# What will be challenges for Copenhagen?

## - Challenges and prospects for negotiations towards COP15 -

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Yukari TAKAMURA
(Ryukoku University, Japan)
e-mail:yukarit@law.ryukoku.ac.jp

- Our challenges and emerging goal
- State of affairs of negotiation towards Copenhagen
- Possible agreement in Copenhagen
- Conclusion: emerging feature of post-2012 regime

# Our Challenges(1)

- Some scientific findings from IPCC AR4
  - Climate change is occurring.
  - Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.
  - likely that anthropogenic warming has had a discernible influence on many physical and biological systems.
  - very likely that all regions will experience either declines in net benefits or increases in net costs for increases in temperature greater than about 2-3°C and that developing countries (DCs) are expected to experience larger percentage losses.

# Our Challenges(2)

- The ultimate objective of the UNFCCC
  - To achieve "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. 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." (Article 2)

# Our Challenges(3)

- Global emissions of GHGs need to peak in the next 10-15 years and need to be reduced to very low levels, well below half the levels in 2000 by the middle of the twenty-first century in order to stabilize their concentrations in the atmosphere to attain the most stringent mitigation levels to avoid dangerous climate change. (IPCC 2007)

# Shared long term goal?(1)

- In Toyako Summit (2008), G8 countries endorsed "the goal of achieving at least 50% reduction of global emissions by 2050" as the goal that G8 countries want to "share with all Parties to the UNFCCC and together with them to consider and adopt in the UNFCCC negotiations".
- L'Aquila Summit (2009) reaffirmed "at least 50% by 2050", "recognizing that it implies that global emissions needs to peak as soon as possible and decline thereafter". It also expressed its support to a goal of developed countries reducing emissions in aggregate by 80% or more by 2050.

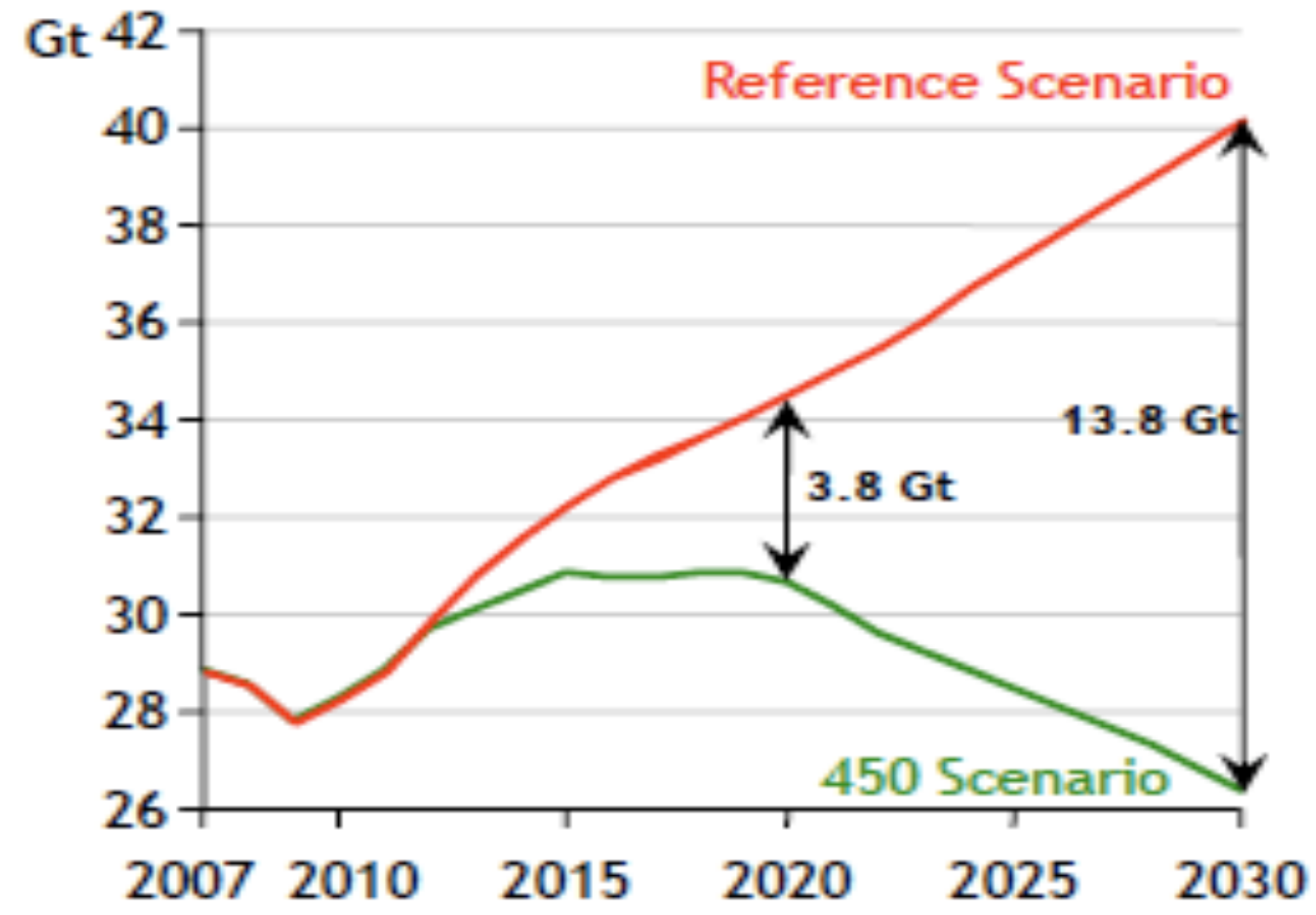
# Shared long term goal?(2)

- L'Aquila Summit also recognized the broad scientific view that increase in temperature above pre-industrial levels ought not to exceed 2 degree.
- Basically, countries agree on drastic cut of global emissions by the middle of this century.
- Developing countries argue that long term target must be ambitious and underpinned by strong mid-term target by developed countries.

| Category | CO2 concentration (ppm) | CO2-eq concentration (ppm) | Global mean temperature increase above pre-industrial (℃) | Peaking year for CO2 emissions | Change in global CO2 emissions in 2050 (% of 2000 emissions) |
|---|---|---|---|---|---|
| I | 350-400 | 445-490 | 2.0-2.4 | 2000 - 2015 | -85 to -50 |
| II | 400-440 | 490-535 | 2.4-2.8 | 2000 - 2020 | -60 to -30 |
| III | 440-485 | 535-590 | 2.8-3.2 | 2010 - 2030 | -30 to +5 |
| IV | 485-570 | 590-710 | 3.2-4.0 | 2020 - 2060 | +10 to +60 |
| V | 570-660 | 710-855 | 4.0-4.9 | 2050 - 2080 | +25 to +85 |
| VI | 660-790 | 855-1130 | 4.9-6.1 | 2060 - 2090 | +90 to +140 |

Source: IPCC AR4 (2007)

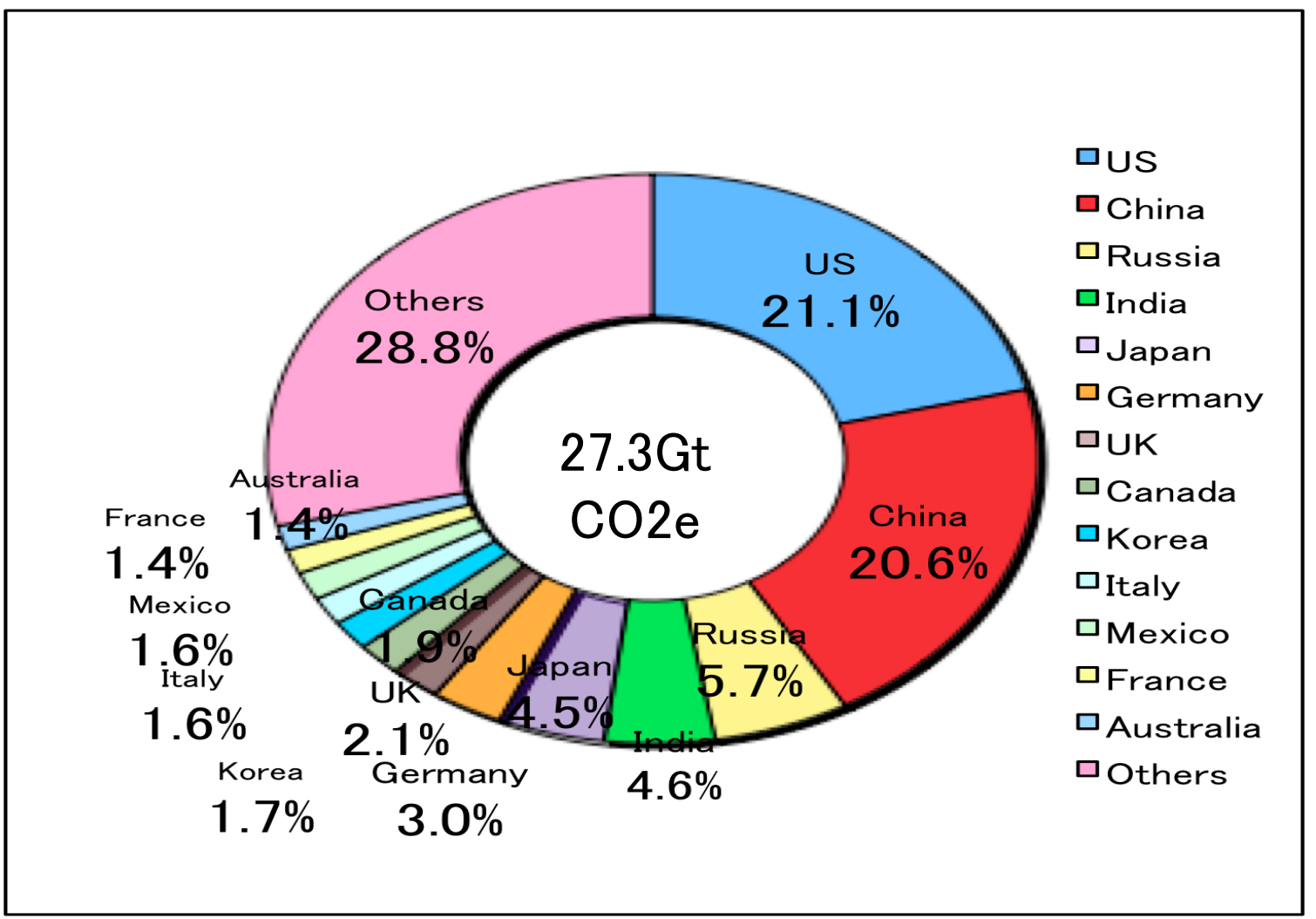
# Gap between reference scenario and 450 scenario





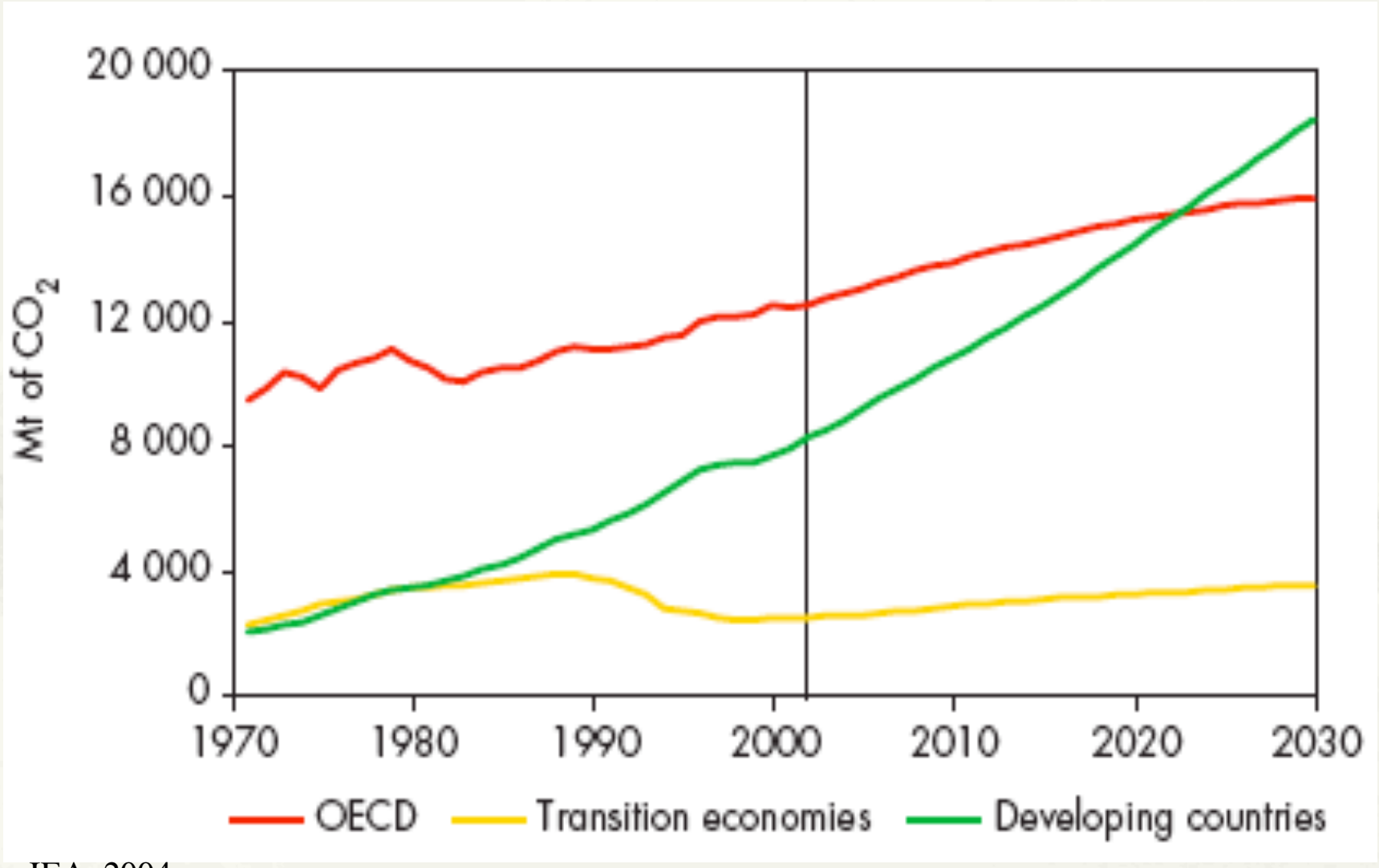

Source: IEA 2009

# GHG Emissions by Country (2006)



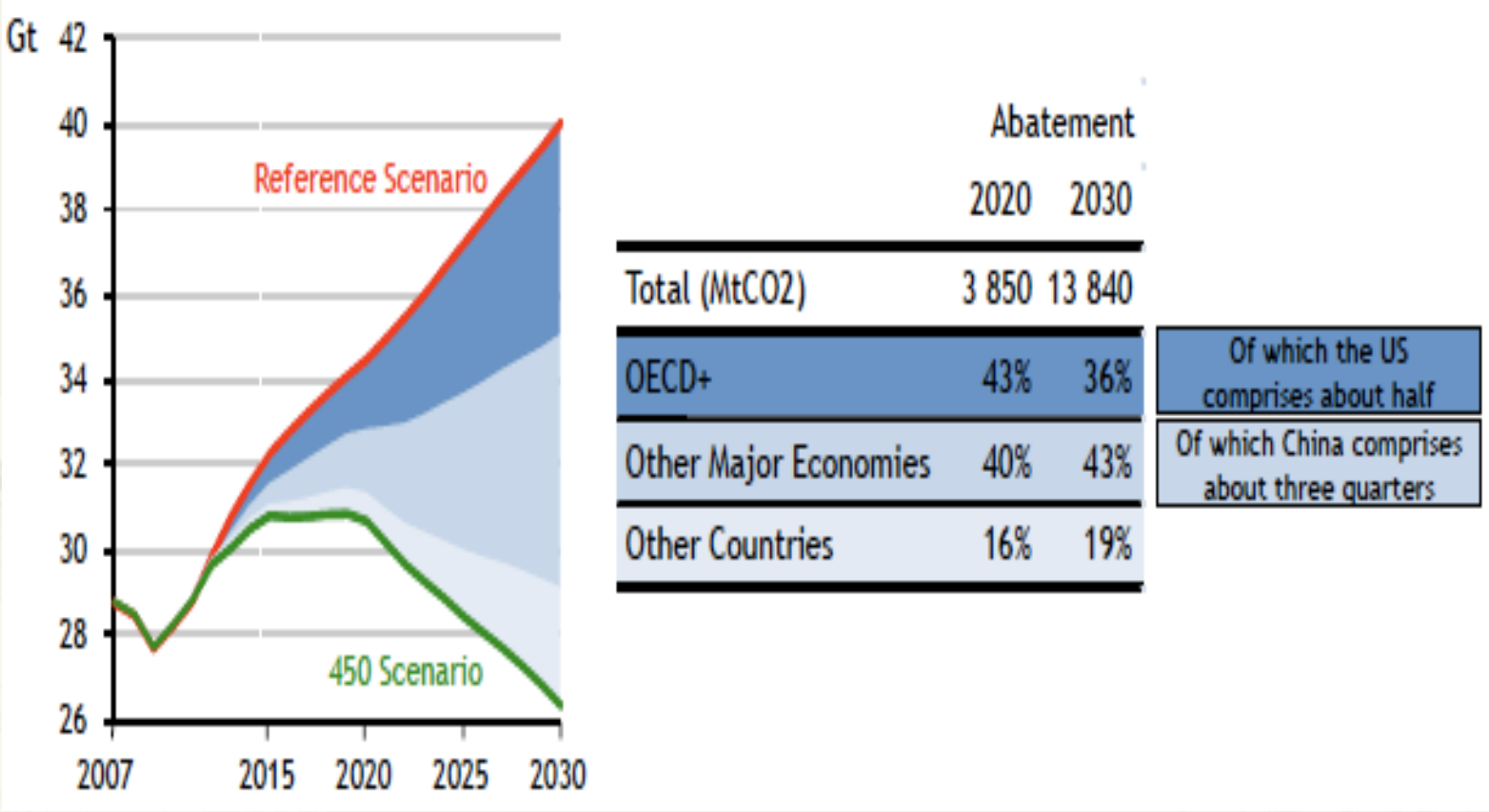

Source: JCCCA website, 2009

# Energy-Related CO2 Emissions by Region




Source: IEA, 2004

# Geographical location abatement in the 450ppm Scenario




| | Abatement 2020 | 2030 | |
|---|---|---|---|
| Total (MtCO2) | 3 850 | 13 840 | |
| OECD+ | 43% | 36% | Of which the US comprises about half |
| Other Major Economies | 40% | 43% | Of which China comprises about three quarters |
| Other Countries | 16% | 19% | |



Source: IEA, 2009

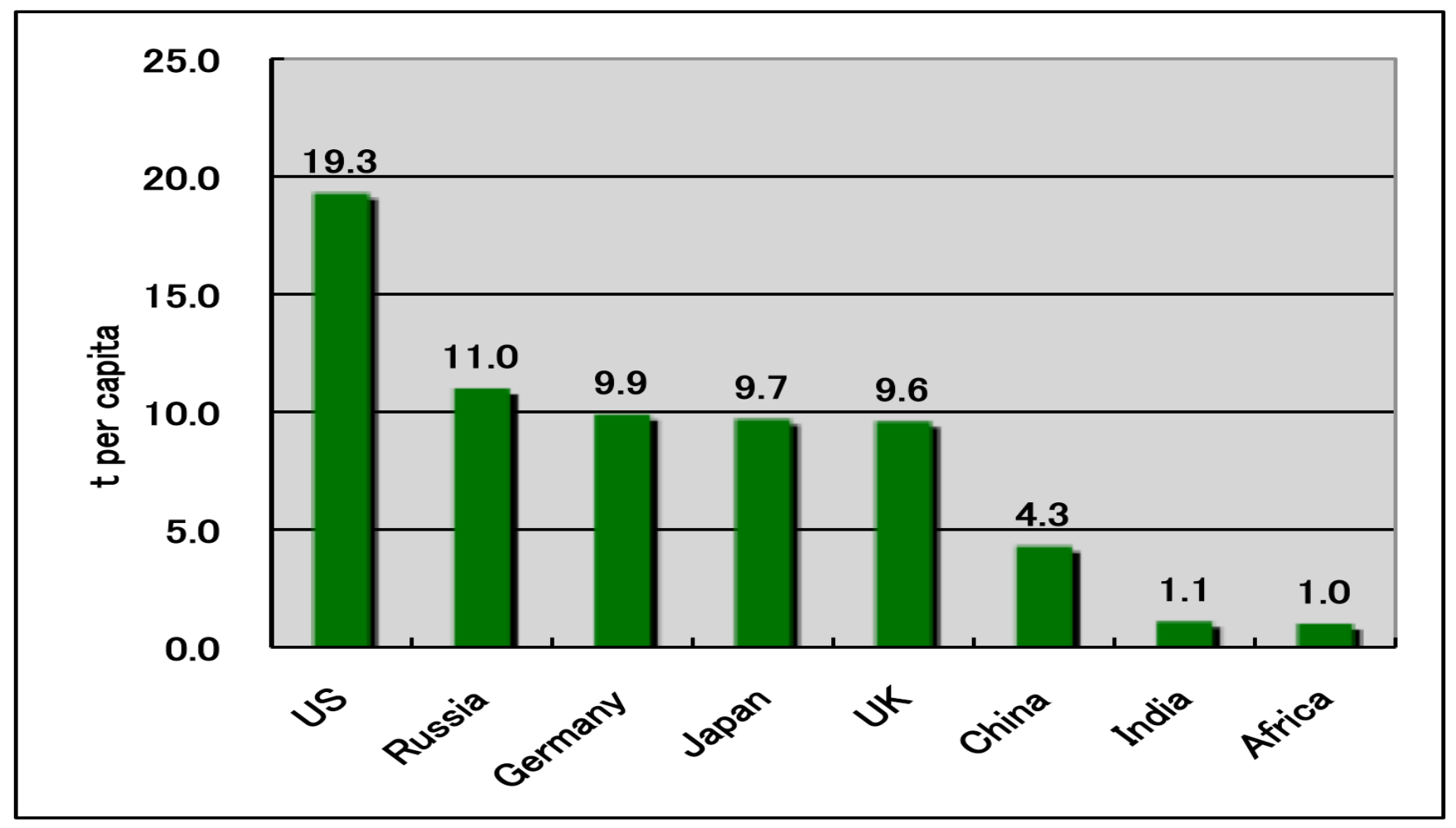
# Equity implications
## (all GHG emissions without LULUCF)

| Scenario category | Region | 2020 | 2050 |
|---|---|---|---|
| A-450 ppm $CO_2$ –eq[2)] | Annex I | -25% to -40% | -80% to -95% |
| | Non-Annex I | Substantial deviation from baseline in Latin America, Middle East, East 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 |



Source: IPCC,2007

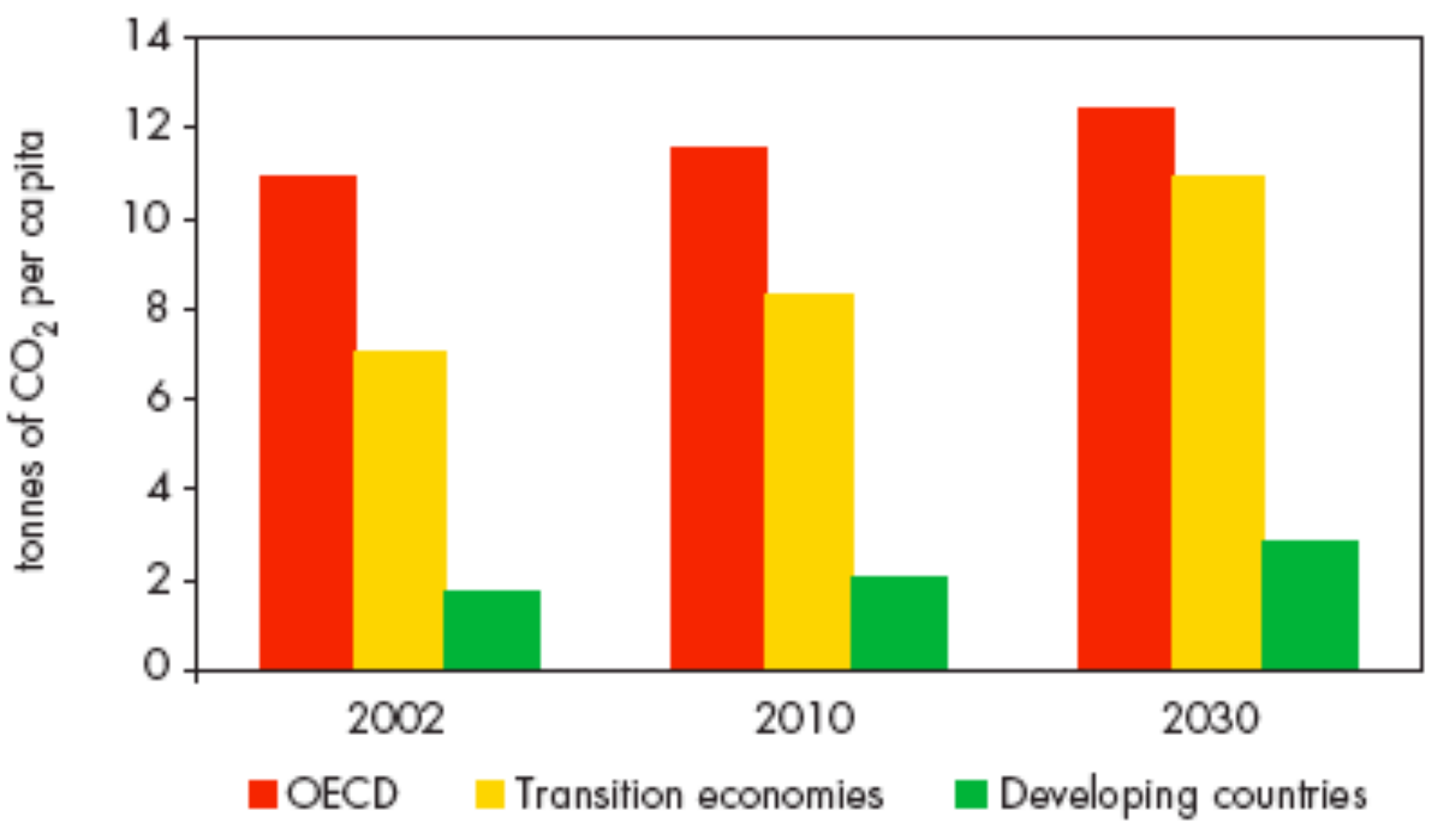
# Per Capita GHG Emissions(2006)






Source:Takamura based on IEEJ, Handbook on Energy & Economic Statistics in Japan 2008

# Per Capita Energy-Related CO2 Emissions by Region






Source: IEA, 2004

# Implication of the goal(1)

- The emerging long-term target requires us to reduce emission more drastically and rapidly and to move as quickly as possible towards a low carbon society.
- Post-2012 climate regime should deliver significant reduction to make global emission peak out by 2020.
- Failure in establishing a really effective regime would lead to a failure, or if not, making it difficult, to achieve the long-term target.

# Implication of the goal(2)

- In order that a post-2012 regime should be effective, both developed countries and developing countries' mitigation efforts are essential.
- Emission reduction should also occur in DCs, but its cost may be in part assumed/ shared by international community.
- International cooperation are more than important to support reduction actions by DCs and to establish a mechanism to make such actions more effective.
- A deal in Copenhagen is therefore crucial for achieving the ultimate objective.

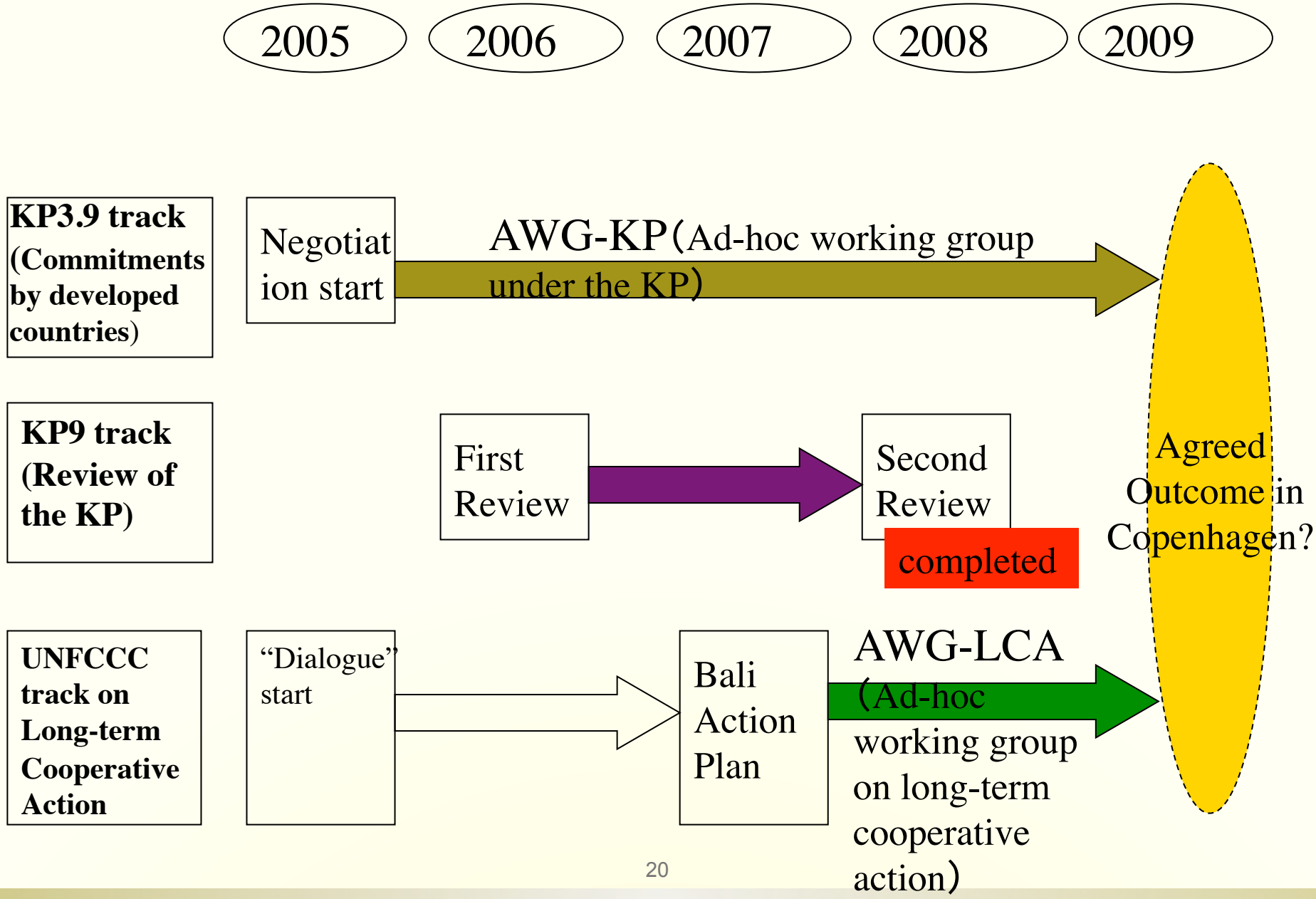
# History of Climate Negotiation

* 1988 Establishment of IPCC
* 1992 UNFCCC adopted (entry into force in 1994)
* 1995 COP1: Berlin Mandate adopted
* 1997 Kyoto Protocol (KP) adopted
* 2001 Marrakesh Accords (draft of implementation rules) adopted
* 2005 Entry into force of the KP; Negotiation under the KP (AWG-KP) started
* 2007 Bali Action Plan (BAP) adopted; Negotiation under the UNFCCC (AWG-LCA) launched
* 2009 COP15 (expect to have an "agreed outcome")

# 2 track negotiations

- Negotiations toward Copenhagen in 2 tracks
  - Negotiation for developed countries' commitments beyond 2012 under the KP (AWG-KP) since 2005
  - Negotiation under the UNFCCC (AWG-Long-term Cooperative Action (LCA)) since 2007 (Bali Action Plan)

# Post-2012 Negotiation since 2005



# AWG-KP(1)

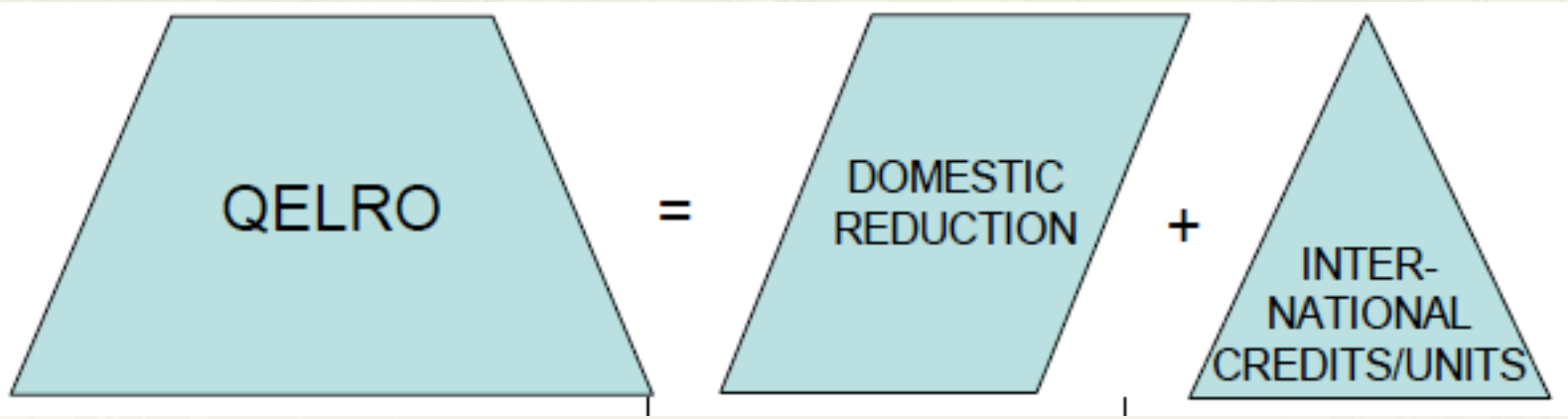
- Negotiation aiming to agree on developed countries' commitments beyond 2012 under the KP
  - "Commitments for subsequent periods for Parties included in Annex I shall be established in amendments to Annex B to this Protocol... [The COP/MOP] shall initiate the consideration of such commitments at least seven years before the end of the first commitment period..." (Article 3.9)

# AWG-KP(2)

- Negotiation focusing on:
  - Proposal for amendments to the KP
    - Annex B (including numbers)
    - Relevant articles such as Articles 3.1; 3.7; 3.9; ...
  - Other related issues
    - Kyoto mechanisms; LULUCF; coverage of gases and sectors (including international aviation and maritime transport); others

# AWG-KP(3)

- Countries already agreed that:
  - Kyoto mechanisms and LULUCF continue to use under the KP.
  - further commitments for Annex I Parties should, for the next commitment period, principally take the form of quantified emission limitation and reduction objectives (QELROs) (=Kyoto-type target)



# AWG-KP(4)

- Based on pledges by developed countries, focus is on scale of aggregate emission reduction by developed countries.
- Increasing necessity for more consistency with AWG-LCA.
- Some technical issues:
  - Baseyear：1990 or other/ Single year or multiple years
  - Commitment period
    - 5 years x 1; 5 years x 2; 8 years x 1; 8 years x 2

Table: Information on possible quantified emission limitation and reduction objectives

| Country | Range or single value by 2020 | Reference year | Inclusion of LULUCF | Inclusion of mechanisms | Status |
|---|---|---|---|---|---|
| Australia | −5 to −15%; or −25% | 2000 | Yes | Yes | Officially announced |
| Canada | −20% | 2006 | TBD | TBD | Officially announced |
| EU | −20 to −30% | 1990 | No for −20%; Yes for −30% | Yes with limitation | Adopted by legislation |
| Japan | −25% | 1990 | No | No | Officially announced |
| NZ | −10 to −20% | 1990 | Yes | Yes | Officially announced |
| Norway | −30% to −40% | 1990 | Yes | Yes | Officially announced |
| Russia | −10 to −15% | 1990 | TBD | TBD | Officially announced |
| Switzerland | −20% to −30% | 1990 | Yes | Yes | Consultations in progress |
| Kyoto Annex I in Aggregate | −16 to 23% (including deforestation only); −15 to 22% (including all LULUCF) | | | | |
| | | | | | |
| USA | −14% to −18% | 2005 | − | − | −14% based on USA, Office of management and budget (2009)−18% comes from estmate of reduction based on Waxman−Mackey bill. |
| Aggregated by AOSIS | −10% to −16% | 1990 | − | − | As of August 11, 2009, which does not reflect new pledge by Japan. |

Source: Takamura based on Informal note by the UNFCCC secretariat (29 August 2009) and

Aggregate Annex I reductions for 2020 (as of 11 August 2009, compiled by AOSIS)

# AWG-KP(5)

- Proposals on improved/new market mechanisms
  - Improving CDM
  - Co-benefit requirement
  - Crediting Nationally Appropriate Mitigation Actions (NAMAs) and sectoral actions
- International aviation and maritime transport

# AWG-LCA(1)

- Negotiation track in which all parties participate.
- Discuss both mitigation by developed and developing countries.
- Ideas and views had been submitted and exchanged in 2008. Shift to full negotiation mode in 2009.

# AWG-LCA(2)

- Negotiation has achieved at:
  - Revised Negotiating Text (outcome of June 2009 session)
  - From August meeting, narrowing down will start.
  - Mitigation/Adaptation/Technology/Finance/ Shared vision/Capacity building
  - Still significant volume of negotiation text remains on the table.

# Mitigation by developed countries

- Quantified emission limitation and reduction objectives (Kyoto-type target) are the most likely ones to be agreed upon.
- Some nuance in the position of some developed countries.
  - Appendix for all parties and "Conformity with domestic law" clause (US Implementing Agreement proposal)
  - National schedule approach (Australian proposal)
- Comparability among developed countries.
  - Necessity of more consistency with AWG-KP work.

# Mitigation by developing countries

- Nationally Appropriate Mitigation Action (NAMA) will be the core of DCs' action.
  - Derives directly from the BAP.
    - "NAMAs by DC Parties in the context of SD" should be "supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner".
  - Actions will be recognized and "register"ed internationally.
  - Matching NAMA with technological and financial support by developed countries.
  - How to institutionalize the idea is one of the key points of negotiation.

# NAMA(1)

- Advantages
  - More appropriate than QELROs in light of current situation of DCs.
    - No precise data on national wide emissions.
    - Difficult to set an appropriate level of target in case emission is projected to continue to increase.
  - Could incentivize DCs to take more actions to decarbonize their economy and society.

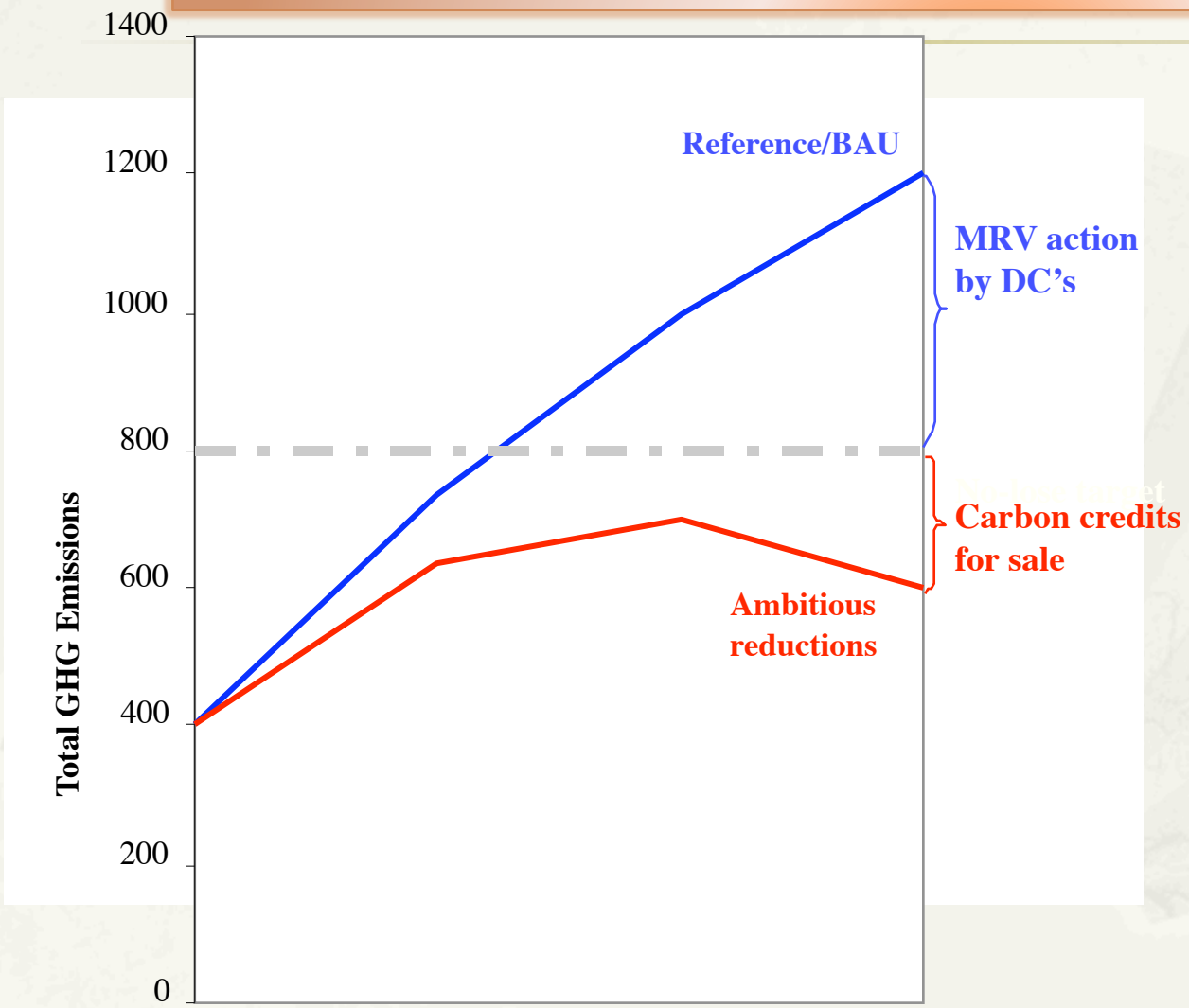
# NAMA(2)

- Challenges
  - Definition of NAMAs, especially the ones that receive international support
  - How to match NAMAs with support to incentivize these actions.
  - How to measure and verify the effectiveness of efforts under NAMAs.
  - How effective in case of “insufficient efforts”

# Sectoral approach

- Sectoral approach: views are diverse.
  - Should be limited to technological cooperation.
  - More focused actions on a specific sector.
    - Agriculture
    - International aviation and maritime transport.
  - Sectoral Crediting Mechanism (SCM) (no-lose target) and Sectoral Trading (ex. EU)

# No-lose targets to credit emission reductions




- Builds on enhanced mitigation action by DC's
- Carbon market incentive for additional emission reductions based on a "no-lose target"
- Limit compliance risk for DC's if target is not met

Source: EU Commission

# SCM(1)

- Advantages
  - More appropriate than QELROs in light of current situation of DCs.
    - No precise data on national wide emissions.
    - Difficult to set an appropriate level of target in case emission is projected to continue to increase.
  - Experience at a sector level would enhance the capacity of DCs.

# SCM(2)

- Challenges
  - Importance and difficulty in setting the baseline for crediting.
    - Loose baseline would lead to an increase in global emission.
    - It might disturb the functioning of carbon market.
  - How effective in case of “insufficient efforts”

# Overarching issues on mitigation

- "Common" or "differentiated" responsibilities
  - Developed countries argue for common framework/ platform on mitigation while degree and strength of responsibilities should be differentiated.
  - DCs, especially major economies, argue that commitments by developed countries and the ones by DCs are distinct in nature and strength.

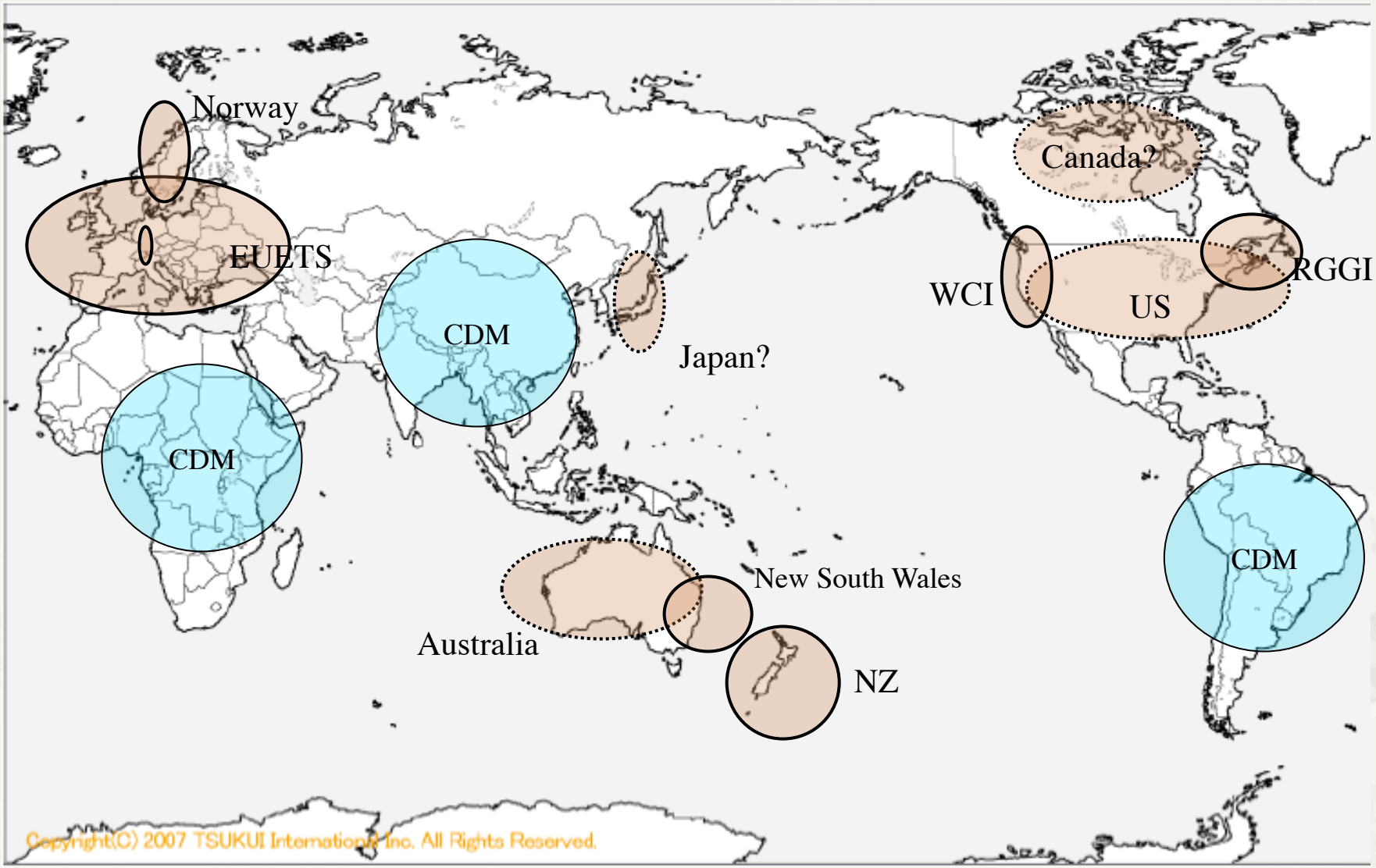
# Investment and financial flows are key

- Returning global emissions to current levels in 2030 requires additional investment and financial flows about 200 billion US dollar in 2030 (UNFCCC Secretariat 2007). Updates in 2008 show that they will be 170% higher. Over half would be needed in DCs (UNFCCC Secretariat 2008).
- Financial and investment flows necessary for adaptation will amount to some dozen to some hundred billion US dollar annually.
- Private funds will play a crucial role.
  - will constitute the largest share of investment and financial flows (86 %) (UNFCCC Secretariat 2007).

# Evolution of Carbon Market

- 1,834 CDM projects registered and about 2,800 more projects in the pipeline.
- More than 2.7 GtCO2 is expected to be reduced by 2012 through CDM.
  - Corresponds to 2 year's aggregated emissions of Japan.

    (UNEP Risoe Center, CDM pipeline, as of 1st October 2009)
- In 2007, 7.4 billion US dollar was transacted.
  - Equivalent 3 times of 4 year (2002-2006) GEF funding (GEF3).
- The CDM Executive Board reported that the amount of investment to developing countries under the CDM by the end of 2006 is 26 billion US dollar.
- Windows for emission reduction in developing countries and for funding necessary for such reduction.


Norway
EUETS
CDM
CDM
Japan?
Canada?
WCI
US
RGGI
New South Wales
Australia
NZ
CDM
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# Additional funding is still necessary

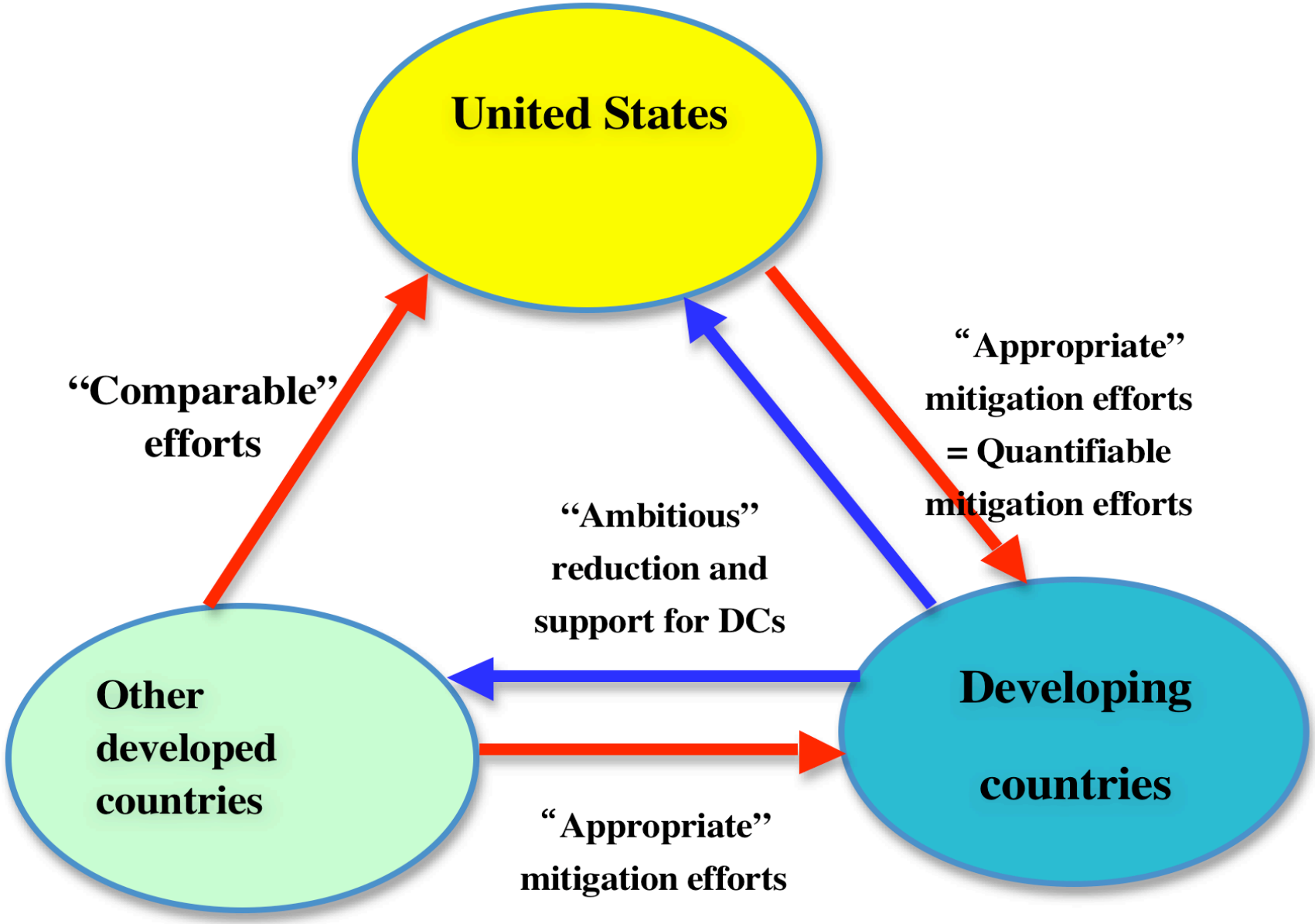
- Some mitigation actions might not match with market mechanisms.
  - Particularly for sectors in developing countries in which private sector is reluctant.
  - Assisting developing countries in making policy and measures.
- Technology transfer and adaptation.
- The GEF share of total multilateral and bilateral funding between 1997 and 2005 is 1.6 per cent.

# Proposed options for funds raising

- Expanded application of a levy similar to the 2% share of proceeds from CDM to international transfers of other credits.
- Contribution by DCs according to capability
- Auction of allowances
  - By developed countries (Norwegian proposal)
  - By international aviation and maritime emitters
- International levy
  - On emissions (Swiss proposal)
  - On international air travel (LDC proposal).
- Tobin tax: tax on currency transactions

# How will be Copenhagen Agreement?

- Most of main players desire an agreement for Post-2012 regime, but not without conditions.
- It appears almost unlikely that countries will agree on "all" issues with detailed rules because of time constraint.
- Many unsettled issues still remain on the table, including legal form of post-2012 agreement.
- Possible agreement in Copenhagen will (or should) be a political agreement on crucial issues. Such a political agreement will be adopted in the form of COP decision, which is no legally binding.


United States
"Comparable" efforts
"Appropriate" mitigation efforts = Quantifiable mitigation efforts
"Ambitious" reduction and support for DCs
Other developed countries
Developing countries
"Appropriate" mitigation efforts

# Legal form of post-2012 regime (1)

- 3 possible options for legal form
  - New single legal instrument (protocol, implementing agreement) (US, Australia, Japan...)
    - Strong opposition from DCs
  - Amendment of the KP (for developed countries except US) + New legal instrument (for US and DCs) (South Africa, Tuvalu...)
  - Amendment of the KP (for developed countries except US) + COP decision (for US and DCs)

# Legal form of post-2012 regime (2)

- Legal form matters: legal form impacts strength of commitments and therefore delicate balance of a possible agreement.
  - Developed countries would be able to accept the agreement if commitments by US and/or DCs will be non-legally binding?
  - DCs would be able to accept the agreement if commitment by US will be non-legally binding?

# What will/should be agreed upon in Copenhagen?

- Although it appears unlikely that all issues will be decided, an agreement in Copenhagen is still crucial in order to have a final agreement on post-2012 regime.
- What will/should be agreed upon?
  - Basic elements of post-2012 regime
    - Mitigation by developed countries and by DC/ Support for DCs....
  - Legal form of agreement on post-2012 regime
  - Some issues which have not been settled, especially which may have impact on numerical targets
  - Numerical targets??
    - Long-term target (global and/or developed countries)
    - Mid-term target for developed countries
  - Mandate and schedule for further negotiation beyond

# Conclusion (1)

- Clear political direction has emerged towards a low carbon society and economy.
- Agreement on post-2012 regime and therefore an agreement in Copenhagen is crucial for achieving that direction and long-term target.
  - Every year of delay adds $500bn to the energy sector's mitigation costs between today & 2030. (IEA 2009)
- Negotiation is much more complex and difficult to achieve an agreement compared to KP negotiation.

# Conclusion (2)

- Scientific progress allows countries to make a more science based and effective framework while it is not easy to agree on a regime capable to deliver the level of reduction science requires.
  - ex. Negotiation on long-term target, necessary level of financial flow to achieve the target...
- Level of mitigation efforts by US and DCs and level of financial support are key for the agreement in Copenhagen.
  - Progress in deliberation on Waxman-Mackey bill by the US Senate will matter.

# Conclusion (3)

- Emerging main feature of possible post-2012 regime
  - Kyoto-type numerical target for developed countries
  - Mitigation actions for DCs
  - Much stronger mitigation efforts in aggregate than the KP.
  - Scaled up financial support for DCs.
    - Necessary to elaborate long-term strategy for finance
  - Expanded carbon market
  - These are to be framed by long-term low carbon strategy.

Thank you for your attention!

Yukari TAKAMURA
E-mail: yukarit@law.ryukoku.ac.jp

- 1) "Multi-level Environmental Governance for Sustainable Development" (FY2006-2011) (project leader: Professor Kazuhiro Ueta (Kyoto University)), funded by MEXT Grant-in-Aid for Scientific Research on Priority Areas (for more information, see http://www.sdgovernance.org/english/);
- 2) “Theory and Practices on Cost Allocation regarding Climate Change” (FY2009-2012)(project leader: Yukari Takamura (Ryukoku University), funded by MEXT Grant-in-Aid for Scientific Research (B) ; and
- 3) "Study on Decision-Making by Major Countries regarding International Climate Policies Beyond 2012" (FY2009-2011) (project leader: Dr. Yasuko Kameyama (National Institute for Environmental Studies (NIES))), funded by Global Environmental Research Fund of the Ministry of the Environment, Japan.