

IPCC Releases Summary of New Report on Climate Change Mitigation

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On April 13, the Intergovernmental Panel on Climate Change (IPCC) released the Summary for Policymakers of the Working Group III (WG3) contribution to the Fifth Assessment Report (AR5). The IPCC held its 39th general meeting in the German capital of Berlin between April 7 and 12, including the 12th session of Working Party III where the WG3 report was considered and approved, before the SPM release.

The AR5 provides various assessments and analyses covering up-to-date scientific knowledge about global warming gained after the AR4 released in 2007. The WG3 report assesses policies for the conservation and reduction of greenhouse gas emissions (or mitigation of climate change) and analyzes GHG emission scenarios as the base for policy assessment.

Given that (1) total anthropogenic GHG emissions have continued to increase over 1970 to 2010 with larger absolute decadal increases toward the end of this period, (2) CO₂ emissions from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emission increase from 1970 to 2010, (3) economic and population growth continue to be the most important drivers of increases in CO₂ emissions from fossil fuel combustion, and (4) increased use of coal relative to other energy sources since 2000 has contributed to accelerating CO₂ emission growth, the latest SPM projects that baseline scenarios, those without additional mitigation efforts, will result in a global mean surface temperature increase from 3.7 to 4.8 C in 2100 compared to pre-industrial levels (median values).

Meanwhile, the SPM analyzes about 900 scenarios on long-term mitigation pathways, which project GHG concentrations ranging from 430 ppm CO₂eq to 720 ppm CO₂eq for 2100. In the scenario where the global mean surface temperature increase from pre-industrial levels will be limited to less than 2 C, the GHG concentration in 2100 will be 450 ppm CO₂eq. To achieve the scenario, the SPM states, the world will have to decarbonize the energy system more rapidly and implement potential changes in land use to substantially reduce anthropogenic GHG emissions. In the scenario to attain the GHG concentration, the world will cut global GHG emissions by 40-70% from 2010 in 2050 and to zero or negative in 2100. To this end, the world will have to improve

energy efficiency rapidly and triple or quadruple the share of zero- and low-carbon energy sources in energy supply from 2010 by 2050. The scenario thus indicates that very large-scale energy system reforms will be indispensable.

The SPM features many “overshoot” scenarios in which 450 ppm and other concentration targets will be eventually attained through a rapid concentration reduction after actual concentrations exceed the targets. But overshoot scenarios typically rely on the availability and widespread deployment of BECCS (bioenergy with carbon dioxide capture and storage) and afforestation in the second half of the century. The SPM also points to uncertainties with regard to the availability of such advanced technology.

While analyzing and assessing various scenarios, the SPM warns that delaying mitigation efforts beyond those in place today through 2030 is estimated to substantially increase the difficulty of the transition to low longer-term emissions levels and narrow the range of options consistent with maintaining temperature change below 2 C relative to pre-industrial levels.

The IPCC assessment report represents an accumulation of up-to-date scientific knowledge in the world about global warming and is of great significance to international discussions on global warming and to relevant policymakers. In this sense, we may have to take note of the possibility that global warming measures could attract global attention again in response to the latest SPM and principal report. Particularly, we may have to pay attention to how the assessment report would influence international discussions on GHG emission reduction targets from 2020. At last year's 19th Conference of Parties to the United Nations Framework Convention on Climate Change, known as COP19, all parties agreed to submit their voluntary GHG emission reduction targets. If possible, parties will publish their targets in the January-March quarter of 2015 and seek to agree on a GHG emission reduction framework following the Kyoto Protocol at the COP21 meeting in Paris in late 2015. Therefore, future international discussions will be important.

The Japanese government made a “Cabinet Decision” on its new Basic Energy Plan on April 11 after long discussions. Based on new energy realities after the March 2011 Fukushima nuclear plant accident, Japan must seek to simultaneously achieve the "3 Es plus S" (energy security, environmental conservation, economic efficiency and safety). In this respect, the new Basic Energy Plan pursues the best mix of all available energy sources including nuclear energy while acknowledging that each energy source has both advantages and disadvantages. As known well, however, the new Plan provides only a qualitative guideline while failing to include quantitative targets that previous plans had covered. If Japan is to responsibly offer GHG emission reduction targets to the world, it will have to provide a quantitative analysis of its future energy portfolio backed by scientific and rational deliberations. Japan is urgently required to consider environmental (global warming) problems and emission reduction targets in line with energy analyses.

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