



# Can Debt-for-Climate Swaps Help Heavily Indebted Developing Countries Address Climate Priorities?

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Rising debt levels and the ravages wrought by climate change present acute threats to achieving sustainable development goals in emerging market and developing economies (EMDEs).<sup>1</sup> The external debt stock of developing countries surpassed \$10 trillion in 2020.<sup>2</sup> Almost 60 percent of the world's poorest countries are either in or at high risk of debt distress.<sup>3</sup> Soaring debt undermines governments' ability to respond to external shocks such as climate disasters, the toll of which has been mounting: from the devastating 2022 floods that tormented Pakistan to six successive failed rainy seasons in the Horn of Africa.<sup>4</sup>

Policymakers globally are discussing possible mechanisms to address fiscal and climatic challenges in EMDEs simultaneously.<sup>5</sup> Debt-for-climate swaps—also referred to as debt-for-nature swaps<sup>6</sup>—are one such arrangement, in which creditors provide debt relief and, in exchange, sovereigns commit to specific conservation efforts.<sup>7</sup> The intuition behind such complex deals is that, by freeing up fiscal space for environmental protection and so-called nature-based solutions in EMDEs, some of the climate-related challenges faced by capital-scarce countries can be confronted in coordination with those possessing ample capital.<sup>8</sup> This proposition is particularly attractive if it can help unlock new and additional funding for climate adaptation projects, which typically do not generate attractive financial returns but are nonetheless a priority for most EMDEs, including many African states.<sup>9</sup>

Debt-for-climate swaps can be classified into two broad types: “bilateral” or “multilateral” debt swaps, which are negotiated directly with one or more official creditors, and “tripartite” debt

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swaps, in which a sovereign buys back its bonds from private investors to retire them with the help of a loan from a third party.<sup>10</sup> These swaps have three important elements. First, either all or part of the existing debt is repurchased at a discount using a loan. Second, new bonds are issued at an interest rate below the market rate for the country with the support of a guarantee from a highly rated institution, thus providing fiscal savings. And third, the sovereign commits to use part of the savings toward conservation activities typically targeted to climate adaptation and biodiversity preservation.

After the first debt-for-climate swap was executed by Bolivia in 1987, more than 100 similar transactions were engineered during the 1980s and 1990s, but numbers peaked in 1993 and were followed by a sharp decline.<sup>11</sup> A recent revival has taken place, with several sovereigns successfully executing such swaps:<sup>12</sup> Seychelles in 2015 (blue bond issued in 2018), Belize in 2021, Barbados in 2022, and Ecuador and Gabon in 2023.<sup>13</sup>

While the number of deals annually does not compare with the early 1990s, the recent batch of executed swaps makes up for the lower number by the size of debt covered.<sup>14</sup> Indeed, Ecuador's debt swap of \$1.6 billion has spurred considerable interest in the instrument: more than 50 developing countries are presently either in debt distress or at high risk of an imminent debt crisis, many of which—including Cabo Verde, Eswatini, Gambia, Kenya, Pakistan, and Sri Lanka—are contemplating debt-for-climate swaps to achieve debt relief and create fiscal space.<sup>15</sup>

In this commentary, the authors find that intrinsic features and the experience so far of debt-for-climate swaps suggest they could become a valuable tool—even if they are no silver bullet and may need to be complemented by additional instruments—to address fiscal and environmental problems. These swaps offer a realistic option to help, for example, vulnerable small island developing states (SIDS) respond to specific challenges<sup>16</sup> and can become an innovative mechanism to channel additional capital to certain EMDEs while anchoring climate commitments.

## Key Features of Debt-for-Climate Swaps

To better understand the scalability and applicability of debt-for-climate swaps, it is worthwhile to derive lessons from recent deals (see Appendix for details). Key aspects of these transactions are:

- **Credit enhancements:** Arguably the most critical feature of these swaps for investors, as well as for the sovereign, is the extent of the guarantee or insurance provided by a third party. In all deals, the new bond's principal was either fully or partially guaranteed (or insured) by highly accredited institutions. Additional credit enhancement features were also sometimes included; for example, a loan was extended to Seychelles on attractive terms to lower its interest payment burden. Not surprisingly, the new bonds issued as part of the swaps carry high



investment-grade ratings.<sup>17</sup> Such credit enhancements were crucial in attracting investors to the new bond offerings by sovereigns facing debt distress, which otherwise would be difficult. Moreover, the improved credit rating can sometimes even entice investors who typically do not buy EMDE bonds, thus diversifying the issuer’s investor base.<sup>18</sup> In addition, for the sovereign, the guarantee results in lower coupon payments, leading to fiscal savings.

- **Approach for retiring old debt:** Three different approaches were used to retire existing debt in the recent deals. First, the case of Seychelles involved bilateral negotiations, which are typically not complicated because the money is owed to a few developed countries.<sup>19</sup> Second, in Belize, the goal was to retire one bond in its entirety. Doing so necessitated negotiations with external commercial bondholders, which are invariably more complex given the number of investors involved<sup>20</sup> and the minimum threshold of investors needed to participate.<sup>21</sup> Finally, the transactions for Barbados and Ecuador involved buying back part of the existing bonds via auctions. The approach was much simpler than Belize’s since the success of the transaction was not conditioned on the retirement of outstanding bonds. Barbados repurchased roughly 15 percent each of an external bond and a domestic bond, the former via a modified Dutch auction and the latter via an option that the government had to buy it back.<sup>22</sup> The Ecuadorian government announced a buyback tender for the outstanding bonds via a modified Dutch auction and managed to retire approximately 10 percent of them.<sup>23</sup> In a signal that this approach has now become the norm, Gabon launched a tender to buy up to \$450 million of its government bonds to eventually swap them into a new bond.<sup>24</sup>
- **Fiscal savings achieved:** The reduction in the notional amounts of bonds following debt-for-climate swaps varied considerably, with almost no change in Barbados to as much as a 60 percent reduction in Ecuador.<sup>25</sup> In the latter case, bonds traded at significantly distressed levels, enabling large savings in terms of the future amount owed. All deals significantly reduced interest payments, which is critical to begin restoring debt sustainability. These fiscal savings were a function of the price at which old bonds were trading before being retired, the guarantee provided, and investor demand for the new bonds.
- **Conservation commitments and governance structures:** In all four deals, the new instrument was labeled a “blue bond” because at least part of the funds unlocked by the swap via debt relief and reduced interest payments go toward marine conservation and promotion of the marine economy—for example, expansion of marine protected areas and better management of priority fisheries in Seychelles.<sup>26</sup> Although these blue bonds appear to be a type of thematic bond, they do not fall under either of the two broad categories of such bonds: use-of-proceeds bonds, in which funds are earmarked for specific projects, or those based on key performance indicators.<sup>27</sup> As such, there are no specific requirements for how the proceeds of blue bonds are

allocated toward conservation projects. While the entire amount raised from the Seychelles blue bond was allocated for such purposes, in Barbados it was only about a quarter of the proceeds and roughly half each for Belize and Ecuador. Such a wide variation was possible because no blue bond principles have been defined yet. As such, an integral component of all transactions was the creation of independent bodies to oversee the execution of environmental commitments, with support from intermediaries involved in the deals. (The governance structures created in the four deals are delineated in the Appendix.) Another important feature of the four swaps was that, by protecting the ocean to support livelihoods and biodiversity, the funds were primarily directed toward climate resilience and adaptation projects, which are more difficult to finance.<sup>28</sup>

## Challenges to Broad-Brush Applications

Following the completion of the debt-for-climate swap by Seychelles in 2018, the Nature Conservancy—which played a pivotal role in this deal and others that followed—estimated that a similar model could apply to up to 85 countries.<sup>29</sup> The mere handful of deals completed since then underlines their complexity and the challenges faced in executing them.

A seminal International Monetary Fund paper<sup>30</sup> argues that debt-for-climate swaps are superior to alternatives only in narrow settings: they are better than conditional grants only if they are structured in a way that makes climate commitments senior to debt service, and they surpass comprehensive debt restructuring only if they lower debt risks without economic disruptions.

Several barriers may impede the successful execution of a debt-for-climate swap:

- **Lack of political commitment:** Since credit enhancements are necessary for a deal to succeed, it is imperative that the international institution providing the guarantee is convinced by a state's pledge to rebuild its fiscal position and execute ambitious conservation policies. Without strong, high-level political commitments by the sovereign, external partners may be unwilling to provide this guarantee.
- **Hesitancy by sovereign states:** Some governments may not see the merits of spending on environmental objectives amid a debt solvency or liquidity crisis, which may be a more immediate determinant of their political future. Additionally, while they could realize long-term savings on interest payments, swaps entail complex and time-consuming negotiations as well as high transaction costs for sovereigns, which may increase political pressure on the government.<sup>31</sup> Finally, many developing states are sensitive to infringement of their sovereignty and may not be comfortable with external organizations either enforcing environmental



commitments or directing the creation of independent bodies to ensure conservation targets are met.<sup>32</sup>

- **Balance sheet limitations:** While as much as \$2 trillion of debt has been identified as potentially eligible for debt-for-climate restructuring,<sup>33</sup> there are practical considerations that may limit that. If the principal on the new bond needs to be close to fully guaranteed, the combined balance sheets of development banks and development finance institutions will only cover so much of the outstanding debt of a sovereign or only extend to governments with low amounts of debt.
- **Limited investor appeal:** The combination of a high coupon and an investment-grade rating may entice some investors to the new bond, but others may balk at its illiquidity and the complexity of the arrangement. Other factors constraining the allure of debt-for-climate swaps include only partial redirection of realized savings toward conservation spending, limited ability to legally enforce conservation pledges, remaining fiscal risks in the absence of a comprehensive debt restructuring, and conceding part of the financial return for a nature-based solution.<sup>34</sup>

## Considerations for Swaps

Despite the challenges, interest in debt-for-climate swaps is growing, as mentioned earlier, raising the question of under what circumstances and for what types of sovereigns and debt profiles they could be most applicable. Elements for consideration could include:

- **Degree of debt distress:** Recent transactions have either been carried out by sovereigns under intense debt distress (Belize), some level of debt distress (Ecuador), or normal financing conditions (Barbados). None of these states were in default. The applicability of debt-for-climate swaps for sovereigns in default is more complex given the need to first address the insolvency problem.<sup>35</sup> Nevertheless, even in a restructuring scenario, a debt-for-climate swap might have a role, but as part of a menu of options.<sup>36</sup>
- **Importance of conservation efforts:** De-risking these instruments implies using the balance sheets of bilateral partners and multilateral organizations, which poses limits on the amount of debt that can be guaranteed. As such, a couple of considerations are: (1) how critical the environmental priorities financed by the debt-for-climate swaps are to the sovereign's fiscal outlook and (2) how relevant they are to global biodiversity and conservation goals. These factors might facilitate assessing whether debt-for-climate swaps are the most appropriate instrument, or whether other climate financing tools (for example, thematic bonds or conditional loans or grants) could be a better fit. These criteria might also affect their

marketability to private investors. For example, conservation of Ecuador’s Galápagos Islands and Belize’s coral reefs benefit these countries economically via tourism while also protecting biodiversity assets of global significance.

- **Credibility of a country’s institutions:** While the issuance of debt-for-climate swaps could reinforce climate governance, their success requires strong institutional commitments in the use of proceeds for the specific conservation goal.<sup>37</sup> Therefore, eligibility for such transactions could depend on a sovereign’s willingness to agree to the appropriate governance structures and participatory practices to ensure the proper use of proceeds, transparency, and accountability vis-à-vis both external stakeholders and domestic populations. Such institutional structures are paramount to the credibility of the transaction and its ultimate contribution to fiscal sustainability and environmental priorities.<sup>38</sup>

## Conclusion

Debt-for-climate swaps will not solve the widening crisis of indebtedness facing EMDEs, nor are they game-changers for the difficulties these countries face in attracting appropriate financing for climate mitigation and adaptation projects. That said, as this commentary has argued, under the right conditions debt-for-climate swaps can help particular subcategories of vulnerable states find new financing for environmental priorities while protecting livelihoods and improving a country’s fiscal outlook. It is no coincidence that climate-vulnerable and heavily indebted SIDS—such as Barbados and Seychelles—have been among the keenest adopters of the mechanism, as it provides these states with hitherto unavailable resources for adaptation projects that focus on combating oceanic biodiversity loss and supporting the livelihoods of coastal communities. Similar spending priorities associated with swap commitments have been on evidence in Belize, Ecuador, and Gabon,<sup>39</sup> where the focus has been on the blue economy and marine conservation projects—the latter pose considerably fewer governance challenges than, for example, limiting deforestation in the world’s rainforests in terms of monitoring compliance with the swap’s conservation goals.<sup>40</sup> Debt-for-climate swaps have thus been quite effective in directing funds toward climate adaptation projects.

Moreover, debt-for-climate swaps—as opposed to straightforward debt restructuring, for example—have an important signaling function for sovereigns to underline their commitment to both environmental and fiscal goals. As such, they can also be valuable for building institutionalized partnerships and ensuring accountability vis-à-vis investors, international organizations, and domestic populations.



# Appendix

**Table A-1:** Key features of recent debt-for-climate swaps

Country	Year	Instrument	Tenor	Coupon	Rating	Currency	Type	Size	Debt restructured		Savings/haircut	Nature conservation		Guarantee/insurance	Guarantor/insurer
			(years)					(mm)	Amt. (mm)	Negotiation	(mm/%)	Amt. (mm)	Governance structure	Amt. (mm)	
Seychelles	2015	Blue bond (issued in 2018)	10	6.5% (effectively, 2.8% due to loan)	None	USD	Private placement	\$15.0	\$21.6	Bilateral	\$6.6 / 31%	\$15.0	Creation of a trust, SeyCCAT, to manage part of the proceeds, and the remaining by DBS	\$5 + \$5 loan to subsidize coupons	World Bank + GEF
Belize	2021	Blue loan/blue bond	20	Step-up: 3.0%–6.1% (loan); 1.6%–4.5% (bond)	Aa2	USD	Syndicated to institutional investors	\$364.0	\$553.0	Multilateral (Buyback of 100% of one bond; 25% of total debt)	\$189.0 / 34%	\$180.0	Creation by TNC of conservation fund and endowment to be transferred in 2041	\$364 political risk insurance + catastrophe insurance	DFC
Barbados	2022	Blue loan/blue bond	15	3.8% (loan); 4.4% (dollar bond)	Aaa (Class A) and Aa2 (Class B)	50% USD + 50% BBD	Syndicated to institutional investors	\$146.5	\$150.7	Buyback of a portion of one USD (via auction) and one BBD bond (via option)	\$4.2 / 3%	\$40.0	Creation by TNC of environmental sustainability fund and endowment to be transferred in 2037	\$150 + natural disaster and pandemic clause	IDB + TNC
Ecuador	2023	Blue bond (“Galapagos Bond”)	18.5	5.6%	Aa2	USD	New debt issued in market	\$656.0	\$1,630.0	Buyback of a portion of several USD bonds (via market tender)	\$974.0 / 60%	\$323.0	Creation of Galapagos Life Fund (GLF), a nonprofit, and an endowment	\$85 + \$656 political risk insurance	IDB + DFC

Note: SeyCCAT = Seychelles’ Conservation and Climate Adaptation Trust, DBS = Development Bank of Seychelles, GEF = Global Environment Facility, DFC = US International Development Finance Corporation, IDB = Inter-American Development Bank, TNC = The Nature Conservancy, mm = millions.

Source: The Commonwealth, “Case Study: Innovative Financing – Debt for Conservation Swap, Seychelles’ Conservation and Climate Adaptation Trust and the Blue Bonds Plan, Seychelles (on-going),” November 28, 2020, <https://thecommonwealth.org/case-study/case-study-innovative-financing-debt-conservation-swap-seychelles-conservation-and>; Olly Jackson, “Deal: Seychelles’ Sovereign Blue Bond,” Latham and Watkins, November 2018, <https://www.lw.com/admin/upload/SiteAttachments/Seychelles%20blue%20bond.pdf>; The Nature Conservancy, “Case Study: Belize Debt Conversion for Marine Conservation,” May 17, 2022, <https://www.nature.org/content/dam/tnc/nature/en/documents/TNC-Belize-Debt-Conversion-Case-Study.pdf>; The Nature Conservancy, “Case Study: Barbados Blue Bonds for Ocean Conservation,” May 10, 2023, <https://www.nature.org/content/dam/tnc/nature/en/documents/TNC-Barbados-Debt-Conversion-Case-Study.pdf>; Inter-American Development Bank, “Ecuador Completes World’s Largest Debt-for-Nature Conversion with IDB and DFC Support,” news release, May 9, 2023, <https://www.iadb.org/en/news/ecuador-completes-worlds-largest-debt-nature-conversion-idb-and-dfc-support>; Ministry of Economy and Finance, Ecuador, “Government of Ecuador Announces Debt for Nature Swap Operation to Preserve Galapagos Islands’ Biodiversity,” news release, May 11, 2023, [https://ire.finanzas.gob.ec/content/2023/05/16.05.2023\\_Debt\\_for\\_Nature.pdf](https://ire.finanzas.gob.ec/content/2023/05/16.05.2023_Debt_for_Nature.pdf).



## Notes

1. United Nations Conference on Trade and Development, “UNCTAD Measures Progress on Sustainable Development Goals, Shows Impact of Global Crises,” June 27, 2023, <https://unctad.org/news/unctad-measures-progress-sustainable-development-goals-shows-impact-global-crises>; World Health Organization, “UN Report: Global Hunger Numbers Rose to as Many as 828 million in 2021,” July 6, 2022, <https://www.who.int/news/item/06-07-2022-un-report--global-hunger-numbers-rose-to-as-many-as-828-million-in-2021>.
2. SDG Pulse, “Developing Country External Debt: From Growing Sustainability Concerns to Potential Crisis in the Time of COVID-19,” <https://sdgpulse.unctad.org/debt-sustainability/>.
3. Brahim S. Coulibaly and Wafa Abedin, “Addressing the Looming Sovereign Debt Crisis in the Developing World: It Is Time to Consider a ‘Brady Plan,’” Brookings Institution, April 2023, <https://www.brookings.edu/articles/addressing-the-looming-sovereign-debt-crisis-in-the-developing-world-it-is-time-to-consider-a-brady-plan/>.
4. UNHCR, “As the Horn of Africa Drought Enters a Sixth Failed Rainy Season, UNHCR Calls for Urgent Assistance,” February 28, 2023, <https://www.unhcr.org/news/horn-africa-drought-enters-sixth-failed-rainy-season-unhcr-calls-urgent-assistance>.
5. Gautam Jain, Luisa Palacios, and Harry Verhoeven, “The Intersection of Debt and Climate in Emerging Market and Developing Economies: Roundtable Report,” Center on Global Energy Policy, Columbia University, July 18, 2023, <https://www.energypolicy.columbia.edu/publications/the-intersection-of-debt-and-climate-in-emerging-market-and-developing-economies-roundtable-report/>.
6. There is a slight distinction between debt-for-climate swaps and debt-for-nature swaps in that the former arrangement aids climate action while the latter protects nature. However, since most swaps direct fiscal resources toward both activities, the terms are used interchangeably.
7. Kristalina Georgieva, Marcos Chamon, and Vimal Thakoor, “Swapping Debt for Climate or Nature Pledges Can Help Fund Resilience,” IMF Blog, December 14, 2022, <https://www.imf.org/en/Blogs/Articles/2022/12/14/swapping-debt-for-climate-or-nature-pledges-can-help-fund-resilience>.
8. Nicole Kearse, “A Case for ‘Debt-for-Nature’ and ‘Debt-for-Climate’ Swaps in Emerging and Developing Economies,” *Butterworths Journal of International Banking and Financial Law X* (January 2023): 28–29, [https://www.linkedin.com/posts/nicolekearse\\_a-case-for-debt-for-nature-and-debt-for-climate-activity-7065274233999757312-AFD-/](https://www.linkedin.com/posts/nicolekearse_a-case-for-debt-for-nature-and-debt-for-climate-activity-7065274233999757312-AFD-/).





9. Harry Verhoeven, “Africa’s Call for Climate Change Adaption: Heeding Warnings from the IPCC Report in Advance of COP26,” Center on Global Energy Policy, Columbia University, September 14, 2021, <https://www.energypolicy.columbia.edu/publications/africa-s-call-climate-change-adaption-heeding-warnings-ipcc-report-advance-cop26-qa-dr-harry/>.
10. Matthew R. Claeson, “Debt-for-Nature Swaps: A Concise Guide for Investors,” Lord Abbett, December 19, 2022, <https://www.lordabbett.com/en-ie/financial-intermediaries/insights/investment-objectives/debt-for-nature-swaps--a-concise-guide-for-investors.html>.
11. African Development Bank Group, “Debt-for-Nature Swaps: Feasibility and Policy Significance in Africa’s Natural Resources Sector,” October 2022, <https://www.greenpolicyplatform.org/sites/default/files/downloads/resource/debt-for-nature-swaps.pdf>.
12. See Appendix for sources.
13. Esteban Duarte and Selcuk Gokoluk, “BofA-Led Debt Swap for Gabon Moves Ahead With \$500 Million Bond,” Bloomberg News, August 2, 2023, <https://www.bloomberg.com/news/articles/2023-08-02/bofa-led-debt-swap-for-gabon-moves-ahead-with-500-million-bond>.
14. Marc Jones and Rodrigo Campos, “Ecuador Seals Record Debt-for-Nature Swap with Galapagos Bond,” Reuters, May 9, 2023, <https://www.reuters.com/world/americas/ecuador-seals-record-debt-for-nature-swap-with-galapagos-bond-2023-05-09/>.
15. Guillaume Chabert, Martin Cerisola, and Dalia Hakura, “Restructuring Debt of Poorer Nations Requires More Efficient Coordination,” IMF Blog, April 7, 2022, <https://www.imf.org/en/Blogs/Articles/2022/04/07/restructuring-debt-of-poorer-nations-requires-more-efficient-coordination>; Natasha White, “Debt-for-Nature Swaps Gain Traction Among Developing Countries,” Bloomberg, November 7, 2022, <https://www.bloomberg.com/news/articles/2022-11-07/debt-for-nature-swaps-offer-option-for-developing-countries>.
16. Adelle Thomas and Emily Theokritoff, “Debt-for-Climate Swaps for Small Islands,” *Nature Climate Change* 11 (November 2021): 889–893, <https://www.nature.com/articles/s41558-021-01194-4>.
17. Since Seychelles’ blue bond was sold to three investors via private placement, it was not rated.
18. Kenza Bryan and Joe Daniels, “UK Fund Giant L&G Bets on Ecuador’s Galápagos Debt Experiment,” *Financial Times*, May 24, 2023, <https://www.ft.com/content/e895761d-63c6-44e7-84d8-ca6dd89a6a20>.
19. Isabelle Gerretsen, “The Deal that Saved Seychelles’ Troubled Waters,” BBC Future, August

- 3, 2020, <https://www.bbc.com/future/article/20200803-the-deal-that-saved-seychelles-troubled-waters>.
20. The Nature Conservancy, “Case Study: Belize Debt Conversion for Marine Conservation,” May 17, 2022, <https://www.nature.org/content/dam/tnc/nature/en/documents/TNC-Belize-Debt-Conversion-Case-Study.pdf>.
21. In Belize’s case, the participation of more than 75 percent of holders of its bonds allowed for the amendment of the existing bonds.
22. The Nature Conservancy, “Case Study: Barbados Blue Bonds for Ocean Conservation,” May 10, 2023, <https://www.nature.org/content/dam/tnc/nature/en/documents/TNC-Barbados-Debt-Conversion-Case-Study.pdf>.
23. Esteban Duarte and Natasha White, “Ecuador’s Planned \$800-Million Debt-For-Nature Gets IDB Guarantee,” Bloomberg News, May 3, 2023, <https://www.bloomberg.com/news/articles/2023-05-03/ecuador-s-planned-800-million-debt-for-nature-gets-idb-guarantee>.
24. Marc Jones and Rachel Savage, “Gabon Launches Tender for Africa’s First Debt-for-Nature Swap,” Reuters, July 25, 2023, <https://www.reuters.com/world/africa/gabon-launches-tender-africas-first-debt-for-nature-swap-2023-07-25/>.
25. See Ministry of Finance of Ecuador, “Government of Ecuador announces debt for nature swap operation to preserve Galapagos Islands’ biodiversity,” press release, May 11, 2023, <https://ire.finanzas.gob.ec/press.php>.
26. Marleen S. Schutter and Christina C. Hicks, “Networking the Blue Economy in Seychelles: Pioneers, Resistance, and the Power of Influence,” *Journal of Political Ecology* 26, no. 1 (2019): 425–447, <https://journals.librarypublishing.arizona.edu/jpe/article/2121/galley/2380/view/>.
27. Gautam Jain, “Thematic Bonds: Financing Net-Zero Transition in Emerging Market and Developing Economies,” Center on Global Energy Policy, Columbia University, December 12, 2022, <https://www.energypolicy.columbia.edu/publications/thematic-bonds-financing-net-zero-transition-emerging-market-and-developing-economies/>.
28. Chetan Hebbale and Johannes Urpelainen, “Debt-for-Adaptation Swaps: A Financial Tool to Help Climate Vulnerable Nations,” Brookings Institution, March 21, 2023, <https://www.brookings.edu/articles/debt-for-adaptation-swaps-a-financial-tool-to-help-climate-vulnerable-nations/>.
29. The Nature Conservancy, “Seychelles Achieves 30% Marine Conservation Commitment,” March



- 16, 2018, <https://www.nature.org/en-us/about-us/where-we-work/africa/stories-in-africa/seychelles-conservation-commitment-comes-to-life/>.
30. Marcos Chamon, Erik Klok, Vimal Thakoor, and Jeromin Zettelmeyer, “Debt-for-Climate Swaps: Analysis, Design, and Implementation,” IMF Working Paper, August 2022, <https://www.imf.org/en/Publications/WP/Issues/2022/08/11/Debt-for-Climate-Swaps-Analysis-Design-and-Implementation-522184>.
31. Natasha White, “Wall Street’s New ESG Money-Maker Promises Nature Conservation —With a Catch,” Bloomberg, January 11, 2023, <https://www.bloomberg.com/news/articles/2023-01-12/bankers-bet-millions-on-sovereign-debt-deals-tied-to-green-goals>.
32. Quentin Paul, Pierre-François Weber, and Romain Svartzman, “Debt-for-Nature Swaps: A Two-Fold Solution for Environmental and Debt Sustainability in Developing Countries?” Banque de France, 244/2, January/February 2023, [https://publications.banque-france.fr/sites/default/files/medias/documents/823003\\_bdf244\\_2-en\\_version\\_finale.pdf](https://publications.banque-france.fr/sites/default/files/medias/documents/823003_bdf244_2-en_version_finale.pdf).
33. Ibid.
34. Ibid., Jain et al. (2023), Kearse (2023), and Kenza Bryan and Joe Daniels, “UK Fund Giant L&G Bets on Ecuador’s Galápagos Debt Experiment,” *Financial Times*, May 24, 2023, <https://www.ft.com/content/e895761d-63c6-44e7-84d8-ca6dd89a6a20>.
35. Chamon et al. (2022).
36. Jain et al. (2023).
37. Fragility of the state and a lack of transparency and commitment to climate goals have been identified as factors limiting the eligibility of countries for debt-for-nature swaps. See Divjot Singh and Vikram Widge, “Debt for Climate Swaps: Supporting a Sustainable Recovery,” Climate Policy Initiative, May 2021, <https://www.climatepolicyinitiative.org/wp-content/uploads/2021/05/Debt-for-Climate-Swaps-Blueprint-May-2021.pdf>.
38. Many countries facing debt distress or default with urgent climate needs could potentially be candidates for these instruments if it were not for their governance challenges. One example is Venezuela, a country under authoritarian rule facing a complex humanitarian crisis and severe environmental issues of global significance. Were political conditions to radically change, Venezuela could be a candidate for such a transaction—as part of a comprehensive debt restructuring program—given the urgent need to protect and restore the country’s Amazon region which, has experienced rapid deforestation. See Gideon Long, “Venezuela’s

Environmental Crisis: ‘The Beginning of a Wave of Destruction,’” *Financial Times*, January 16, 2022, <https://www.ft.com/content/92583389-fc7-43d1-b1f9-6516b4370bc2>; Singh and Widge (2021); Jain et al. (2023).

39. Kenza Bryan, David Pilling, and Mary McDougall, “Gabon Finalises First Debt-for-Nature Swap in Africa,” *Financial Times*, August 15, 2023, <https://www.ft.com/content/23c1c1ce-59ef-4fee-8b86-fed2c3e5f3b1>.
40. See, for instance, on the difficulties with such conditionalities, Eric F. Lambin et al., “The Role of Supply-Chain Initiatives in Reducing Deforestation,” *Nature Climate Change* 8, no. 2 (January 29, 2018) 109–116, <https://www.nature.com/articles/s41558-017-0061-1>; Rachael D. Garrett, Janina Grabs, Federico Cammelli, Florian Gollnow, and Samuel A. Levy, “Should Payments for Environmental Services be Used to Implement Zero-deforestation Supply Chain Policies? The Case of Soy in the Brazilian Cerrado,” *World Development* 152, April 2022, 105814, <https://www.sciencedirect.com/science/article/pii/S0305750X22000043>.

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He holds a Ph.D. in Operations Research from Columbia University. He also has an M.S. in Industrial Engineering from Iowa State University and a B.Tech. in Mechanical Engineering from the Indian Institute of Technology, Bombay. He is a CFA charter holder, a Cornell EMI Fellow, and an Adjunct Professor at Columbia University’s School of International and Public Affairs. He has co-authored publications in the *Journal of Derivatives*, the *Journal of Banking and Finance*, the *Journal of Applied Probability*, *Probability in Engineering and Informational Science*, and the *International Journal of Production Economics*. He has also contributed chapters for the 2020 and 2021 Cornell EMI Annual Reports.



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Before her time at Citgo, Palacios was a Senior Managing Director and member of the management committee of Medley Global Advisors, a macro policy research firm. She headed Medley's Latin America's economic and energy practice and later the firm's emerging market research efforts. She previously worked at Barclays Capital as a Director in the emerging markets research department in New York, and as an economist in the risk department at Société Générale in Paris. She also worked as a senior economist at the Japan Bank for International Cooperation and was a consultant in the Office of the Chief Economist for Latin America at the World Bank in Washington, D.C.

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