

To protect our health, protect our planet

Our well-being is inextricably bound with the natural world. But we have been poor stewards of the earth and its resources.



Tommy Koh

Today, April 22, is celebrated around the world as Earth Day. As a tribute to Mother Earth, I would like to focus attention on the link between our health and the health of our planet; specifically, the inextricable connections between humankind and our impact on the earth's land, biodiversity, oceans and atmosphere.

My starting point is that we, human beings, are not separate from the natural world in which we live.

Mr Kofi Annan, the former secretary-general of the United Nations, explained the link in these words: "Human health depends, to a larger extent than we might imagine, on the health of other species and on the healthy functioning of natural ecosystems... We cannot do without the countless services provided by biodiversity: pollinating our crops, fertilising our soils, providing millions of people with livelihoods, medicine and much else."

Sadly, we, the beneficiaries, have been very poor stewards of the earth and its resources.

Consider the damage we have done in the last 50 years. As a result of human actions, the earth has lost one-third of its forests, 90 per cent of its large commercial fisheries, one-fifth of the land suitable for agriculture, one-fifth of its topsoil, half the coral reefs and 80 per cent of its wetlands.

HUMAN HEALTH AND BIODIVERSITY

There is a price to be paid for our poor stewardship. The bill

includes our health, as there is a link between human health and the earth's biodiversity.

At the 1992 Earth Summit, which I had the privilege of chairing, two environmental treaties were opened for signature. The first was the Convention on Biological Diversity, or CBD. The second was the UN Framework Convention on Climate Change, or UNFCCC.

The CBD came into force in 1995. The period 1995 to 2022 was disastrous for the earth's biodiversity. We are losing the biodiversity at such an alarming rate that some biologists have called this the Sixth Great Extinction.

The Fifth Great Extinction took place 65 million years ago, when the earth was struck by a massive asteroid. The impact resulted in the death of the dinosaurs and many other species of flora and fauna.

Today the threat we face comes not from outer space but ourselves. As a result of deforestation across the world, wildlife is losing its habitat. As wildlife comes into closer contact with humans, this can accelerate the spread of zoonotic diseases, such as Sars and Covid-19. A zoonotic disease is one which originates in an animal. The disease is transmitted from the animal to a human or through an intermediary animal. For example, the Nipah virus was transmitted from a bat to a pig and from the pig to a human.

Apart from the risk of zoonotic diseases, is there any other reason for worrying about the loss of biodiversity?

Professor Edward O. Wilson, the Harvard biologist often described as the "father of biodiversity", explained why we should worry. In 2008, he wrote: "The mismanagement and destruction of species and ecosystems around the world... lower the quality of the planet's natural resources,



destabilise the physical environment, and we hasten the spread of human infectious diseases and the spread of invasive enemies of crops and forests, on which our lives depend."

A renowned entomologist as well, Prof Wilson also wrote: "If the beneficial insects did not flourish, most of our land ecosystems would collapse and a good part of humanity would perish with them."

One of the beneficial insects Prof Wilson referred to is the bee, which is responsible for not only producing honey, but also the pollination of an estimated one-third of all plants or plant products eaten by humans. In 2019, the UN's Food and Agriculture Organisation warned that declining bee populations pose a threat to global food

security.

Is the situation hopeless? It is desperate, but not hopeless.

In December 2022, the countries which are parties to the CBD met in Montreal, Canada. At the end of their meeting, they adopted the Kunming-Montreal Global Biodiversity Framework Agreement. Under this agreement, the governments agreed to work towards achieving a set of 23 goals and targets by 2030.

The most ambitious goal is to conserve at least 30 per cent of land, inland waterways, coastal areas and the oceans. Another ambitious goal is to reduce, by 10 times, the rate of extinction of all species by 2030.

Will these goals and targets be achieved? A sceptic will say that none of the previous environmental goals and targets had been achieved, so why should

we believe that these will be met. I have no answer to the sceptic except to hope that a tipping point has been reached, and the governments will summon the political will to do the right thing.

ATMOSPHERE AND THE OCEANS

In assessing the impact of climate change, one must look at the effects on both the atmosphere and the oceans, as the two are linked. It is an established fact that the earth's atmosphere is warming due largely to the burning of fossil fuels. The oceans become warmer too. By absorbing rising quantities of carbon dioxide from the atmosphere, the oceans have also become more acidic.

One result is that many coral reefs have been damaged by bleaching. The Great Barrier Reef of Australia is a good

example. According to a 2022 survey, 91 per cent of the reefs were found to have been affected by bleaching. This is worrying because coral reefs provide food and shelter and act as nurseries for fish. When corals die, the ecosystem is disrupted and fish stocks are depleted, to the detriment of humans ultimately.

Human health is threatened, too, in a more direct way, if global temperatures rise unchecked. A growing body of scientific evidence points to an increase in heat-related deaths as temperatures climb. Experts believe that the battle to keep global warming under the critical threshold of 1.5 deg C will be won or lost by 2030. The bad news is that global emissions of CO2 are still rising. The situation is so bad that UN Secretary-General Antonio Guterres has described the situation as "Code Red".

NATURE AND MEDICINE

A final point about nature and healing. About half of prescribed medicine comes, directly or indirectly, from natural sources – plants, animals and microbes. Traditional Chinese medicine relies on plants and animals even more than Western medicine.

Some examples of medicines derived from plants: aspirin from willow bark, morphine and codeine from poppy, the anti-malarial drugs quinine and artemisinin, and oncorine and vinblastine used in cancer treatment.

Insulin, vital in the management of diabetes, was largely produced from the pancreas of pigs and cattle before biosynthetic versions came along in the 1980s, while heparin, a blood thinner, is derived from bovine and porcine tissue. Is there any medicine derived from microbes? The answer is penicillin.

Besides being a source of medicine, nature supports human health in other ways. Doctors have found that walking among trees in forests – the Japanese call it "forest bathing" – can lead to improved mental and cardiovascular health. In Singapore, Professor Kua Ee Heok is a champion of this belief and practice. His study on "Rainforest, Health and Happiness" was selected for presentation at the 2022 World Congress of Psychiatry.

I will conclude by quoting from two professors at Harvard Medical School, Prof Eric Chivian and Prof Aaron Bernstein. In 2008, they edited a seminal book, *Sustaining Life: How Human Health Depends On Biodiversity*. This is how they sum up their wisdom in the book: "Human beings are an integral part of nature, and... our health depends ultimately on the health of its species and the natural functioning of its ecosystems."

It is a timely message for Earth Day and a guide for all our actions beyond that.

• Tommy Koh is the patron of the Nature Society (Singapore). In 2006, he received the Singapore President's inaugural Award for the Environment, and the Champion of the Earth Award from the UN Environmental Programme.