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What does 400ppm mean to us?

Yousuf Jamil

On May 9, 2013, ‘The keeling curve’ (named after geochemist Charles David Keeling), which plots the constant changes in atmospheric concentration of carbon dioxide at Mauna Loa observatory in Hawaii, recorded the daily average concentration of 400.03 per-parts-million (ppm). For the same 24-hour period, Scripps Institution of Oceanography at UC San Diego recorded a reading of 400.08 ppm. Climate scientists say that for the first time in at least 800,000 years, the mean atmospheric concentration of CO2 level has surpassed 400ppm. It means that, for every million air molecules, 400 are carbon dioxide. It has come as no surprise to us that global carbon dioxide was bound to exceed the threshold sooner or later, given the fact that the world communities have repeatedly failed to slow down global CO2 emissions.

Since the monitoring began more than five decades ago at the Mauna Loa observatory, it had been well documented that the atmospheric concentration of CO2 had increased from about 0.7 ppm per year in the late 1950s to 2.1 ppm per year during 2003 to 2012. National Oceanic and Atmospheric Administration (NOAA) scientists pointed out that today’s rate of increase is more than 100 times faster than the increase that occurred when the last ice age ended. Human activities are believed to be contributing more and more to CO2 concentration in the earth’s atmosphere. While our world has entered a new danger zone, most people are wondering about why this milestone is so important.

400ppm is kept as a round easily remembered figure, which is a critical global threshold agreed in the Kyoto Protocol to avoid average global temperature rise more than 2‘C. Creating a prehistoric climate would certainly have major repercussions. Increased CO2 means increased global temperature and the impacts of increased temperature are already well known, marked in particularly by the biophysical consequences, for example stronger cyclones, increased coastal flooding, frequent droughts, fresh water scarcity and increased water salinity. These biophysical consequences will continue to affect people and their livelihoods, the whole economy across sectors and human development will suffer as a result of changing weather. Unfortunately, the poorer countries are more vulnerable to the effects of climate change than the richer countries.

Sea level rise is unavoidable under a warming world due to the increased melting of world’s glaciers. Sea water intrusion, extreme tides and frequent storm surge in the low-lying lands have already caused havoc in many coastal communities around the world, particularly in the developing countries. Environmental migration is a reality now. People are forced to flee from their lands and sought shelter in the cities. Losing everything and trying to rebuild their lives all over again have put enormous pressure on families to find jobs that would suit their skills, as well as finding decent and affordable homes. Lack of job opportunities and proper accommodations would naturally fuel the expansion of city slums. Such unsustainable urban growth would in turn step up the deterioration of local urban environment that would contribute further to urban poverty. This would contribute to other social issues, including increased criminality and vandalism, poor public health, no education, increased child labour etc.

Not all are bad news but there is good news too. What if climate change would turn Greenland green? Experts are now saying that climate change could turn Greenland green by 2100 (The Guardian, 28 August 2013). The lead scientist Professor Jens-Christian Svenning, from Aarhus University in Denmark, said that ‘Greenland has the potential to become a lot greener -- forest like the coastal coniferous forests in today’s Alaska and western Canada will be able to thrive in fairly large parts of Greenland, for example, with trees like Sitka spruce and Lodgepole pine.’ But what would happen with all the melting ice water? It will naturally flow down to the seas. Perhaps all good news will probably concentrate in the colder and richer parts of the world. People who lives in the colder regions will enjoy relatively warmer weather, possibilities of saving energy over time, will enjoy economic benefits from tourism; and the agriculture, forestry and fishery sectors will have the market potential and new commercial opportunities.

Green technological innovation will probably thrive in the richer world. Future technological changes will concentrate on super-efficient equipment and appliances, maximising recycling and resource efficiency, finding eco-friendly alternative energy sources, technological advances in climate change science and adaptation disciplines to find more adaptation options and performance of these options. It’s absolutely crucial that the green technological collaborations need to happen between rich and poor countries in order to combat a common enemy. It’s not going to help if the advances in green technologies only concentrate in the richer part of the world.

In the end, the atmospheric carbon dioxide emissions will continue to increase unless countries around the world take radical steps to stop the rising levels of CO2 emissions. Chances are remote that it will happen sooner. Maybe five or ten years’ down in the line, Mauna Loa observatory will record the readings which would surpass another threshold value. But the fact of the matter underlying inequalities and vulnerabilities will still exist after hundred years from now if we do not adapt and prepare ourselves for our warming world.

The writer is a UK-based environmentalist.

daily sun

Editor: Amir Hossain.
Published by Maynal Hossain Chowdhury on behalf of East West Media Group Limited, Plot No: 371/A, Block No: D, Bashundhara R/A, Baridhara, Dhaka -1229 and Printed at Plot No: C/52, Block-K, Bashundhara, Khilkhet, Badda, Dhaka.
Advertisement Phone: 8402046, PABX: 8402361-3, Fax: 88-02-8402096, 8402094
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