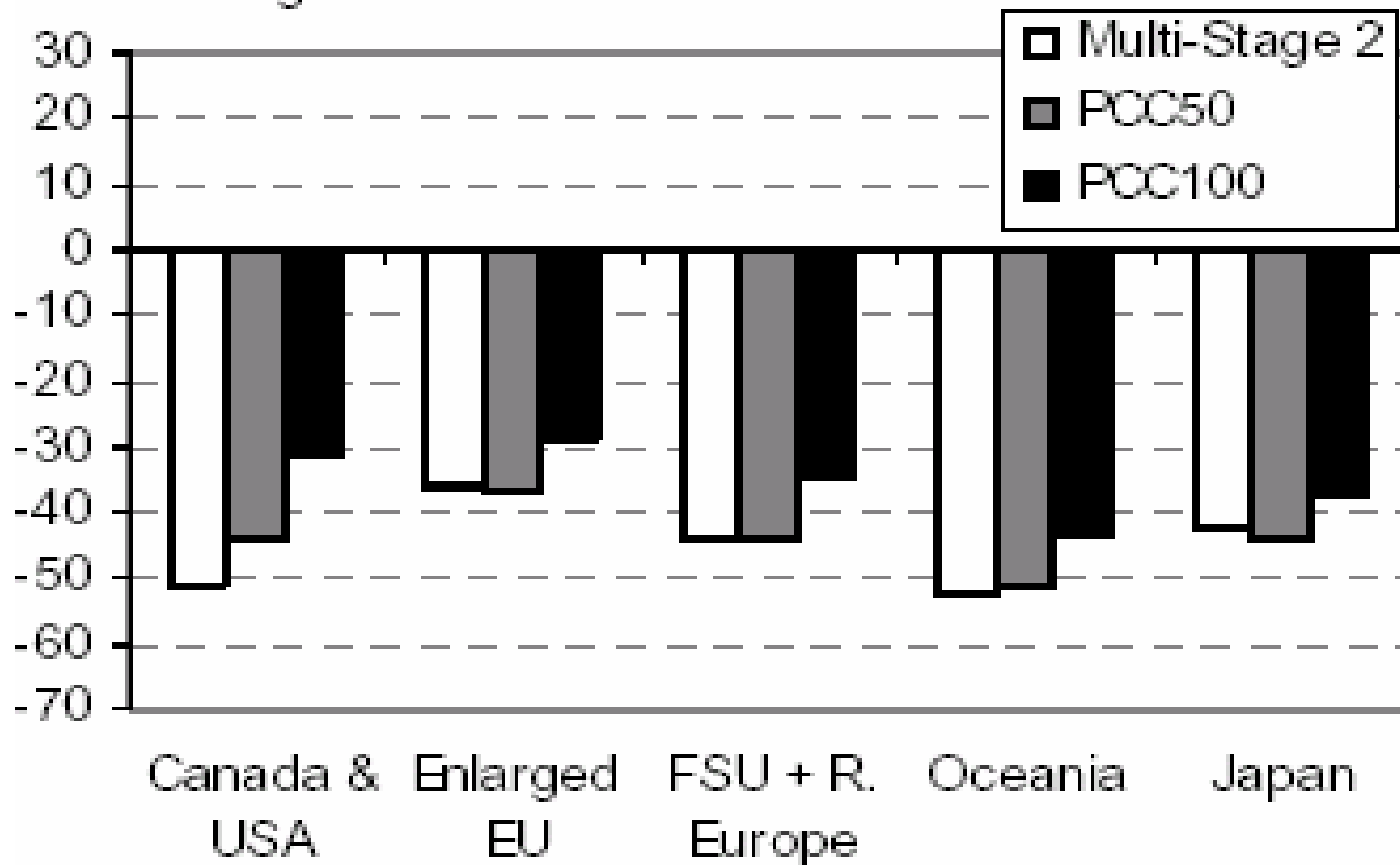
- 主要Non-Annex 諸国の早期参加

Regions	中米	南米	北アフ	西アフ	東アフ
Stage 2	2012	2012	2012	2055	2065
Regions	南アフ	中東	南アジ	東アジ	東南アジ
Stage 2	2012	2012	2015	2012	2012

MS (Stage 2 3)

Regions	中米	南米	北アフ	西アフ	東アフ
Stage 3	2015	2012	2050	2100	2100
Regions	南アフ	中東	南アジ	東アジ	東南アジ
Stage 3	2060	2012	2050	2015	2030

%-change from baseline-level in 2025



4. Addressing other issues

Other issues to be addressed

- Considerable GHG reduction should take place in order to achieve 550ppm.

Therefore...

1. ET is needed to minimize the cost associated with substantial GHG reduction.
2. Technological breakthroughs are needed (**under construction**).

The basic structure of ET in the context of the MS approach

- Let us assume today that trades take place only at the stage 3.
- (We might consider trades between stage 2 and stage 3.)
- Setting the price-cap

Participation timing for ET under KP and the MS approach

- The 1st commitment period (2008 ~ 2012)
annual extra supply: 200 ~ 450MtC
- 2013年 ~
US participation (creating extra demand of 300 ~ 500MtC annually)
- 2015年 ~
China, Central & South America, and Middle East participate
Potential sellers or buyers?
- 2030年 ~ Global GHG emissions will peak
SE Asia joins. GHG reduction takes place globally.

Price cap の価格設定

- 低価格

環境 × 経済

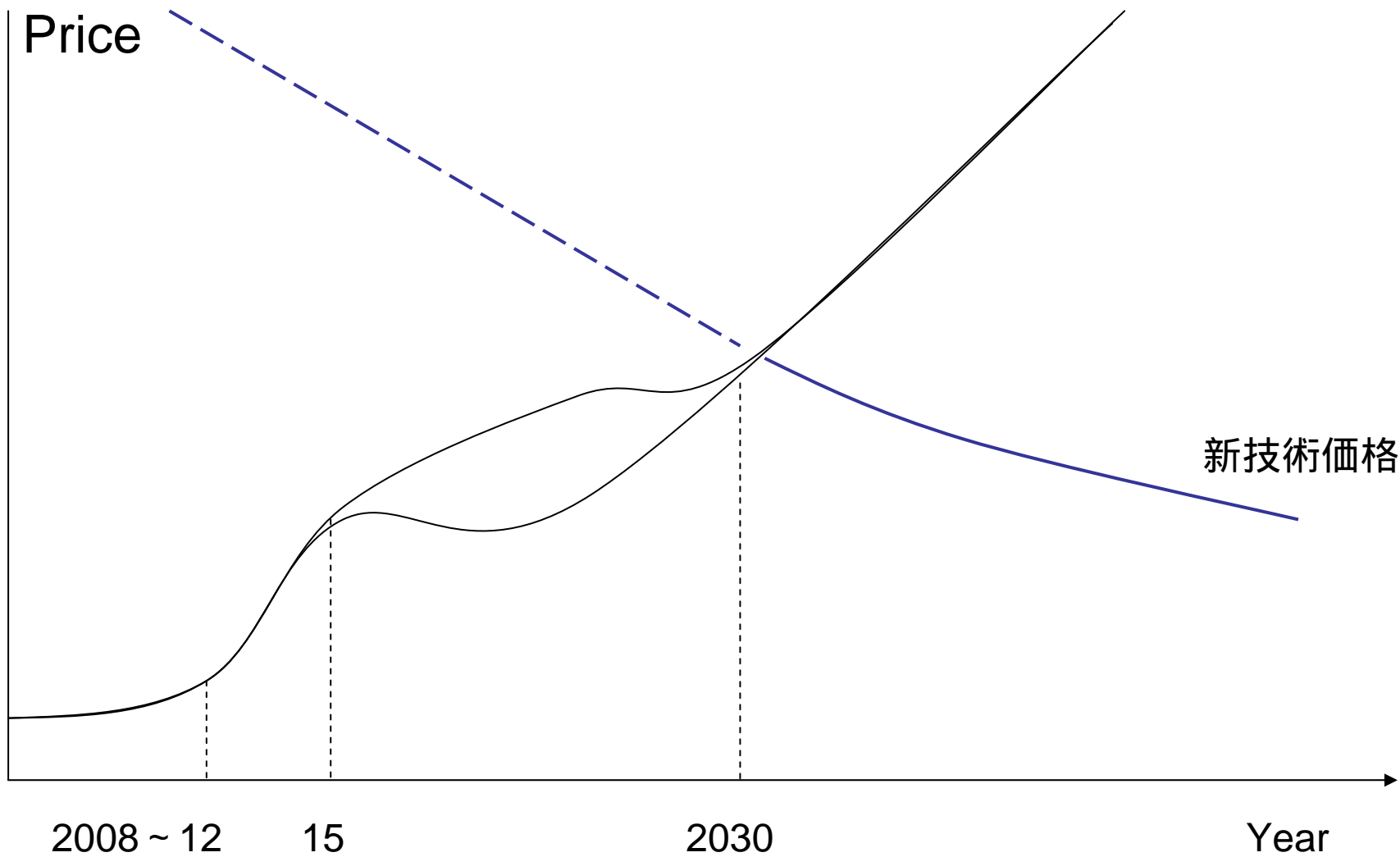
- 高価格

環境 経済 ×

Price capの経路

- 2013年以降
 - 米国の参加に伴って設定する必要性あり
 - 排出権価格の上昇に伴って徐々に上げていく
- 2030年以降
 - Price cap > 新技術の価格
 - 新技術の導入

Projecting the price for emission allowances in the context of the MS approach



2030年以降のPrice Cap

A: 排出権価格 B: 新技術価格

MAC

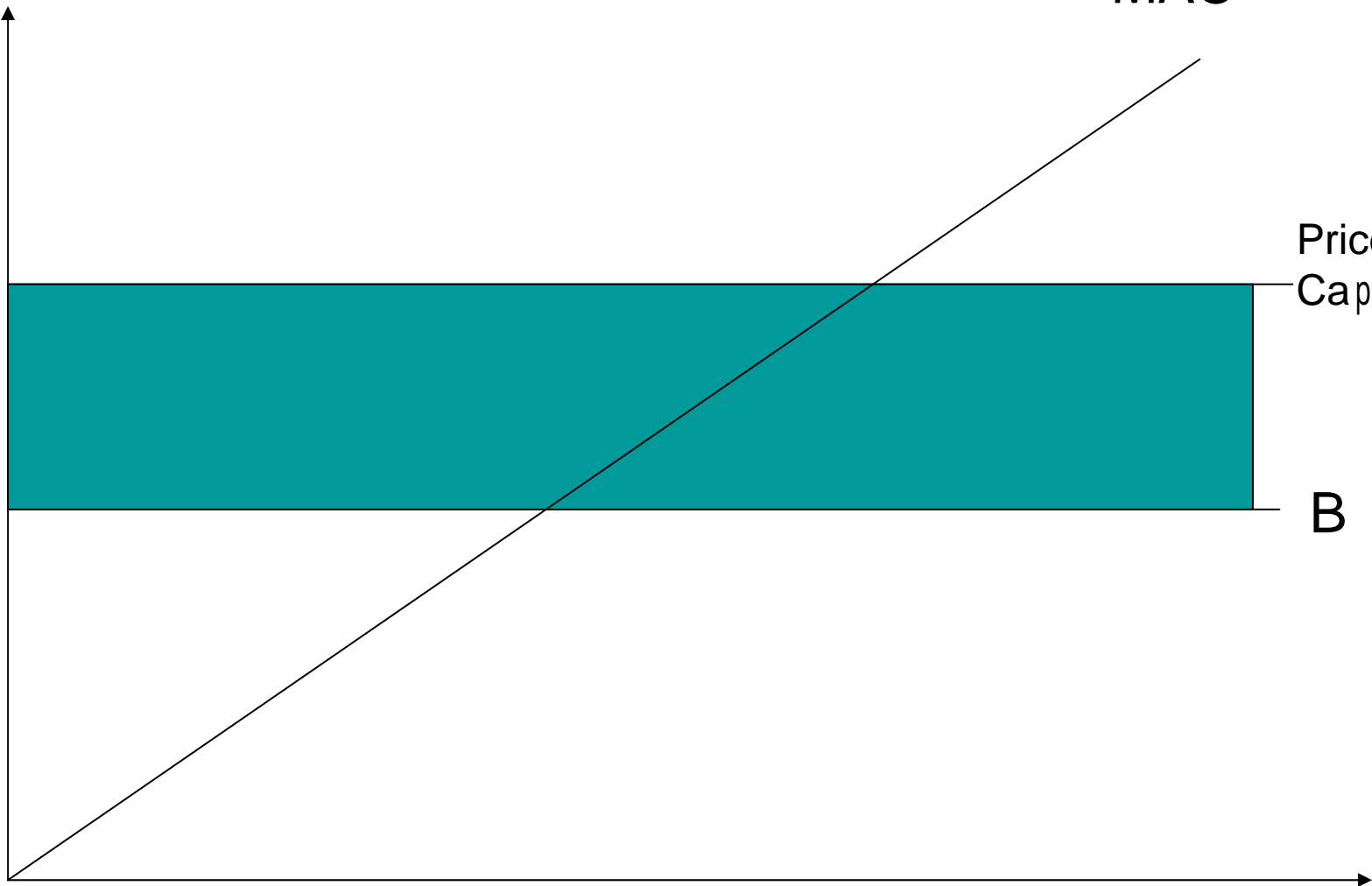
価格

Price
Cap

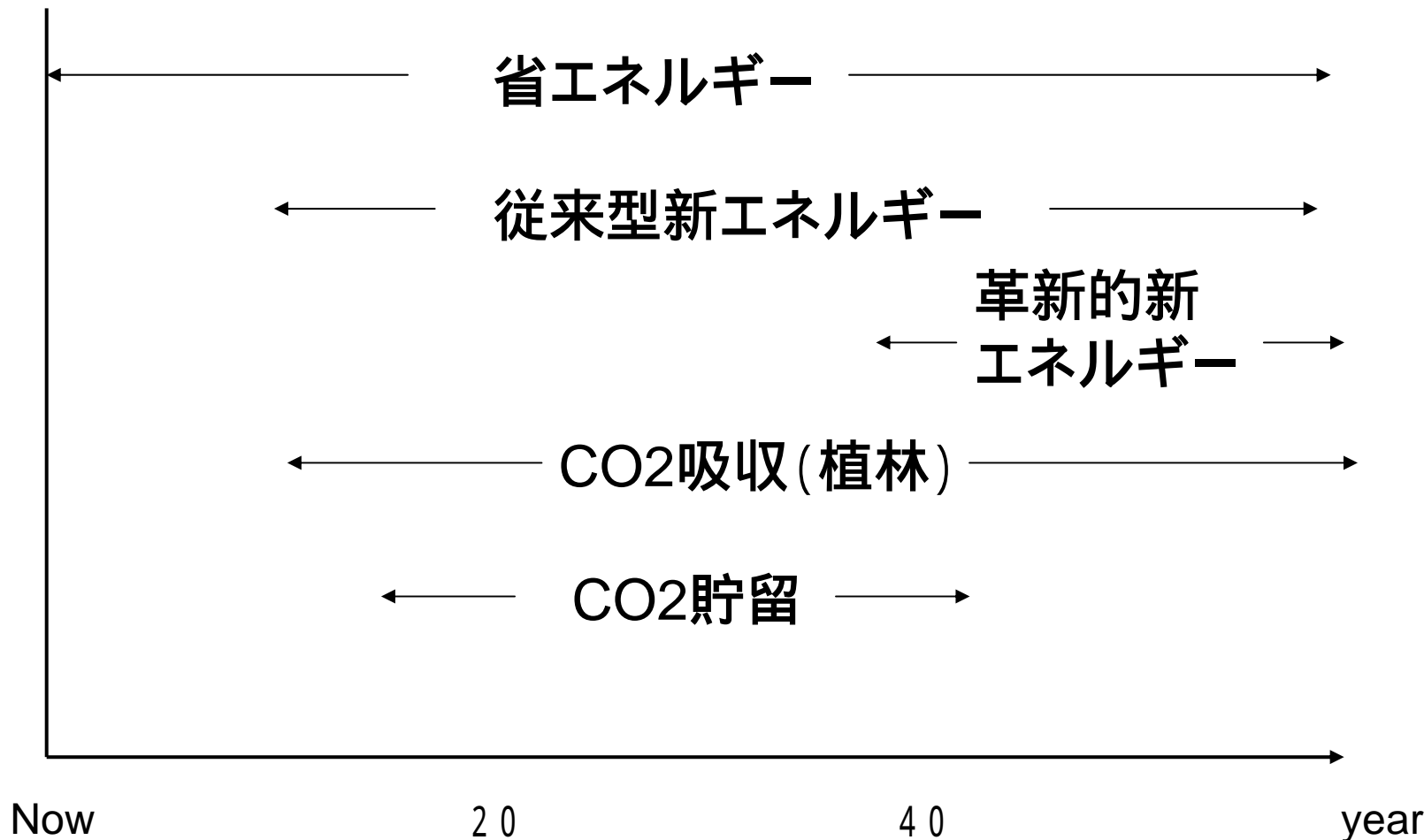
B

A

Emission Reduction



温暖化対策手段のイメージ

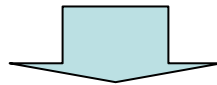


実現可能性の視点

- WRE排出経路はあくまで参考
550ppmをヘッジ戦略として目指す
- Step by step approach
5年～10年単位で目標設定を繰り返す
- 割り当て
一人当たり排出量収束の方向へ

Implication

- Price capが必要となるのは
 - . 2012年 ~ 米国の参加
 - . 2015 ~ 30年 途上国の参加
 - . 2030年 ~ 全世界的な大幅削減

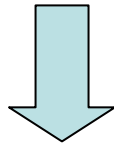


- 2030年以降は絶対量の大幅削減が必要
Cf. Cap & trade
革新的技術の普及が不可欠

5. Our proposal for the post-Kyoto regime

For the equal entitlement

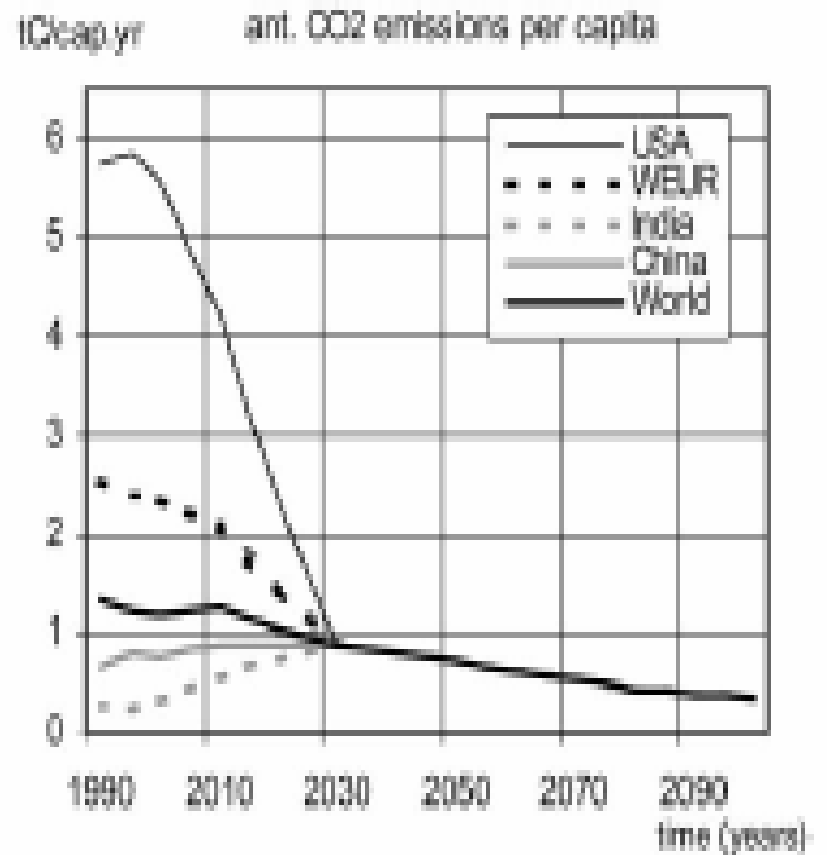
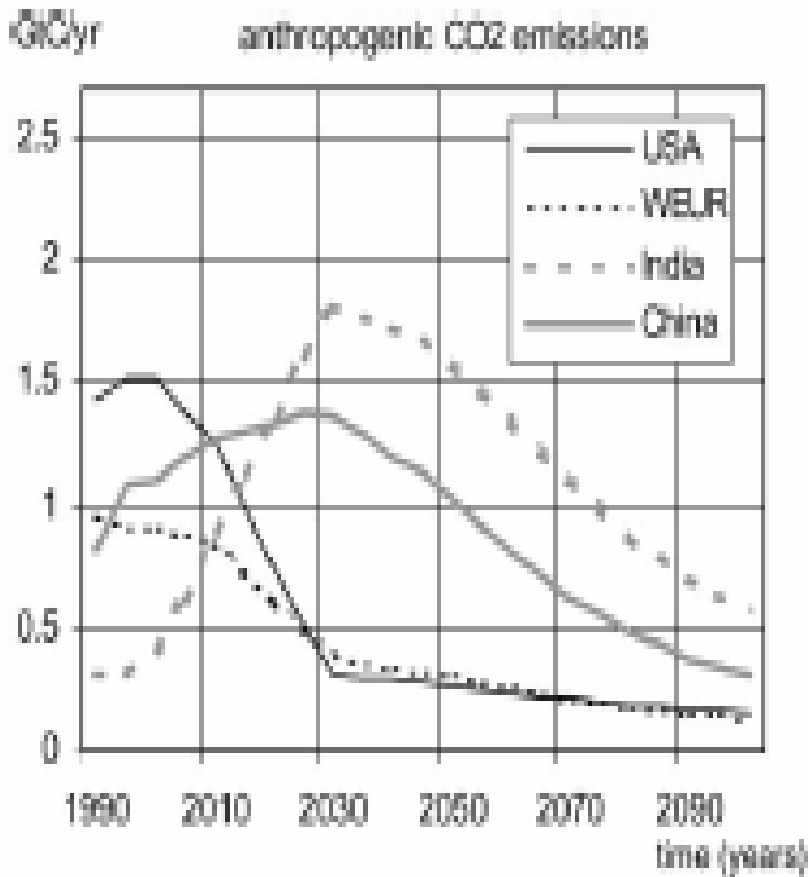
- Per capita emissions need to converge across countries.



PCC(C&C) approach

- Convergence of per capita emissions at a given year, say 2050.
- Simultaneous participation of every country right after the first commitment period of KP (2013)
- Stabilization of the GHG concentration level by 2100.

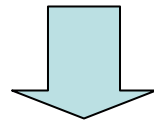
E.g. convergence year 2030 and 2100 stabilize at 450



resource : den Elzen(2001)

But...

- PCC requires every country to participate in the regime simultaneously with regardless of institutional, economic and social conditions.



This is the problem!!!!

- Must think of Timing differentiation

The amounts of allocated emissions in 2025

MtCO₂

45000

40000

35000

30000

25000

20000

15000

10000

5000

0

USA

Canada

OECD Europe

Eastern Europe

FSU

Oceania

Japan

Central America

South America

Nothern Africa

sub-Saharan Africa

ME& Turkey

South Asia

South-East & East Asia

World

