


SCALING CLEAN ENERGY THROUGH CLIMATE FINANCE INNOVATION: STRUCTURE OF AN EXCHANGE RATE COVERAGE FACILITY FOR DEVELOPING COUNTRIES

BY PHILIPPE BENOIT, JONATHAN ELKIND, LEONARDO BELTRAN, JUSTINE ROCHE,
ESPEN MEHLUM, OLIVIER LELOUCH, AND CHANDRA SHEKHAR SINHA

OCTOBER 2022



Columbia University CGEP
1255 Amsterdam Ave.
New York, NY 10027
energypolicy.columbia.edu

   @ColumbiaUEnergy

ABOUT THE CENTER ON GLOBAL ENERGY POLICY

The Center on Global Energy Policy at Columbia University SIPA advances smart, actionable and evidence-based energy and climate solutions through research, education and dialogue. Based at one of the world's top research universities, what sets CGEP apart is our ability to communicate academic research, scholarship and insights in formats and on timescales that are useful to decision makers. We bridge the gap between academic research and policy — complementing and strengthening the world-class research already underway at Columbia University, while providing support, expertise, and policy recommendations to foster stronger, evidence-based policy. Recently, Columbia University President Lee Bollinger announced the creation of a new Climate School — the first in the nation — to tackle the most urgent environmental and public health challenges facing humanity.

Visit us at www.energypolicy.columbia.edu

   @ColumbiaUEnergy

ABOUT THE SCHOOL OF INTERNATIONAL AND PUBLIC AFFAIRS

SIPA's mission is to empower people to serve the global public interest. Our goal is to foster economic growth, sustainable development, social progress, and democratic governance by educating public policy professionals, producing policy-related research, and conveying the results to the world. Based in New York City, with a student body that is 50 percent international and educational partners in cities around the world, SIPA is the most global of public policy schools.

For more information, please visit www.sipa.columbia.edu

For a full list of financial supporters of the Center on Global Energy Policy at Columbia University SIPA, please visit our website at <https://www.energypolicy.columbia.edu/partners>. See below a list of members that are currently in CGEP's Visionary Annual Circle. This list is updated periodically.

Air Products

Anonymous

Jay Bernstein

Breakthrough Energy LLC

Children's Investment Fund Foundation (CIFF)

Occidental Petroleum Corporation

Ray Rothrock

Kimberly and Scott Sheffield

Tellurian Inc.

TABLE OF CONTENTS

About the Authors	03
Executive Summary	06
Introduction	08
Part One: The Need for Clean Energy Investments in Developing Countries	09
Currency Exchange Risk in Clean Energy Investments	10
Part Two: An Illustrative Exchange Rate Coverage Facility	13
Principles and Attributes	13
Facility Coverage	14
Facility's Financial Structure	16
<i>Model Clean Energy Project under ERCF</i>	18
Operational Issues	21
Potential Benefits	22
Conclusion	24
Notes	25

ACKNOWLEDGMENTS

The authors wish to express their appreciation to the more than 35 experts in investment banking, development banking, clean energy project development, exchange rate management, development policy, and impact investing, who have engaged in private consultations related to the concept of an Exchange Rate Coverage Facility. They also thank Dr. Jesse Schreger of the Columbia Business School, Sandhya Srinivasan of the World Bank's Climate Change group, and Emeka Ochu of the Center on Global Energy Policy at Columbia/SIPA. Finally, the authors thank the CGEP publications team and four anonymous reviewers, who read and commented on this piece in draft form. Any remaining shortcomings in the text are the responsibility of the authors.

This policy note represents the research and views of the authors. It does not necessarily represent the views of the Center on Global Energy Policy. The piece may be subject to further revision.

Contributions to SIPA for the benefit of CGEP are general use gifts, which gives the Center discretion in how it allocates these funds. More information is available at <https://energypolicy.columbia.edu/about/partners>. Rare cases of sponsored projects are clearly indicated.

ABOUT THE AUTHORS

Philippe Benoit is an Adjunct Senior Research Scholar at the Center on Global Energy Policy at Columbia University SIPA. Philippe has had a distinguished career in energy, development, and climate policy. His experience spans a wide spectrum of regions, including the emerging economies of Asia and Latin America, developing countries in Sub-Saharan Africa, North America and Europe. He has over 25 years of experience in working on energy, finance and development in both the private and public sectors. From 2011-2016 Philippe served as head of the Energy Environment and Energy Efficiency Divisions at the International Energy Agency. In addition to his time at the IEA, he worked for over 15 years at the World Bank, including as energy sector manager for Latin America and the Caribbean, and at Société Générale as a director in the Energy Project Finance Department.

Philippe has managed over 50 publications in the areas of clean energy, development and climate change while at the IEA and the World Bank. He holds a J.D. from Harvard Law School, a B.A. in economics and political science from Yale University, and a masters in trade law from the University of Paris.

Jonathan Elkind is a fellow and senior research scholar at the Center on Global Energy Policy. Elkind came to the Center after a long and distinguished career devoted to energy and environment policy in the private and public sectors. From 2009 to 2017, he worked on international energy and climate issues at the United States Department of Energy, helping to coordinate energy policy in the Obama Administration and leading climate and energy programs with key global partners. He departed DOE as Assistant Secretary for International Affairs.

Before his service in the Obama Administration, he founded Eastlink Consulting, LLC where he guided corporate and non-profit clients on commercial energy projects in Europe and Eurasia, and he served as a non-resident senior fellow at the Brookings Institution, researching international energy security issues.

Earlier in his career, Elkind focused on energy, environment and economic issues in the post-Soviet nations in a variety of posts with the Joint Global Change Research Institute, the U.S. National Security Council, Office of the Vice President of the United States, the Department of Energy, and the Council on Environmental Quality.

Elkind holds a Master of Business Administration in Strategy and International Business from the R.H. Smith School of Business at the University of Maryland, a Master of Arts in Russian History and Certificate in Soviet Studies from the W. Averell Harriman Institute, and a Bachelor of Arts with Distinction in History from the University of Michigan, Ann Arbor. He is a Director on the Board of Infineon Technologies, LLC. He is also a Distinguished Associate with Energy Futures Initiative.

Leonardo Beltran is a Distinguished Visiting Fellow at Columbia University's Center for Global Energy Policy, a non-resident fellow at the Institute of the Americas, and an executive fellow of the School of Public Policy at the University of Calgary. He is also serving his second three-year term on the Administrative Board of Sustainable Energy for All.

Mr. Beltran has had a distinguished 13-year career in public service in the government of Mexico, including as the longest serving Deputy Secretary of Energy (2012-2018). In this

capacity, he led the Ministry's coordination of Mexico's National Energy Strategy, policy document that served as the foundation for the energy reform of 2013. He was also on the Board of Directors of Petróleos Mexicanos (Pemex), Mexico's national oil company and the world's 10th largest oil producer and was alternate Chairman of the Board of Directors of Comisión Federal de Electricidad (CFE), Mexico's national power utility and a Global 500 company. Mr. Beltran also chaired the boards of the national laboratories of the energy sector (Mexican Petroleum Institute; National Institute of Electricity and Clean Energies; National Nuclear Research Institute), and presided the board of a billion usd R&D trust funds that created the Mexican Centers for Innovation on Energy (biofuels, CCS, geothermal, ocean, solar, and wind), the largest clean energy technology innovation networks in Latin America, and invested in the biggest talent development effort in the energy sector in the country.

Before serving as Deputy Secretary of Energy, Mr. Beltran held other leadership positions in the Ministry of Energy, including Director-General for Information and Energy Studies and Director for International Negotiations.

Mr. Beltran is currently also a member of the Advisory Board of the Just Transition Initiative (partnership between the Climate Investment Funds and the Center for Strategic and International Studies); a member of the Board of Fundación Por México (NGO focused on providing educational services to underserved communities); a member of the IPS International Association (global news agency); a member of the expert's network and the Global Futures Council of the World Economic Forum; and a mentor of the Global Women's Network for the Energy Transition. He is also consulting the Inter-American Development Bank, the Latin American Energy Organization, and the World Bank on issues surrounding the energy transition.

Mr. Beltran is a leading expert in the energy transition, he has been named several times as one of the most influential leaders in the energy sector in Mexico and personality of the year in renewable energy (including in 2018).

He holds a Master's in Public Administration in International Development from Harvard Kennedy School and a Bachelor of Science in Economics from Instituto Tecnológico Autónomo de México (ITAM).

Justine Roche is leading the World Economic Forum's initiative on Mobilizing Investment for Clean Energy in Emerging Economies. Her work concentrates on solutioning barriers and enabling public and private-sector collaboration toward scaling clean energy investment, with a specific focus on the developing world. Prior to joining the Forum, in 2019, she deployed circularity programs for the infrastructure sector in Europe, Africa, and the Middle East. She's also active in the field of environmental education. Justine holds Master's degrees from the University of Fribourg and the University of Applied Sciences of Geneva, where she specialized in sustainable development.

Espen Mehlum is the Head of Energy, Materials, and Infrastructure Programs, Benchmarking and Regional Action, World Economic Forum. Espen Mehlum leads Programs and initiatives within the World Economic Forum's global platform for Energy, Materials, and Infrastructure. He has over 22 years of experience in energy, sustainability, and international collaboration. From 2000-2004, he was advisor in the Norwegian Ministry of Petroleum and Energy, and from 2004-2006, he served as Norway's Energy Advisor to the International Energy Agency.

From 2006 to today, he has held several positions at the World Economic Forum. Espen holds a Master of Science degree in Economics from the Norwegian School of Economics and Business Administration, World Economic Forum Global Leadership Fellow.

Olivier Lelouch is an Energy & Climate Economist in the Climate Change Group at the World Bank and is part of the Invest for Climate team. He previously worked as an analyst at the International Energy Agency in Paris, Oil Industry Markets division. Mr. Lelouch has a Master's degree in Energy Economics from the Paris-Saclay University, France, and a Master's degree in Engineering from IMT Atlantique, Nantes, France.

Chandra Shekhar Sinha is an Adviser in the Climate Change Group at the World Bank. He was a part of the design team for the Prototype Carbon Fund through which carbon finance was established at the World Bank. Mr. Sinha has worked the energy, climate change, and climate finance space in the Latin America and Caribbean and the South Asia regions of the World Bank. He has also worked at JPMorgan, TERI-India, UNDP, and the Kennedy School of Government at Harvard University. Chandra Shekhar has a Ph.D. and M.Tech. in Energy Studies from the Indian Institute of Technology (IIT), Delhi, and a master's degree in Physics from IIT, Kanpur, India.

EXECUTIVE SUMMARY

Transitioning to a low-carbon energy future consistent with the goals of the Paris Agreement requires trillions of dollars of additional investment in the Global South. Most of this investment will need to be in domestic-oriented projects, generating local currencies and creating domestic development opportunities. However, local capital alone will not be enough, and significant amounts of foreign investments in the form of debt or equity will play a critical role. Exchange rate risk—the possibility that a local currency (LC) loses value relative to the foreign currency (FC) in which a loan is denominated—is a major impediment to large foreign capital flows for clean energy projects, increasing the cost of capital and at times hindering investments altogether while creating financial exposure issues for domestic sponsors. While currency hedging and other options exist, they can be expensive and are lacking for many developing country currencies, particularly at the long tenors, low cost, and large scale required to support the needed clean energy investments.

Addressing exchange rate risk should therefore be a priority for climate- and development-focused policy makers, financial executives, clean energy investors, and civil society advocates. While this issue is important regardless of economic cycles, it is vital in times of rising interest rates and cost of capital—particularly in many emerging and developing markets, which are often seen as riskier by investors in times of global economic uncertainty.

This policy note sets out a possible structure that could alleviate exchange rate risk for clean energy projects. It outlines a facility, supported by a combination of domestic and international resources (including carbon credits, official development assistance, and international private capital), that could issue currency exchange risk protection to international lenders to catalyze financing for clean energy projects in developing countries.

Critical features of the facility would include the following:

- *Full coverage for currency shortfalls*—the facility would cover any and all shortfalls, even those resulting from an extreme depreciation.¹
- *Protection for both foreign investors and local stakeholders*—the facility would provide a creditworthy offshore guarantor for foreign lenders and reduce the corresponding exposure of host-country stakeholders (with the facility absorbing this risk with respect to the FC loans).
- *Blended finance and burden sharing*—the facility would be funded from a variety of sources, including potentially multilateral development banks, development finance institutions, philanthropic impact investors, sovereign wealth funds, private investors, and host-country stakeholders.
- *Carbon credits*—critical funding of the coverage would come from monetizing a share of the carbon credits generated by the clean energy project and assigned to the facility.
- *Scalability*—the facility is designed to be able to expand in size and coverage over time.
- *Complementarity*—the facility would complement commercial currency hedging products to create a seamless coverage for the long tenors required by clean energy infrastructure projects.

- *Host institution*—the facility would be housed within an appropriate, existing institution (likely a multilateral finance organization) and would draw on existing currency exchange rate expertise.

The facility, as conceived by the authors, would generate several benefits for project owners, host countries, and international investors, including by:

- catalyzing additional foreign financing for clean energy projects in developing countries, targeting in particular high-impact climate projects, such as those that add zero-carbon capacity to carbon-intensive grids.
- absorbing currency depreciation risk, which could insulate (to some extent) consumers and other local stakeholders against the currency exchange rate risk, including by guarding against the prospect of dramatically rising electricity prices if the LC devalues;
- reducing the cost of foreign-financed clean energy projects by enabling projects to access international finance at international lending rates.
- providing a vehicle for climate-engaged funders and donors to leverage their financial contributions into larger investments in clean energy projects in developing countries.
- facilitating the growth of markets for high-integrity carbon credits, which are likely to be in high demand as diverse jurisdictions and companies around the globe seek to implement net-zero pledges.
- providing the flexibility to aggregate smaller projects or to cover other specialized projects, such as projects in “small island developing states.”

The facility outlined in this policy note reflects extensive analysis and consultations conducted by the authors. While it is possible that this specific concept could become a reality, the primary objective of this piece is to catalyze intensified discussion on potential solutions that can increase the flow of climate finance to developing countries by addressing the constraint of currency exchange rate risk.

INTRODUCTION

Efforts to address the climate crisis face a range of challenges—political, geopolitical, economic, technological, financial, and more. One of the most persistent challenges is the difficulty of mobilizing sufficient capital to enable developing countries² to continue developing while simultaneously accelerating their clean energy transition.

To deliver clean energy consistent with the terms of the Paris Agreement, it is estimated that finance for clean energy infrastructure in developing countries, even without including China, needs to grow massively. Analysis produced by the International Energy Agency in cooperation with the World Economic Forum estimates that, depending on whether one aims to limit global warming to “well below” 2.0° Celsius or to 1.5° Celsius, such investments must grow from roughly \$150 billion per year currently to either \$600 billion or over \$1 trillion in 2030.³ Advanced economies pledged to mobilize \$100 billion annually for clean energy investment in developing countries but have fallen short, only meeting 80 percent of that.⁴

A key to achieving these goals is addressing the currency exchange risk that occurs between foreign-denominated financing and the local currency (LC) revenues of clean energy projects in emerging economies and other developing countries. This policy note sets out a possible structure to address this constraint and is organized as follows:

PART 1

This section explains the need for increased investment in clean energy in developing countries, the centrality of local currency revenues in these clean energy projects, the corresponding challenge posed by exchange rate fluctuations, and certain existing mechanisms for managing this risk.

PART 2

This section outlines a possible structure to address the challenge of exchange rate risk: an exchange rate coverage facility. Specific elements, features, and implications of this illustrative structure are discussed, as well as areas meriting further discussion and development.

This policy note is the result of a collaboration among scholars at Columbia University's Center on Global Energy Policy, working with the World Economic Forum's “Mobilizing Investment for Clean Energy in Emerging Economies” initiative⁵ and the World Bank Group's Climate Change program “Invest for Climate.”⁶ The piece reflects the authors' analysis and research, including information gathered through discussions with investment and commercial bankers, private investors, multilateral bank executives, development finance authorities, development advocates, clean energy project developers, foreign exchange experts, and policy stakeholders.

PART 1: THE NEED FOR CLEAN ENERGY INVESTMENTS IN DEVELOPING COUNTRIES

In order to achieve the global climate goals set out in the Paris Agreement while also meeting rising demand for energy to fuel economic growth, developing countries need much more clean energy investment. Numerous analyses estimate the scale of need. As noted earlier, the International Energy Agency (IEA) has published seminal analysis that projects a need for fourfold to sevenfold increases in investments.⁷ That analysis also estimates that 30 percent of the needed funding could come in the form of foreign capital.⁸ This is due to the comparatively small scale of gross domestic product, less developed capital markets, and competing priorities for domestic funds (such as education and health services). Moreover, a portion of the required equipment will need to be sourced from abroad in foreign currencies (FCs). Foreign capital will need to play a significant role.⁹

Adding complexity, capital for clean energy finance tends to be available in advanced economies rather than in developing economies.¹⁰ Investment in developing countries grew at only 2 percent per year for most of the period since 2015, the year when the Paris Climate Agreement was achieved.¹¹ Developing countries comprise two-thirds of the global population but have attracted only one-fifth of clean energy investment since 2016.¹² Available finance is a key missing link to accelerate clean energy deployment in developing economies.

Clean energy technologies often require large up-front capital expenditure. Their overall lifetime costs (initial capital expenditures plus operations, maintenance, and financing costs) may be lower than those of legacy energy systems, but the capital intensity of clean energy poses its own burdens, especially in capital-constrained developing countries. This means that building clean energy in developing countries requires effective management of a range of different risks—the creditworthiness of purchasers, possible regulatory and political uncertainties, unfamiliar technologies, and where foreign debt is involved, currency exchange rate risk.

Two additional important dynamics are relevant in financing clean energy projects to meet climate goals. First, greenhouse gas (GHG) emissions are projected to rise in emerging economies and other developing countries as a result of demographic, development, and energy demand reasons. Over the coming decade, countries currently classified as low and middle income by the World Bank¹³ will grow to constitute roughly two-thirds of total global energy demand, a stark shift from the beginning of the century when the majority of global energy demand was in advanced economies.¹⁴ Similarly, energy emissions in developing countries are currently projected to grow by 5 Gt by 2040, while over the same period they plateau in China and shrink by 2 Gt in advanced economies.¹⁵ These projections highlight the importance of reversing emissions trends in these developing countries, which must simultaneously continue to develop their energy systems to raise inadequate standards of living. This emissions-reduction outcome requires a massive increase in clean energy investment in developing countries.¹⁶

Second, as described in more detail in the next section, the majority of these clean energy investments need to be made in power and other infrastructure projects designed to meet local demand; they therefore generate local currency revenues. In addition, they tend to earn modest returns that require long return periods. They thereby contrast to the high-return foreign currency generating export projects that have, to date, attracted much of the international capital to energy investments in developing countries.

Currency Exchange Risk in Clean Energy Investments

Most clean energy projects—such as solar or wind power plants, investments in public transit systems, building efficiency retrofits, and electric vehicle charging stations—generate revenues in local currency. Traditionally, local borrowers are required to repay any foreign debt finance on agreed terms in the foreign currency, such as US dollars, euros, or yens. If the local currency loses value relative to the foreign currency during the life of the loan, a common circumstance with many developing country currencies, the project’s investors are exposed to a material risk.

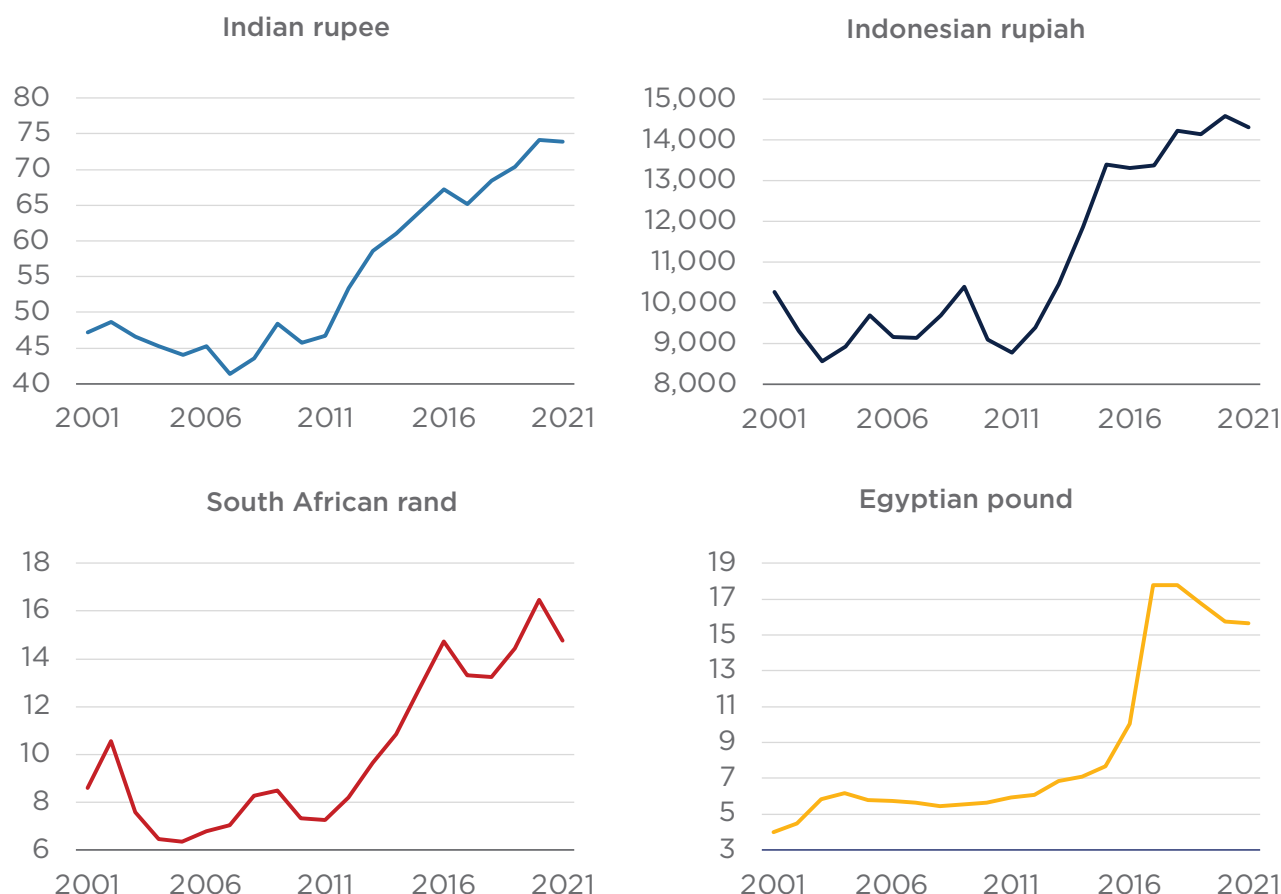
Often, this risk is borne by host-country participants through, for example, host-government guarantees or by denominating the loan and other returns to foreign investors in dollars or other foreign currencies. As a result, as one expert analysis states, “When local currencies depreciate, the consequences [for host developing countries] range from bad to disastrous; including insolvency, job losses, recession, increases in non-performing loans, decreases in investment flows and economic crisis.”¹⁷ In addition, foreign investors are often unwilling to invest without access to coverage beyond what the host government provides, thereby limiting the supply of capital for clean energy investments.

Two other factors compound the currency exchange rate risks for clean energy investment in developing countries. First, as noted above, most such projects are not major cash generators; they provide utility-scale returns. Second, the debt service terms may extend for 15 years or more, during which currency depreciation can be large while slim margins make it more difficult to absorb.¹⁸

Importantly, developing countries can be on the losing end of exchange rate fluctuations for a variety of reasons—some having nothing to do with their own policies or practices. For example, in early 2022, global investors worried about the macroeconomic impacts of Russia’s war in Ukraine, and many investors shifted to traditional “safe” stores of value. They wanted to hold wealth in US dollars or gold, for example.¹⁹ Many other currencies—especially those in the developing world—suffered losses as a result.²⁰ Other factors also adversely affected them, such as the sharp increase in energy import prices and the impact on their currency reserves.

Problematic domestic policies can also drive down the value of local currencies. At times it is difficult to identify the exchange rate impact of individual factors, especially over the short term, but as a general proposition the local currencies of many emerging economies have depreciated significantly relative to the dollar over the last 20 years. The LC values for Indonesia, India, Egypt, and South Africa relative to the US dollar are shown in Figure 1.²¹

Figure 1: Local currency units relative to US dollars for selected currencies, 2001–2021



Source: World Bank Open Data, “Official exchange rate (LCU per US\$, period average),” <https://data.worldbank.org/>.

Certain existing tools and mechanisms can help manage exchange rate risk, but they have specific implications for costs, tenor, and scale. One such mechanism, host-government guarantees, covers the gap between the value of the local currency revenues and the debt service (and potentially equity payments) owed to foreign investors. Such guarantees require that the host government has fiscal space and can often create macroeconomic and budgetary stresses—a particularly salient issue given the trying macroeconomic environment of the past two years.

Another approach is for the debt obligation to be denominated in the FC, which results in the project developer—often a state-owned enterprise—bearing the responsibility to cover a depreciation-related debt service shortfall and often then turning to the government owner for compensation.²² Clean energy investment in developing countries will not be able to proceed at pace and scale if all projects must rely on host-government compensation or guarantees—not only because these governments lack the financial capacity to do so, but

also because doing so may not be wise from a macroeconomic management perspective.

Another tool used for certain projects—price indexation—has different implications. In this case, the project developer would raise the price it charges for the clean energy if the local currency loses value over time.²³ Such an arrangement can present major political and social problems if it results in significant tariff increases for consumers. As a result, this may translate into an accommodation in which the government once again steps in to pay the required amounts without passing the costs onto consumers.

Domestic private companies developing clean energy projects often do not have the option to turn to the state for compensation or have the financial muscle to cover potential large losses due to currency fluctuations. Even international companies investing in many markets with greater financial solidity and ability to diversify risks across different markets and currencies are exposed to LC depreciation risks over time, which can make investments that would otherwise be financially viable riskier and, hence, less attractive or even impracticable.

Importantly, the market can also provide protection—at a price and under certain conditions and limitations. Exchange rate swaps and hedges can be purchased in the commercial market to protect against currency risks, but hedges and swaps are only available for certain currencies, and they are not generally available for the long-tenor obligations that characterize the financing for clean energy investments. They can also be costly.²⁴

Recognizing the limitations of currency hedging products for many developing country currencies, various donors, together with multilateral financial institutions, established The Currency Exchange Fund (widely known as TCX). TCX aims to facilitate sustainable development in emerging and frontier markets by providing currency hedging services for project developers and borrowers in these markets.²⁵ In the 15 years since its inception, TCX has de-risked \$1.4 billion in loans to developing countries, including \$53 million in energy projects.²⁶ While an important addition, there remains significant room for more financial innovation.

Risk-adjusted returns matter for domestic and foreign investors, and the FC risk is an important element in that determination. The financial products currently available to catalyze clean energy investments by addressing currency exchange rate risk are insufficient to deliver the needed volume of foreign investment, particularly on terms that are affordable and consistent with other development needs. Consequently, there is not only room but need to do more in this area. The following section sets out a possible new facility to help fill this gap.

PART TWO: AN ILLUSTRATIVE EXCHANGE RISK COVERAGE FACILITY

One possible approach to manage exchange rate risk is through the creation of a Clean Energy Exchange Rate Coverage Facility (ERCF). The structure and design presented here by the authors are not the only form that such a facility could take. Rather, this proposal provides an indicative structure with certain features that can be debated, amended, and improved. In order to facilitate the basic design task, certain parameters of the proposed facility have been simplified.

Principles and Attributes

The Clean Energy Exchange Rate Coverage Facility is intended to increase funding for clean energy investments in developing countries²⁷ by protecting FC lenders (including those supplying commercial loans and buying bonds) against depreciation of LC payments, while also helping to protect domestic sponsors against this exposure. The facility would do so by absorbing this risk, which is distributed among its various funders (as described below). The facility would provide foreign lenders for clean energy projects with an offshore, creditworthy financial guarantee against foreign currency exchange risk and also help project sponsors access FC loans at lower rates than would otherwise apply.

In general, the following guiding principles have informed the development of this illustrative structure to respond to potential concerns of investors, local stakeholders, and international financiers, including multilateral development organizations:

- *Crowding-in and development benefits*—The facility aims to attract (“crowd in”) additional funding to support the significant scaling-up of affordable clean energy in developing countries, targeting in particular high-impact climate projects that can generate carbon credits (such as those that add zero-carbon generating capacity to carbon-intensive electricity grids).
- *Full coverage for currency shortfalls*—The facility would cover the gap that results if and when, as a result of currency depreciation, the value of the LC payments due by the clean energy project falls below the corresponding FC-denominated debt payments. The facility would cover any and all shortfalls, even from an extreme depreciation (i.e., where the LC is worth a tiny fraction of its original value).
- *Protection for both foreign investors and local stakeholders*—The facility would provide a creditworthy coverage for foreign lenders while also reducing the corresponding exposure of host-country stakeholders—with the facility absorbing this risk with respect to the FC loans.
- *Blended finance/burden sharing*—The proposed facility would mobilize concessional funding while providing for burden sharing among three different classes of economic actors—host-country stakeholders, international development community, and international capital.
- *Climate impact through leveraging of funding*—The facility’s FC loan coverage would

leverage financial contributions into larger amounts of capital investment in clean energy investments by mobilizing larger amounts of other investments such as complementary equity investments and LC loans. The facility’s financial structure itself, comprising individual funding contributions, should also catalyze funding from others (e.g., carbon credits catalyze multilateral development bank [MDB]/development finance institution [DFI] support and vice versa).

- *Scalability*—The facility is designed to be able to expand in size and coverage, thereby enabling it to catalyze increasing amounts of clean energy investment.
- *Creditworthiness*—The facility would provide coverage of a creditworthy offshore guarantor.
- *Complementarity*—The facility product would be structured to complement existing commercial hedging products, helping to create seamless coverage over the long tenors required by clean energy infrastructure projects without crowding out current market services. It could also complement existing currency inconvertibility coverage.²⁸
- *Simplicity*—For each project considered by the facility, decision-making and deployment procedures for the exchange rate coverage would be as straightforward and simple as possible.

The proposal blends the attributes of

- the World Bank guarantee program, notably by enabling local sponsors, with the support of the host government, to attract financing at sound rates by providing creditworthy third-party offshore protection to international lenders,

with
- concessional funding by the International Development Association, achieved through concessional capital provided by development agencies and climate-focused philanthropies,

with
- contributions by the host government (e.g., through any required counterguarantees in respect of MDB guarantees to the facility) and also from local stakeholders (through the assignment of the project’s carbon credits).

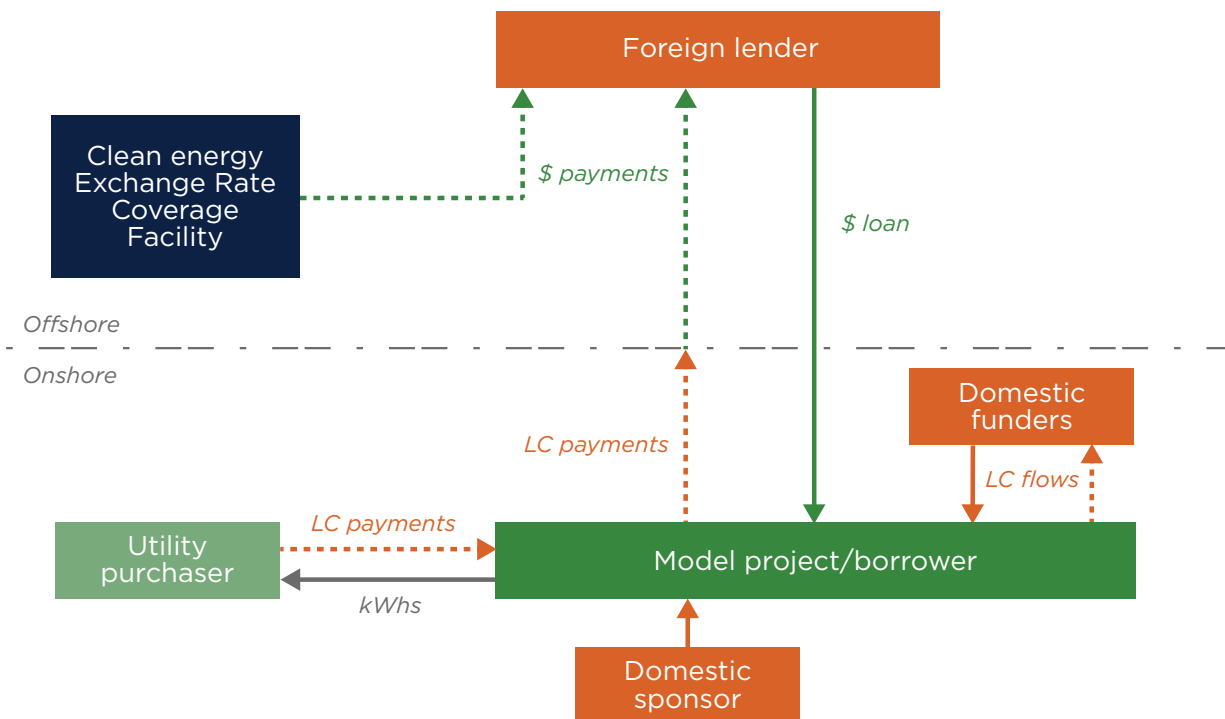
Facility Coverage

The ERCF would cover the entire FC loan repayment against any shortfall resulting from depreciation of the LC relative to a contractually defined exchange rate, referred to herein as the “Reference Exchange Rate.” This coverage would include minor depreciations (e.g., the LC is worth 99.9 percent of its original value), as well as extreme depreciation (e.g., the LC is worth a tiny fraction of its original value), and all levels in between.

The ERCF’s coverage would be issued to support the debt service payments due to the FC

lender of a project. The facility would be established and operate “offshore”—that is, outside the project host country—and would make its shortfall payments in FC directly to the FC lender (as depicted in Figure 2). The FC loan would be issued by the foreign lender to the project borrower; the coverage would be issued by the facility to the foreign lender. When there is a shortfall in the LC contracted amount relative to the FC debt service payment,²⁹ the ERCF would pay the dollar amount of that shortfall directly to the foreign lender.

Figure 2: ERCF coverage to FC lender



This coverage is illustrated in Table 1, which depicts how the shortfall would have applied to a 10-year,³⁰ dollar-denominated loan using the historical exchange rate for the Indonesian rupiah/US dollar from 2012 to 2021. The exchange rate average for 2011 of 1:8,770 is used as the Reference Exchange Rate. The ERCF coverage would, as reflected in Table 1, have paid the FC lenders \$0.7 million in 2012, rising to \$4.0 million in 2020, and a total of \$30.9 million over the 10-year term.

Table 1: Shortfalls under historical Indonesian rupiah/USD exchange rate as applied to an illustrative 10-year loan

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Debt service (m)		10	10	10	10	10	10	10	10	10	10	100
Exchange rate, rupiah/USD	8,770	9,386	10,461	11,865	13,389	13,308	13,380	14,236	14,147	14,582	14,308	
Current LC value as percentage of 2011 value (in percentage points)*		93 (-7)	83 (-17)	74 (-26)	65 (-35)	66 (-34)	65 (-35)	62 (-38)	62 (-38)	60 (-40)	61 (-39)	
LC repayment ('000s)		87.7	87.7	87.7	87.7	87.7	87.7	87.7	87.7	87.7	87.7	877
\$ Value (m)		9.3	8.3	7.4	6.5	6.6	6.5	6.2	6.2	6.0	6.1	
\$ Shortfall (m)		0.7	1.7	2.6	3.5	3.4	3.5	3.8	3.8	4.0	3.9	30.9

Note: This is the debt service requirements under a \$75 million loan at a 5.5 percent fixed interest, repayable in 10 equal installments. The exchange rate in effect in 2011 is used as the Reference Exchange Rate. *See further explanation about how the percentage of depreciation is defined in endnote 1.

The ERCF is not designed to cover traditional credit, operational, technological, or other risks, which fall within the usual due diligence remit of project investors. However, consistent with its climate and development orientation, the product would conceptually be structured such that the facility's shortfall currency protection is triggered if the project produces the clean energy (which in turn produces the carbon credits) and the borrower makes the contracted LC payment.

The facility's product could potentially be used to mobilize additional funding from foreign lenders to domestic banks to increase the capacity of these banks to provide local currency loans for these projects. The facility could also explore potential specialized product windows, for example aggregating smaller projects from small island developing states. In addition, consideration could be given to providing some complementary protection for equity investors. Finally, the facility could be structured to receive any "surplus" in the event of an appreciation of the LC relative to the Reference Exchange Rate.

Facility's Financial Structure

This section describes the sources of funding for the facility, the facility's potential exposure, the proposed funding structure to meet that exposure, and other possible financial management and operational considerations.

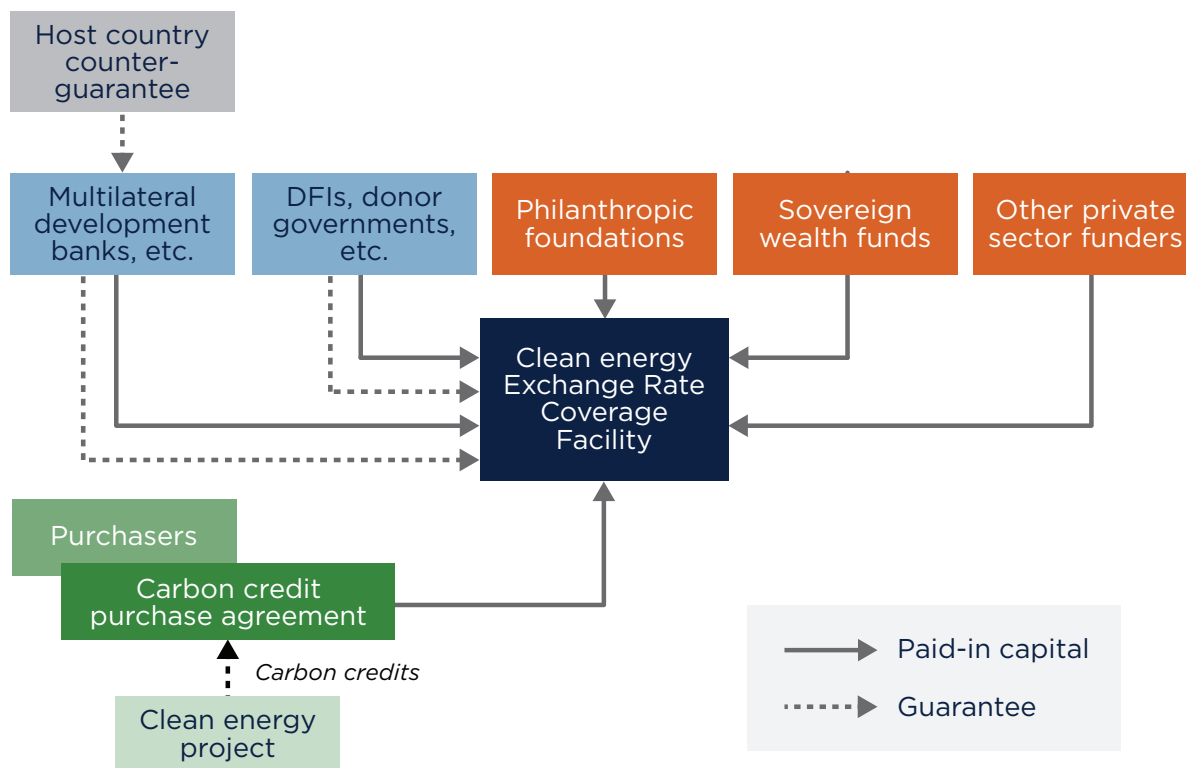
The ERCF would draw on funding from three types of sources: (i) carbon credits; (ii) multilateral development banks (MDBs), development finance institutions (DFIs), and others

in the international development/climate community; and (iii) other sources of international capital. The result is a “blended finance” facility:

1. *Carbon credits.* An agreed share of the carbon credits generated by the clean energy project would be transferred to the facility by their nominal owners in return for the currency exchange coverage used to help mobilize the project’s FC loans. The credits would then be monetized into hard currency resources of the facility through a long-term carbon credit purchase arrangement backstopped, for example, by one of the carbon funds operated by the MDBs,³¹ which would also provide a guaranteed price floor (so as to generate the required revenues for the ERCF). Under the illustrative structure, these revenues would be divided into two installments: an initial one covering up to 20 percent of currency depreciation (i.e., if the currency loses value down to 80 percent relative to the Reference Exchange Rate), and a second one covering the unlikely prospect of a depreciation of 81-100 percent (i.e., if the LC effectively falls to near zero in value). Unused carbon credit revenues (or a portion thereof) could, potentially, be rolled over to reduce the next year’s funding requirements (notably with respect to the “81-100 percent” coverage, which is unlikely to be required for most years under most loans).
2. *Multilateral development banks and other similar bilateral agencies.* The second source of financial support would be from climate- and development-focused multilateral and national development agencies. Under the illustrative structure, they would provide financing to cover the second slice of depreciation, from a level of 21 percent to 50 percent (i.e., when the LC value falls to between 79 percent and 50 percent of its original value). This second slice would be divided in two, with a currency depreciation from 21 percent to 35 percent being funded through an MDB guarantee, which is in turn counterguaranteed by the host country. This counterguarantee would create a financial disincentive for the host-country government, but the host country would have no financial exposure to the facility beyond this counterguarantee. Funding for a depreciation of 36 percent to 50 percent would be provided by these organizations either through guarantees to the facility (this time without the host-country counterguarantee) or paid-in contributions.
3. *Interested international capital, including philanthropies, sovereign wealth funds, and private-sector financial institutions.* Under the illustrative structure, they would provide financing to cover the third slice of currency depreciation, from a level of 51 percent to 80 percent (i.e., when the LC value falls to between 49 percent and 20 percent of its original value). This would notionally be in the form of grants from philanthropies, while other funders would receive some level of remuneration (notionally, concessional to some extent). It is anticipated that multiple institutions would contribute only a portion of the required funding. Moreover, the coverage being funded would in essence constitute a form of “third loss,” following on the exposure absorbed through the carbon credits (“first loss”) and the MDBs/DFIs (“second loss”) slices.

These various funding sources are depicted in Figure 3.

Figure 3: ERCF financing structure



Model Clean Energy Project under ERCF

In order to illustrate how a clean energy project, its FC loan, the ERCF coverage, and the illustrative facility funding structure interact, the authors have developed a model clean energy project and related FC loan. They assume the following:

- A \$200 million capital investment in a utility-scale solar project
- A debt-equity ratio for the capital investment (excluding financing costs) of 70:30
- Sixty percent of this debt for the capital investment (i.e., \$84 million) provided through the FC loan to be protected by the facility
- The FC loan has the following attributes:
 - A fixed interest rate of 5.5 percent per annum (e.g., underlying variable rate loan swapped into a fixed rate one)
 - A two-year grace period for construction
 - \$7 million capitalized into the loan to cover interest during construction (IDC)

- An overall 15-year tenor
- A levelized repayment structure of 13 equal payments

The resulting total FC loan amount, including IDC, is \$91 million. The debt is repayable in 13 annual equal installments of \$10 million, for total repayment over the life of the loan of \$130 million. As a consequence, each 10 percent LC depreciation relative to the Reference Exchange Rate in any given year generates a shortfall of \$1 million for that year and, if repeated for the entire life of the loan, a total shortfall of \$13 million.

The maximum exposure of the facility (i.e., assuming a complete collapse of the local currency through the term of the loan) would equal \$130 million payable over the 15-year loan period. The facility would need to be funded to pay any and all shortfalls, up to the maximum of \$130 million—an extremely unlikely scenario but nonetheless a scenario for which lenders would seek comfort. To meet this contingent obligation, the facility would draw on the following contributions:

- The first 20 percent currency depreciation: \$26 million, funded by carbon credits, with \$2 million drawable in any given year³²
- The second slice covering 21 percent to 50 percent currency depreciation: \$39 million, split between \$19.5 million of MDB guarantee with a host-government counterguarantee, and the balance through other MDB/DFI/bilateral support
- The third slice covering 51 percent to 80 percent currency depreciation: \$39 million, funded through a combination of philanthropies, sovereign wealth funds, and other investors
- A final slice, covering a severe depreciation of 81 percent to 100 percent: \$26 million, funded by carbon credits

Table 2 depicts, with respect to the model \$91 million FC loan presented above, the drawdown sequence on facility resources to fund the shortfall payments for depreciation of the LC that varies over the life of the loan, from a low of 10 percent in year 3 to a high of 85 percent in years 10 and 11.

Table 2: Shortfall and drawdown sequence for a \$91 million loan under illustrative depreciation

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
\$ Debt service (m)			10	10	10	10	10	10	10	10	10	10	10	10	10	130
Current LC value as percentage of Reference Exchange Rate value (in % points)*	100	100	90 (-10)	80 (-20)	80 (-20)	70 (-30)	60 (-40)	50 (-50)	40 (-60)	15 (-85)	15 (-85)	40 (-60)	60 (-40)	90 (-10)	90 (-10)	
Shortfall \$ (m)			1	2	2	3	4	5	6	8.5	8.5	6	4	1	1	52
Allocations under drawdown sequence																
Carbon credits (1% to 20%)—\$ (m)			1	2	2	2	2	2	2	2	2	2	2	1	1	23
MDBs/ sovereign counter guarantee (21% to 35%)—\$ (m)						1	1.5	1.5	1.5	1.5	1.5	1.5	1.5			11.5
Other MDB/ DFIs (36% to 50%)—\$ (m)							0.5	1.5	1.5	1.5	1.5	1.5	0.5			8.5
Philanthropy/ SWF/ private sector (51% to 80%)—\$ (m)									1	3	3	1				8
Carbon credits (81% to 100%)—\$ (m)										0.5	0.5					1

Note: \$91 million loan at 5.5 percent interest for 15 years with a two-year grace period. *See further explanation about how the percentage of depreciation is defined in endnote 1.

Note that under the illustrative structure, any and all potential shortfall payments (up to the total annual debt service payment, set at \$10 million under the illustrative loan) to be made by the facility must be fully funded by the different funding sources. Accordingly, the funding to the facility by each and every contributor needs to be structured to be sufficiently robust to enable the facility—and by extension the coverage it issues—to provide lenders with strong investment grade protection against the risk of exchange rate depreciation. These funding arrangements would need to be reviewed and evaluated by an appropriate rating agency and will likely differ depending on the class of funder. For example, a guarantee from the World Bank covering the 15-year shortfall period may be sufficient, but a similar contingent

obligation for some other funders may not be adequate. In addition, while the facility is structured to cover a massive depreciation, that is unlikely to occur for all currencies covered by the ERCF.

Operational Issues

Several operational aspects would need to be addressed for this type of facility to move forward:

- *Host institution and management*—The facility should take advantage of existing organizations. For example, the ERCF could be housed within an existing multilateral institution, such as an active multilateral international financial institution with extensive experience in clean energy projects and in dealing with international lenders. The host institution would also assume management responsibility. It would draw on existing organizations that specialize in exchange risk management, particularly for developing country currencies.
- *Linkage with creditworthy carbon purchaser*—Explicit purchase arrangements with one or more of the carbon funds operated by MDBs would underpin the ERCF. Potential carbon fund partners could include the Carbon Initiative for Development, the Transformative Carbon Asset Facility, and the upcoming Climate Emissions Reduction Facility of the World Bank or the Future Carbon Fund and the Climate Action Catalyst Fund of the Asian Development Bank. The MDB carbon funds could potentially provide price floor contracts for the carbon credits rather than irrevocable assignments of the credits; this approach might be viewed more favorably by project developers as it would enable the potential pricing upside (i.e., if market prices exceeded the price floor) to be retained by the clean energy project sponsor. The projected rise in private capital flows into carbon markets could also increase the amount of liquidity available to monetize the facility’s carbon credits.
- *Prudential practices*—The facility would operate under prudential risk and other operational management processes, including risk reviews of potential currencies for coverage. The facility would also adopt diversification policies—for example, managing exposure to any particular country currency.
- *Private-sector-like operations*—The ERCF would be managed along private-sector principles, notably in efficiency and predictability in product deployment.
- *Pricing principles*—The facility will need to adopt a pricing strategy. However, three overarching objectives should apply: (i) promote “crowding in” international investment for clean energy projects; (ii) avoid “crowding out” commercially available and affordable products in the market; and (iii) facilitate a significant increase in affordable clean energy infrastructure in developing countries. The assigned carbon credits would constitute an “access fee,” paid by their owner to access the exchange rate coverage.
- *Interplay with currency hedging swap products*—The ERCF shortfall coverage is intended to work in a complementary manner with existing currency hedging/swap instruments. For example, the facility could purchase hedging products commercially

available under reasonable terms, or it could provide its shortfall coverage to the extent commercial markets do not provide products (e.g., either in the currencies or for the required tenors). The operating mechanics would need to be developed. Moreover, because the facility would not address inconvertibility (a circumstance in which the specified LC payment cannot be converted into FC, or the resulting FC cannot be exported), the project funders could seek these protections elsewhere—for example, through the Currency Inconvertibility and Transfer Restriction product of the Multilateral Investment Guarantee Agency.³³

Potential Benefits

The facility set out in this policy note could generate several types of benefits, including:

- helping to catalyze additional foreign financing for clean energy projects in developing countries by addressing exposure to currency fluctuations, thereby generating important development benefits for the host country and contributing to global efforts on climate change.
- helping to reduce (but not eliminate) the exposure of local consumers and stakeholders to currency exchange rate risk by absorbing that risk through the blended finance facility. This could also include reducing (but not eliminating) the prospect of major adjustments in electricity prices if the LC depreciates. Local stakeholders would still bear some of this exposure, notably through the use of the locally generated carbon credits and the host-government counterguarantee for the MDB guarantee, which are used to fund some of the facility’s coverage (depending on the level of depreciation).
- reducing the cost of foreign-financed clean energy projects, as the projects would be able to access funds at the FC interest rates, which are typically lower than corresponding LC ones.
- providing a vehicle for climate-engaged donors and others to leverage financial contributions (made to the facility either as contingent obligations, such as guarantees to fund, or funded up-front through paid-in contributions) into larger amounts of investments in clean energy projects in developing countries.
- helping to increase the investment opportunities in clean energy projects for private-sector developers and other investors by increasing the volume of potentially “bankable” projects.
- enabling the scaling-up of low-cost capital through the facility, depending on the demand for ERCF’s coverage and the appetite/willingness of climate-engaged funders.
- facilitating the growth of markets for high-integrity carbon credits by catalyzing more clean energy projects. Such markets are likely to be in high demand as jurisdictions and companies around the globe pursue net-zero pledges. In parallel, the facility would demonstrate the value of leveraging carbon markets and carbon revenues to de-risk private financing of clean energy investments and can allow more developers to tap into carbon credits and the related markets.

- targeting only currency exchange risk and not traditional commercial or other risks; it leaves with project developers and commercial lenders the burden of due diligence and risk assessments for the other risks and thus avoids weakening the corresponding project evaluation filters.
- providing the structural flexibility to cover specialized projects, for example by aggregating small-scale projects or targeting projects in “small island developing states.”

CONCLUSION

The world has a clear and overwhelming interest in avoiding dangerous levels of climate change. To achieve that outcome requires substantial investments in clean energy projects across the developing world, which, in addition to avoiding GHG emissions, also contribute to economic opportunities and job creation in these countries. This, in turn, will require large levels of foreign investment. Given that these clean energy investments will mostly be in local currency-generating projects, both foreign investors and domestic economic actors will need protections against foreign currency risks, at levels that far exceed the financial or prudential capacity of host governments. The international community, both public and private, has a role to play in this regard.

The facility outlined in this policy note is a possible vehicle to translate climate engagement and financial resources into more plentiful flows of international capital to fund clean energy projects in developing countries. It does so largely by bringing together a variety of economic actors to cover any depreciation shortfall or, more precisely, to assume exposure regarding the risk of an eventual shortfall, including from massive depreciations. However, this also involves costs to the various prospective facility funders, both domestic and international, who must allocate some of their resources to this, rather than other uses. The attractiveness (from a cost/benefit analysis) of this potential investment in the facility would need to be assessed by each potential participant—including, notably, the owners of the carbon credits, which serve as a first loss.

Despite the illustrative details provided for the facility structure, a number of open issues remain and merit consideration, including access and certainty regarding carbon credits, relative appetite and participation of different funders, and treatment of the facility's resources (including undisbursed funds), as well as institutional hosting. Most importantly, this policy note is designed to catalyze discussion on the important topic of how to advance climate and development finance in a way that meets the twin objectives of addressing climate change while reducing poverty and promoting growth in developing countries.

NOTES

1. A terminological clarification: References in this paper to percentage of depreciation are expressed as the percentage of lost value with respect to the agreed Reference Exchange Rate that is formalized at the financial closing for a given clean energy project. If the text refers to a 90 percent loss of value of the relevant local currency, then an initial amount of LC that was worth \$100 equivalent now only represents \$10 equivalent. The LC is said to retain only 10 percent of its initial value (as determined by the Reference Exchange Rate). A 50 percent loss means that the LC is worth half (i.e., 50 percent) of its original value.
2. While there is debate in various circles as to whether China should continue to be classified as a “developing country,” for purposes of this discussion China is not included. For more discussion of China’s proper status, see: Philippe Benoit and Kevin Tu, “Is China a Developing Country, and Why It Matters for Energy and Climate,” Columbia University Center on Global Energy Policy, July 2020, https://www.energypolicy.columbia.edu/sites/default/files/file-uploads/ChinaDevelopingCountry_CGEP-Report_072220.pdf.
3. See: Organization for Economic Cooperation and Development (OECD)/IEA, “Financing Clean Energy Transitions in Emerging and Developing Economies,” June 2021, <https://www.iea.org/reports/financing-clean-energy-transitions-in-emerging-and-developing-economies/executive-summary>.
4. In 2009, at COP-15 in Copenhagen, developed countries pledged to mobilize \$100 billion per year by 2020. Just before COP-26 in Glasgow, the OECD found that clean energy investment capital mobilized for developing countries amounted to roughly \$20 billion less than this goal. See: OECD, “Statement by the OECD Secretary-General on Future Levels of Climate Finance,” October 25, 2021, <https://www.oecd.org/newsroom/statement-by-the-oecd-secretary-general-on-future-levels-of-climate-finance.htm>.
5. <https://initiatives.weforum.org/micee>.
6. <https://www.worldbank.org/en/topic/climatechange/brief/mobilizing-finance-for-climate-action-through-the-invest4climate-platform>.
7. Other analyses reach broadly similar conclusions. See, for example: IPCC AR6 (2022) WGIII report, “Climate Change 2022, Mitigation of Climate Change,” and notably discussion in chapter 15 (https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf). There are also country and sector level reports. For example, Sustainable Energy for All (SE4ALL) and the Climate Policy Initiative concluded that Indonesia’s clean electricity investment needed to increase by more than a factor of four to \$13.4 billion per year to comply with Indonesia’s net-zero target for 2060 (SE4ALL, “Paris Alignment of Power Sector Finance Flows in Indonesia: Challenges, Opportunities, and Innovative Policy,” March 2022, <https://www.seforall.org/publications/paris-alignment-of-power-sector-finance-flows-in-indonesia-challenges-opportunities>). Similarly, a study by BloombergNEF indicated that India’s investments in renewables would need to average \$27.9 billion annually till the end of the decade to meet the government’s own renewable energy installation commitment (Shantanu Jaiswal and Rohit Gadre, “Financing India’s 2030 Renewables Ambition,” BloombergNEF, June 22, 2022).

8. OECD/IEA, “Financing Clean Energy Transitions in Emerging and Developing Economies,” Figure 2.1.
9. See Figure 2.1 in “Financing Clean Energy Transitions in Emerging and Developing Economies,” and Robin Baker and Philippe Benoit, “How Project Finance Can Advance the Clean Energy Transition in Developing Countries,” Oxford Institute for Energy Studies, September 7, 2022, <https://a9w7k6q9.stackpathcdn.com/wpcms/wp-content/uploads/2022/09/How-Project-Finance-Can-Advance-the-Clean-Energy-Transition-in-Developing-Countries-ET17.pdf>.
10. IPCC, “Climate Change 2022: Mitigation of Climate Change,” Sixth Assessment Report, 15-4, April 2022, <https://www.ipcc.ch/report/ar6/wg3/>.
11. Investment levels rose in 2021, although they still fall well short of the needed scale. IEA, “World Energy Investment 2022,” OECD/IEA, June 2022, <https://www.iea.org/reports/world-energy-investment-2022>.
12. OECD/IEA, “Financing Clean Energy Transitions in Emerging and Developing Economies.”
13. That is with a gross national income per capita level of less than about \$12,500. This currently includes China, which, as noted above, is not included in the term “developing country” as used in this paper.
14. Philippe Benoit, “Energy and Development in a Changing World: A Framework for the 21st Century,” Columbia University Center on Global Energy Policy, March 2019, <https://www.energypolicy.columbia.edu/research/energy-and-development-changing-world-framework-21st-century>.
15. OECD/IEA, “Financing Clean Energy Transitions in Emerging and Developing Economies,” 13.
16. See: Baker and Benoit, “How Project Finance Can Advance the Clean Energy Transition in Developing Countries,” <https://a9w7k6q9.stackpathcdn.com/wpcms/wp-content/uploads/2022/09/How-Project-Finance-Can-Advance-the-Clean-Energy-Transition-in-Developing-Countries-ET17.pdf>.
17. European Commission, Organization for Economic Cooperation and Development, European Development Finance Institutions, Convergence Finance, and The Currency Exchange Fund, “The Need to Reduce FX Risk in Development [sic] Countries by Scaling Blended Finance Solutions,” February 2017, <https://www.convergence.finance/resource/7ursD0kKrKmoAeoy4MG6ug/view>.
18. For a general discussion of the foreign exchange exposure of renewable energy projects, see “The Need to Reduce FX Risk...” Separately, a white paper from BloombergNEF on renewable energy investments in India finds foreign exchange risk to be the second-most important financial risk to projects, after rising interest rates. See: Shantanu Jaiswal and Rohit Gadre, “Financing India’s 2030 Renewables Ambition,” BloombergNEF, June 22, 2022.
19. Chris Flood, “Flight to ‘Safe Haven’ Funds Runs Its Own Risks,” *Financial Times*, March 7, 2022, <https://www.ft.com/content/fea79934-139b-44f2-93bb-d9841a148d31>.

20. See: John Authers, “When Austerity Is a Bigger Problem Than Inflation,” Bloomberg News, July 18, 2022, <https://www.bloomberg.com/opinion/articles/2022-07-18/mexico-s-enjoys-low-inflation-but-amlo-s-austerity-is-starving-the-economy?sref=Bo5bEQTo>. Also see: Jeff Stein, “Poorer Nations Could Suffer from U.S. Efforts to Slow Inflation,” Washington Post, July 25, 2022, <https://www.washingtonpost.com/us-policy/2022/07/25/federal-reserve-interest-developing-markets/>.
21. These represent the changes in nominal terms, not in constant dollars or real terms. Loan agreements are similarly denominated in nominal terms, whether they use variable or fixed interest rates.
22. For example, Mexico’s state-owned utility, CFE, in the last couple of years (2020–2021) had to cover an additional 2.6 billion USD in its foreign denominated debt due to a 9.2 percent depreciation of the LC in relation to 2019, which represented 16.6 percent and 39.4 percent, respectively, of the net loss of the company in 2021 and 2020. See Operation’s Results section in “CFE’s 2021 Annual Report,” <https://www.cfe.mx/finanzas/reportes-financieros/Reportes%20Anuales%20Documentos/Reporte%20anual%202021.pdf>.
23. See Baker and Benoit, “How Project Finance Can Advance the Clean Energy Transition in Developing Countries,” referencing, inter alia, Project Development for Power and Water, a Middle Eastern Case Study 1999–2019, P Conway EMEA Energy Consulting Ltd.
24. Comments on the challenges of using hedging and swaps were made by investment bankers and project developers whom the authors interviewed on a confidential basis for this project. See also: Joaquim Levy, “Foreign Exchange Risk: How a Liquidity Facility Could Help,” World Bank blog post, July 18, 2017, <https://blogs.worldbank.org/voices/foreign-exchange-risk-how-liquidity-facility-could-help>.
25. Created in 2007 by a number of European development finance institutions and other government agencies, TCX works in partnership with the International Finance Corporation, the European Bank for Reconstruction and Development, and other MDBs to offer hedging and swap products. For background on TCX Fund, see: <https://www.tcxfund.com/concept-structure/>.
26. TCX Fund, “TCX Impact Report 2021,” May 31, 2022, 2, <https://www.tcxfund.com/wp-content/uploads/2022/05/TCX-Impact-Report-2021.pdf>.
27. See discussion in endnote 1 on references in this commentary to “developing countries,” which grouping as used in this paper does not include China.
28. See, for example, the Currency Inconvertibility and Transfer Restriction product offered by the Multilateral Investment Guarantee Agency (<https://www.miga.org/product/currency-inconvertibility-and-transfer-restriction>).
29. Note that, as concerns of the contracted LC payments due from the borrower, they could either be set as payable in LC or, alternatively, in FC at their FC equivalent based on the Reference Exchange Rate. While this would not affect the shortfall coverage provided by the ERCF, it would affect which party (the borrower or the FC lender) bears

the convertibility risk with respect to the contracted LC amount. See later discussion regarding Currency Inconvertibility and Transfer Restriction coverage.

30. Most loans would be expected to have longer tenors, more in the range of 15 years, as described in Table 1.
31. See, for example, the Carbon Initiative for Development, the Transformative Carbon Asset Facility, the upcoming Climate Emissions Reduction Facility of the World Bank, or the Future Carbon Fund or the Climate Action Catalyst Fund of the Asian Development Bank.
32. This would be \$2.6 million per year in carbon credits. This figure assumes a 10-year carbon crediting period for years 3–12. Each year would require \$2 million in revenues to cover a 20 percent depreciation of the \$10 million debt service payment. In addition, the ERCF would need to build up a reserve of \$6 million from this project to cover years 13–15 when carbon credits would no longer be available (i.e., \$0.6 per year of crediting). A project operating in a power system with a 0.75 emissions grid factor (i.e., tCO₂e/MWh), with an \$800 cost per installed kWh and a 23 percent capacity factor, would generate sufficient carbon credits.
33. See description at <https://www.miga.org/product/currency-inconvertibility-and-transfer-restriction>.

 COLUMBIA | SIPA
Center on Global Energy Policy

