

Climate change: seven reasons for you to be concerned

Ecosystem effects

1 Polar bears are going hungry as Arctic ice becomes thinner and scantier. They're having trouble finding enough seals to eat as the ice melts earlier, according to scientists with the Canadian Wildlife Service. Weight of both male and female polar bears is declining and female bears are having fewer cubs.

In Tasmania, summer used to finish abruptly at the end of February, with no more warm weather until September. This year, after a cold spell with a few frosts in early April (pretty normal for us), the weather warmed up markedly for several days, with temperatures up to eight degrees Celsius (14 deg F) above average. One consequence has been that part of our garden thinks it's spring: the blood-red rhododendrons started to flower in April. Milder winters are likely to allow increased survival of tree-boring insects; though spring is occurring earlier, the overall effect is not necessarily beneficial.

The distribution of mosquitoes and other insects that transmit diseases such as malaria is changing, moving to higher latitudes and up mountains to higher altitudes. Insects colonise new areas and the parasites they carry colonise new human populations, formerly protected by a cooler or drier climate. Humans living in normally disease-free areas are at special risk because they lack immunity.

Infrastructure & economy

2 Extreme weather events may be increasing (including prolongation and possible intensification of the El Niño Southern Oscillation cycle), as are stronger winds, more intense rainfall, more intense low pressure cells, longer cyclone and hurricane seasons and changes in storm pathways, including to higher latitudes.

There are concerns that melting alpine permafrost will damage building foundations, including in the Swiss Alps. Harmful flow-on effects to the economy include damage to the travel and insurance industries.

Food & water security

3 Computerised simulations of future climate predict major changes to rainfall and temperature patterns in the next century. Canada may benefit as the US wheat belt moves north (provided Canadian soils are sufficiently fertile to take advantage of warmer weather), but sub-Saharan Africa — already the most food-insecure and war-affected continent — is likely to become more infertile.

Risk of conflict

4 Further food insecurity in the Horn and sub-Saharan Africa is likely to exacerbate conflict, leading to countless more deaths. This is likely to contribute indirectly to even more suffering through a vicious cycle of weakening government and deteriorating school and health services, accelerating 'demographic entrapment.'

South Asia is predicted by some models to lose agriculturally because of climate change. By 2050, the combined population of India, Bangladesh and Pakistan will approach 2 billion. India and Pakistan have already fought several wars. Both are now nuclear armed. How can increasing food insecurity in this volatile region lead to a reduced risk of conflict? Even a limited nuclear war on the subcontinent will have devastating local and international consequences.

Access to wealthier nations for environmental refugees, including from increasingly flood-prone island states and coastal regions such as Mozambique, will be limited. Illegal immigration and attempted 'people smuggling' is likely to increase.

Catastrophic global environmental change

5 Substantial sea level rise may yet occur from the melting of the Greenland and even the Antarctic iceshelves. Disruption of the 'global conveyor belt' that drives the Gulf Stream and warm Northwestern Europe may lead to paradoxical cooling of high-latitude European nations.

Positive warming feedbacks

6 Presently less than one-third of the additional carbon dioxide (approximately 6 gigatonnes) that humans add annually to the atmosphere remains airborne. The rest is absorbed by a poorly understood 'carbon sink,' which involves both landmasses and the ocean.

Loss of the Amazonian and central African rainforests following the logging of Indonesia and Southeast Asian forests and increased fires — partly resulting from more prolonged climate change associated droughts — may impair this sink, leading to an accelerated rate of atmospheric carbon dioxide accumulation, with a positive feedback effect.

Melting of the tundra from ongoing climate change may liberate additional quantities of the greenhouse gas methane, with further warming and methane release.

Unpredicted events

7 Most of the above possibilities are mentioned in the existing scientific literature, but hardly any were forecast a generation ago. What predictions are likely to unfold in the next generation as theory, data and computer models improve? Climate change is not our only environmental, economic and social problem. The World Scientists' Warning to Humanity, signed by more than 100 Nobel laureates after the Earth Summit in 1992, is almost unknown by the general public. A rump of contrarian scientists — rarely if ever published in the peer-reviewed literature — receives disproportionate coverage and weight. Public relations tactics are used to sow doubt in the mind of the general public about these concerns. The favoured strategy has been to emphasise uncertainty, rather than totally deny risk. But 'business as usual' and 'waiting for certainty' are not neutral responses. They are based on the conclusion that the risk of climate change is negligible.

References available on website