

IPCC 5th Assessment Reports and their Impact on Future Negotiations

The final reports of the three Working Groups of the Intergovernmental Panel on Climate Change (IPCC) were released in April of this year and with these the Fifth Assessment Report is complete, except for the synthesis report to be released in October. **Yamaguchi Mitsutsune** introduces the main points of the reports and emphasizes the need to focus on the importance of risk management.

The content of the final reports of the three IPCC Working Groups can be summarized briefly as follows: the Working Group I report shows it is extremely likely that human influence has been the cause of global warming; the Working Group II report contains the latest information about damage resulting from global warming; and the Working Group III report offers a scenario for mitigating global warming and lists the technologies, costs, and policies needed. In October of this year, it is planned to put out a Synthesis Report integrating these reports. This will be an occasion to discuss the main ideas of the three working group reports and their influence on subsequent international negotiations.

The IPCC report enables experts to draw on reliable literatures and provides

policymakers with objective knowledge. The IPCC itself cannot advocate or draw its own conclusions; its role is to offer “policy-relevant but not policy-prescriptive information.” This point is made clear in the report.

Points at Issue in the 5th IPCC Assessment Reports

The first point at issue in the IPCC report is positioning the global warming problem. Immediately following the release of the Working Group II report, *The Economist* magazine on April 5 carried a news item with the headline, “A new report from the IPCC implies that ‘climate exceptionalism,’ the notion that global warming is a problem like no other, is coming to an end.” The meaning of this is that although global warming is undoubtedly a major global risk,

there are other major global risks. This also means that the cost of coping with climate change should be thought of in a balanced way with other risks. In fact this kind of statement is contained in the reports of Working Groups II and III. Until now, global warming specialists have tended to think that global warming alone is the single, greatest risk, while policymakers have already been deciding on policies by comparing it with other important problems. The opinion that global warming should be

thought of in balance with other problems has therefore got an important meaning.

The second point at issue is the damage caused by global warming. Irrespective of mitigation measures, global warming is inevitable. Given this, as global warming progresses what degree of damage will be done on a global scale? In the Working Group II report, there is a figure showing five categories of risk level affected by changing temperatures, including unique and threatened systems, extreme weather events, and large-scale singular events such as Greenland’s ice sheet collapse (figure). In comparison with previous reports, a relatively smaller increase in temperature seems to bring these effects.

What degree of global economic impact (losses) is there from global warming?

Concerning this point, the Working Group II report says it is difficult to estimate because of differences in the assumptions of the models, but it also says that economic losses for additional temperature increase of 2°C relative to recent years (1986–2005), or 2.6°C relative to the pre-industrial level, are between 0.2–2% of income. After that the report states, “Losses are more likely than not to be greater, rather than smaller, than this range.” That is, even if global warming is mitigated by some measures at this level, this degree of loss may be expected.

The third point at issue is the feasibility and cost. Conventionally, it has been commonly recognized amongst governments in international negotiations that it is important to stabilize temperature rise within 2°C since pre-industrialization (1750) (the so-called 2°C target). The Working Group III report also says that even from the present point a 2°C target (though not stabilization but an increase at 2100) is attainable with a determined policy of cutbacks. However, for this to happen by 2050 for example, the amount of global CO₂ emissions would have to be cut back 40–70% compared with 2010. In fact, with the upper middle income countries and especially China continuing a rapid increase in CO₂ emissions, the achievement of this objective is getting increasingly difficult. According to many models, emission levels must be reduced not to zero but even to negative by 2100. To achieve this, CO₂ emitted by, for example, electricity generation of

Global Mitigation Cost (Extracted for reasons of space from the WG3 Table SMP.2)

	Consumption losses in cost-effective scenarios		Increase in total discounted mitigation costs in scenario with limited availability of technologies			
	[% reduction in consumption relative to baseline]	[percentage point reduction in annualized consumption growth rate]	[% increase in total discounted mitigation costs (2015 – 2100) relative to default technology assumptions]			
2100 Concentration (ppm CO ₂ eq)	2100	2010 – 2100	No CCS	Nuclear phase out	Limited Solar / Wind	Limited Bioenergy
450 (430–480)	4.8 (2.9 – 11.4)	0.06 (0.04 – 0.14)	138 (29 – 297)	7 (4 – 18)	6 (2 – 29)	64 (44 – 78)
500 (480–530)	4.7 (2.4 – 10.6)	0.06 (0.03 – 0.13)				
550 (530–580)	3.8 (1.2 – 7.3)	0.04 (0.01 – 0.09)	39 (18 – 78)	13 (2 – 23)	8 (5 – 15)	18 (4 – 66)
580–650	2.3 (1.2 – 4.4)	0.03 (0.01 – 0.05)				

Note: At about 450 ppm CO₂ eq. concentration in 2100, temperature increase can be limited to less than 2°C since pre-industrialization with more than a 66% likelihood.

bioenergy has to be stored underground (BECCS: Bioenergy with carbon dioxide capture and storage) or large scale forestation will be needed. At the same time, these measures require consideration of the availability of land space and trade-off with food production.

What of the cost of these mitigations?

According to the Working Group III report, the cost of realizing the 2100 2°C target (approximately equivalent to 450 ppm CO₂ eq.), would be between 3 and 11% (median: 4.8%) of consumption that year, which is fairly large. The report indicates some numerical data implying a not-so-large cost in consideration of future consumption growth. The same can be said, however, of the aforementioned losses (table).

What benefit (avoided loss) then would be gained from this cost? This is cost benefit analysis. Since there is no estimate of expected loss if no policy is implemented (in other words, cost of inaction), the benefit is impossible to calculate. In addition, the indirect effects (co-benefit) of a mitigation accompanied by, for example, a reduction in atmospheric pollution, is unclear. Also the treatment of non-market-value loss such as those in ecosystems, and large-scale loss such as widespread rising of the sea level caused by ice sheet collapse, is unclear. In short, the necessary information to compare costs and benefits have not determined, yet.

It is noteworthy that the cost is calculated based on the ideal assumption where all available technologies will be used and all countries including the United States and China participate immediately in the treaty and a uniform global carbon tax is introduced. However,

if carbon capture and storage (CCS) technology were not commercially available, the cost would go up 2.4 times (table), and some models showed the 2°C target would be physically impossible. In addition, if countries participated at different times and there were multiple prices for carbon, the process would become inefficient and the cost would go up further. On the other hand, if the target was just eased for example to a level of 2.5°C, the cost would fall markedly to 1/3 – 2/3.

I believe the world leaders should cooperate and speedily promote a policy to mitigate global warming. The problem is how far the mitigation should be promoted. I believe this is the opportunity for the political leaders of the world to take in the points mentioned above and then promote a mitigation taking into account the need to balance it with other important global issues.

Some Concerns on Government Review Process and Focal Points for Future International Negotiations

What is the impact of the reports on international negotiation? In the IPCC report, only the Summary for Policymakers will be subject to line-by-line approval by all member governments. This time, very important changes have been made in this process. The most important change is that the figure showing the CO₂ emissions trend per economic region, displayed since 1970, has been removed. A glance at this figure will immediately show that the increase in the world’s emissions is largely caused by an increase of emissions by the upper middle income countries including China. This has caused opposition by these countries.

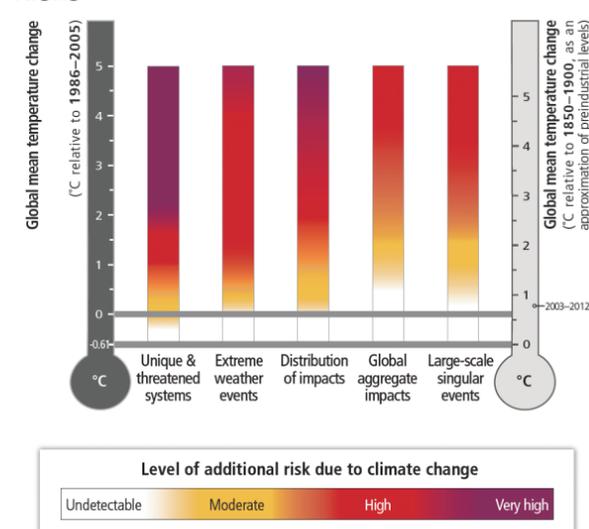
Removal of the table is clearly a change prompted with a view to future negotiations. *The Economist* wrote, “That seems more like policy-based evidence than evidence-based policy.” A coordinating lead author who attended the government approval sessions of the IPCC held in Berlin this April, Professor Robert Stavins from Harvard University, said in his blog that 75% of the chapter he was involved with was deleted, and he expressed strong disquiet at the outcome. He said that his colleagues who attended the sessions felt that the final document was “Summary by Policymakers,” not “Summary for Policymakers.” The author believes that the more IPCC gets involved in politics, the less scientifically credible their reports get. Based on this fact, the screening by governments that is the final step in the IPCC report may need to be reviewed.

As to the future international framework, each country understands a “pledge and review” will be the only approach feasible. This approach is to have each country pledge its mitigation/adaptation target to the best it can, and then to review their progress. From the viewpoints of the technology availability, costs, and efficient allocation of resources among globally important issues, including global warming, I believe that the 2°C target is too challenging, and persistently adhering to such a target may actually get in the way of effective mitigations against global warming. When the temperature increases more than 2°C and a certain tipping point is passed, irreversible, large-scale damage may occur, if not suddenly, such as sea levels rising following the collapse of ice sheets. But these matters are uncertain and their scientific knowledge is limited.

In these circumstances, the focus of international negotiations should not be on policies for reaching the 2°C target. The focus should be shifted to risk management relating to how to respond to the risk of uncertain, large scale, damaging events. The IPCC could play a large role in this area.

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Relationship between Climate Change and Risks



Source: WG2/SPM