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Global Participation and Sustainable Development : *Korea's Perspectives*

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Prospects of Climate Change Negotiation

Marrakesh *to* Delhi

■ Marrakesh Accords

- paving the way for widespread ratification of the Kyoto Protocol
- providing the operational detail required to move the Kyoto Protocol from framework designing stage to implementation stage

■ Delhi Declaration

- beginning of shift in climate change negotiations from the specifics of implementing the Kyoto Protocol to the question of what happens next
- the emergence of a vigorous debate over next step in the development of an international framework for climate change
- beginning of dialogue on equitable sharing of responsibility for protecting climate

Entry into Force of the Kyoto Protocol

- Entry into force of the Kyoto Protocol in 2003 is now a possibility.
 - EU, Canada and Japan(O) ; US and Australia(X)
 - the timing for its entry into force depending on Russia's ratification
 - Russia's conflicting signals (COP-8) on the likely timing of a ratification, but remained optimism on Russia's ratification in 2003
- Postponed entry into force of the Kyoto Protocol (if)
 - return of US to the Kyoto Protocol
 - commitments of leading developing countries such as Korea and Mexico
- Rejection of Kyoto Protocol (if)
 - new system with global participation

Prospect of Kyoto Treaty

- Effectuation of Kyoto treaty excluding US and some other countries ➤ two tracks of efforts by developed countries :
 - most countries : ratification of the protocol and implementation of domestic P&M to meet the binding target
 - US : pursuit of a separate climate change strategy, initially, separated from the international regime
- No clear potential on interaction between the US framework and the Kyoto framework
 - participation of US in international emission trading
- Two important areas of uncertainty have implications for the economic consequences of Kyoto Treaty
 - future targets
 - party participation

Future Targets and Party Participation

■ Future targets

- current emission targets applying only to 2008-2012
- further negotiation required on targets for the second and subsequent commitment periods, either as amendments to the protocol itself or as an entirely new agreement
- size and timeframe for these targets having considerable bearing on the costs of achieving them

■ Party participation

- ratification by some combination of key parties required for entry into force of Kyoto Protocol
- overall economic impacts influenced by the combination
- questions for significant long-term reduction of GHGs
 - developing country participation in emission abatement
 - possibility of any interaction between the Kyoto Protocol and the US framework

Global Participation

- The issue of developing country participation largely avoided in the UNFCCC negotiation
- Developing countries are expected to avoid the discussion about developing country participation without participation of US in Kyoto Protocol
- US approach to climate change
 - lack of developing country commitment => unfairness condemning developing countries to slow growth or no growth
 - flexible target : provides one of the potential avenues for bringing developing countries into the global abatement effort
 - facilitation of economic growth of each country
- Timing, threshold, flexibility of target, burden sharing, stringency, binding or non-binding of developing country commitment
 - worthwhile to analyze and change information informally at expert level

Position of Korea (1)

- Ratification of the Kyoto Protocol
 - endorsed by the National Assembly in 2002
- Timing of commitment to GHG emission reduction target
 - declared Korean government's intention to set the target during the *third commitment period* (1998)
- Forms of commitment for developing countries
 - new approach maintaining sustained economic growth in those countries
 - prefer a more flexible architecture to the current fixed target option of the Kyoto Protocol.
 - a dynamic target option in which indexes are assigned based on key economic variables.

Position of Korea (2)

- Per GDP emissions target : one of the preferable methods
 - inviting developing countries to commit to global efforts
 - arguments due to difficulties in GDP verification
- Research on various scenarios of GHG emissions reduction target led by Korea Energy Economics Institute (KEEI)
 - timing and forms of commitments, and their impacts on the national economy
 - focus on the best course of action minimizing the negative impacts on the national economy

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Global Participation

Modeling Approach : GTEM-KOR

- Based on GTEM with GTAP database and GEMAPCK software
- Multi-commodity, multi-region, dynamic CGE model
 - 19 commodities and 23 regions
 - dynamic components : debt, capital and population
- Accounts for carbon dioxide, methane and nitrous oxide emissions
- Application to analysis on trade, energy and environmental policies

Sectors in GTEM-KOR (Max. 50)

- | | | | |
|----|-------------------------------|----|------------------------|
| 1 | Coal | 11 | Other manufacturing |
| 2 | Oil | 12 | Service |
| 3 | Gas | 13 | Trade and transport |
| 4 | Petroleum and coal products | 14 | Crops |
| 5 | Electricity | 15 | Rice |
| 6 | Iron and steel | 16 | Livestock |
| 7 | Nonferrous metals | 17 | Meat and milk products |
| 8 | Chemals, rubbers and plastics | 18 | Processed foods |
| 9 | Nonmetallic minerals | 19 | Fishery and forestry |
| 10 | Other metallic minerals | | |

Regions in GTEM-KOR (Max. 45)

- | | |
|-----------------------|----------------------|
| 1 Australia | 12 China |
| 2 New Zealand | 13 South Korea |
| 3 United States | 14 Chinese Taipei |
| 4 Canada | 15 Indonesia |
| 5 Japan | 16 Rest of ASEAN |
| 6 European Union | 17 India |
| 7 Former Soviet Union | 18 Mexico |
| 8 Eastern Europe | 19 Brazil |
| 9 Middle East | 20 Argentina |
| 10 North Africa | 21 Venezuela |
| 11 South Africa | 22 Columbia |
| | 23 Rest of the world |

Scenarios of Global Participation

■ Assumption

- developing countries : abatement commitment with developed countries (including US) from the 2nd commitment period
- 5% reduction of GHG from the 1st commitment period
- international emission trading

■ Developing countries : three groups

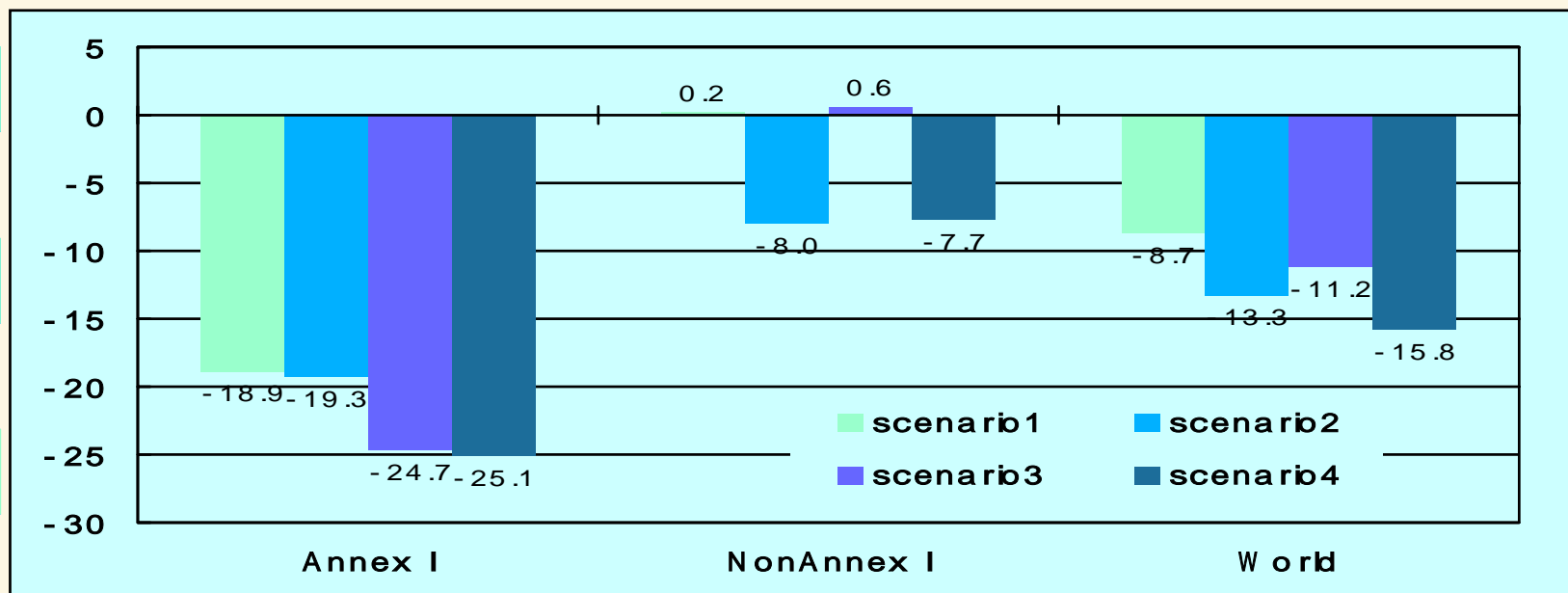
- based on analysis and literature review on the issue of burden sharing
- group 1 : Korea, Mexico, Argentina, Indonesia, Brazil, Colombia, Rest of ASEAN
- group 2 : China(including Chinese Taipei), India, Middle East, Venezuela
- group 3 : other developing countries

Scenarios of Global Participation

■ Scenarios of GHG abatement commitment

scenario	1 st commitment period	2 nd commitment period
1	No U.S. participation (own strategy)	Annex I , group 1
2		Annex I , group 1 & 2
3	U.S. participation	Annex I , group 1
4		Annex I , group 1 & 2

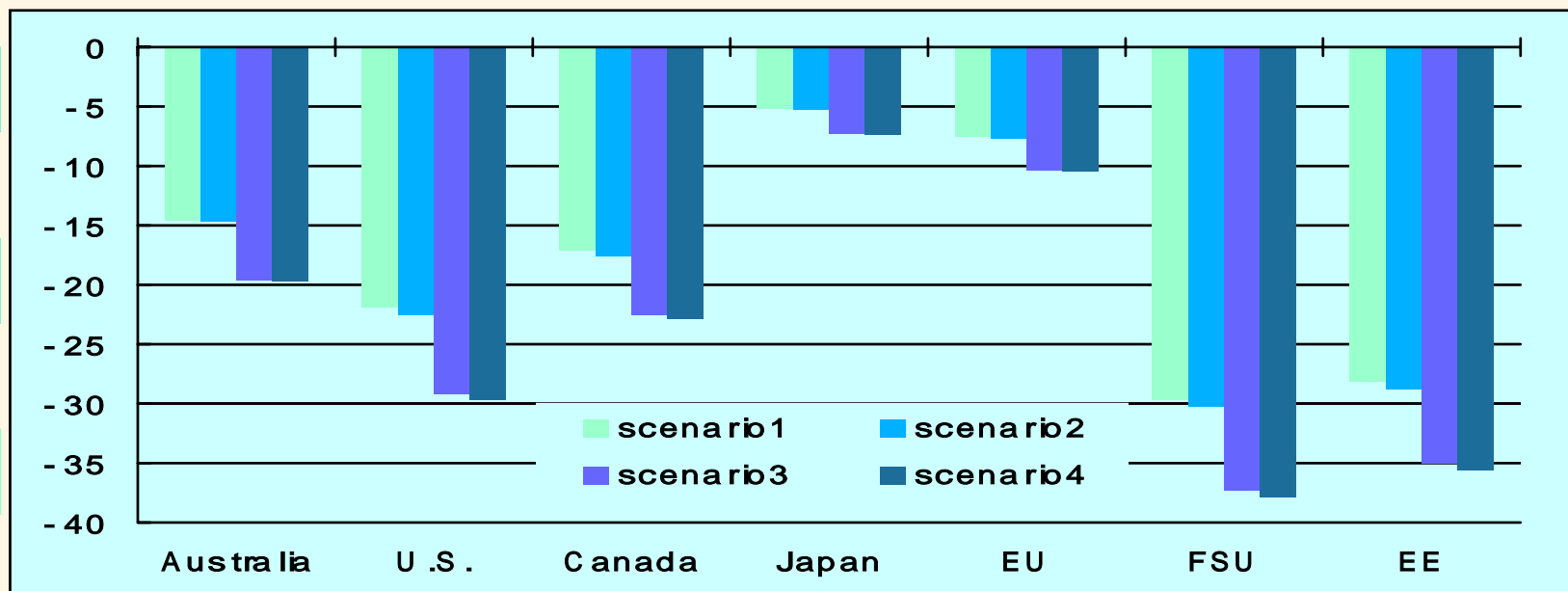
GHG Emissions



Note : Percentage change relative to the reference case in 2015

- More reduction of GHG emissions with participation of U.S. in the Kyoto Protocol
- Important role of developing countries (especially group 2) in mitigating climate change

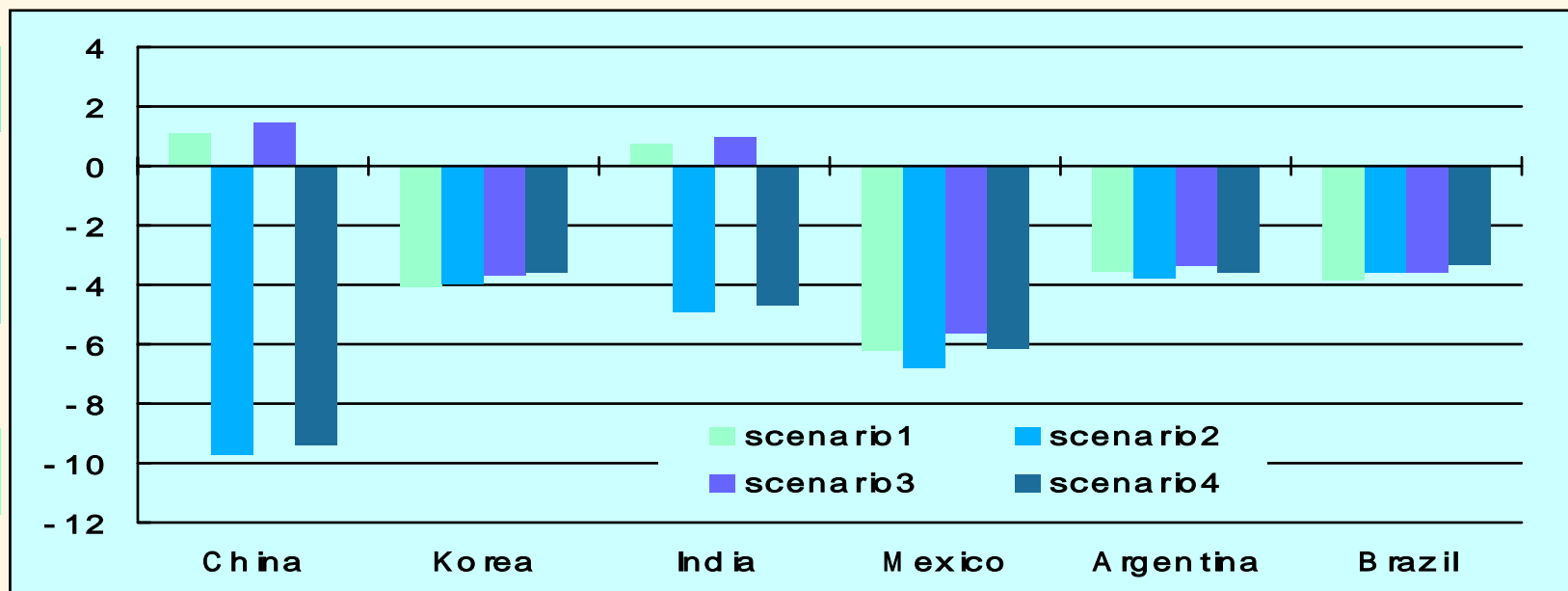
GHG Emissions (Annex I)



Note : Percentage change relative to the reference case in 2015

- FSU and EE \Rightarrow net seller
- Japan and EU \Rightarrow relatively high marginal abatement cost
- No significant change of emissions with participation of group 2

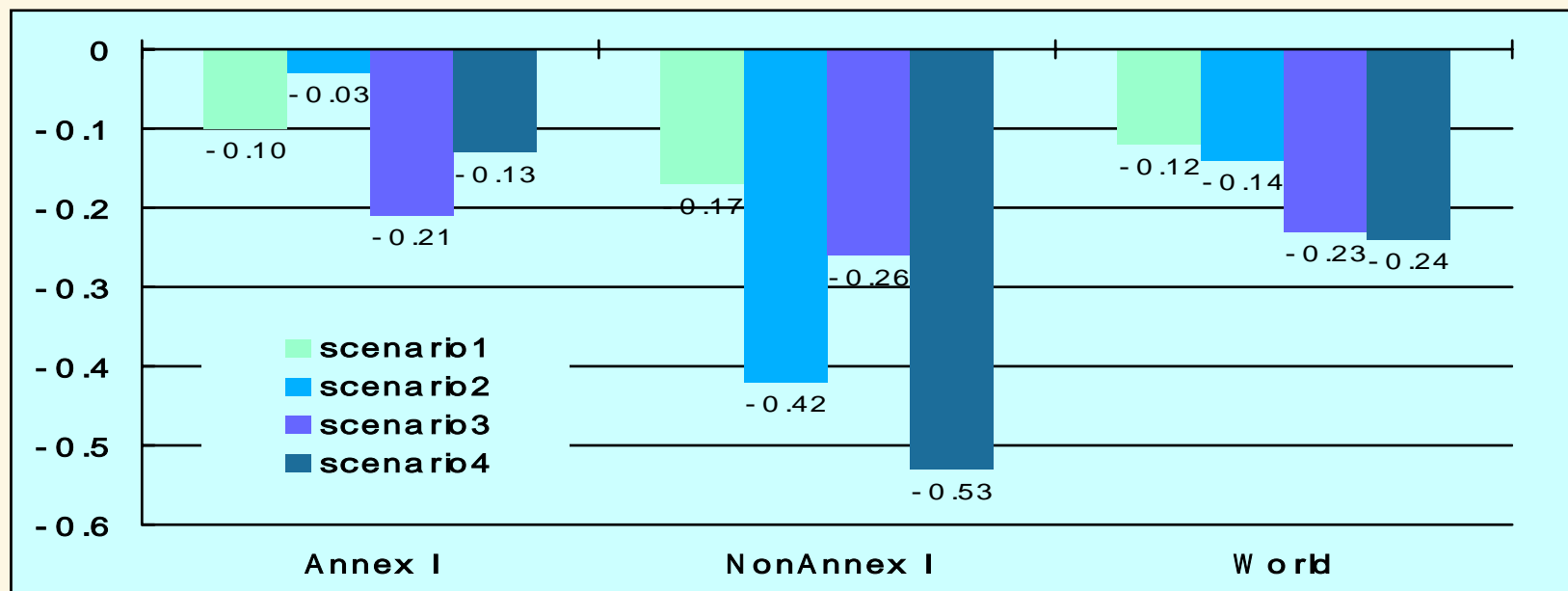
GHG Emissions (Non-Annex I)



Note : Percentage change relative to the reference case in 2015

- Increase of emissions from China and India without participation to the commitment of GHG emission reduction
- Insignificant change of emissions from group 1 countries with participation of group 2 in the commitment

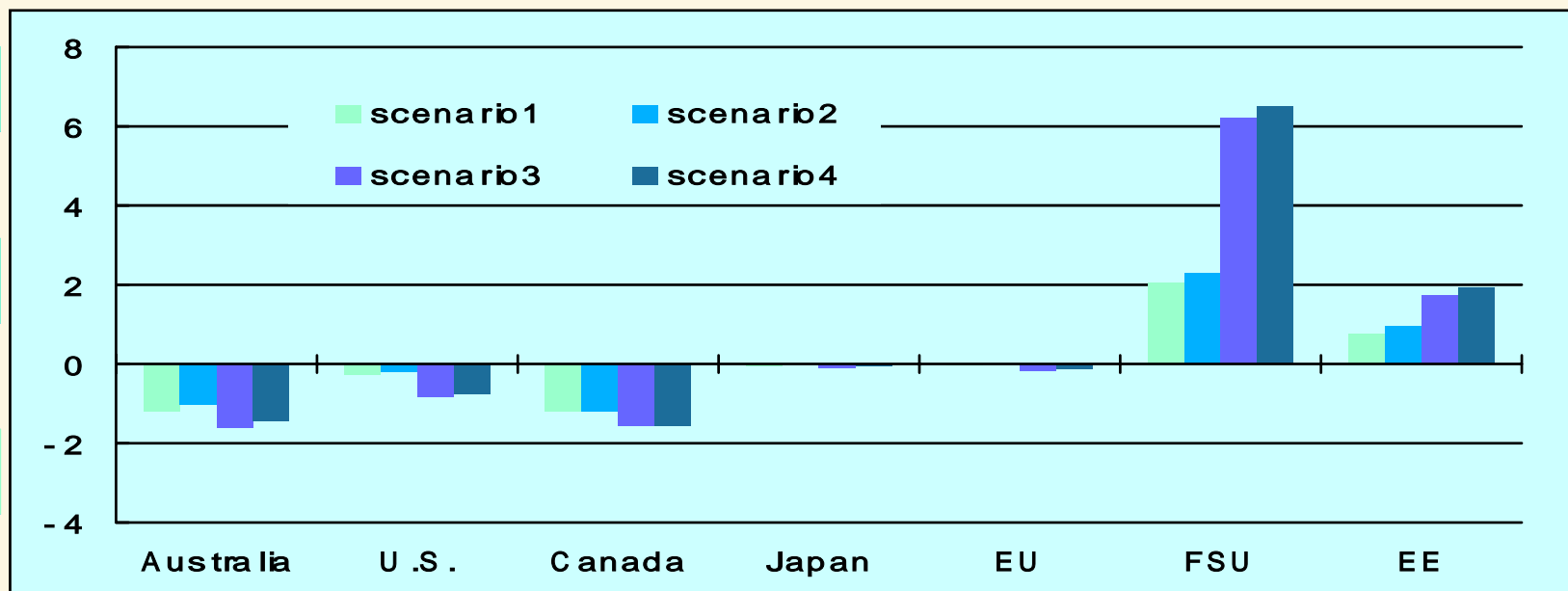
Gross National Products (GNP)



Note : Percentage change relative to the reference case in 2015

- Increase of economic costs with US's participation in the Kyoto Protocol
- Decrease of economic costs of Annex I with expansion of Non-Annex I participation in the GHG abatement commitment

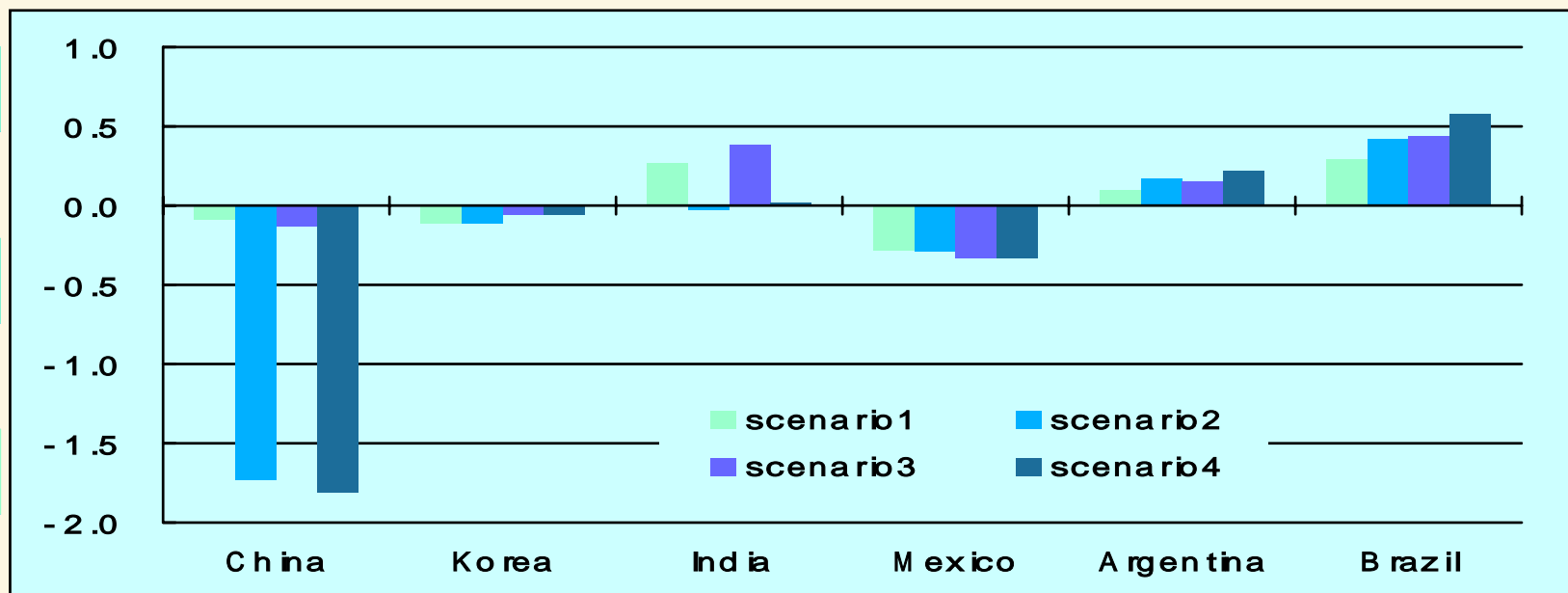
Gross National Products (Annex I)



Note : Percentage change relative to the reference case in 2015

- Increase of costs of developed countries and increase of benefits of FSU and EE with US participation in the Kyoto Protocol
- Decrease of costs of developed countries and increase of benefits of FSU and EE with expansion of developing country participation

Gross National Products (Non-Annex I)



Note : Percentage change relative to the reference case in 2015

- Impacts depending on the commitment of GHG abatement and economic circumstance (i.e. industrial structure) of each economy

Implications for Global Participation

- **Mitigation of climate change**
 - insignificant contribution of participation of leading developing countries (i.e. group 1 countries)
 - small increase of global economic costs with expansion of developing country participation from group 1 to group 1+2, but significant reduction of global GHG emission
- **Conditions for effective and cost-saving reduction of GHG emissions**
 - participation of US in the Kyoto Protocol
 - participation of developing countries in group 2 in GHE reduction commitment

Thank you !!!



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