

New emissions target

The new emission reduction targets of the E.U., the U.S. and China may prove well short of the IPCC's stringent climate change mitigation scenario. BY **S. GOPIKRISHNA WARRIER**

The European Commission, as a bloc, has decided to reduce at least 40 per cent of its emissions by 2030 compared to the emission levels in 1990. It said there would be a 27 per cent share of renewable energy and a 27 per cent improvement in energy efficiency by 2030.

The United States intends to achieve an economy-wide target of reducing its emissions by 26-28 per cent below its 2005 level by 2025. China intends to achieve the peaking of carbon dioxide emissions by around 2030 and intends

to increase the share of non-fossil fuels in primary energy consumption to around 20 per cent by then.

How do these commitments affect the global emission scenarios for the 21st century that were released in the recent months by the Intergovernmental Panel on Climate Change (IPCC) in its Fifth Assessment Report (AR5)? The IPCC used a new scenarios process with AR5. Instead of the linear process of developing socio-economic scenarios and then building emission scenarios, for the AR5

experts developed Representative Concentration Pathways (RCPs) as the scenarios.

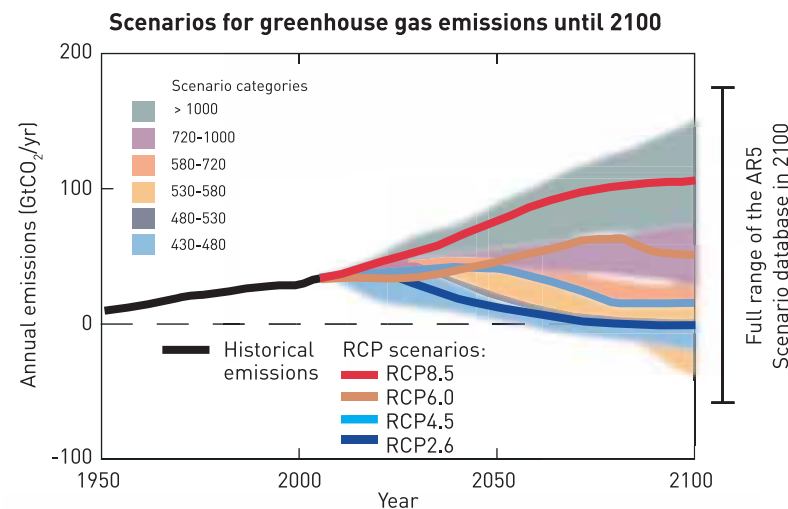
The RCPs begin with a limited number of alternative pathways (trajectories over time) of radiative forcing levels (the difference between the solar radiation absorbed by the earth and the energy radiated back into space, which is dependent on the total greenhouse gas (GHG) emissions and is expressed as carbon dioxide equivalent concentrations, or CO₂eq, in the atmosphere). The four

Carbon dioxide concentration in the atmosphere and the likelihood of staying below a specific temperature level over the 21st century (relative to 1850-1900)

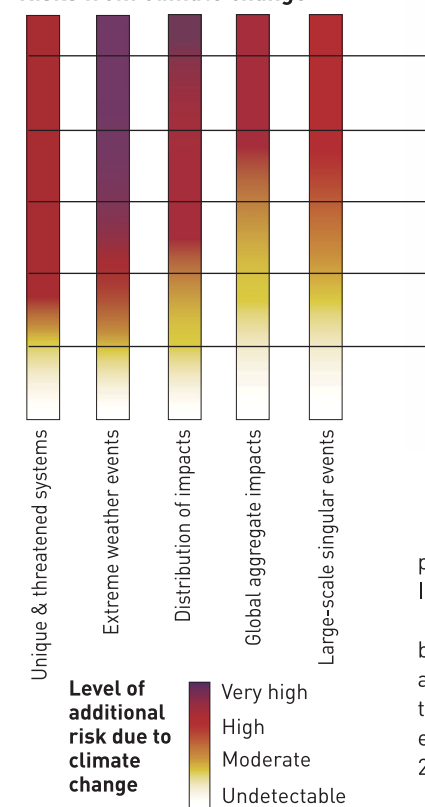
CO ₂ eq Concentrations in 2100 (CO ₂ eq) ⁶	Subcategories	Relative position of the RCPs	Change in CO ₂ eq emissions compared to 2010 (in per cent)		Likelihood of staying below a specific temperature level over the 21st century (relative to 1850-1900)			
			2050	2100	1.5°C	2°C	3°C	4°C
<430	Only a limited number of individual model studies have explored levels below 430 ppm CO ₂ eq							
450 (430 — 480)	Total range	RCP2.6	-72 to -41	-118 to -78	More unlikely than likely	Likely		
500 (480 — 530)	No overshoot of 530 ppm CO ₂ eq		-57 to -42	-107 to -73	Unlikely	More likely than not	Likely	Likely
	Overshoot of 530 ppm CO ₂ eq		-55 to -25	-114 to -90		About as likely as not		
550 (530 — 580)	No overshoot of 580 ppm CO ₂ eq		-47 to -19	-81 to -59	Unlikely	More unlikely than likely		
	Overshoot of 580 ppm CO ₂ eq		-16 to 7	-183 to -86				
[580 — 650]	Total range	RCP4.5	-38 to 24	-134 to -50	Unlikely			
[650 — 720]	Total range		-11 to 17	-54 to -21		More likely than not		
[720 — 1000]	Total range	RCP6.0	18 to 54	-7 to 72	Unlikely	More unlikely than likely		
>1000	Total range	RCP8.5	52 to 95	74 to 178	Unlikely	Unlikely	Unlikely	More unlikely than likely

scenarios used are RCP2.6, RCP4.5, RCP6.0 and RCP8.5. These are representative of clearly distinguishable climate futures and move from low emission (RCP2.6) to high emission scenarios (RCP8.5).

The IPCC-AR5 report projects that the increase of global mean surface temperature by 2081-2100 relative to 1986-2005 is likely to be 0.3°C-1.7°C under RCP2.6; 1.1°C-2.6°C under RCP4.5; 1.4°C-3.1°C under RCP6.0; and 2.6°C-4.8°C under RCP8.5. Thus keeping the temperature rise at less than 2°C is possible only with scenario RCP2.6, which the IPCC experts call "the stringent mitigation scenario".

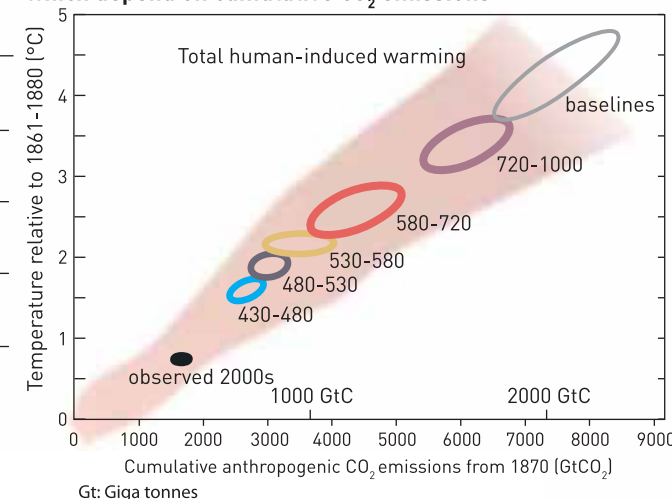


Risks from climate change...



"Emissions scenarios leading to GHG concentrations in 2100 of about 450 parts per million CO₂eq or lower are likely to maintain warming below 2°C over the 21st century relative to

which depend on cumulative CO₂ emissions



pre-industrial levels," states the IPCC-AR5.

"These scenarios are characterised by 40 per cent to 70 per cent global anthropogenic GHG emissions reductions by 2050 compared to 2010, and emissions levels near zero or below in 2100."

At higher GHG concentrations, this possibility becomes less and disappears above 500 ppm. The current carbon dioxide concentration, as reported by the Mauna Loa Observatory in Hawaii, is 395 ppm.

According to the Global Carbon Project, in 2013 China contributed to

28 per cent of the global GHG emissions, the U.S. 14 per cent, the European Union 10 per cent and India 7 per cent. Together, the emissions by the E.C., the U.S. and China add up to 52 per cent, which is more than half of the global total.

Thus, a reduction of 40 per cent by the E.C. and 28 per cent by the U.S. and another 16 years of emissions growth by China is unlikely to keep the global temperature increase below 2°C by 2100.

S. Gopikrishna Warriar is regional environment manager with Panos South Asia. The views expressed here are personal.