

The answer to the biodiversity crisis is not more debt

Pledged funding needs to be given as grants – which must include research grants – not as a reward for taking out loans.

Funding for biodiversity is getting some attention at last.

In September, nine philanthropic organizations, most of them in the United States, pledged a total of US\$5 billion over a decade towards projects that will help to preserve the richness of Earth's species.

This month, Chinese President Xi Jinping announced the allocation of 1.5 billion yuan (\$235 million) to the new Kunming Biodiversity Fund. This will have a goal of funding projects, such as protected areas, that will contribute to slowing down and eventually reversing the loss of species and ecosystems.

More details are awaited from China, along with further information on a promise made by the European Union to double its funding for biodiversity. Contributions to the Kunming fund should be given as grants, not loans; they should have a research component; and they should be pooled and managed through international organizations. Moreover, the rules for access need to be transparent and fair to all applicants. These are important factors to emphasize, because there seems to be a trend towards providing environmental finance as loans – many of them to some of the world's poorest countries, which are often already highly indebted.

The pledges were timed to coincide with the first part of the China-hosted United Nations biodiversity conference, COP15, which ended on 24 October. Collectively, the sums, although not insignificant, will amount to little more than a 1–2% increase on the roughly \$133 billion a year that the world currently spends on biodiversity. Well over half of this is spent by China, the EU, Japan and the United States.

Spending on biodiversity needs to increase in all regions, according to a report by the UN Environment Programme, published in May (see go.nature.com/3ekaopk). For comparison, money earmarked for tackling climate change totalled \$632 billion per year in 2019–20, according to a *Nature* analysis (*Nature* **598**, 400–402; 2021).

The reasons that finance for biodiversity is lower than that for its climate cousin include a relative dearth of finance in low- and middle-income countries and the fact that more than half of all climate funds take the form of loans. Both public and private investors know that in financing projects such as solar energy plants or batteries research and development, they will probably see a return on their investments. By contrast, protecting a watershed

or a wetland is more of a public service – and so is more likely to be funded from taxation. Partly as a result, some 86% of biodiversity funding currently comes from public sources, in the form of grants.

But that might be about to change. Researchers, corporations, bankers and policymakers have been exploring how to create financial investment products – from both private and public sources – in biodiversity, as well as how to better protect nature from the negative environmental impacts of big infrastructure projects. Most industrial sectors rely on biodiversity to some extent. Food producers, forestry, clothing manufacturers and hydropower, for example, would all struggle without healthy soils, pollinators or predictable water supplies. If nature continues to degrade, the world's economic output will begin to suffer sooner or later.

One idea being studied is how to create an internationally agreed reporting system so that any entity – a bank, a government or a corporation – would need to publish data on whether its investments could lead to ecological damage. Such disclosures would probably prompt financiers to think twice before taking on investments that might be environmentally harmful. Earlier this year, an organization called Taskforce on Nature-related Financial Disclosures began work to develop such a system. It is co-chaired by Elizabeth Mrema, the executive secretary of the UN biodiversity convention secretariat, and is based in Montreal, Canada.

Another idea under study is called Nature Performance Bonds (NPBs). According to this model, indebted countries would be eligible for more-favourable loan repayment terms if they could commit to spending the cash saved on environmental protection.

Last month, a study commissioned by the China Council for International Cooperation on Environment and Development, an organization of policymakers that advises China's government, recommended that China become a global leader in NPBs (see go.nature.com/3pekzk7). The study says that some 52 low- and middle-income countries owe China a combined total of more than \$100 billion in loans. These include loans for projects that are part of China's Belt and Road Initiative (BRI) to upgrade energy sources, roads, railways and airports, mainly in low- and middle-income countries. Many of China's BRI investments are in ecologically sensitive areas.

The terms of China's \$235-million biodiversity announcement have not yet been confirmed. But it would be wise if this funding were not linked to the debts of countries whose biodiversity is being affected by BRI projects. Otherwise it would seem that China's main motivation is the greening of its own investments, when, as the host of COP15, it needs to think and act more globally, and work towards creating a fund by and for all nations.

The Kunming Biodiversity Fund needs to be a stand-alone grant fund, ideally managed by a mechanism involving all countries, and with transparent rules of access. It also needs to have a dedicated research component – something that is not possible through loan finance. And other nations must contribute.

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The need for research funding is especially acute. There are often few funding opportunities from national research bodies for researchers in low- and middle-income countries that are rich in biodiversity. The UN's official biodiversity funder, the Global Environment Facility, based in Washington DC, does not have a dedicated research facility. It does fund some science, but that is a part of a small-grants programme (see go.nature.com/3mgu8io) that is mainly focused on funding for conservation.

It is clear that biodiversity will be getting more finance. But loan finance must not crowd out or replace grant funding. There is a precedent for this. It is already happening in climate finance, for which a much-delayed \$100 billion pledged to be provided annually to low- and middle-income countries will be mainly in the form of loans.

A step change in biodiversity finance is needed and the Kunming Biodiversity Fund will be a welcome move in the right direction. But it will be inequitable if most of the promised finance ends up committed to loans. Finding an answer to the biodiversity crisis should not mean the poorest countries having to take on yet more debt.

COVID pandemic must accelerate work on TB vaccines

The coronavirus crisis has halted decades of progress on tuberculosis. But the speed of COVID vaccines shows there can still be hope for advances against neglected diseases.

Researchers and clinicians are upset and frustrated that decades of work in diagnosing, treating and researching tuberculosis (TB) have massively stalled. The slowdown means the world is losing ground against a disease that kills 1.5 million people every year.

As the International Union Against Tuberculosis and Lung Disease held its annual conference online last week, Guy Marks, the union's president, spoke for many when, comparing efforts against COVID-19, he said: "Many of us who work in the [TB] field feel robbed that equivalent efforts to develop a TB vaccine have never been as well committed or funded."

Marks added: "The failure to deliver COVID-19 vaccines to low- and middle-income countries and end tuberculosis are two sides of the same coin – a devaluation of human life in poor countries." He has a point. But it doesn't need to be this way.

Researchers are again urging decision-makers to revive diagnosis, treatment and research programmes for TB and other infectious diseases, such as malaria. And

they are saying that much can be learnt from how the creation of COVID-19 vaccines was fast-tracked.

Researchers have been warning that even more people will die from TB and other infectious diseases, such as malaria and HIV, if health systems continue to neglect these infections because of the continuing focus on coronavirus (see *Nature* 597, 314; 2021). And they are pleading with funders and governments not to drop the ball on TB work.

But their warnings are not being heeded. Not only are more people dying of the disease, but a target to reduce deaths by 90% from 2015 levels by 2030 – part of the United Nations Sustainable Development Goals – is now in peril. According to research published this month, this failure will also lead to profound economic and health losses in the trillions of dollars – with the greatest impact in sub-Saharan Africa (S. Silva *et al. Lancet Glob. Health* 9, E1372–E1379; 2021).

A crucial problem is that fewer medical professionals have been available to diagnose and treat TB. As a result, the number of people diagnosed with the disease fell from 7.1 million in 2019 to 5.8 million in 2020. India, Indonesia and the Philippines are the most affected countries, according to the World Health Organization's (WHO's) latest TB report, published this month (see go.nature.com/3re4n6j).

At the same time, funding has also shrunk. Global spending on TB diagnostic, treatment and prevention services dropped from US\$5.8 billion to \$5.3 billion in 2020. Moreover, this overall spending is less than half of the WHO's global target of \$13 billion annually by 2022. TB research funding is also half of what it needs to be. The WHO set a separate target for this of \$2 billion annually for 2018–22. In 2019, funding for TB research totalled only \$901 million. By contrast, the US National Institutes of Health alone has set aside \$4.9 billion for research on COVID-19. Published research in TB seems to be holding up for now, according to an analysis published this week in *Nature Index* (see *Nature* 598, S10–S13; 2021).

Some conference delegates spoke of lowering the targets for diagnosing and treating TB (and for other infectious diseases) to account for these and other ground realities. But that would be inadvisable. Although the COVID-19 pandemic is the highest priority for political leaders, wealthier nations and philanthropic donors, the pandemic has also shown how it is possible to boost both research into an infectious disease and treatment – and to do so at speed, which has led to COVID-19 vaccines in record time.

Lessons from COVID-19 must be applied to the fight against TB and other infectious diseases – from extraordinary resource mobilization to the use of emerging technologies, such as messenger RNA and other platforms to create vaccines. Advances in rapid and reliable diagnostics, advanced computation, sequencing and clinical-trial capacity for new vaccines and treatments can all be harnessed for TB and other infectious diseases.

The TB vaccine in use today is essentially the same as the *Bacillus Calmette–Guérin* (BCG) vaccine introduced in July 1921. The COVID-19 pandemic has shown that it's possible to produce new vaccines in one year, not 100 – provided that there is funding and political will.



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