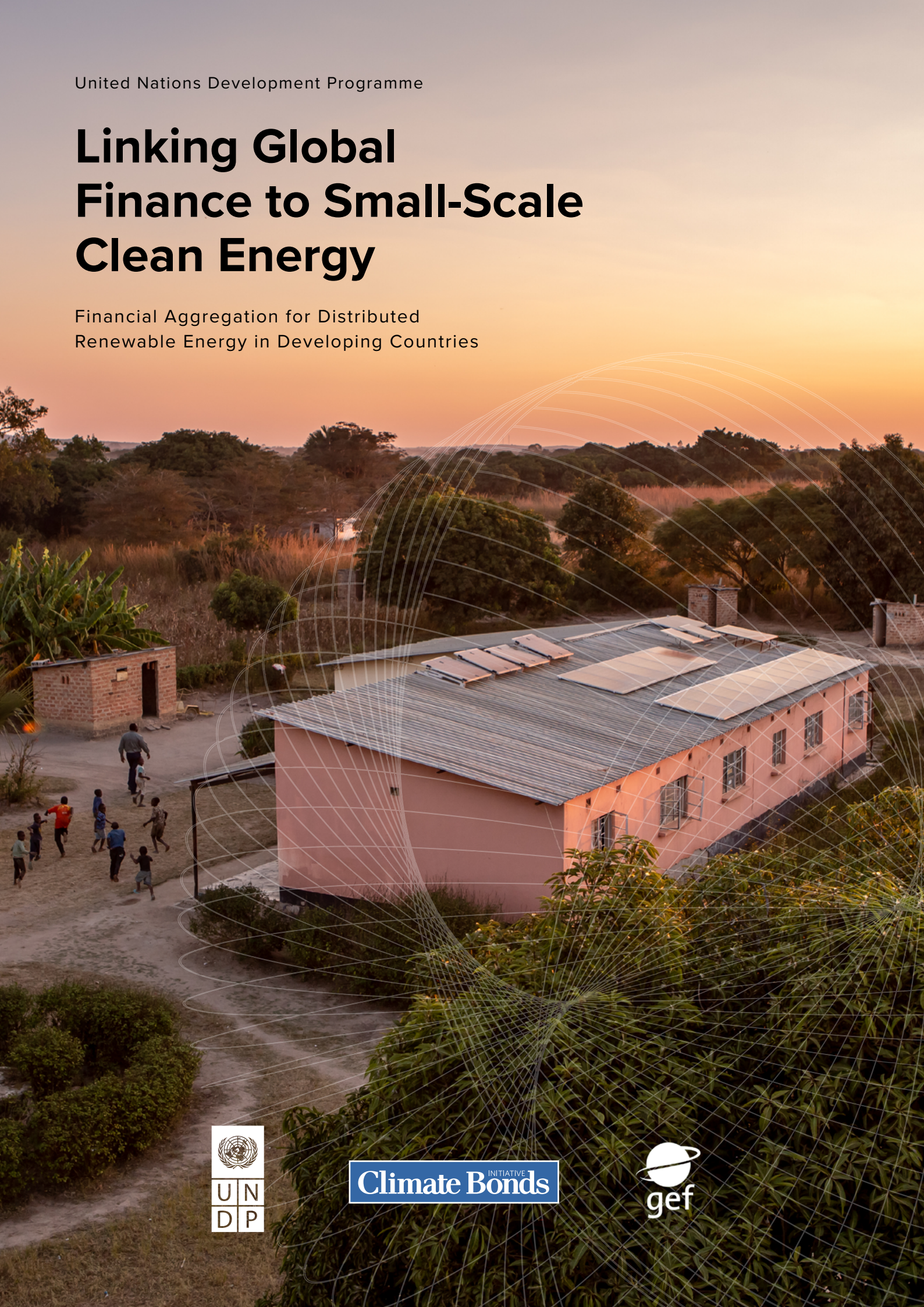
United Nations Development Programme

Linking Global Finance to Small-Scale Clean Energy

Financial Aggregation for Distributed Renewable Energy in Developing Countries



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The Climate Aggregation Platform (CAP)

The Climate Aggregation Platform (CAP) is a Global Environment Facility (GEF) funded project implemented by UNDP, which, in partnership with the Climate Bonds Initiative, seeks to promote the scale-up of financial aggregation for small-scale, low-carbon energy assets in developing countries.

The project aims to advance and raise awareness for innovative solutions to market barriers for financial aggregation – with the goal to increase access to low-cost financing for low-carbon energy. In so doing, the project can improve the lives of people in developing countries, bringing about affordable, reliable, and clean energy.

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The Climate Bonds Initiative

The Climate Bonds Initiative (Climate Bonds) is an international investor-focused not-for-profit organisation working to mobilise the USD100tn bond market for climate change solutions. It promotes investment in projects and assets needed for a rapid transition to a low-carbon, climate-resilient, and fair economy. The mission focus is to help drive down the cost of capital for large-scale climate and infrastructure projects and support governments seeking increased capital markets investment to meet climate and greenhouse gas (GHG) emission reduction goals.

Climate Bonds conducts market analysis, policy research, and market development; advises governments and regulators; and administers a global green bond standard and certification scheme. Climate Bonds screens green finance instruments against its Climate Bonds Taxonomy to determine alignment and uses sector-specific certification criteria. Climate Bonds Certification is a labelling scheme. Rigorous scientific criteria ensure that it is consistent with the 2˚C global warming limit of the Paris Agreement. Certification requires initial and ongoing third-party verification to ensure the assets meet the metrics of Sector Criteria.

GEF

The Global Environment Facility was established on the eve of the Rio Earth Summit to tackle our planet's most pressing environmental problems. Since then, it has provided more than USD21.7bn in grants and mobilized an additional USD119bn in co-financing for more than 5,000 projects and programs. The GEF is the largest multilateral trust fund focused on enabling developing countries to invest in nature, and supports the implementation of major international environmental conventions including on biodiversity, climate change, chemicals, and desertification. It brings together 184 member governments in addition to civil society, international organisations, and private sector partners. Through its Small Grants Programme, the GEF has provided support to more than 27,000 civil society and community initiatives in 135 countries.

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Cover photo: Zambia-health centre with solar panels ©UNDP - Karin Schermbrucker for Slingshot

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Foreword

Climate impacts, exacerbated by the COVID-19 pandemic and the current energy crisis, continue to mount. Never has it been more important to act together, at an accelerated pace and scale, to transition to affordable renewable and sustainable energy sources and leave no one behind. Achieving such goals requires extremely ambitious measures, and new financial tools are needed to pave the way.

UNDP is committed to increasing energy access where it is lacking. By speeding up investment in distributed renewable energy solutions, especially for those hardest to reach and in crisis contexts, we aim to increase access to clean and affordable energy for 500 million people. Partnerships like this one between UNDP and Climate Bonds can catalyse impact better than individual action.

The transition toward a clean energy future is happening everywhere, albeit unevenly, and too many constraints prevent innovative solutions from being deployed. Access to finance is critical to enabling clean energy deployment. The thematic debt market is already enabling trillions to be channelled towards the green, resilient and inclusive economy of the future globally – yet some barriers to its tremendous potential remain, particularly in emerging markets.

Thematic debt instruments such as green bonds can be valuable tools to inject significant capital into small-scale renewable energy solutions that provide lower-cost energy than their fossil fuel equivalents. Low-carbon energy complies with the Climate Bonds Taxonomy and lends itself to the green bond universe. The recent announcement of the first-ever green bond transaction to finance distributed renewable energy across developing countries using securitisation highlights the evolving nature of this sector.

Existing fossil fuel energy systems are often deeply ingrained, making the change difficult, but we are on the cusp of a tipping point for an energy transition. By speeding-up investment in distributed renewable energy solutions, we can increase clean and affordable energy access. Small-scale assets also generate important social co-benefits, such as productive energy use and reduction of gender inequality.

This market-leading research investigates the great potential of financial aggregation to unlock finance necessary for the widespread adoption of clean energy in developing countries. However, many of the lessons can be applied more broadly across any sector dominated by small-scale enterprises. The partnership between UNDP and Climate Bonds aims to help mobilise global capital to bring clean energy access to 500 million people and empower other practitioners with the knowledge needed to navigate the challenges faced in financing small-scale clean energy projects.

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Acronyms

ABS	Asset-backed security
B2C	Business-to-consumer
CAGR	Compound annual growth rate
C&I	Commercial and industrial
CAP	Climate Aggregation Platform
DESCO	Distributed energy service company
DFI	Development finance institution
DM/EM	Developed Market(s)/Emerging Market(s)
DRE	Distributed renewable energy
D-REC	Distributed renewable energy certificate
ESG	Environmental, social and governance
EV	Electric vehicle
FCDO	UK Foreign, Commonwealth & Development Office
FX	Foreign exchange
GOGLA	Global Off-Grid Solar Lighting Association
GSS	Green, Social and Sustainability
ICT	Information and communications technology
IEA	International Energy Agency
IRENA	International Renewable Energy Agency
KES	Kenyan Shilling
KPI	Key performance indicator
LMD	Last-mile distributors
MAI	Market Attractiveness Index
MFI	Microfinance institution
OGR	Off-grid renewable(s)
OGS	Off-grid solar
PAYGO	Pay-as-you-go
P-REC	Peace renewable energy certificate
P2P	Peer-to-peer
PV	Photovoltaic
PULSE	Productive use leveraging solar energy
RBF	Results-based financing
SDG	Sustainable Development Goal
SEforALL	Sustainable Energy for All
SHS	Solar home system(s)
SME	Small- and medium-sized enterprise(s)
SPV	Special purpose vehicle
SNAT	Supranational
SSA	Sub-Saharan Africa
UGX	Ugandan Shilling
USD	United States Dollar
XAF	Central African Rand

1. Report outline

This report was developed as part of the Climate Aggregation Platform (CAP), a Global Environment Facility (GEF)-funded project implemented by UNDP, which, in partnership with the Climate Bonds Initiative, seeks to promote the scale-up of financial aggregation for small-scale, low-carbon energy assets in developing countries.

The report provides information on the current landscape for Distributed Renewable Energy (DRE) and the potential of financial aggregation to address the existing financing gap in developing countries. The majority of evidence detailed in this report focuses on sub-Saharan Africa (SSA). However, UNDP intends to support small-scale, low-carbon energy markets across all developing countries.

Available literature relevant to this topic alongside market analysis serves as the basis for identifying the key barriers to broader adoption of financial aggregation as a means to extend affordable finance to the sector. The barrier identification process serves as the premise for highlighting potential market enablers and directs the research towards case studies where success has been observed in practice. Several insights and recommendations are drawn from the analysis along with areas for further investigation. This process is supplemented by dozens of semi-structured informal interviews with stakeholders (complete list provided in the appendix) to ensure the analysis and conclusions reflect the current experience of practitioners operating in this space.

The report is intended to update existing knowledge and fill gaps in information. Future engagements between critical stakeholders including private and public financiers, impact investors, development agencies, commercial banks, financial intermediaries, government programmes, policymakers, energy companies, and other sector experts can benefit from the information enclosed to help achieve the ultimate goal of financial aggregation: the establishment of a liquid capital market to enable large-scale capital flows towards promising small-scale renewable energy initiatives.

UNDP is looking to expand the work in this report further and build on the existing data and insights. The Climate Aggregation Platform (CAP) project plans to develop a framework for assessing different markets' readiness for financial aggregation in the small-scale, low-carbon energy sector, and to conduct in-depth assessments at the regional and country level.

The team is particularly thankful for the contributions and peer reviews conducted by Christine Eibs Singer (SEforALL), Olivia Coldrey (SEforALL), Sagar Gubbi (Ecoforge), Arun Gopalan, Alison Harwood (Milken Institute), Daniel Waldron (Acumen), Ahmed Badr (IRENA), Tarig Ahmed (IRENA), Mateo Salomon (UNDP) and Kirthisri Rajatha Wijeweera (UNDP).

2. Executive summary

Further finance is needed to achieve SDG7

Electricity penetration rates are notably lower in developing countries, and direct actions are needed to address the access and financing gap if SDG7 is to be achieved.[1]

Distributed renewable energy (DRE) and other small-scale, low-carbon energy solutions are vital to achieving universal access, especially as a means of reaching those most underserved. Some significant distributional discrepancies are also evident, with financial commitments concentrated in a few countries and thus failing to reach many of those most in need of international support. Likewise, intranational discrepancies are apparent whereby private firms gravitate towards more accessible and higher-income markets. In other markets with less infrastructure and lower ability-to-pay, results-based financing (RBF) and other targeted mechanisms are necessary to de-risk investment and increase affordability.

Energy access is growing, yet finance fails to keep pace

Despite energy access seeing unprecedented growth and capital inflows over the last decade, investments have been highly concentrated and far from sufficient to enable the sector to reach its full potential. While the customer base is considerably larger than ten years ago, an estimated 620m people are predicted to remain without access by 2030 under current and planned policies before the start of the COVID-19 crisis.[2] The energy access deficit remains large – as does the potential for DRE and other small-scale, low-carbon energy solutions to address it. Solar home systems (SHS) and pico-solar are the dominant technologies in the off-grid sector despite most companies failing to achieve profitability.[3] Mini-grids play an essential role in increasing electrification rates. However, they are still at an early stage of market development, attract considerably less financing and require different types of capital compared to SHS. Clean cooking applications hold great promise but attract comparatively low amounts of funding due to a lack of policy support for the industry and affordability constraints.[4]

Sustainable finance is growing and could help stimulate the sector

There is a fundamental shift in how capital is allocated in global capital markets. The triple threats of climate change, environmental degradation, and social inequalities, which the COVID-19 pandemic has further exacerbated, have led to the development of a sustainable finance market to directly address these challenges at scale. The thematic or labelled debt market, which comprises an expanding universe of green, social, and sustainability bonds/loans as well as sustainability-linked instruments, has grown considerably over the last decade.

The use of mainstream financial tools such as green, sustainable, and social (GSS) bonds can encourage wider sources of capital to invest, with aggregative financing models for distributed energy having the potential to improve the availability and reduce the cost of capital for such solutions. These instruments present opportunities to address the critical need for funding from the sell-side along with the growing buy-side demand and appetite from investors.

New financial mechanisms are needed to link global finance to small-scale, low-carbon energy assets

Financial aggregation can potentially unlock new sources of capital investment for the development of DRE projects and businesses in developing countries by providing the opportunity to invest in a diversified portfolio and gain exposure to small-scale, low-carbon energy assets. These assets can be pooled in a special purpose vehicle (SPV) to create asset-back securities (ABS) that funnel large-scale finance into small-scale enterprises and projects. Many advanced economies have thriving ABS markets, but these are yet to flourish in Emerging Markets (EM), where capital markets remain immature.[5]

Financial aggregation remains nascent

While holding great potential, financial aggregation for DRE and other small-scale low carbon energy assets is still at a nascent stage and faces a range of barriers. Markets for financial aggregation require innovation and time to reach maturity, viability, and scale; a typical financial aggregation transaction is complex, involving numerous steps and multiple stakeholders.