Climate Change Toolkit for Health Professionals

Factsheet: Climate Change – Science, Drivers & Commitments

Climate science and the drivers of climate change

While greenhouse gases (GHG) are necessary to maintain the conditions for life on Earth, GHGs emitted by human activity are altering the planet's climate. Human activities have resulted in the release of an estimate 2,220 gigatons (Gt) of carbon dioxide (CO_2) from pre-industrial times to the present, increasing atmospheric concentrations from 315 to 410 parts per million (ppm) over a span of only 60 years.

Globally, the majority of GHG emissions from human activity are produced in only four sectors of the economy - electricity and heat production (25%), agriculture, forestry and other land use (24%), industry (21%) and transport (14%). In 2017, average temperature around the world had increased by 1°C since the the industrial revolution.

Future projections

With global temperatures increasing by about 0.2°C per decade, global warming is expected to reach 1.5°C by 2040 at the current rate of emissions.

Global warming of 1.5°C will amplify and extend the climate change impacts we have seen so far. It is expected to:

- increase the intensity and frequency of hot days and nights, and similarly decrease cold days and nights on a global scale;
- increase the frequency and intensity of heavy precipitation and strong tropical cyclones around the world, and increase flood hazards and the extent of droughts in some regions;
- decimate between 70 and 90% of warm water coral reefs;
- produce unprecedented habitat fragmentation that will halve the geographic range of 6% of insects, 8% of plants and 4% of vertebrates.

A global warming scenario of 2°C is projected to amplify these impacts even further. Compared with 1.5°C, 2°C warming will:

- expose over one third of the world's population to severe heatwaves at least once every five years, which is nearly three times the number of

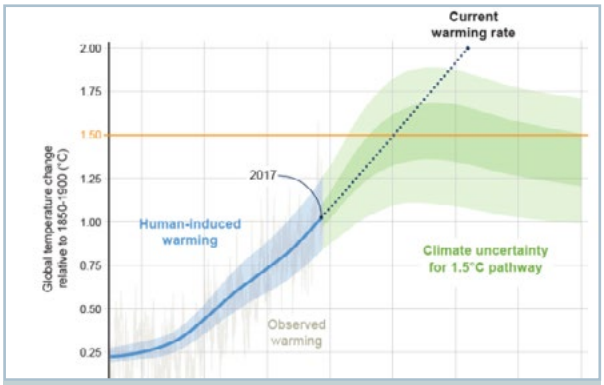

Figure 2: at the current rate of emissions, is expected to reach 1.5°C by 2040 Figure taken from (IPCC, FAQs, 2018).

people who would be exposed with 1.5°C of warming;
- increase the risk of heavy precipitation and droughts as well as strong tropical cyclones;
- increase global sea levels so that an additional 10.4 million people are impacted;
- increase climate-induced water stress by 50% and reduce agricultural yields of maize, rice, and wheat; and
- double the number of people exposed to more than one of these risks.

Where we are and where do we need to be?

In 2017, annual GHG emissions reached a record high of 53.5 Gt CO_2eq on a global scale. To keep global warming from exceeding 1.5°C:

- annual CO_2 emissions must be reduced by 25 to 30 Gt CO_2eq per year by 2030, corresponding with a 45% reduction from 2010 levels, and attain net zero around 2050;
- renewable energy should supply between 52 to 67% of primary electricity generation by 2050, with coal providing only 1 to 7% of the total capacity;
- oil and gas usage should decline by 39 to 77% and 13 to 62%, respectively, from 2020 to 2050;
- changes are required in the agricultural sector, including improving efficiency of food production, closing the yield gaps, decreasing food loss and waste, and shifting dietary changes to minimise the consumption of meat.

Mobilizing greater action in the global community

The Paris Agreement is the first climate change agreement that includes all nations. The Parties to this agreement have committed to keeping global warming well below 2°C, with the ambition of not surpassing 1.5°C global warming by 2100.

In compliance with the Paris Agreement, each country submits a Nationally Determined Contribution (NDC) strategy document, which includes their emissions reduction targets, and the plan for how they will achieve these from 2020 onwards, with reporting and review required every five years, starting in 2023.

Despite the progress represented by the Paris Agreement, meeting current NDC targets will not be sufficient to achieve the goal of 1.5°C or even 2°C global warming, and instead will likely result in 3°C warming by 2100. To align the NDCs with Paris Agreement targets, all Parties should strengthen their GHG emission reduction ambitions and targets before we enter their effect period in 2020. Additional revisions should be made at the first opportunity following global stock-taking of NDC achievements in 2023.

Note: References for this factsheet can be found in Module 1 of CAPE's Climate Change Toolkit for Health Professionals.