



Climate Change and the 2 degree target - Vertical balance and horizontal balance -

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1. Act now! Delay causes substantial increase of mitigation cost. Yes!

But real issue is act now, but TO WHAT EXTENT.

Negotiators believe as though IPCC suggested they have to limit the temperature increase to 2 degree C since pre-industrialization. IPCC, however, have not suggested any particular target ever. 2 degree target is not based on science, but it is a political decision.

2. What does 2 degree target mean? Sticking this target is the real reason of deadlock of COP (Conference of the Parties of the United Nations Framework Convention on Climate Change) negotiations.

To achieve 2 degree target, global emissions must be reduced by 41~72% in 2050 (base year 2010). Even if developed countries reduce their per capita emissions by 80% (from 13.9tCO₂ to 2.7tCO₂, a very challenging goal) by 2050, the room left for developing countries per capita emissions are 3.2~1.3tCO₂, whereas per capita emission in 2010 is 5.5tCO₂ (for reference 2010 emissions: China 8.1t and Korea 13.4tCO₂). Is this feasible?

3. Article 2 of UNFCCC (ultimate objective of tackling climate change)

- 1) To stabilize the GHG concentration at a level not dangerous
- 2) This should be achieved within a time frame --- sufficient to enable economic development to proceed in a sustainable manner.

Balance between too less response measures and excessive response measures.

4. International framework

Strong weak agreement is better than weak strong agreement that may collapse. We need multifaceted thinking: vertical balance and horizontal balance.

5. How to manage the gap between 2 degree target and the reality

Total sum of emission reduction pledges by all countries never reach 2 degree target trajectory. Also we have to know huge uncertainty still remains. The most important example is the climate sensitivity. Current figure shown in IPCC 5th assessment report is 1.5-4.5 degree and no best estimate was shown.

6. Our strategy

- 1) Revisiting 2 degree target
Ref. to Dr. Yoichi Kaya's proposal to change the goal to 2.5 degree
- 2) Make 2 degree target as aspirational. But all countries have to do their best under respective circumstances to tackle climate change both through mitigation and adaptation.
- 3) Even if 2 degree target remains unchanged, let policymakers know we need not to reduce global emissions by 50% by 2050 (base year 2000). The most recent IPCC report shows if policymakers wish to achieve 2 degree target, we need to reduce our emissions by 41~72% (base year 2010). This corresponds to 28~66% reduction from 2000.
- 4) To take into consideration of climate sensitivity uncertainty, emission trajectories to achieve 2 degree target may be much lower.

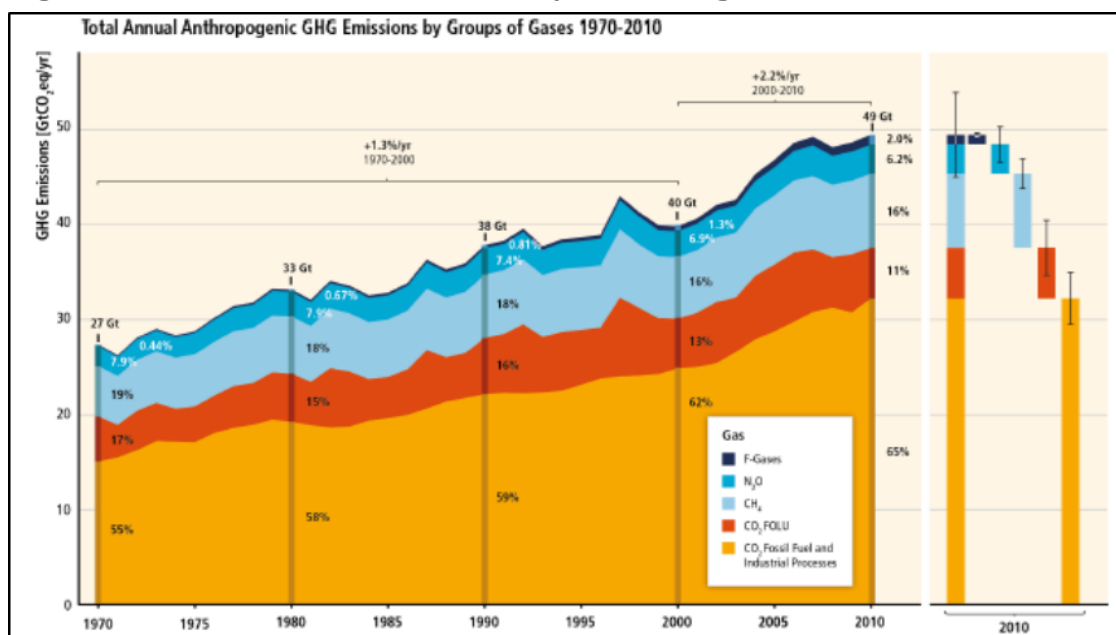
7. We have to act now!

Japan (per capita emission 10.6t), China (8.1t) and Korea (13.4t) should cooperate and lead the global deal based on the above mentioned understandings.

8. Balanced Approach

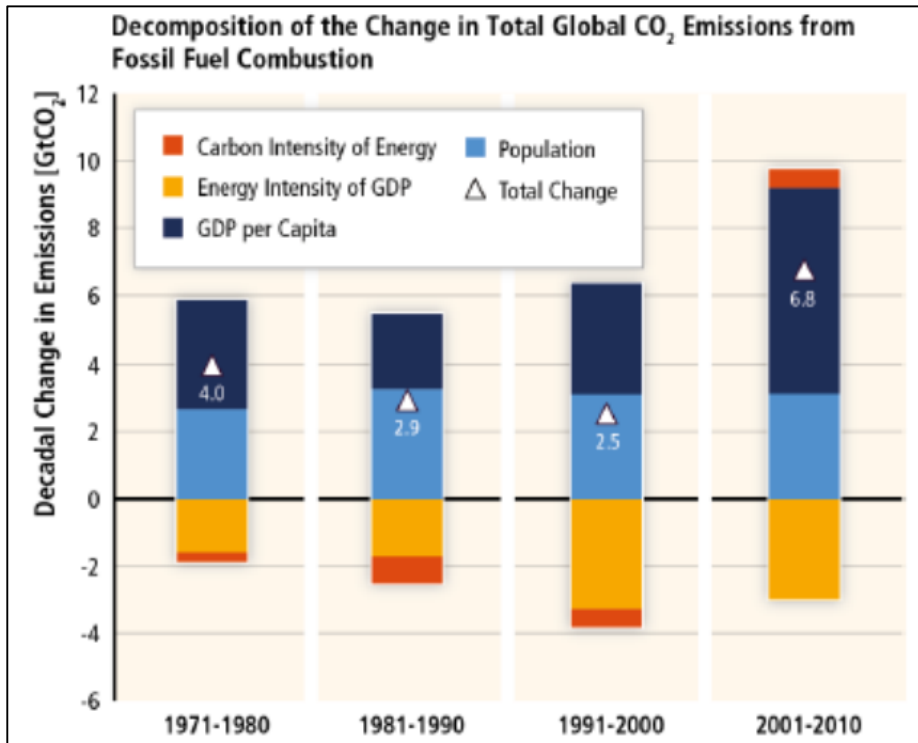
Further, we have to pay enough attention to the efficient allocation of global scarce resources among global urgent issues, such as UNSDGs, as well as urgent domestic issues, such as economy, unemployment, health care, aging etc.

Figure 1. Global emissions are steadily increasing



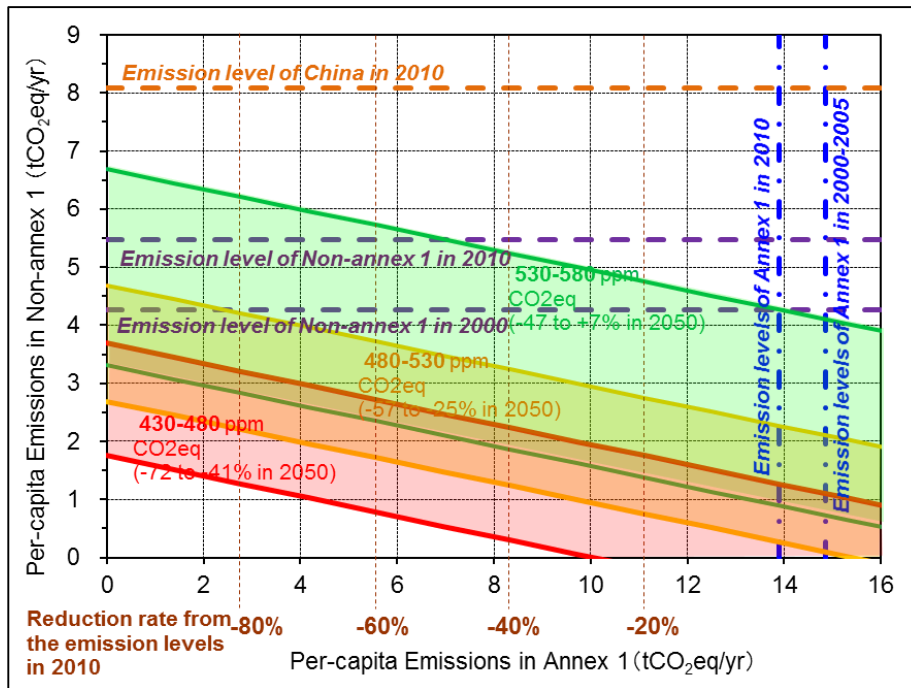
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Figure 2. Increase of per capita GDP and population contributed significantly



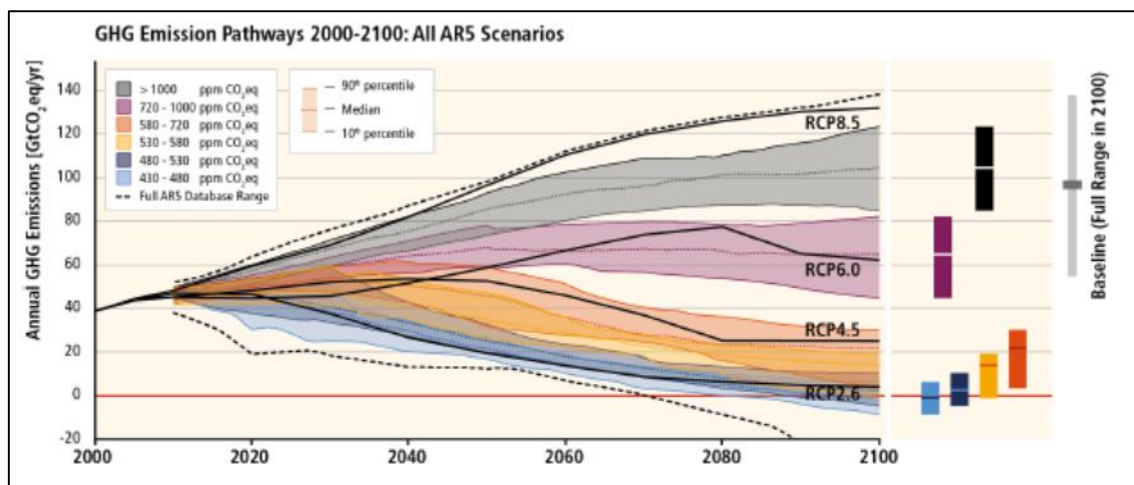
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Figure 3. How to achieve 2 degree target



Source: Dr. K. Akimoto, RITE

Figure 4. Scale of Challenge

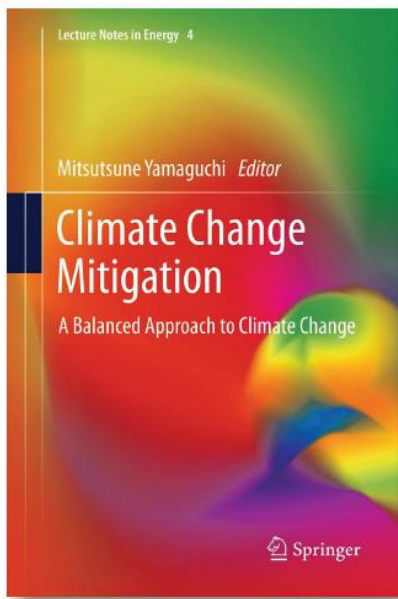


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Table 1 Various pathways to achieve 2 degree target

CO ₂ eq. Concentrations in 2100 (CO ₂ eq.)	Subcategories	Relative position of the RCPs	Change in CO ₂ eq. emissions compared to 2010 in (%)		Temperature change (relative to 1850-1900)	
			2050	2100	2100 Temperature change	Likelihood of staying below 2 degree over the 21st century
<430	Only a limited number of individual model studies have explored levels below 430 ppm CO ₂ eq.					
450 (430-530)	Total range	RCP2.6	-72 to -41	-118 to -78	1.5-1.7 (1.0-2.8)	Likely
500 (480-530)	No overshoot of 530 ppm CO ₂ eq.		-57 to -42	-107 to -73	1.7-1.9 (1.2-2.9)	More likely than not
	Overshoot of 530 ppm CO ₂ eq.		-55 to -25	-114 to -90	1.8-2.0 (1.2-3.3)	About as likely as not
550 (530-580)	No overshoot of 580 ppm CO ₂ eq.		-47 to -19	-81 to -59	2.0-2.2 (1.4-3.6)	More unlikely than likely
	Overshoot of 580 ppm CO ₂ eq.		-16 to -7	-183 to -86	2.1-2.3 (1.4-3.6)	
(580-650)	Total range	RCP4.5	-38 to -24	-134 to -50	2.3-2.6 (1.5-4.2)	Unlikely
(650-720)	Total range		-11 to -17	-54 to -21	2.6-2.9 (1.8-4.5)	
(720-1000)	Total range	RCP6.0	18 to 54	-7 to 72	3.1-3.7 (2.1-5.8)	
>1000	Total range	RCP8.5	52 to 95	74 to 178	4.1-4.8 (2.8-7.8)	Unlikely

IPCC/AR5/WG3/SPM



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Climate Change Mitigation

A Balanced Approach to Climate Change

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