

Biodiversity loss—more than an environmental emergency



The UN declared 2010, as the International Year of Biodiversity. However, around that time, media outlets and other sources of information revealed that most people do not fully understand what biodiversity is. Public understanding has hopefully improved since 2010. The recent global assessment by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services attracted high levels of media interest in response to their shocking findings; for example, one headline stated that there are 1 million species facing extinction.¹ Political awareness is increasing as a result of the IPBES report, which states clearly that biodiversity loss is as important an issue for society as climate change.² But there is still much confusion and misperception about biodiversity—what it is, what it does, and why it matters. Perhaps this lack of familiarity accounts for the scarcity of engagement of the development community in debates about biodiversity and how to protect it. It is not that those concerned with development have a blind spot for environmental issues—climate change is a priority on high on the agenda of many development organisations. But they don't seem to fully understand biodiversity. In this comment, I argue that they need to, and quickly.

When biodiversity loss is reported in the media, it is most often in the form of emotionally provoking stories about the plight of iconic species such as rhinos, polar bears, tigers, and elephants. It is no surprise then that development professionals—although they might be personally concerned about these issues—do not see the connection between declining biodiversity and their development agenda of poverty alleviation, improvements of health care, gender equality, and resilience to natural disasters, and other important areas social issues. Furthermore, reports of human rights abuses in the name of conservation³ could justifiably persuade the development community that concern for biodiversity can work against their agenda.

So, what is biodiversity and why does it really matter to development? The formal definition of biodiversity comes from the UN Convention on Biological Diversity which describes it as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this

includes diversity within species, between species and of ecosystems.” The key word is variability. Biodiversity is more than an elephant, a herd of elephants, or the entire world population of elephants. It is the diversity of life and the ecological interactions between diverse lifeforms that matters most.

Diversity matters because it has a big effect on the productivity and stability of natural ecosystems, and on the services they provide, many of which are important for key development sectors. Crop genetic diversity increases the yield of agricultural crops, tree species diversity enhances wood production in plantations, plant species diversity produces better fodder in grasslands, and fish species diversity is associated with more stable catches.⁴ More diverse systems are also more resilient to climate fluctuations.⁵

Diversity is not the only important property of natural systems from a development and poverty reduction perspective. Many benefits people, particularly those of a lower socioeconomic background, get from nature are dependent on the abundance of particular species as they are on the species diversity. How well ecosystems provide people with developmental benefits also depends on their condition and extent, and on the specific functions certain species, groups of species, or ecosystems carry out (eg, sources of food, absorbers of air pollution, and natural barriers against storm surges). Crucially, however, diversity underpins the abundance, extent, and condition of nature and ecosystems and is needed to secure the flow of benefits to people in the future, particularly in the face of changing environmental conditions.

Biodiversity is about not just the wealth of nature, but also the health of nature. Loss of biodiversity undermines ecosystems' abilities to function effectively and efficiently and thus undermines nature's ability to support a healthy environment. This is particularly important in a changing climate in which loss of biodiversity reduces nature's resilience to change. It is also particularly important for people of a lower socioeconomic background who are more directly dependent on nature than are others, and who will be hit the soonest and hardest because of their existing vulnerability to climate change.

Although some loss of biodiversity is normal, the current rate of extinction is unprecedented being up

For the UN Convention on Biological Diversity see <https://www.cbd.int/convention/articles/default.shtml?a=cbd-02>

to 1000 times higher than natural background rates.⁶ Development professionals need to engage, because the current rate of loss poses a severe threat to key development priorities (eg, health and hunger; panel).⁷

In 2020, the international community will agree on a new 10-year framework for biodiversity management. Developing this new framework into one that works for both biodiversity and for people requires active engagement by the development community, and there are some actions that could be taken to enable this.

Panel: Effect of biodiversity loss on health and hunger⁷

Hunger

Fisheries

Declines in the diversity of fish species is strongly associated with lower catches, decreased resilience to exploitation, and higher incidence of stock collapse.

Agriculture

Loss of genetic diversity reduces crop yields. Loss of soil biodiversity makes soil less resilient and undermines its ability to support wild and cultivated food plants. Agricultural systems' capacity to adapt to environmental change depends on maintaining diversity in cropping systems, crop varieties, and animal breeds.

Health

Human health is directly linked to food production and because biodiversity affects food availability (both wild and cultivated), it also affects health. Loss of crop diversity, and subsequent reliance on agrochemicals to compensate for lowered plant resilience and poor soil, exposes people to health damaging pollutants. Even if the quantity of food is maintained, a scarcity of diversity limits dietary diversity and nutritional health.

The health of 60% of the world's population who use largely plant-based traditional medicines, particularly people of a lower socioeconomic background who cannot afford modern substitutes, is compromised as wild-collected medicinal plants become less available. The loss of biodiversity limits ecosystems' evolutionary potential to continue to produce new, therapeutic plant varieties, as well as missing out on potentially useful compounds that are lost before the species that bear them have been recorded.

Around 50% of modern drugs have been developed from natural products, and new discoveries are continuously emerging and increasingly undermined by biodiversity loss.

Disease burden on humans is increased, particularly on those of a lower socioeconomic background and vulnerable groups. For example, watershed degradation is correlated with increased diarrhoea (a major cause of child mortality) among people of a lower socioeconomic status who depend on untreated water sources.

First, nature-proofing development interventions. For many years now, development professionals have recognised the need to climate-proof their investments. Similarly, they should understand the risks of biodiversity loss and build biodiversity safeguards into development interventions, particularly investments in infrastructure, extractive industries, large-scale agriculture, and tourism.

Second, recognition and investment in biodiversity for development and climate change resilience. As well as avoiding undermining biodiversity, we need to invest in ways that maximise its potential. Biodiversity directly supports export earnings, gross domestic product, and jobs in a wide variety of economic sectors from tourism to agriculture, and it therefore needs to be sustainably managed for these sectors to successfully grow. There is increasing international interest in nature-based solutions to development and climate change challenges, but these need to emphasise diverse nature over monocultures. For example, large-scale afforestation programmes on the Loess Plateau in China have involved plantations of single, non-native species, which have been effective at reducing soil erosion but compromised water supplies for agriculture and domestic use and have brought fewer ecosystem services overall than have areas where natural vegetation has been allowed to regrow.⁸

Last, engagement with the conservation sector. It is crucial that the development community challenges interventions that might disadvantage people of a lower socioeconomic background—such as militarised conservation or exclusionary protected areas—and encourage those that focus on components of biodiversity that are particularly important to these people, including plant and animal species for food, medicines, and income.

In 2020, biodiversity is as much a development priority as is the climate change emergency and therefore needs much more proactive engagement and response from the development community.

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I declare no competing interests.

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