

POLICY FORUM

ENVIRONMENT AND ECONOMICS

Tackling debt, biodiversity loss, and climate change

Experience tells us how to maximize debt-for-nature effectiveness

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At the United Nations climate conference in late 2023, multilateral development banks and environmental institutions committed to raising the number, size, types, and effectiveness of funding mechanisms

that support developing countries to address the interconnected crises of debt, climate, and biodiversity. A “Task Force on Sustainability-Linked Sovereign Financing for Nature and Climate” will convene to establish a framework to ameliorate these crises by reforming debt-for-nature swaps—voluntary transactions in which creditors reduce or cancel debt in ex-

change for debtor-country commitments to fund specific environmental activities. We identify four reforms that should underpin the new framework: (i) Offer debt relief at a nationally consequential scale; (ii) defer to debtors on implementation to reduce transaction costs and raise debtors’ benefits; (iii) employ performance-linked instruments based on reliable metrics to ensure global gains; and (iv) integrate all of those metrics across biodiversity conservation, emissions reduction, and climate adaptation to allocate funds most efficiently.

Recent global negotiations highlighted critical roles for low- and middle-income countries to keep the global average rise in temperature under 2°C and maintain ecosystems that support water, air, and biological resources. Many developing countries—for example, those across the



A 2021 nature swap supporting marine conservation in Belize has demonstrated that national scaling is possible.

Congo and Amazon Basins—contain large carbon and biological stores. Their decisions affect the planet. Developing countries (excluding China) already account for ~40% of carbon dioxide emissions from burning fossil fuels and land-use change. That share will rise, especially in Asia and Africa.

Developing countries are also especially vulnerable to disrupted climates and collapsing ecosystems. They face costs of climate adaptation that will rise above 1% of their gross domestic product annually (1). This burdens them to the point that compensation for the loss and damage they experience as a result of climate change is now

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accepted as an international policy issue.

Despite their awareness of the urgency of climate and biodiversity challenges, developing countries are not taking all the necessary actions to tackle them. They must direct limited financial resources to other needs, including debt service (2). Economic crises due to COVID-19, and exacerbated by the war in Ukraine, put many countries in or at risk of debt distress. Half of the world's poorest countries have severe debt problems and risk bankruptcy.

Economic, climate, and biodiversity crises thus exacerbate each other's impacts. Financial limitations, including substantial debt obligations, limit the ability to invest in protections for nature. Ongoing damages to nature, in turn, limit economies. This vicious cycle suggests a need for reforms to relieve sovereign debt and simultaneously raise biodiversity conservation and climate actions.

We have been here before. Thomas Lovejoy proposed an innovative solution for the 1980s debt crisis in Latin America: debt-for-nature swaps. In forgiving loans, these nature swaps relieved over \$3 billion in debt, with the simultaneous commitment that debtor governments would channel over \$1 billion into conservation. But by the mid-1990s, debtors' interest had waned. These initial nature swaps had shortcomings. Relief was small relative to total debt levels and therefore inefficient in light of high transaction costs. Within debtor nations, some felt that their sovereignty had been infringed. Additionally, nature swaps primarily funded small projects without measurable benefits for global goals. Finally, weak monitoring and evaluation meant that impacts on nature were questionable. Owing to these limitations, past nature swaps had modest impacts.

There are new calls to revitalize linkages between debt financing and nature—including going beyond nature swaps (2). Yet expanding initiatives without addressing shortcomings will again yield minimal debt, biodiversity, and climate impacts. Fortunately, learning from prior nature swaps and public-goods interventions in developing countries indicates how to revitalize this linkage. We ask, then answer: "Why can reforms occur now if they have not happened before?" We highlight a crucial confluence of shifts in key conditions: renewed debt stress; expanded global treaties, which include (often unfulfilled) national commitments; and past learning. Lessons learned arise from both observing how nature swaps fell short and evaluating impacts due to conservation and development policies—including when outcome metrics facilitated local choice.

LESSONS FROM HISTORY

Multiple phases

Early nature swaps involved debtor governments and environmental nongovernmental organizations (NGOs) (3). NGOs bought commercial debt at a discount (4) and then offered relief if debtors set aside lands for conservation or funds for government agencies (5). The first nature swap was in Bolivia in 1987. By the early 1990s, this approach generated over \$164 million in conservation spending through at least 48 different swaps in 15 countries (3).

The next phase featured leadership by industrialized countries—the US and others in the Paris Club—with smaller roles for NGOs. The US led this through the 1990 Enterprise for the Americas Initiative and the 1998 Tropical Forest Conservation Act focused on tropical moist forests in South America (5). Instead of directly funding projects, many nature swaps established conservation trust funds managed by creditors, debtor governments, and local organizations. These generated over \$888 million in debt relief in at least 81 different swaps in 19 debtor countries (3). Most nature swaps involved developing countries with high debt and high biodiversity. In South America, Peru was the most frequent recipient, and in Africa, Madagascar. Nature swaps often went to countries near creditors, though the US continued swaps worldwide.

Nature swaps continue at a low frequency, albeit with some useful innovations. Since the Tropical Forest Conservation Act, "subsidized debt swaps" have become a common means of implementation. NGOs provide funds upfront, supplementing debt relief rather than buying and exchanging debt (3). These NGO contributions expand funding and ease timing (see "Timing support" below). As governments and large financial institutions have limited leeway, NGO involvement and their flexibility may help complex negotiations move forward. Other recent innovations include adding emissions reductions and, even more recently, climate adaptation. Some nature swaps, such as in Belize, included marine biodiversity gains and "blue carbon" sequestration.

Nature swaps can have economic gains beyond debt relief totals. Trust funds make funding more dependable, as compared to often episodic conservation funding. They also create stakeholder partnerships in debtor nations. Financing nature swaps using local currency lowers exchange-rate risk (5). For the creditors, nature swaps put debtor economies on a better footing, increasing the chance that any unforgiven loans are repaid. Nature swaps also burnish the environmental credentials of creditors in international communities.

Lessons

Despite their advantages, nature swaps relieved only a small portion of total debt over the past four decades. Environmental commitments were small relative to total expenditures in conservation as well. Nature swaps directed just over \$1 billion to conservation from 1984 to 2015, compared to over \$100 billion spent annually on biodiversity conservation activities globally (6).

Why did nature swaps decline in frequency from the late 1990s beyond the fall in indebtedness? Relief often seemed

nature. If conservation restricts resource use more than necessary or fails to compensate—or even to consult—frictions arise, and outcomes suffer. For example, after nature swaps established protected areas on expropriated farmlands in Costa Rica, farmers used the lands illegally (7). Heated discussions have arisen about “biopiracy”—the theft of debtors’ natural assets—given legacies of mistrust, such as for rubber in the Amazon (8).

For their part, creditors had scant evidence of conservation impacts. Limited

creditors would offer performance targets required for providing relief. Debtor countries would choose whether and how to meet them. The proposed reforms described below are based on decades of nature swap experiences plus lessons from conservation and development policy evaluations. Linking relief to performance metrics ensures that the gains paid for by creditors are achieved regardless of debtors’ implementation approaches. Gains for debtor nations arise as a result of efficiencies from greater scale, better timing, and greater control over implementation to avoid sovereignty concerns while also facilitating the maximization of debtors’ net benefits.

Consequential scale

Because most debt is national, that scale is logical for goals, measurements, and instruments. For debtors, national scale implies the potential for substantial financial relief, making transaction costs worthwhile. This spatial scale also offers the freedom to identify where to act within the country, reducing trade-offs. For creditors, measuring environmental change at a national scale should sharply reduce domestic leakage—the relocation of degrading activities to elsewhere within a debtor country. (Some leakage might traverse national borders.) In the past 3 years, nature swaps in Belize and Ecuador (for the Galápagos) have demonstrated that such national scaling is possible (2).

To address debt at a nationally consequential scale, nature swaps will need to be complemented by other financial approaches. Nature swaps could be integrated into “comprehensive debt restructuring,” which requires all creditors in a country to renegotiate the terms of their loans (led by the International Monetary Fund or World Bank). Nature swaps could also incorporate increasingly popular financial instruments such as green and blue bonds, sustainability-linked bonds, political risk insurance, or conditional grants to help increase the scale of climate and biodiversity financing (11, 12).

Implementing national-scale relief requires extensive coordination among multilateral and bilateral public and private lenders and donors. Ongoing comprehensive debt restructuring in Zambia and Sri Lanka illustrates how lengthy such processes can be. Although similarly difficult, nature swaps have an advantage: They offer incentive for creditors to join, such as biodiversity protection, emissions reduction, climate adaptation, and reputational benefits (12). Coordination is indeed difficult, but it has been a policy issue for many



A 2002 nature swap improved capacity for community management in Pacaya-Samiria National Reserve, Peru.

insufficient to debtors, for such complex agreements. Given total debt burdens and repayment schedules, debt forgiveness was too small and too slow (5). Further, although relief was realized over time, debtors were expected to spend immediately on conservation. That was impossible for many debt-distressed nations and hindered their ability to repay the remaining debt (4).

Also unattractive to debtors was creditors’ inattentiveness to countries’ development priorities. Specific views about where to conserve and exactly how led to sovereignty concerns: Should outsiders holding debt be the dominant driving force in negotiation about local nature? Land and development policy must reflect local information and needs (7). Ignoring them often diminishes outcomes for

conservation impact from past protected areas, ecopayments, and certification programs (9) generated concern. Leakage could occur: Even if nature swaps were to show impact at program sites, degradation could be displaced to other sites. Even if nature swaps were to send funds to environmental agencies, debtor governments could shift domestic funds between agencies, leaving conservation funding flat [for Brazil, see (10)]. Further, agriculture and natural-resource interests could lobby to avoid restrictions on profitable activities, undermining conservation impact (9).

FOUR REFORMS

We propose that future debt relief be conditioned on achievements for global climate and biodiversity, as measured at the national scale. After bargaining over goals,

challenges at many scales, from contiguous bird habitat across farms to sectoral export compliance to national laws for bankruptcy. We can learn from prior policies.

Performance metrics and debtor control

Debtor control allows debtors to select the implementation plans they prefer for reaching agreed targets in light of their priorities and local information. Suppose bargaining yields an agreement that a debtor will lower emissions by 1% per year over a decade to relieve a \$100 million debt: \$10 million will be forgiven when each 1% drop is verified—regardless of the actions taken to reach these agreed milestones.

Debtors might prefer environmental policy that also advances economic development—for instance, improving “carbon efficiency” (reducing emissions per unit energy) while also raising rural energy access. If a debtor’s prioritization of energy access results in fewer reductions in emissions than agreed, debt relief is reduced. With the trade-offs explicit, debtors can choose.

Flexibility from using performance metrics is central to policies such as “pull financing.” Rewards are promised for meeting some predetermined outcomes without rules about how (13). For example, pledging future purchases of energy-efficient air conditioners that achieve benchmark reductions in emissions per unit energy could incentivize generation of global gain while also supporting economic development.

Basing debt relief on performance metrics requires accurate and reliable measurements. Like market-based approaches such as carbon markets or sustainability-linked bonds, nature swaps will often use available sensible metrics, yet at times struggle to find metrics that reflect performance (14). Our proposed national scale lowers “noise” in measurements relative to single sites. Our outcomes-focused reform does not require any attribution to specific policy interventions, also simplifying what is measured.

Creditors might rue surrendering influence on implementation. For instance, they may not want gains in climate mitigation to be won on the backs of the poorest, nor the resulting inefficiency when a lack of “local buy-in” degrades performance. They may desire the protection of areas with high biodiversity value. Without infringing on the sovereignty of debtor nations, during the negotiation process creditors could offer greater debt relief for specific outcomes or specific implementation processes. Debtors can then decide upon what they want to agree.

Timing support

Relief from future debt payments does not provide debtors with funds to spend today. Debt-distressed countries need immediate help with the costs of conservation or climate action. Sequencing can help. Annual relief based on measured progress helps if early actions yield debt relief to support more of each in turn. Given limited resources, we see additional value in subsidized nature swaps for debt-distressed countries that are least able to spend on early actions. NGOs (or philanthropies) could provide initial grants for these nations to support early actions that could achieve initial targets.

Integrated benefits

Creditors may prefer projects that provide multiple global gains (15). Debtors then prefer debt relief to rise with each gain. Maintaining or restoring rainforests could earn cumulative debt relief for climate mitigation, climate adaptation, biodiversity conservation, and zoonotic disease reduction. Financial acknowledgment of each incentivizes efficient paths to targets.

Preferences about how to integrate these multiple global gains will vary across creditors. Some prioritize biodiversity conservation, others carbon emissions reduction, and others still climate adaptation. Coordination of creditors (as discussed above) may be aided by matching uneven creditor preference with uneven mixes of habitat, mitigation, and adaptation gains at the national scale. Debtors’ and creditors’ priorities over multiple benefits differ too. That leads back to debtor control. Creditors can adjust relief offers during bargaining over targets, but debtors ultimately choose whether to agree to any given target and how best to implement it.

MEETING THE MOMENT

Why do we argue that, after decades of prior practice and limited impacts, it is possible to enact such dramatic reforms? The world now possesses hindsight about how past swaps fell short for creditors and debtors, alongside a large and growing body of rigorous evidence on what does (and does not) work to support the environment and economic development. Lessons learned are important.

In addition, global conditions have shifted, providing more fertile ground for our reforms. Global attitudes have changed regarding both biodiversity loss and climate change. International development institutions have broadly embraced planetary health as fundamental to economic growth and poverty reduction (4).

Further, unlike in the 1980s, the financ-

ing required to address climate and biodiversity crises is roughly on par with other large financial demands. For example, 48 of the most debt-distressed countries have stated that they will need ~\$790 billion to achieve their greenhouse emissions mitigation targets in their nationally determined contributions (NDCs) under the Paris Agreement. The same countries’ cumulative external debt is ~\$605 billion (see supplementary materials).

Nearly all countries have committed to reducing carbon emissions, adapting to a changing climate, and protecting nature. Yet, most have fallen short. Critically, many highly debt-distressed countries will only fulfill those promises with aid. Indeed, they often have explicitly conditioned the achievement of NDCs upon receiving external financial support. Improved debt relief could help nations fulfill promises that would have languished, extending the scope of debtor nations’ relief and providing creditor nations with substantial and additional global environmental benefits. ■

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SUPPLEMENTARY MATERIALS

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